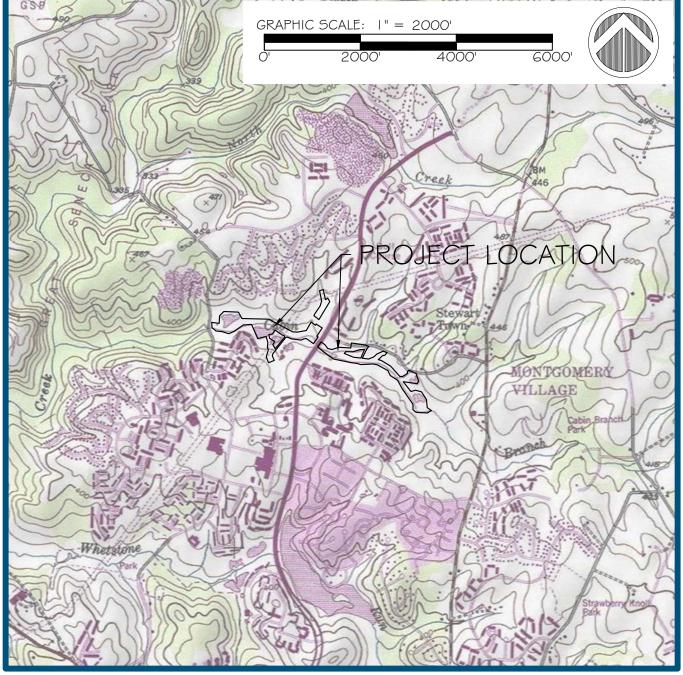


LOCATION MAP



LATITUDE: N 39° 10' 43" LONGITUDE: W 77° 12' 08"

RELATED REQUIRED PERMITS

TYPE OF PERMIT	REQD	NOT REQD	PENDING	APPROVED	NOTES
U.S. ARMY CORP OF ENGINEERS	Х				
MARYLAND DEPARTMENT OF THE ENVIRONMENT	Х				
LOCAL JURISDICTION (CITY/COUNTY)					
SPECIAL USE		Х			
ZONING		Х			
LAND DISTURBANCE	Х				
FLOODPLAIN	Х				
NRI	Х			Х	#4-20170430
FCP	Х				

RFP-2 CABIN BRANCH STREAM RESTORATIO AND WETLAND MITIGATION PHASE II EROSION & SEDIMENT CONTROL PLAN MONTGOMERY COUNTY, MARYLAND

AERIAL PHOTOGRAPH-PROJECT OVERVIEW



SHEET INDEX: I - COVER SHEET 2 - KEY SHEET 3 - COMPOSITE SHEET 4 - DRAINAGE AREA MAP 5-14 - EROSION & SEDIMENT CONTROL PLAN 15 - ESC NOTES 16-18 - ESC DETAILS

	INTY DEPARTMENT OF ICES APPROVED FOR:	NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.	FOR ALL WORK WITHIN THE LIMITS OF THE PARCELS OWNED BY POTOMAC ELECTRIC
Stormwater Management:	Sediment Control Technical Requirements:	Administrative Requirements:	POWER COMPANY THE FOLLOWING NOTES SHALL APPLY: <u>GRANTOR's PROPERTIES Workspace Notes</u>
Reviewed Date	Reviewed Date	SEDIMENT CONTROL PERMIT NO.	A. Notify GRANTOR at least seventy-two (72) hours prior to start of work on GRANTOR's PROPERTIES. Notify GRANTOR again at the completion of work. Failure to notify GRANTOR may trigger a stop work order.
Approved Date SM FILE #		MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.	B. Remove all construction debris from GRANTOR's PROPERTIES at the completion of the work.
treatment standards and does not create or	imply any right to divert or concentrate runoff esign engineer or other responsible person of	d compliance with minimum environmental runoff onto any adjacent property without that property professional liability or ethical responsibility for the	C. Stabilize all disturbed areas by grading, seeding and/or mulching.

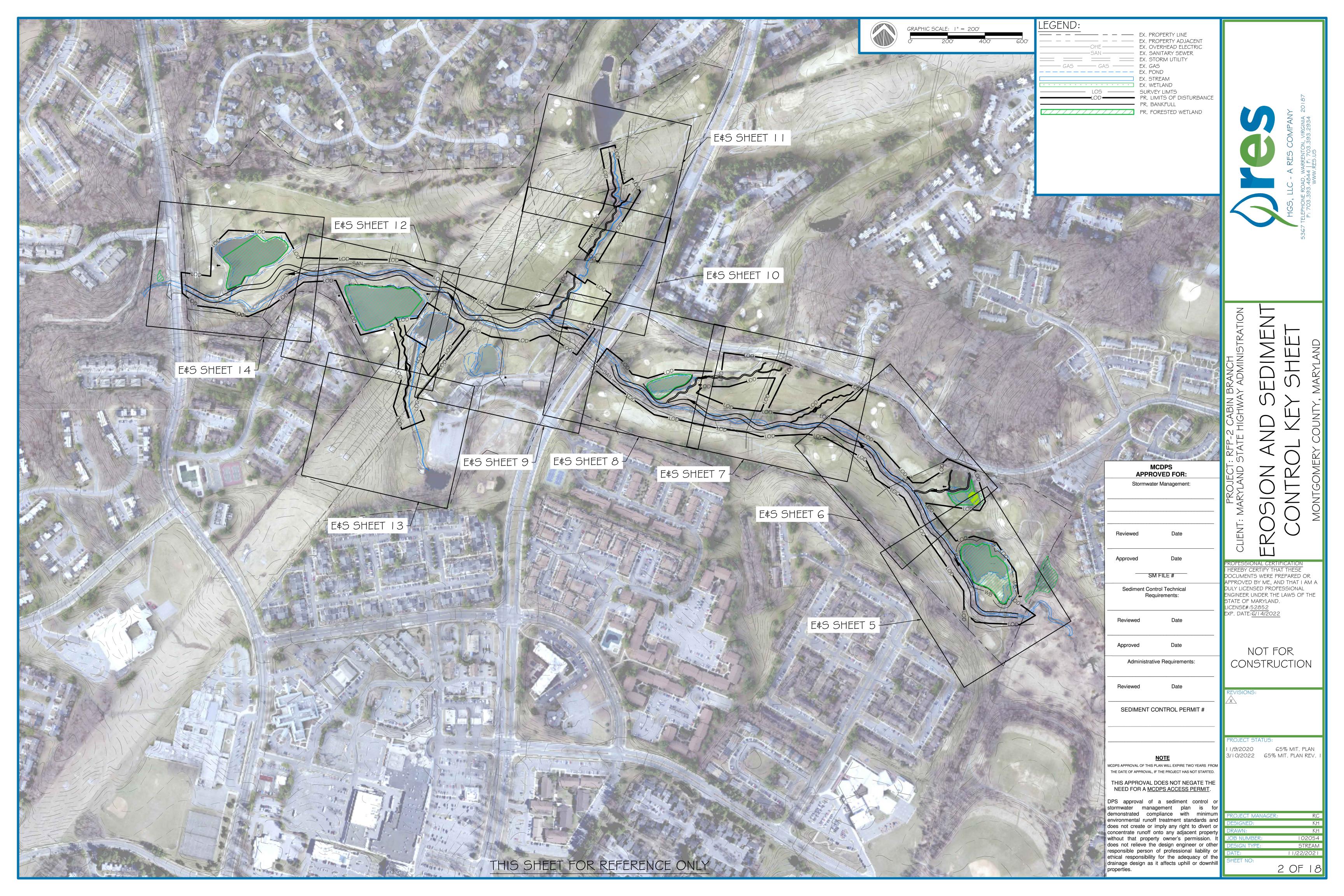
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	FEMA FIRMETTE
	PROJECT LOCATION
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	REFERENCE FEMA MAP: 24031C0187D
	APPLICANT/AGENT: NAME: HGS, LLC A RES COMPANY ADDRESS: 5367 TELEPHONE ROAD WARRENTON, VIRGINIA 20187
	PROPERTY OWNER #1: NAME: USL2 MR MONT VILLAGE BUSINESS TR ADDRESS: 19550 MONTGOMERY VILLAGE AVE

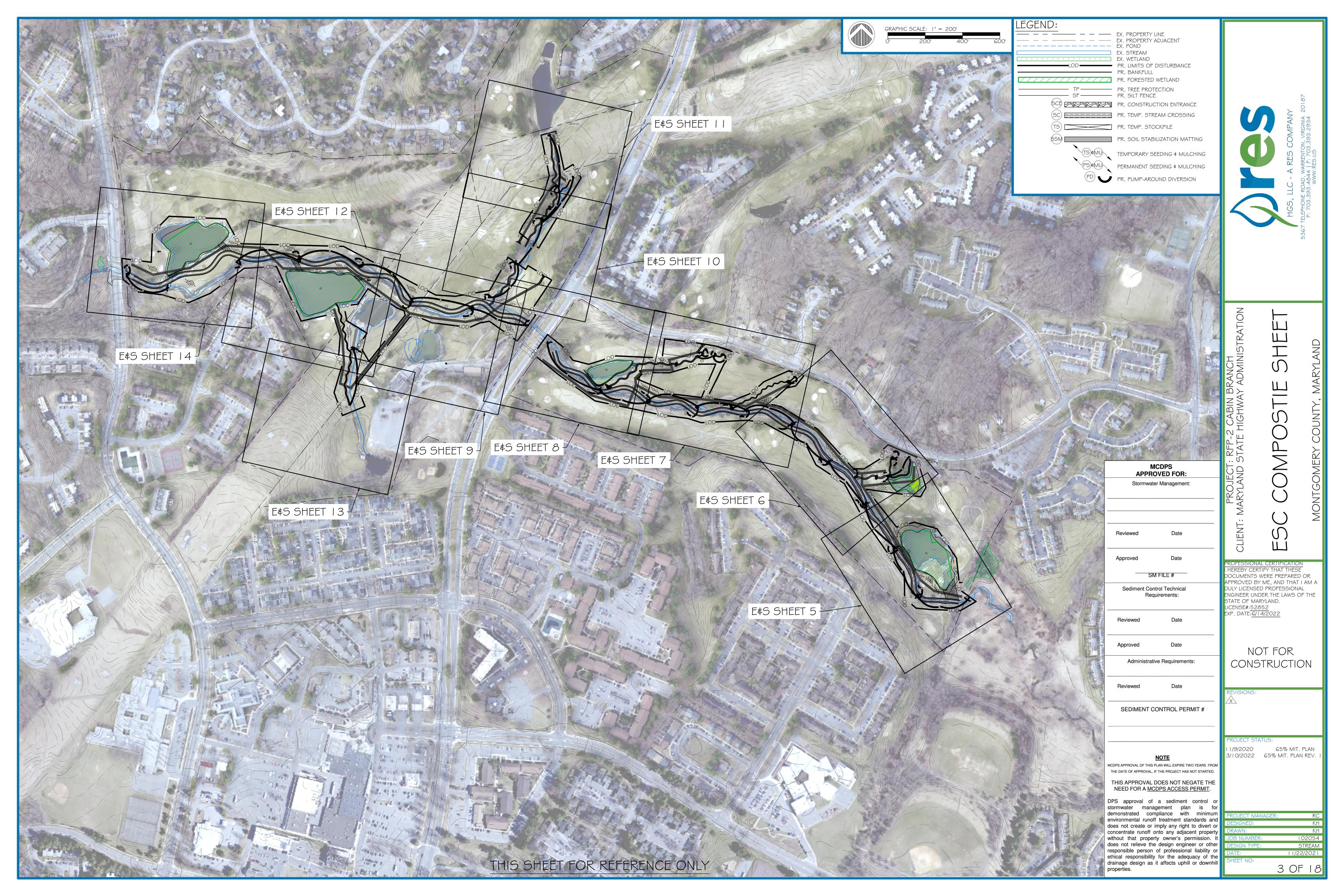
ACREAGE: 111.87 PROPERTY OWNER #2: NAME: POTOMAC ELECTRIC POWER CO ADDRESS: C/O CORP TAX DEPT STE 5617 701 9TH ST NW WASHINGTON, DC 20068 ZONING: R-200 ACREAGE: 16.52

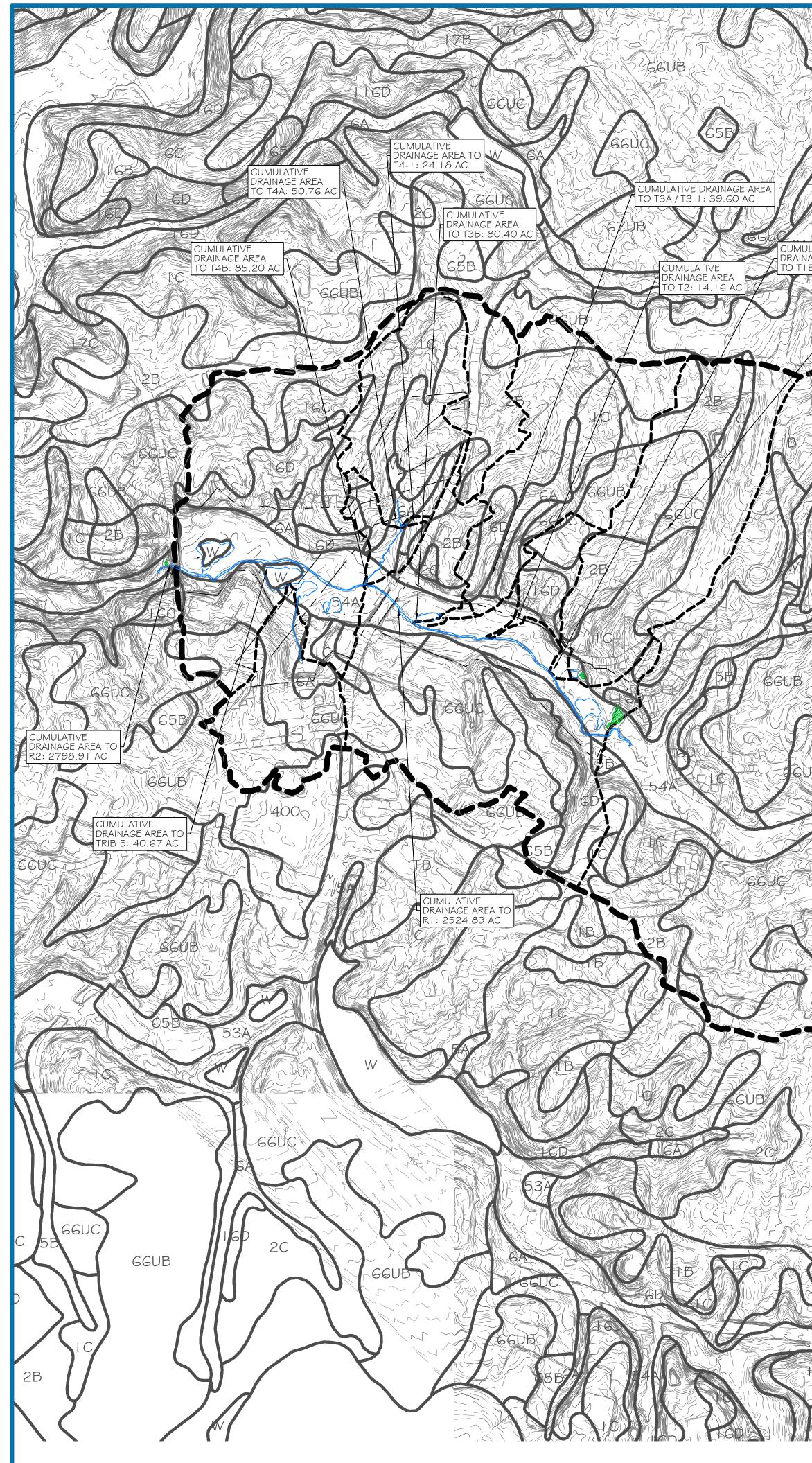
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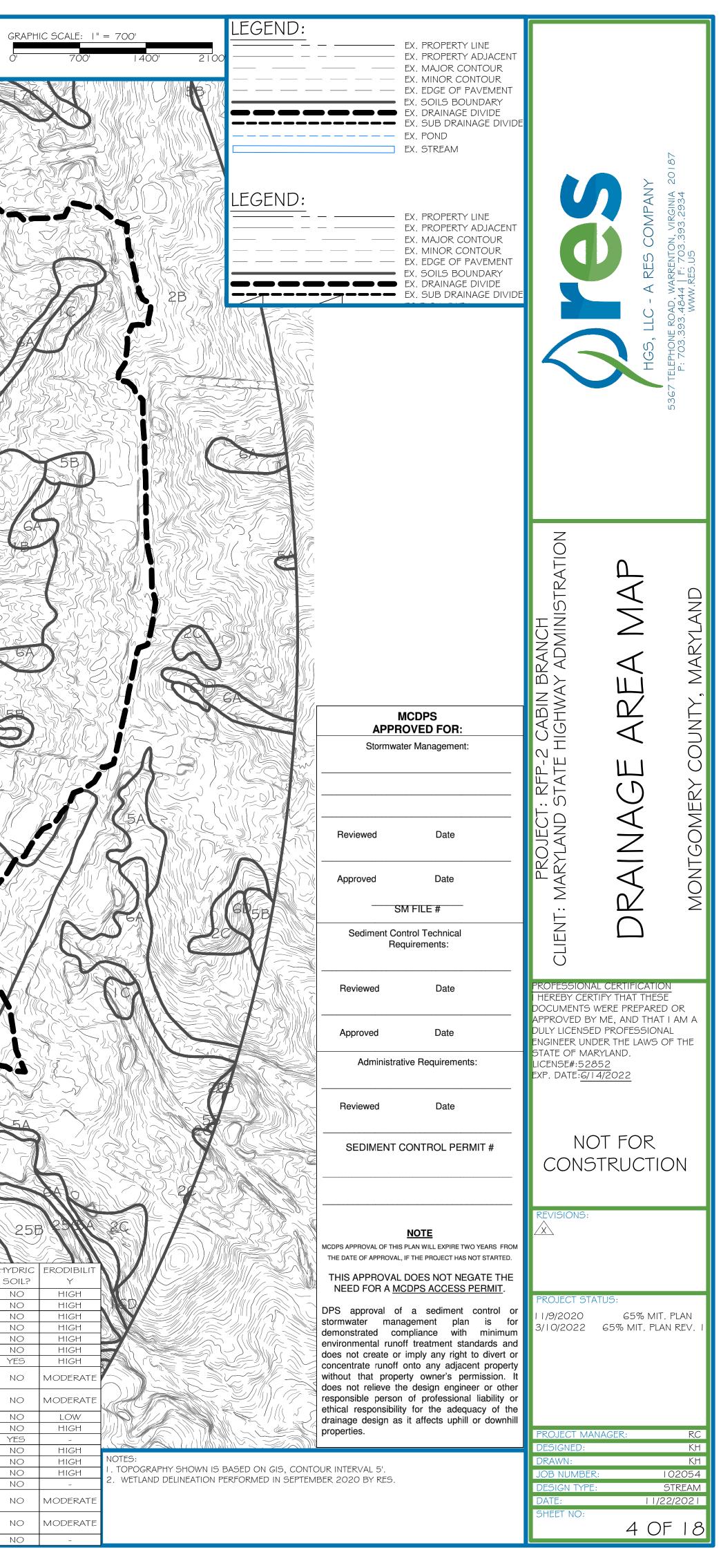
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE RFP-2 CABIN BRANCH OF MARYLAND, LICENSE NO. 52852, EXPIRATION DATE: 6/14/2022 PROJECT MANAGER: JOB NUMBER: PRJ102054 NOT FOR DESIGNED: DESIGN TYPE: CONSTRUCTION 404 MITIGATION ΚI DRAWN: PLAN DATE: | |/22/202 PROJECT STATUS DATE DESCRIPTION HGS, LLC - A RES COMPANY 65% MITIGATION PLAN 2/15/2021 9/8/2021 65% MITIGATION PLAN REV. 5367 TELEPHONE ROAD, WARRENTON, VIRGINIA 20187 P: 703.393.4844 | F: 703.393.2934 3/10/2022 65% MITIGATION PLAN REV. WWW.RES.US

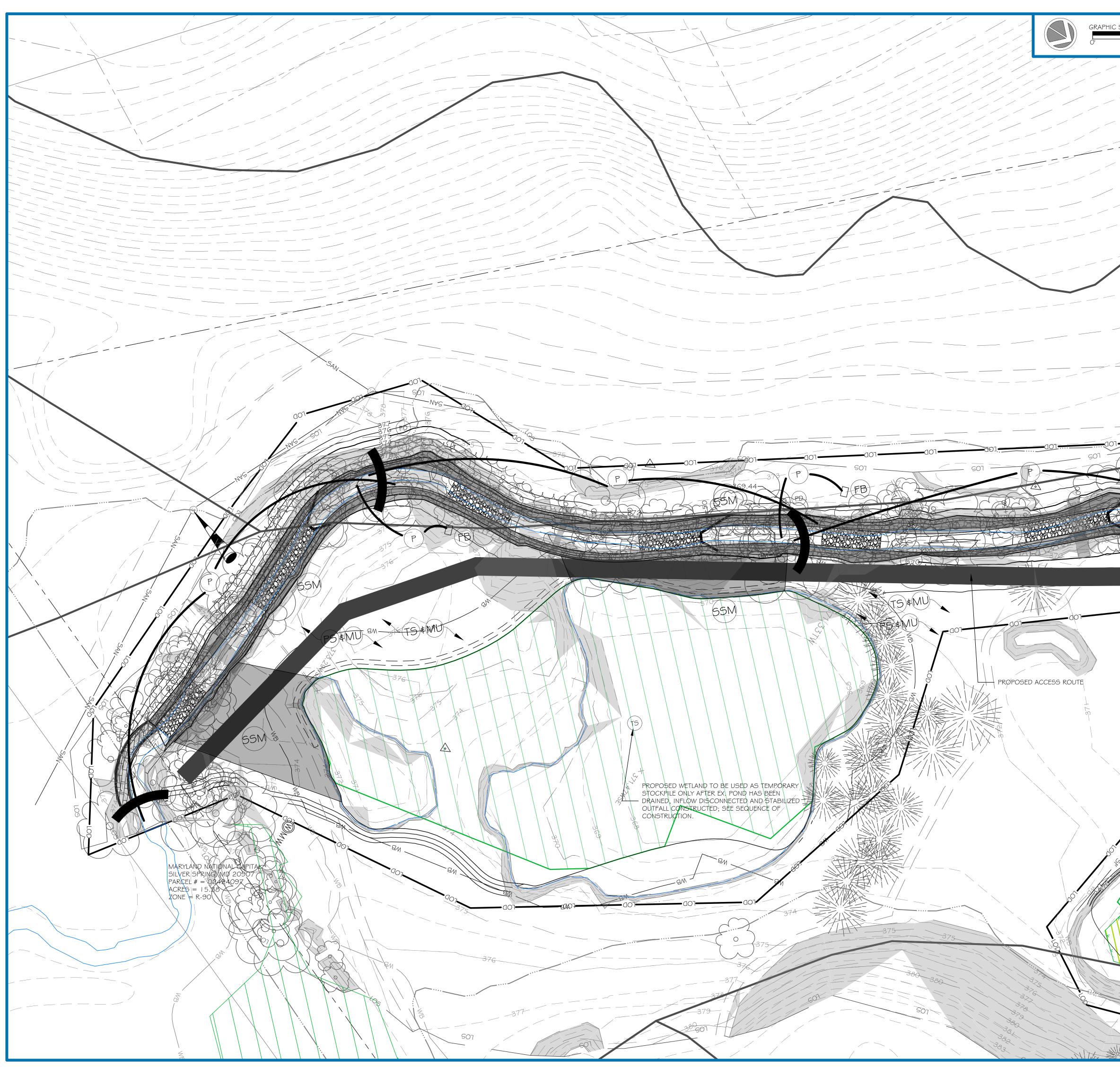




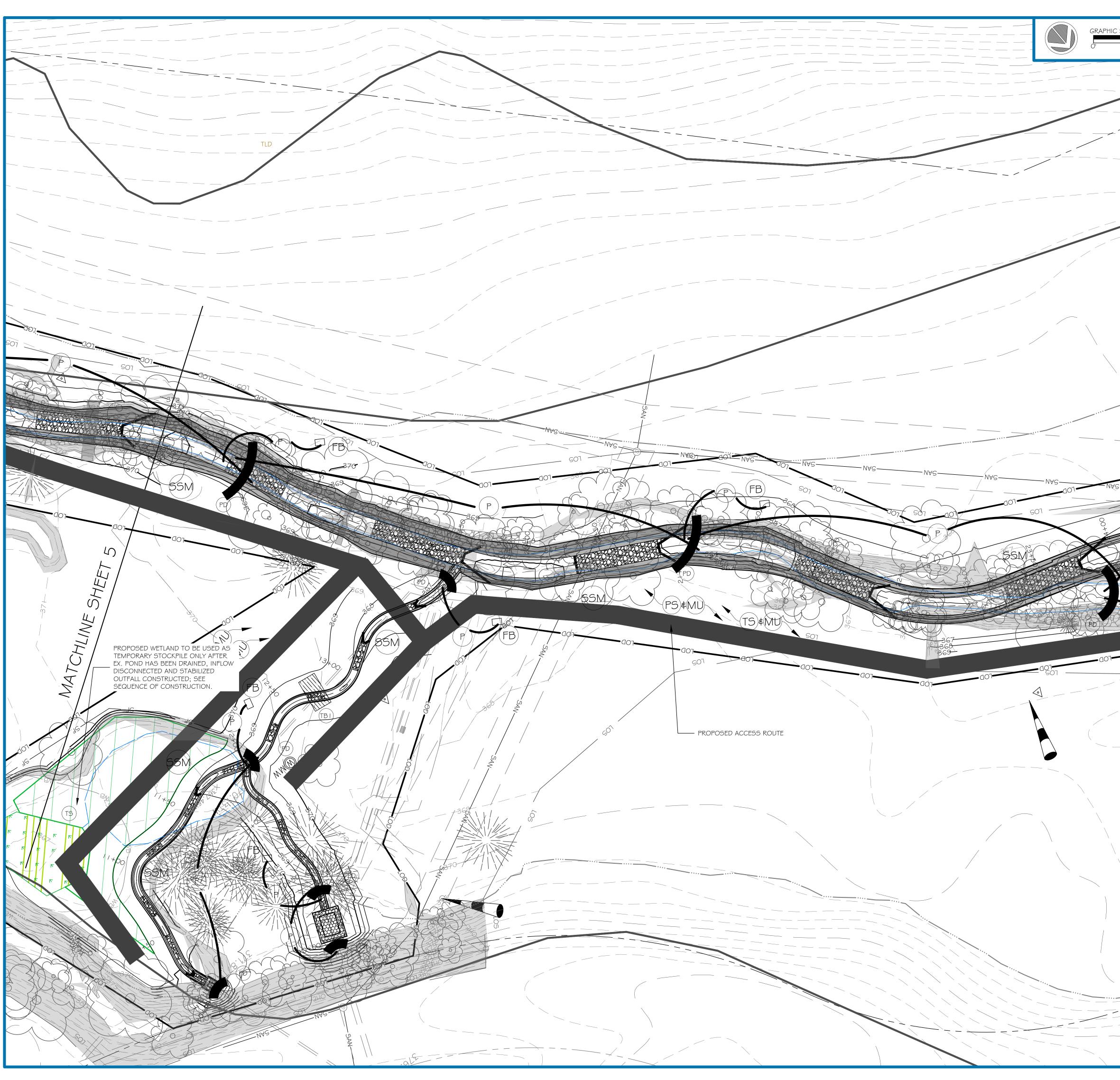


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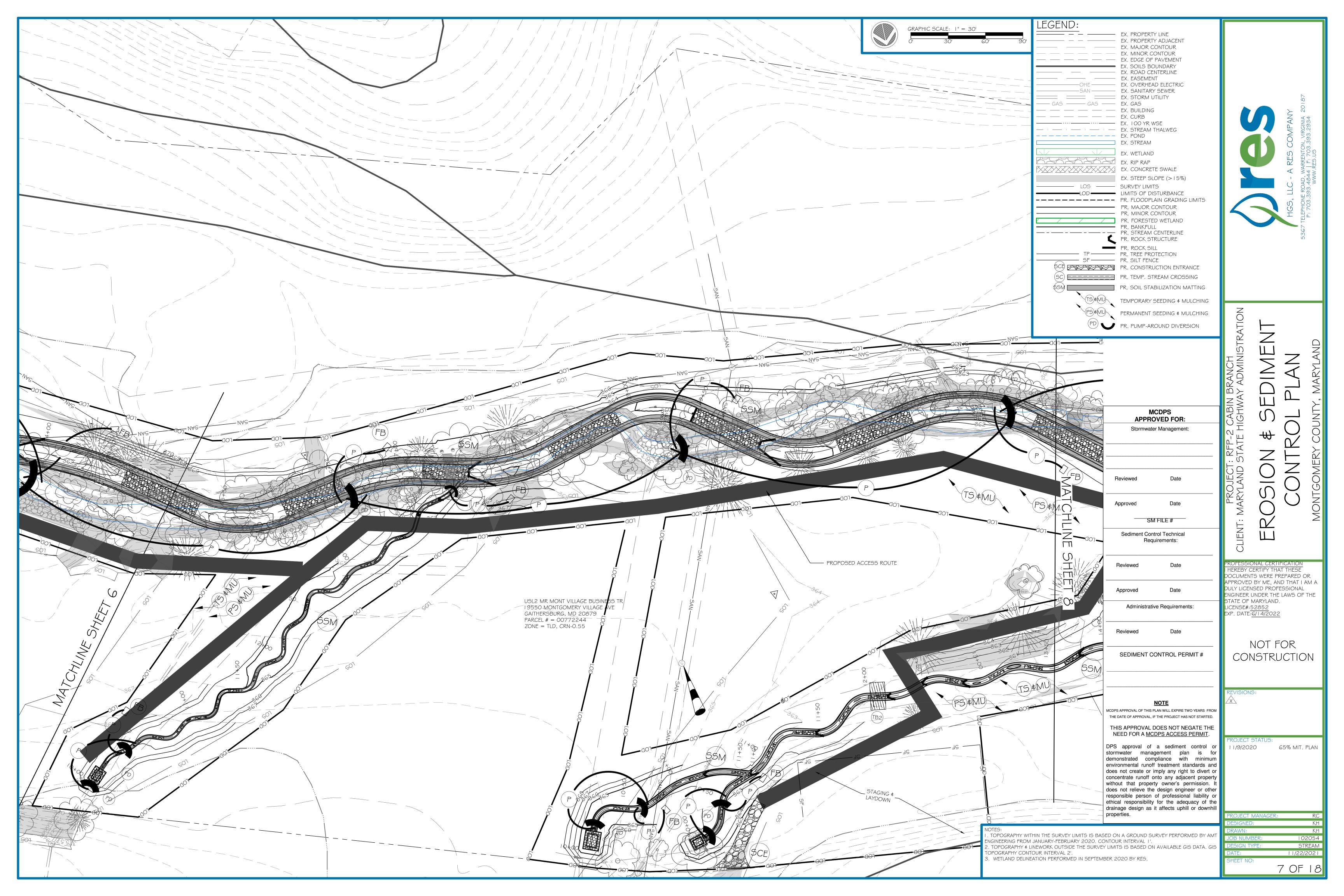


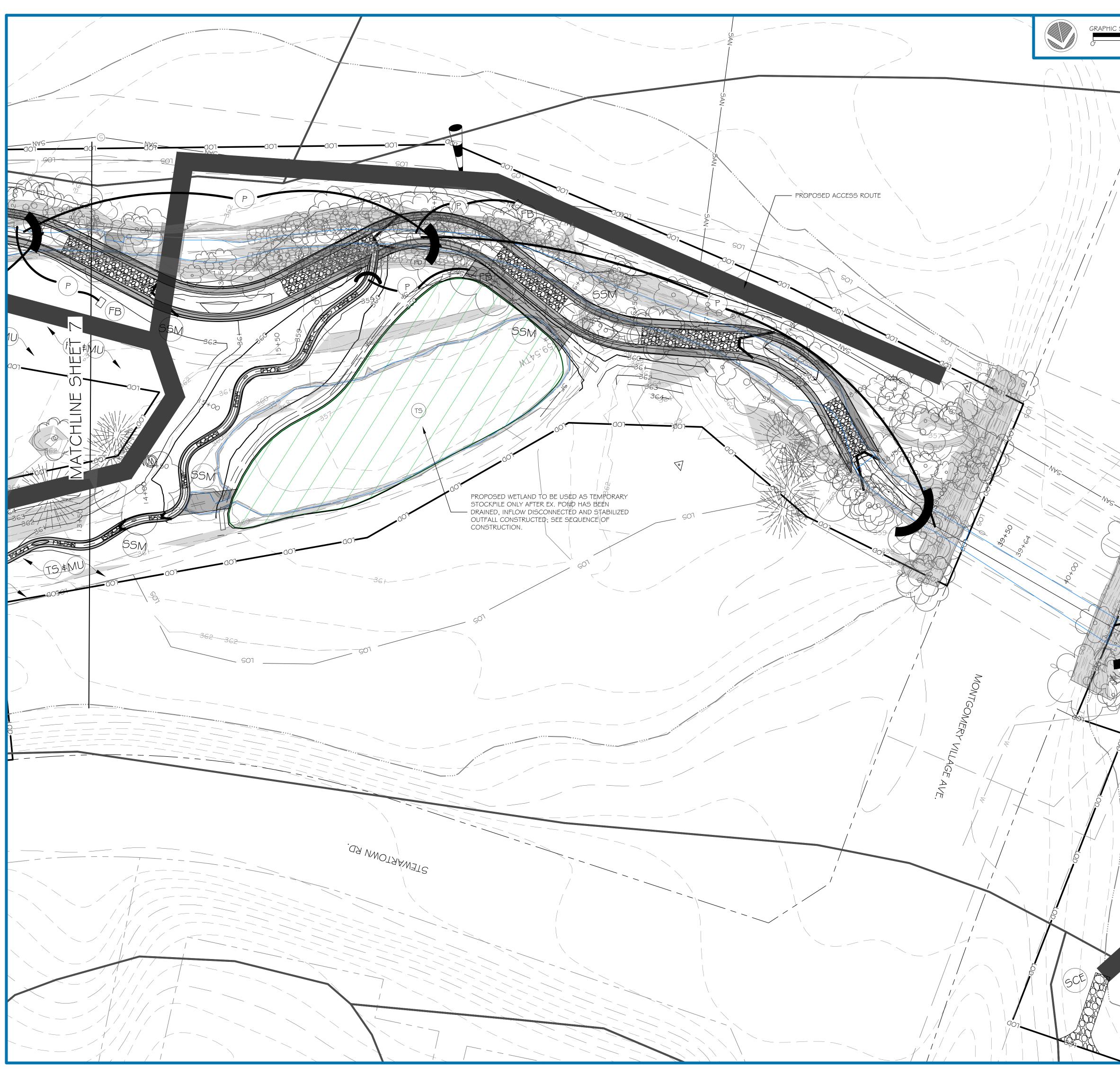


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HEE		Administrative Requirements:	STATE OF MARYLAND. LICENSE#: <u>52852</u> EXP. DATE: <u>G/14/2022</u>
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		THIS APPROVAL DOES NOT NEGATE THE NEED FOR A <u>MCDPS ACCESS PERMIT</u> .	
T TO		DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum	PROJECT STATUS: I 1/9/2020 65% MIT. PLAN
		demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property	
		without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or	
		ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.	PROJECT MANAGER: RC
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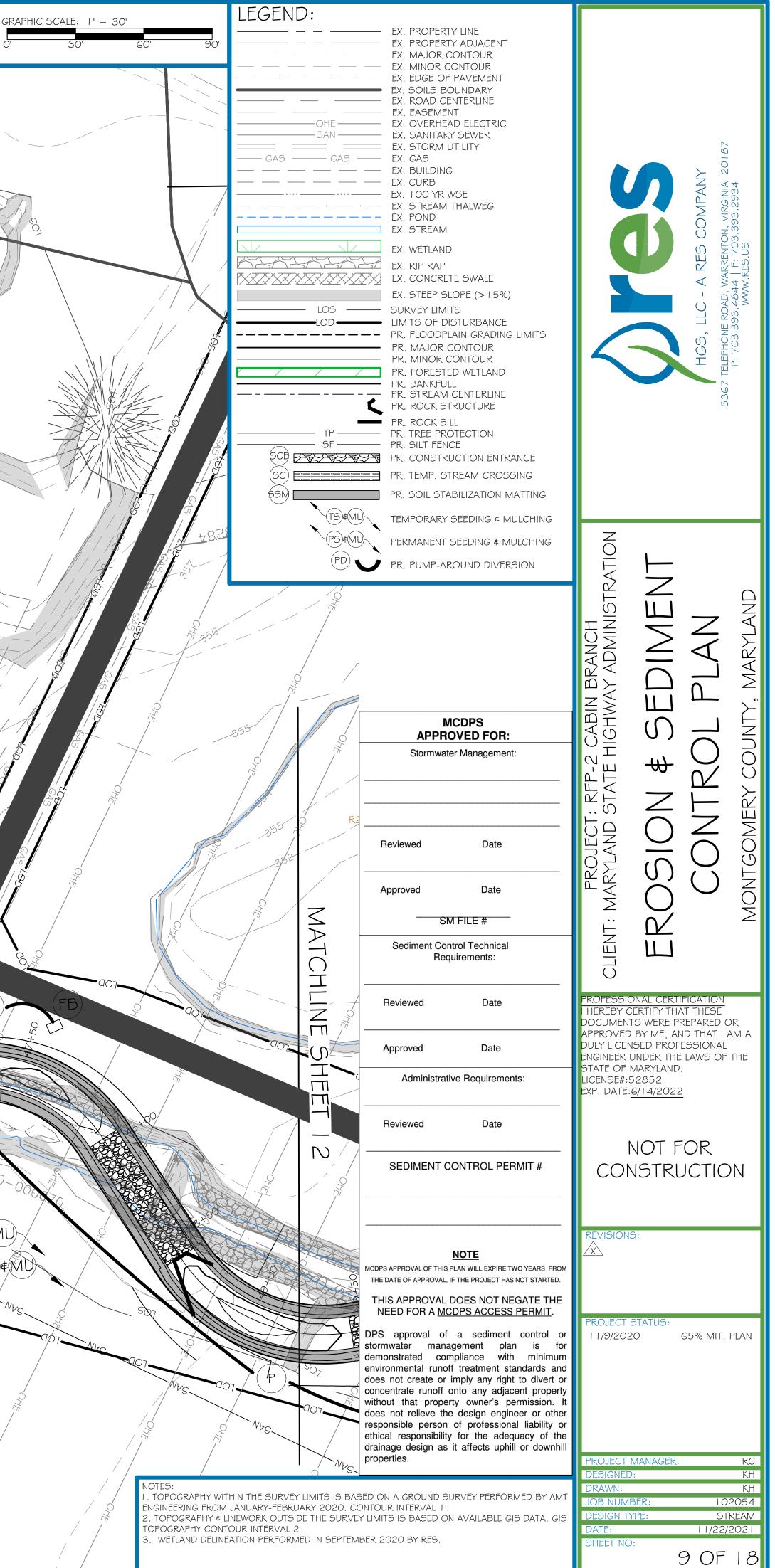


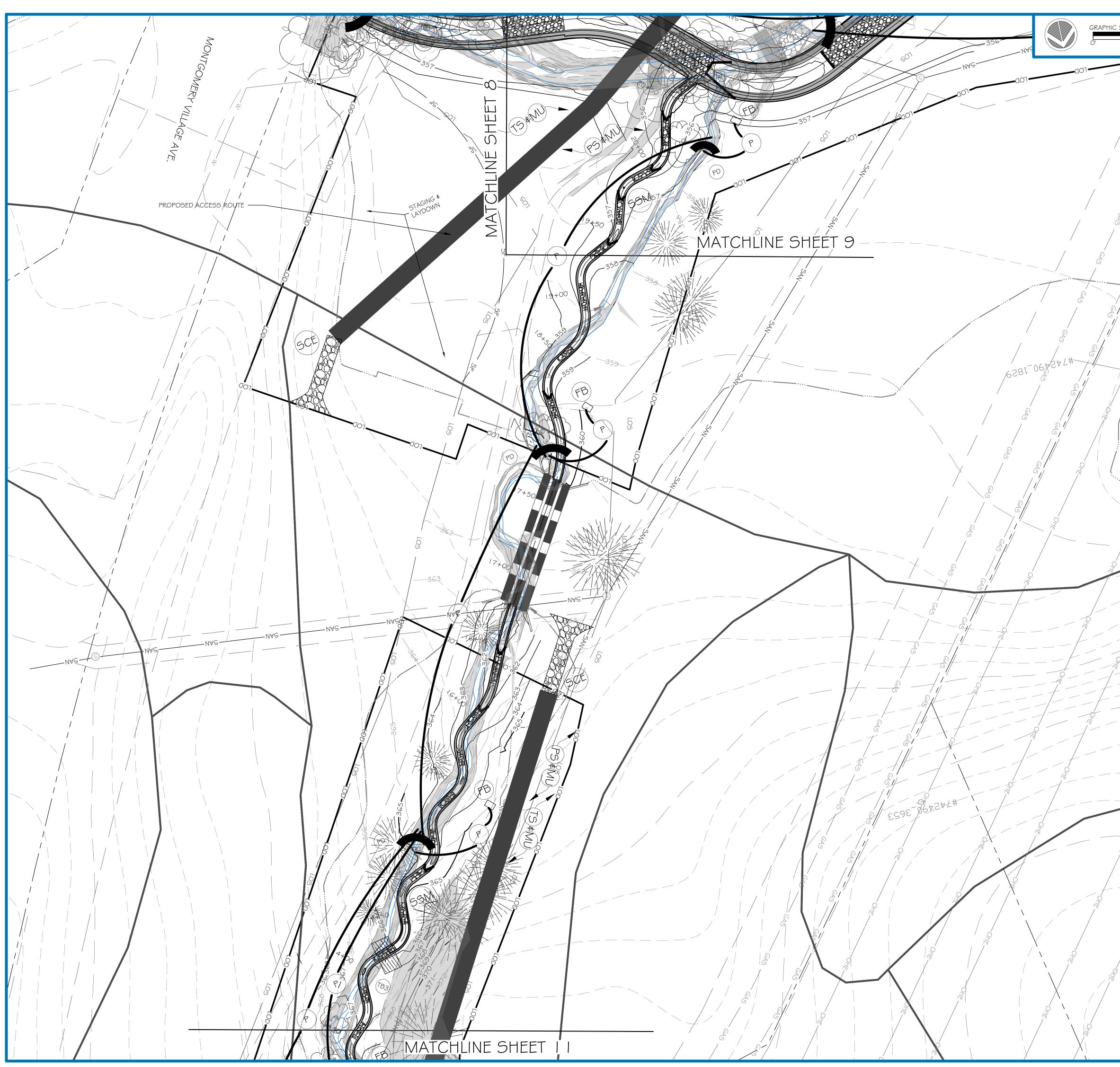


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	19+	environmental runoff treatment standards and does not create or imply any right to divert or				
		concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other				
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		drainage design as it affects uphill or downhill properties.	PROJECT N DESIGNED:			RC KH
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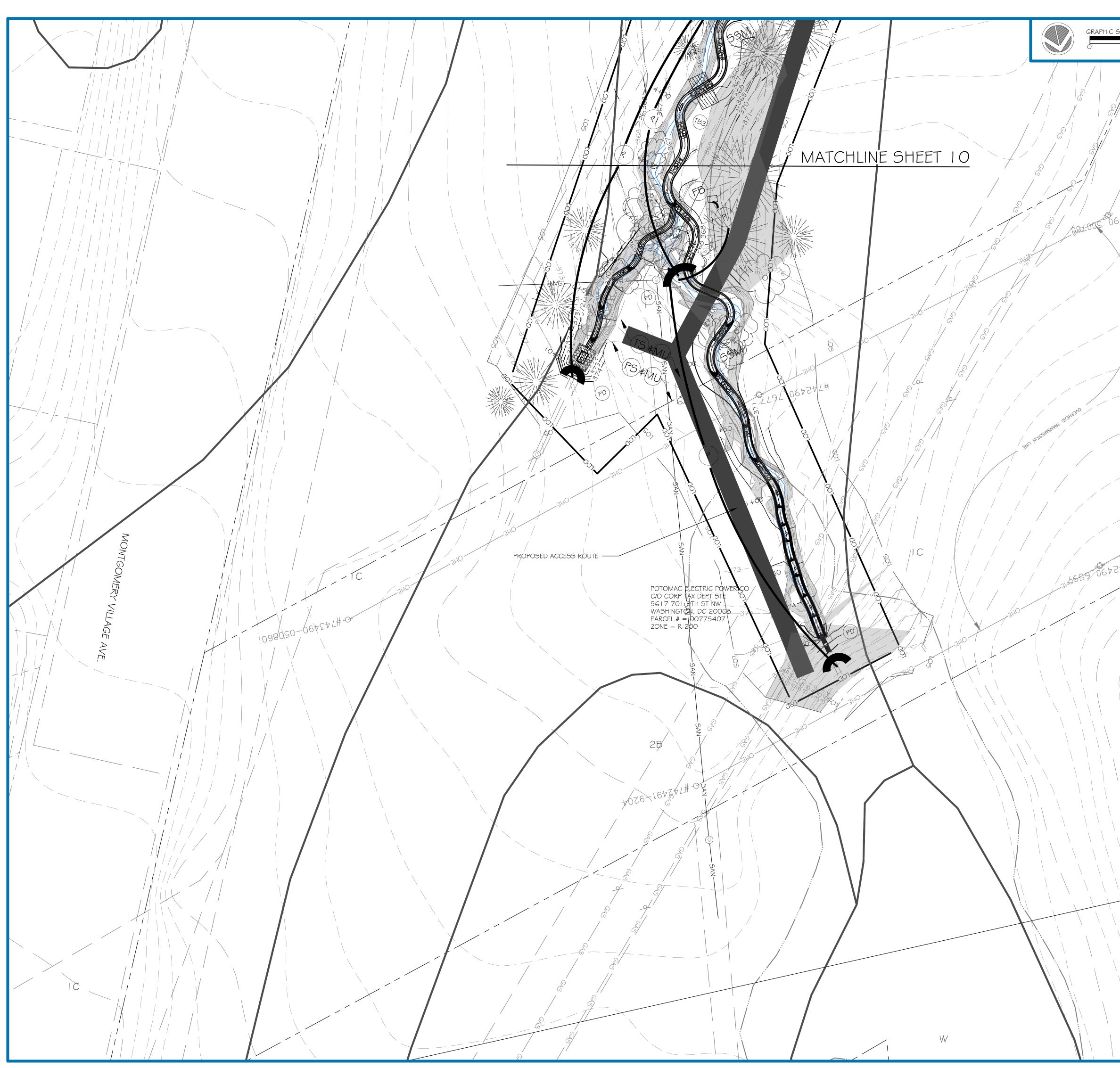


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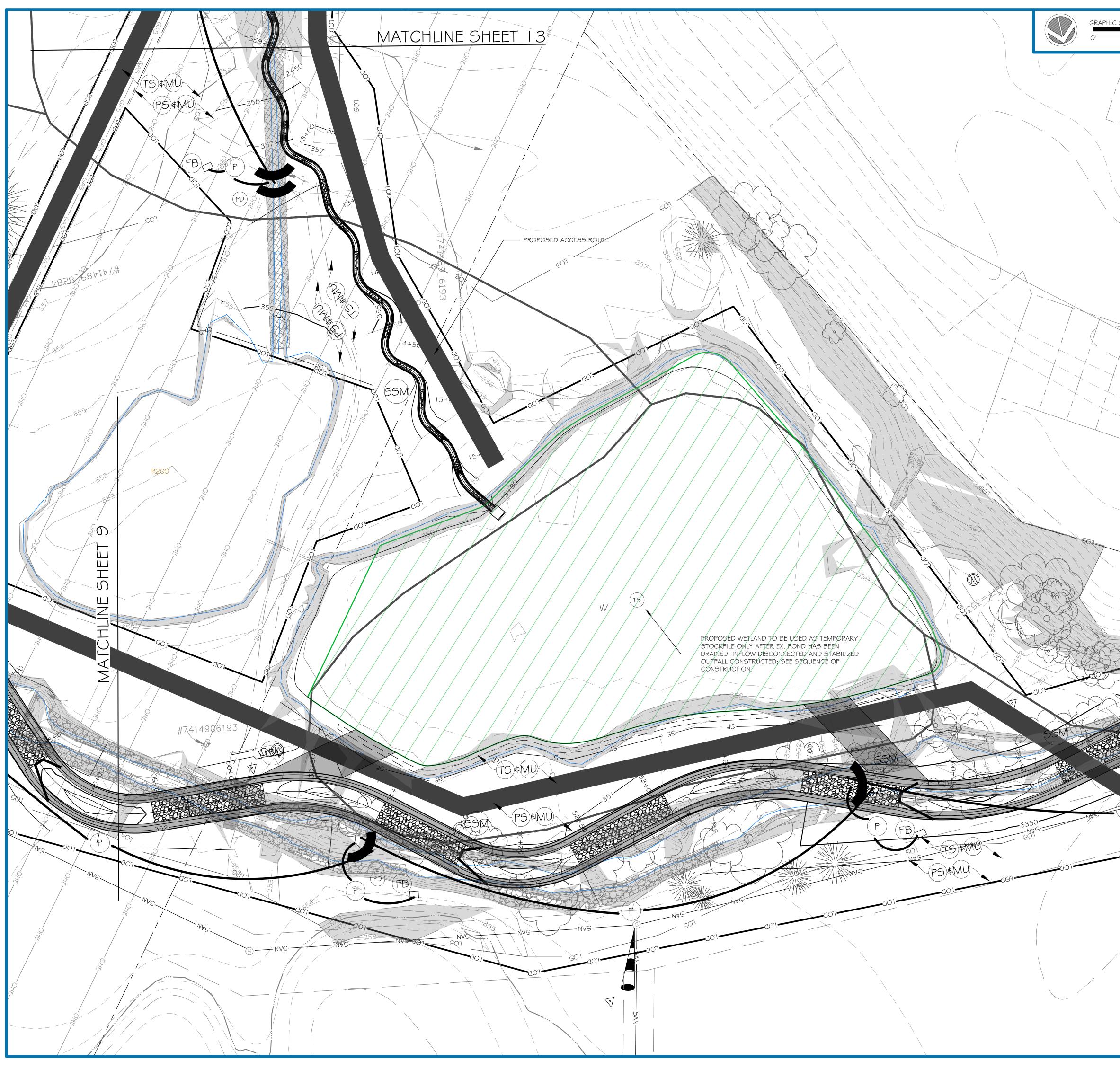




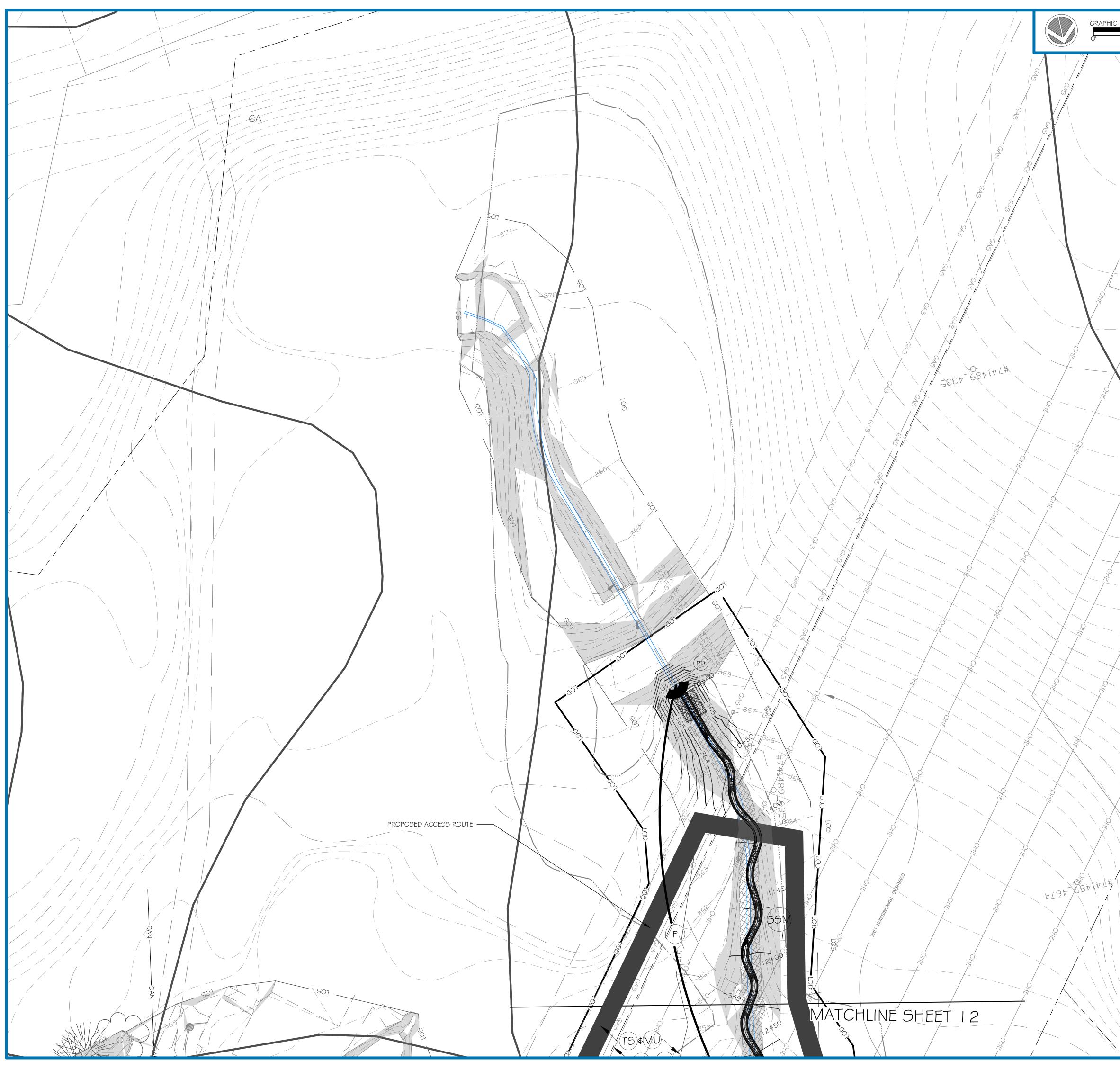
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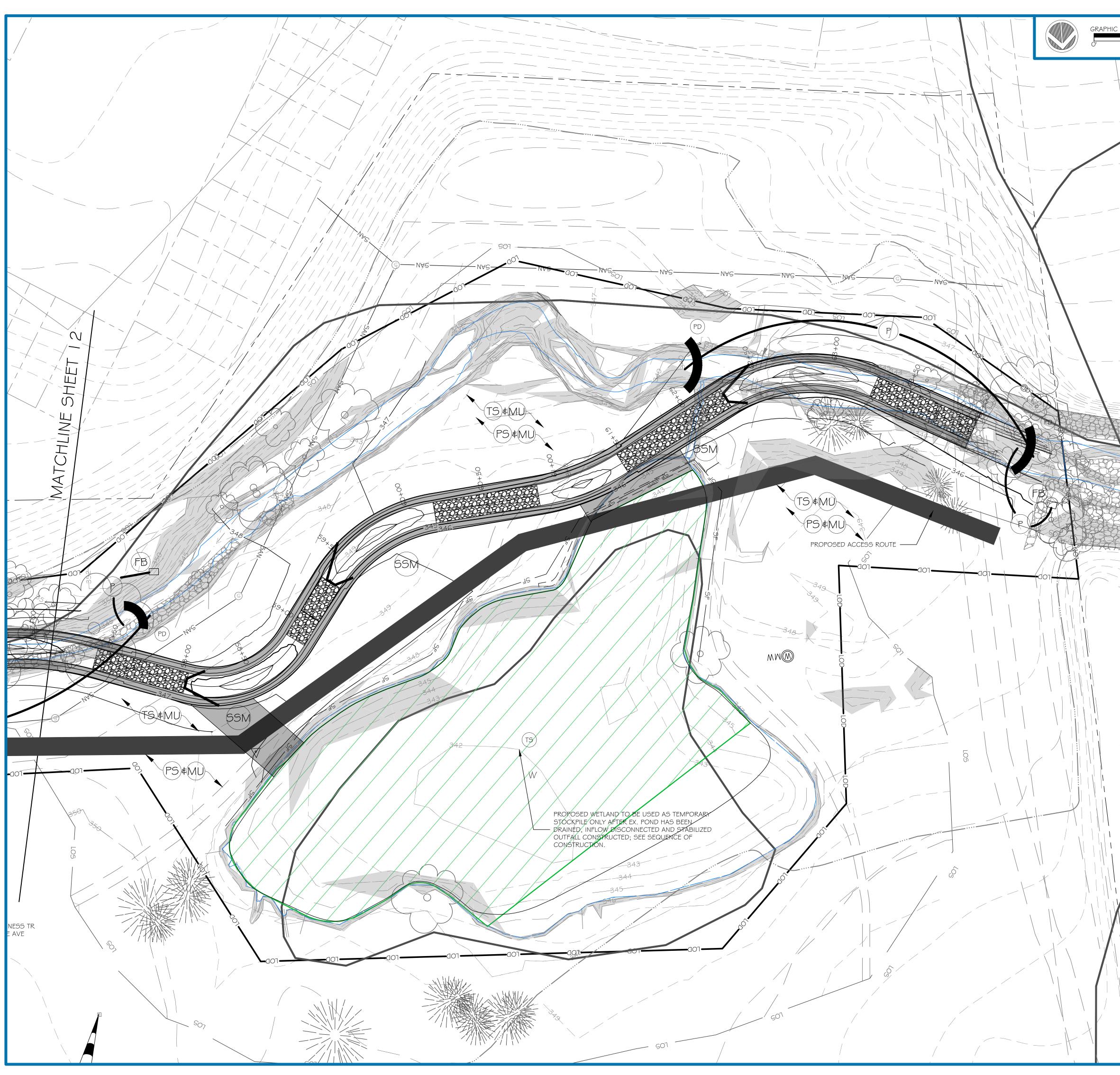
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	LOS	DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum	/9/202	20 65% MIT. PLAN
		demonstrated compliance with minimum environmental runoff treatment standards and		
		does not create or imply any right to divert or concentrate runoff onto any adjacent property		
/		without that property owner's permission. It does not relieve the design engineer or other		
	I	responsible person of professional liability or ethical responsibility for the adequacy of the		
		drainage design as it affects uphill or downhill properties.	PROJECT N	MANAGER: RC
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SEOE C	8 V T V L #	MCDPS APPROVED FOR: Stormwater Management: Reviewed Date Approved Date	PROJECT: RFP-2 CABIN BRANCH MARYLAND STATE HIGHWAY ADMINIS ⁻	OSION & SEDIME	CONTROL PLAN	MONTGOMERY COUNTY, MARYLANI
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E¢S NARRATIVE: **PROJECT DESCRIPTION:**

THE PURPOSE OF THIS PROJECT IS TO CREATE A PERMITTEE RESPONSIBLE MITIGATION BANK FOR THE I-270/495 EXPANSION. THE PROJECT SITE IS LOCATED OFF OF MONTGOMERY VILLAGE AVE IN MONTGOMERY COUNTY, MARYLAND. THE CONSTRUCTION OF THIS PROJECT WILL DISTURB 33.32 ACRES.

EXISTING SITE CONDITIONS:

THE EXISTING SITE IS ON AN ABANDONED GOLF COURSE. THE PROJECT SITE IS BISECTED BY MONTGOMERY VILLAGE AVENUE AND TERMINATES AT WATKINS MILL ROAD. DUE TO THE PREVIOUS DEVELOPMENT OF THE SITE, THE SITE CONSISTS MOSTLY OF OPEN FIELDS, WITH LARGE TREES LINING THE EXISTING STREAM AND NINE GOLF COURSE PONDS IN VARIOUS CONDITIONS. THE SITE IS MOSTLY WITHIN THE FLAT VALLEY FLOODPLAIN, SURROUNDED BY STEEP VALLEY WALLS.

ADJACENT AREAS:

THE PROPERTY IS SURROUNDED BY EXISTING AND PROPOSED URBAN RESIDENTIAL AREAS.

OFFSITE AREAS

NO OFFSITE AREAS WILL BE DISTURBED FOR THIS PROJECT

REFER TO ESC PLAN SHEET FOR SOILS MAP; THE SOILS WITHIN THE LIMITS OF DISTURBANCE ARE SUMMARIZED BELOW:

MAP UNIT SYMBOL	MAP UNIT NAME	HYDROLOGIC SOIL GROUP	HYDRIC SOIL?	ERODIBILITY
ΙB	GAILA SILT LOAM, 3 TO 8 PERCENT SLOPES	В	NO	HIGH
IC	GAILA SILT LOAM, 8 TO 15 PERCENT SLOPES	В	NO	HIGH
2B	GLENELG SILT LOAM, 3 TO 8 PERCENT SLOPES	В	NO	HIGH
2C	GLENELG SILT LOAM, 8 TO 15 PERCENT SLOPES	В	NO	HIGH
4B	ELIOAK SILT LOAM, 3 TO 8 PERCENT SLOPES	С	NO	HIGH
5B	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C/D	NO	HIGH
6A	BAILE SILT LOAM, O TO 3 PERCENT SLOPES	C/D	YES	HIGH
160	BRINKLOW-BLOCKTOWN CHANNERY SILT LOAMS, 8 TO 15 PERCENT SLOPES	С	NO	MODERATE
IGD	BRINKLOW-BLOCKTOWN CHANNERY SILT LOAMS, 15 TO 25 PERCENT SLOPES	С	NO	MODERATE
24D	MONTALTO SILT LOAM 15 TO 25 PERCENT SLOPES, VERY STONY	С	NO	LOW
37B	TRAVILAH SILT LOAM, 3 TO 8 PERCENT SLOPES	C/D	NO	HIGH
54A	HATBORO SILT LOAM, O TO 3 PERCENT SLOPES, FREQUENTLY FLOODED	B/D	YES	-
65B	WHEATON SILT LOAM, O TO 8 PERCENT SLOPES	В	NO	HIGH
66UB	WHEATON-URBAN LAND COMPLEX, O TO 8 PERCENT SLOPES	В	NO	HIGH
66UC	WHEATON-URBAN LAND COMPLEX, 8 TO 15 PERCENT SLOPES	В	NO	HIGH
67UB	URBAN LAND-WHEATON COMPLEX, O TO 8 PERCENT SLOPES	D	NO	-
IIGD	BLOCKTOWN CHANNERY SILT LOAM, 15 TO 25 PERCENT SLOPES, VERY ROCKY	D	NO	MODERATE
IIGE	BLOCKTOWN CHANNERY SILT LOAM, 25 TO 45 PERCENT SLOPES, VERY ROCKY	D	NO	MODERATE
400	URBAN LAND	D	NO	_

CRITICAL AREAS:

THERE ARE CRITICAL ENVIRONMENTAL AREAS LOCATED WITHIN THE PROJECT AREA. THESE AREAS INCLUDE STREAMS, FLOODPLAINS, PONDS. AND STEEP SLOPES (> 15%). ADDITIONALLY, THERE ARE EXISTING WETLANDS ADJACENT TO THE WORK AREA. THESE AREAS WILL EXPERIENCE SERIOUS DEGRADATION IF SEDIMENT LEAVES THE SITE AND DRAINS INTO THESE FEATURES. THEREFORE, EXTRA CARE WILL BE TAKEN TO MINIMIZE THE EXPOSURE OF THESE WATER FEATURES TO SEDIMENT AND TO PREVENT EROSION OF THE ADJACENT BANK. ADDITIONALLY, THESE AREAS SHOULD BE INSPECTED MORE FREQUENTLY FOR SIGNS OF EROSION.

EROSION & SEDIMENT CONTROL MEASURES:

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE MINIMUM STANDARD OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL AND EROSION AND SEDIMENT CONTROL SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE. THE E&S INSPECTOR HAS THE AUTHORITY TO ADD OR DELETE E&S CONTROLS AS NECESSARY IN THE FIELD AS SITE CONDITIONS CHANGE. IN ADDITION, NO E∉S CONTROLS, INCLUDING SEDIMENT BASINS OR TRAPS, CAN BE REMOVED WITHOUT WRITTEN AUTHORIZATION. ADDITIONALLY, NO EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED UNTIL ALL UPSLOPE AREAS HAVE BEEN STABILIZED.

SAFFTY FFNCF

SAFETY FENCING EITHER POLYETHYLENE SECURED TO CONVENTIONAL METAL T OR U POSTS OR CHAIN LINK METAL SAFETY FENCING SHALL BE INSTALLED AS SHOWN ON THE PLANS. SIGNS NOTING POTENTIAL HAZARDS SHALL BE USED AND POSTED SUCH THAT THEY ARE EASILY VISIBLE TO ANYONE APPROACHING THE PROTECTED AREA. FENCES AND GATES SHOULD BE CHECKED REGULARLY TO ENSURE STABILITY AND LOCKS USED WHEN THE SITE IS CLOSED.

ABILIZED CONSTRUCTION ENTRANCE (

A STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED WHERE INDICATED ON THE PLANS. IT WILL BE NEEDED TO CLEAN THE TIRES OF VEHICLES AND EQUIPMENT DURING WET CONDITIONS IN ORDER TO PREVENT MUD/ROCKS/DEBRIS FROM BEING TRACKED OFF SITE OR INTO PUBLIC ROADWAYS.

SILT FENCE (F-1

JILT FENCE SEDIMENT BARRIERS WITHOUT WIRE BACKING SHALL BE INSTALLED ON THE DOWNSLOPE SIDE OF AREAS WITH MINIMAL GRADES TO FILTER SEDIMENT-LADEN RUNOFF FROM SHEET FLOW.

CULVERT INLET PROTECTION:

CULVERT INLETS WILL NEED TO BE PROTECTED TO PREVENT SEDIMENT-LADEN RUNOFF FROM DRAINING INTO THE CULVERT DURING CONSTRUCTION. CULVERT INLET PROTECTION SHOULD BE USED AT EACH INLET UNTIL UPLAND AREAS ARE STABILIZED.

PUMP-AROUND PRACTICE (THE MARYLAND GUIDELINES TO WATERWAY CONSTRUCTION; MGWC 1.2

A PUMP-AROUND SYSTEM SHALL BE INSTALLED TO TEMPORARILY DIVERT FLOW AROUND IN-STREAM CONSTRUCTION SITES. THIS FORM OF DIVERSION IS NECESSARY WHEN RESTORATION PRACTICES SPAN THE ENTIRE WIDTH OF THE STREAM CHANNEL AND/OR A LINEAR REACH OF STREAM SEGMENT IS TO BE SIMULTANEOUSLY WORKED ON. THIS PRACTICE ALSO LIMITS POTENTIAL FOR DOWNSTREAM SEDIMENTATION BECAUSE IN-STREAM WORK WILL BE COMPLETED IN THE DRY AND ALL DENUDED AREAS WILL BE STABILIZED BEFORE RE-INTRODUCTION OF WATER BACK INTO STREAM CHANNEL. THE TOTAL WORK AREA OF THE PUMP-AROUND SHOULD NOT EXCEED THE LENGTH OF AREA THAT CAN BE COMPLETED AND STABILIZED IN ONE (1) WORKING DAY. THE PUMP-AROUND LOCATIONS SHOWN ON THE PLAN ARE SCHEMATIC AND SHOULD BE PLACED IN THE FIELD BASED ON THE CONSTRUCTION SCHEDULE. THE COFFERDAM RESTRICTING BASEFLOW SHOULD BE REMOVED AT THE END OF EACH DAY; IF TIME TO COMPLETE WORK AREA WILL EXCEED ONE (1) DAY ALTERNATIVE PRACTICES SHOULD BE USED. THIS PRACTICE SHOULD ALSO BE LIMITED TO BASE OR LOW FLOW CONDITIONS WERE APPLICABLE TO ENSURE ADEQUACY OF PUMP EQUIPMENT. PRACTICE IS MOST APPLICABLE IN SMALL TO MEDIUM WATERSHEDS WITH RELATIVELY SMALL BASE FLOW DISCHARGES. THIS ALLOWS FOR MULTIPLE PUMPING OPTIONS AND EQUIPMENT TO SUFFICIENTLY HANDLE NECESSARY PUMP CAPACITY. USE OF PRACTICE NOT LIMITED TO WATERSHED SIZE BUT BY CAPACITY OF PUMP AND HEIGHT OF IN-STREAM BARRIERS. PUMP SELECTION SHALL BE SIZED TO ADEQUATELY PUMP BASE FLOW AT A HEAD GREATER THAN THE IN-STREAM BARRIER HEIGHT. DOWN STREAM GEOTEXTILE LINED FLOW TRANSITION POINT MAY BE USED. THIS FEATURE ALLOWS FOR DISPERSION OF PUMP DISCHARGE TO A NON-EROSIVE VELOCITY WITHIN THE EXISTING STREAM CHANNEL. ALL OTHER APPLICABLE ESC MEASURES SHALL BE USED IN CONJUNCTION WITH PUMP AROUND.

TEMPORARY ACCESS BRIDGE (H-4-1):

TEMPORARY ACCESS BRIDGE SHOULD BE INSTALLED WHEN IT IS NECESSARY FOR CONSTRUCTION TRAFFIC TO CROSS A WATERCOURSE. A STRUCTURAL CROSSING IS NECESSARY TO PREVENT VEHICLES FROM DAMAGING STREAMBANKS AND CONTINUALLY TRACKING SEDIMENT AND OTHER POLLUTANTS INTO THE FLOW REGIME. HOWEVER, THESE STRUCTURES ARE CONSIDERED CHANNEL CONSTRICTIONS AND SHOULD BE PLANNED TO BE IN SERVICE FOR THE SHORTEST PRACTICAL PERIOD OF TIME AND REMOVED AS SOON AS THEIR FUNCTION IS COMPLETED.

VEGETATIVE STABILIZATION (B-4):

ALL DISTURVED AREAS OUTSIDE OF THE STREAM AREA TO BE PERMANENTLY SEEDED UPON THE REMOVAL OF TEMPORARY STABILIZATION PRACTICES. PERMANENT SEEDING PER B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING AND IN ACCORDANCE WITH B-4-5 PERMANENT SEEDING SHALL BE UTILIZED IN UPLAND AREAS. STREAM BANKS SHALL BE STABILIZED WITH A RIPARIAN SEED MIX PER THE TABLE PROVIDED.

COIR 700 SOIL STABILIZATION BLANKETS & MATTING (B-4-6):

SOIL STABILIZATION BLANKETS/MATTING SHALL BE INSTALLED WHERE INDICATED ON THE PLANS TO AID IN CONTROLLING EROSION IN CRITICAL AREAS AS WELL AS AIDING IN THE ESTABLISHMENT OF VEGETATION FOR PERMANENT STABILIZATION ON PREVIOUSLY DISTURBED SLOPES. BLANKETS/MATTING SHALL BE INSTALLED PER SPECIFICATION B-4-6.

TREE PROTECTION:

A FENCE BARRIER IS TO BE PLACED AROUND THE TREES AND VEGETATED AREAS WHICH WILL NOT BE DISTURBED TO PROTECT THE TREES AND OTHER VEGETATION FROM CONSTRUCTION EQUIPMENT AND SOIL COMPACTION.

MANAGEMENT STRATEGIES

REMOVED.

- CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- 2. SEDIMENT TRAPPING / DIVERTING MEASURES WILL BE INSTALLED AS A FIRST STEP IN GRADING AND WILL BE SEEDED & MULCHED IMMEDIATELY FOLLOWING INSTALLATION.
- 2. TEMPORARY SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING. . AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
- 4. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT
- CONTROL PRACTICES. 5. AFTER ACHIEVING ADEQUATE STABILIZATION OF PERMANENT SEEDING, THE TEMPORARY E&S CONTROLS WILL BE CLEANED UP AND

PERMANENT STABILIZATION:

MAINTENANCE:

IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE SILT FENCE BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER. FILTERING DEVICES WILL BE INSPECTED FREQUENTLY AND REPAIRED/REPLACED ONCE THE SEDIMENT BUILD-UP PREVENTS THE STRUCTURE FROM FUNCTIONING AS DESIGNED. ALL SOIL STABILIZATION MATTING SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING THE DAMAGE TO THE SLOPE OR DITCH. SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.

CONSTRUCTION SEQUENCE:

- DISTURBANCE.
- 4. CONSTRUCT AND STABILIZE PERIMETER CONTROLS.

- COMPLETED "IN THE DRY."

- EQUIPMENT.

- FOLLOW THE SEQUENCE BELOW:

- STABILIZE CHANNEL TIE-IN.

- DIVERSION PUMPS.

PLAN.

EVENT. 13. OBTAIN WRITTEN APPROVAL OF MONTGOMERY COUNTY SEDIMENT CONTROL INSPECTOR TO REMOVE EAS CONTROLS. 14. INSTALL PERMANENT SEEDING AND MULCH IN DISTURBED AREAS NOT ALREADY STABILIZED. 15. DAILY INSPECTION AND MAINTENANCE OF PERMANENT SEEDING AND MULCHING IS REQUIRED UNTIL PERMANENT SEEDING IS

ESTABLISHED, AND A GOOD STAND IS MAINTAINED. *CONCURRENT WORK IN DIFFERING AREAS MAY TAKE PLACE AS LONG AS THE CONSTRUCTION SEQUENCE IS FOLLOWED PROPERLY FOR ALL WORK SITES AND THE NECESSARY PERMITS ARE OBTAINED AND ABIDED BY.

ALL DISTURBED AREAS ARE TO BE STABILIZED WITH PERMANENT SEEDING AND MULCHING IN ACCORDANCE WITH THE SITE SPECIFIC PLANTING PLAN AFTER LAND DISTURBING ACTIVITIES ARE COMPLETED.

. PRIOR TO CLEARING OF TREES, INSTALLING SEDIMENT CONTROL MEASURES, OR GRADING, A PRECONSTRUCTION MEETING MUST BE CONDUCTED ON-SITE WITH THE MONTGOMERY COUNTY SEDIMENT CONTROL INSPECTOR (48 HOURS' NOTICE REQUIRED), THE OWNER'S REPRESENTATIVE, AN MDE NON-TIDAL REPRESENTATIVE AND THE ENGINEER. 2. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL

MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES. WITH APPROVAL OF THE MONTGOMERY COUNTY SEDIMENT CONTROL INSPECTOR STEPS 3-8 CAN BE PHASED ACROSS THE LIMITS OF

3. CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS.

5. CLEAR, GRUB, AND GRADE FOR INSTALLATION OF SEDIMENT CONTROL DEVICES.

6. ONCE THE SEDIMENT CONTROL DEVICES ARE INSTALLED, THE PERMITTEE MUST OBTAIN WRITTEN APPROVAL FROM THE INSPECTOR BEFORE PROCEEDING WITH ANY ADDITIONAL CLEARING, GRUBBING, OR GRADING.

7. PERFORM REMAINING CLEARING/GRUBBING AS NECESSARY TO INSTALL REMAINING EROSION \$ SEDIMENT (E\$) MEASURES AND PERFORM CONSTRUCTION OPERATIONS.

8. STAKE OUT THE PROPOSED ALIGNMENT OF THE STREAM CHANNEL IN THE FIELD AND REVIEW WITH THE ENGINEER PRIOR TO GROUND DISTURBANCE. THE DOWNSTREAM \$UPSTREAM TIE-IN TO THE EXISTING STREAM SHOULD BE REVIEWED TO DETERMINE IF MODIFICATIONS ARE REQUIRED TO ADJUST THE DESIGN TO CURRENT STREAM CONDITIONS.

9. WETLAND AND STREAM RESTORATION COORDINATION: a. STREAM RESTORATION AND WETLAND RESTORATION ARE EXPECTED TO HAPPEN SIMULTANEOUSLY.

b. SOIL STOCKPILES ARE SHOWN WITHIN THE PROPOSED WETLAND FOOTPRINTS, THESE STOCKPILES CAN NOT BE UTILIZED UNTIL THE COMPLETION OF STEP 10.D FOR ANY GIVEN STOCKPILE/PROPOSED WETLAND LOCATION.

10. PERFORM WETLAND RESTORATION OPERATION: NOTE: THE FOLLOWING SEQUENCE SHOULD BE REPEATED FOR EACH WETLAND LOCATION. ALL WETLAND CONSTRUCTION MUST BE

a. INSTALL DEWATERING PUMP AND SILT BAG TO DEWATER EXISTING POND.

b. DISCONNECT UPSTREAM STORMWATER INFLOWS, CONNECT TO PROPOSED STREAM CHANNELS. C. DEWATER POND AND EXCAVATE SUMP HOLE IN WETLAND CELL ADJACENT TO STABILIZED OVERFLOW WEIR TO PLACE PUMP FOR MAINTENANCE OF DEWATERED CONDITION OF THE WETLAND CELL DURING CONSTRUCTION.

d.RIP CLAY BOTTOM OF POND TO DEPTH NECESSARY TO RESTORE FREE GROUNDWATER MOVEMENT; WETLAND DESIGNER TO PROVIDE APPROVAL PRIOR TO FILLING WITHIN THE PROPOSED WETLAND.

e. FILL POND BOTTOM WITH SOIL SALVAGED FROM ON SITE TO ACHIEVE SUBGRADE ELEVATIONS 6" BELOW FINAL GRADE ELEVATION IN THE WETLAND PLANTING ZONES. ALL OTHER AREAS TO BE FILLED/EXCAVATED AND GRADED TO FINAL ELEVATIONS. h. PROVIDE WETLAND DESIGNER WITH SURVEY OF SUB GRADE ELEVATIONS OF THE WETLAND PLANTING ZONES PRIOR TO SPREADING OF TOPSOIL AND INCORPORATION OF ORGANIC COMPOST INTO THE SOIL.

I. CONSTRUCT AND STABILIZE PASSIVE OVERFLOW WEIRS TO ELEVATIONS SHOWN ON THE PLANS / CONNECT WITH ADJACENT STREAM RESTORATION AND GRADING.

1. UPON APPROVAL OF SUB GRADES BY WETLAND DESIGNER, PLACE 6" OF CLASS A TOPSOIL ACROSS THE WETLAND PLANTING ZONES TO ACHIEVE FINAL GRADE. ONLY LOW-GROUND PRESSURE EQUIPMENT TO BE USED TO SPREAD TOPSOIL.

k. SPREAD ORGANIC COMPOST ON SURFACE OF WETLAND PLANTING ZONES AT A QUANTITY OF 60 CY PER ACRE, AND INCORPORATE INTO THE SOIL TO A MINIMUM DEPTH OF 8" BY DISKING OR RIPPING, USING ONLY LOW GROUND PRESSURE

I. PLACE LARGE WOODY DEBRIS IN THE WETLAND CELL AS SHOWN IN THE DESIGN PLANS.

m.IF CONSTRUCTION IS COMPLETED OUTSIDE OF THE RECOMMENDED PLANTING SEASON, ALL AREAS OF DISTURBED SOIL ARE TO BE SEEDED WITH TEMPORARY SEED MIXES SPECIFIED IN THE PLANTING PLANS. NO SEEDING OF THE PERMANENT WETLAND SEED MIX OR PLANTING OF THE WETLAND PLANTS SHALL BE CONDUCTED UNTIL THE APPROPRIATE SEASON, AS APPROVED BY THE WETLAND DESIGNER.

n. WETLAND PLANTING AND PERMANENT SEEDING NOTES AND DETAILS ARE INCLUDED IN THE DESIGN PLANS.

II. PERFORM STREAM RESTORATION OPERATION:

NOTE: THE FOLLOWING SEQUENCE SHOULD BE REPEATED DAILY ALONG A SECTION OF STREAM THAT CAN BE COMPLETED WITHIN ONE DAY. ALL STREAM CONSTRUCTION MUST BE COMPLETED "IN THE DRY," WHEN POSSIBLE NEW SEGMENTS OF CHANNEL SHALL BE CONSTRUCTED OFF-LINE AND STREAM FLOW WILL BE MAINTAINED IN THE ORIGINAL STREAM CHANNEL WHILE THE PROPOSED CHANNEL IS BEING CONSTRUCTED. THE PROPOSED STREAM CHANNEL MUST BE GRADED, SEEDED AND MATTED TO CONTROL EROSION PRIOR TO INTRODUCTION OF FLOW INTO THE PROPOSED CHANNEL. THE CONSTRUCTION OF THE PROPOSED CHANNEL SHALL GENERALLY

a. SETUP PUMP-AROUND DIVERSION: INSTALL PUMP AROUND DIVERSION FOR THE SECTION OF STREAM UNDER ACTIVE CONSTRUCTION. DIVERTING ONLY THE NECESSARY PORTION OF THE STREAM AS NEEDED TO EXPOSE THE CONSTRUCTION AREA. THE PUMP INTAKE MUST BE FLOATED ABOVE THE STREAM BOTTOM AT ALL TIMES, THE OUTFALL OF THE PIPE MUST BE STABILIZED AND ALL SEDIMENT LADEN WATER SHALL BE PUMPED THROUGH AN APPROVED FILTERING DEVICE. WORK SHALL BE PLANNED SUCH THAT PUMP-AROUNDS ARE SET UP BEFORE WORK EACH DAY AND TAKEN OUT AFTER ALL WORK HAS BEEN COMPLETED FOR THAT DAY, SO THAT FLOW MAY RETURN TO A STABILIZED CHANNEL.

b. SALVAGE TOPSOIL: STRIP TOPSOIL FROM AREA TO BE GRADED AND STOCKPILE FOR REUSE ACROSS THE DISTURBED STREAM BANKS & RIPARIAN AREAS.

C. CHANNEL EXCAVATION: EXCAVATE THE CHANNEL PER THE PLANS. DURING EXCAVATION OF THE CHANNEL ANY ACCUMULATION OF GROUND WATER SHALL BE PUMPED OUT OF THE CHANNEL THROUGH AN APPROVED FILTERING DEVICE ONTO A STABILIZED AREA ENSURING NO EROSION OCCURS AROUND THE OUTFALL OF THE FILTERING DEVICE.

d.INSTALLATION OF STRUCTURES (LOG OR ROCK): USING LOGS (SALVAGED FROM SITE CLEARING IF AVAILABLE) OR ROCKS INSTALL THE STRUCTURES PER THE PLANS, ENSURING THAT THE TOP OF THE LOG/HEADER ROCK EXPOSED IN THE CHANNEL IS EVEN WITH THE INVERT OF THE STREAM CHANNEL.

e. BANK STABILIZATION: INSTALL TOPSOIL, SEEDING & COIR MATTING ON THE STREAM BANKS, AS SHOWN IN THE PLANTING/STREAM DETAILS SECURING THE MATTING AS SHOWN.

f. CHANNEL STABILIZATION: STABILIZE THE STREAM BED WITH STONE AS INDICATED IN THE PLANS, ENSURING THAT THE SURFACE OF THE STONE MATCHES THE PROFILE ELEVATION.

q. DOWNSTREAM TIE-IN: COMPLETE THE GRADING OF THE CHANNEL ON THE DOWNSTREAM END, ENSURING A GRADUAL TRANSITION INTO THE DIMENSIONS OF THE EXISTING STREAM CHANNEL. INSTALL TOPSOIL, SEEDING, COIR MATTING & BED MATERIAL TO

h. UPSTREAM TIE-INS: AFTER THE COMPLETION ALL OTHER DOWNSTREAM GRADING, GRADE THE STREAM CHANNEL UPSTREAM TO THE EXISTING STREAM CHANNEL (OR PREVIOUSLY COMPLETED SECTION), ENSURING A GRADUAL TRANSITION FROM THE DIMENSIONS OF THE EXISTING STREAM CHANNEL TO THE PROPOSED CHANNEL. INSTALL TOPSOIL, SEEDING, COIR MATTING & BED MATERIAL TO STABILIZE CHANNEL TIE-IN.

. RETURNING FLOW TO CHANNEL: AFTER THE ENTIRE STREAM CHANNEL (OR SECTION) HAS BEEN CONSTRUCTED AND STABILIZED, AND ALL TIE-INS COMPLETED, OPEN THE PROPOSED CHANNEL TO STREAM FLOW REMOVING COFFERDAMS AND STREAM

1. TOPSOILING AND SEEDING FLOODPLAIN: APPLY SALVAGED TOPSOIL, SPREAD SEEDING AS SPECIFIED ON THE PLANTING PLAN, AND INSTALL MATTING WHERE SHOWN TO THE DISTURBED RIPARIAN & UPLAND AREA.

K. PLANTING: IN THE APPROVED PLANTING SEASON, INSTALL ADDITIONAL TREE/SHRUB PLANTINGS AS INCLUDED IN THE PLANTING

12. INSPECT AND PERFORM MAINTENANCE (AS REQUIRED) OF E≰S CONTROLS ON A WEEKLY BASIS AND THE NEXT DAY AFTER EACH RAIN

**ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE SILT FENCE BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE

REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER. FILTERING DEVICES WILL BE INSPECTED FREQUENTLY AND REPAIRED/REPLACED ONCE THE SEDIMENT BUILD-UP PREVENTS THE STRUCTURE FROM FUNCTIONING AS DESIGNED. ALL SOIL STABILIZATION MATTING SHOULD BE INSPECTED PERIODICALLY FOLLOWING INSTALLATION, PARTICULARLY AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. ANY DISLOCATION OR FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUTS OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING THE DAMAGE TO THE SLOPE OR DITCH. SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDED AS NEEDED.

DISTURBED SURFACE AREA: 33.32 AC VEGETATIVELY STABILIZED AREA: 33.32 AC VOLUME OF SPOIL MATERIAL: 12,672.28 CY VOLUME OF CUT: 21,454.29 CY VOLUME OF BORROW MATERIAL: O CY VOLUME OF FILL: 34,126.57 CY

SEDIMENT CONTROL/STORMWATER MANAGEMENT CERTIFICATIONS

OWNER'S/DEVELOPER'S CERTIFICATION

I/We hereby certify that all clearing, grading, construction, and or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the project.

Signature

Printed Name and Title

DESIGN CERTIFICATION

hereby certify that this plan has been prepared in accordance with the "2011 Maryland Standards and Specification for Soil Erosion and Sediment Control," Montgomery County Department of Permitting Services Executive Regulations 5-90, 7-02AM and 36-90, and Montgomery County Department of Public Works and Transportation "Storm Drain Design Criteria" dated August 1988.

Design Engineer Signature

Printed Name

CERTIFICATION OF THE QUANTITIES

I hereby certify that the estimated total amount of excavation and fill as shown on these plans has been computed to _____ cubic yards of excavation, _____ cubic yards of fill and the total area to be disturbed as shown on these plans has been determined to be _____ square feet.

Signature

Printed Name and Title

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS. WETLAND BUFFERS, WATERWAYS, AND I OO-YEAR FLOODPLAINS

- I. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 100-YEAR FLOODPLAIN.
- DELETERIOUS SUBSTANCE.
- WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- IMPACTED BY ANY CONSTRUCTION.
- FOLLOWING SPECIES:
- 8.AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- 9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:
- MARCH I THROUGH JUNE 15, INCLUSIVE DURING ANY YEAR.
- FEBRUARY 15 THROUGH JUNE 15, INCLUSIVE DURING ANY YEAR.
- APRIL 30, INCLUSIVE, DURING ANY YEAR.
- 31, INCLUSIVE, DURING ANY YEAR.
- DEBRIS INTO THE WATERWAY.
- AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

CERTIFICATIONS ON THIS SHEET MUST BE ON EVERY SEDIMENT CONTROL/STORMWATER MANAGEMENT PLAN.

Date

Registration Number

Date

Registration Number

2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE

3.DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIALS FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER

4.PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL

WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR G.RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR IOO-YEAR FLOODPLAIN TEMPORARILY

7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE

ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.) AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 3 I FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.

A. USE I WATERS (WITHOUT YELLOW PERCH): IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD

B. USE I WATERS (WITH YELLOW PERCH): IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD

C. USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER I THORUGH

D. USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH I THROUGH MAY

I O. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF

II. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF

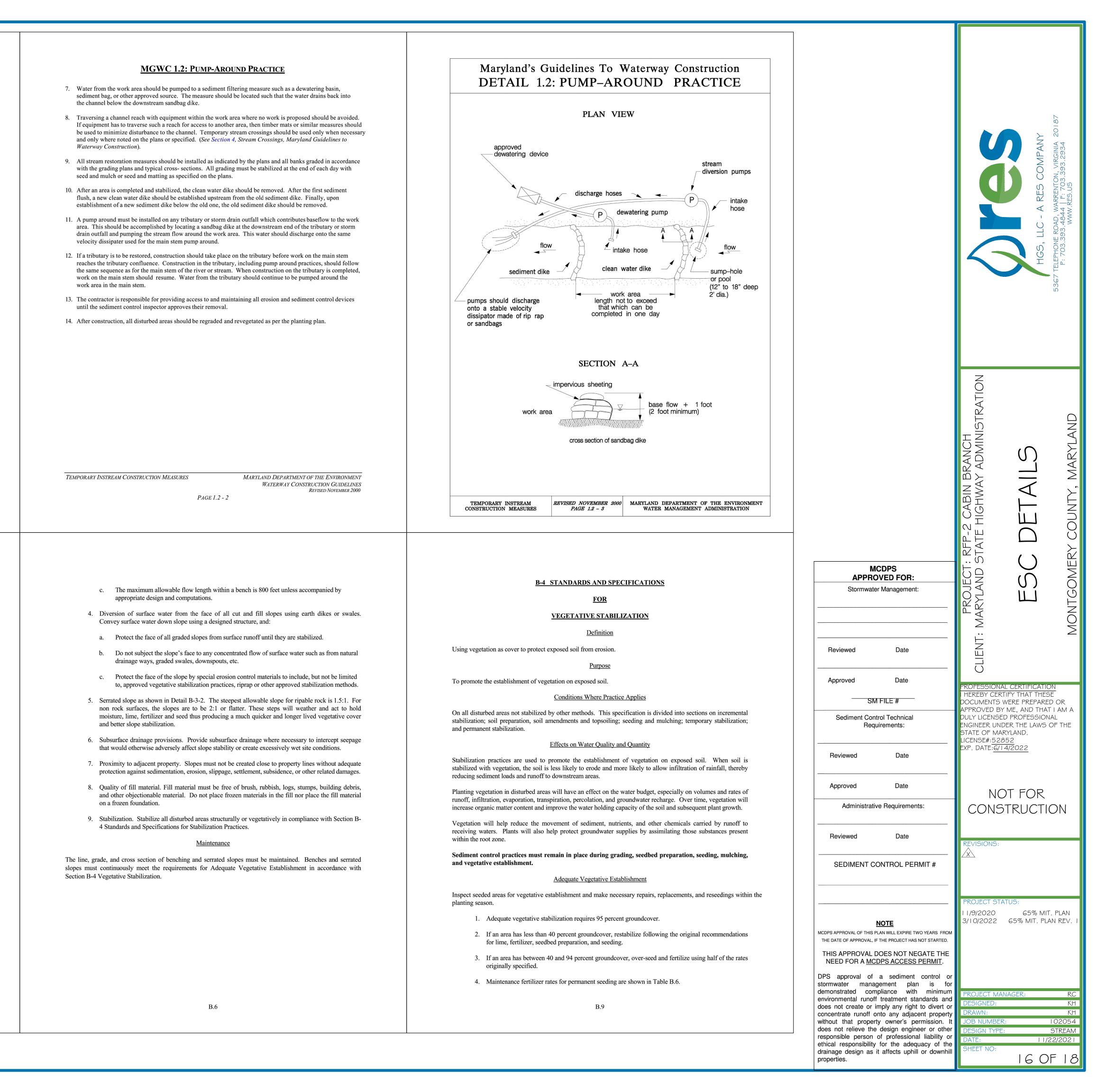
	CDPS DVED FOR:
Stormwate	er Management:
Reviewed	Date
Approved	Date
SM	1 FILE #
Sediment Con Req	trol Technical uirements:
Reviewed	Date
Approved	Date
Administrati	ve Requirements:
Reviewed	Date
SEDIMENT C	ONTROL PERMIT #
	NOTE PLAN WILL EXPIRE TWO YEARS FROM F THE PROJECT HAS NOT STARTED.
	DOES NOT NEGATE THE DPS ACCESS PERMIT.
stormwater mana demonstrated com environmental runof does not create or concentrate runoff c	a sediment control o gement plan is fo ppliance with minimum f treatment standards and imply any right to divert o onto any adjacent propert ty owner's permission.

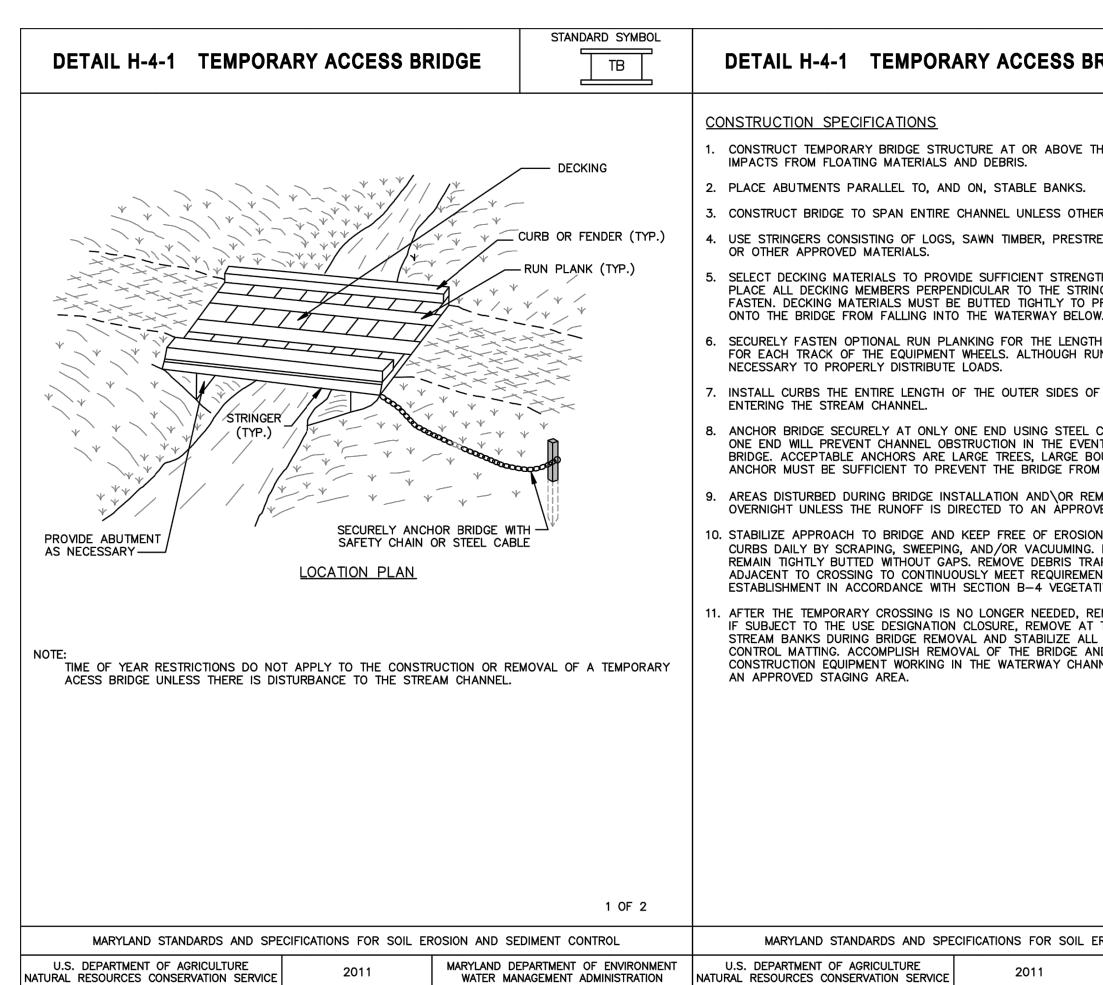
properties.

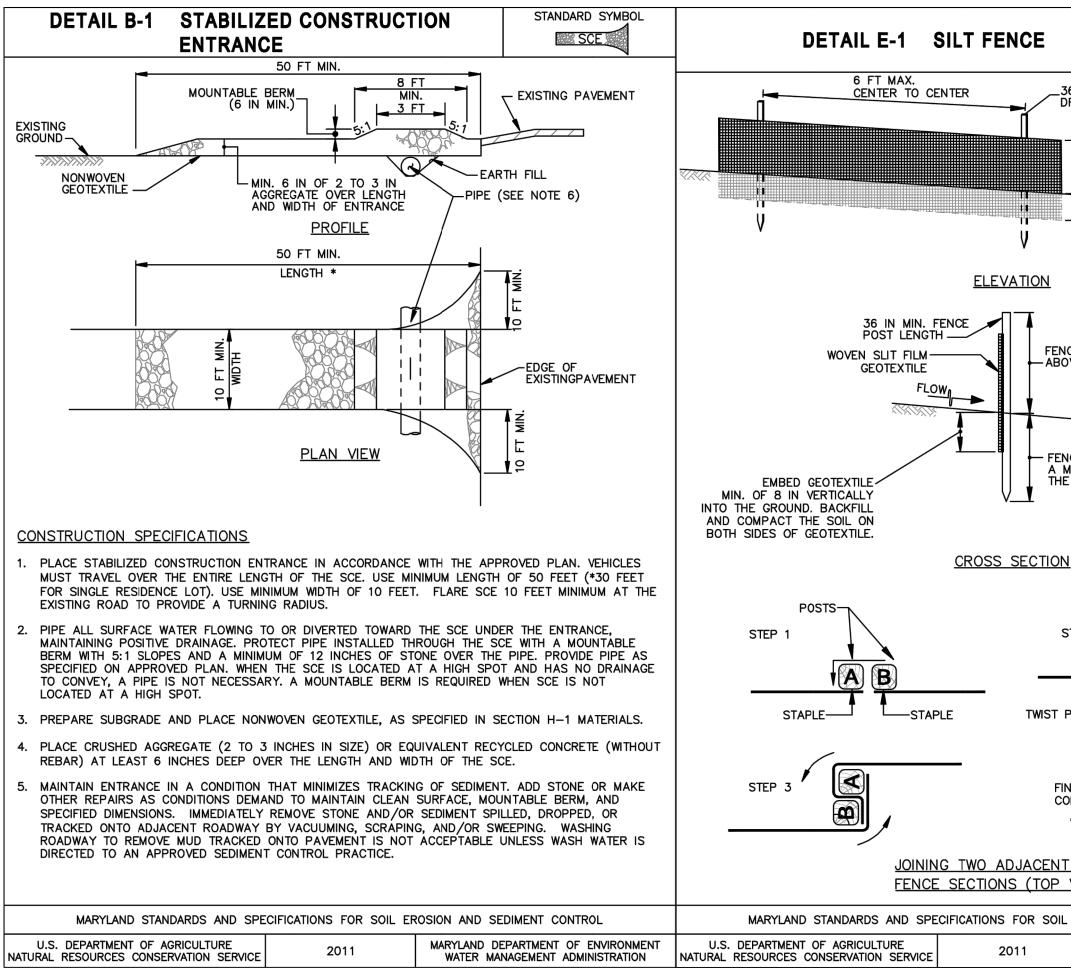
LARLY AFTER DIATELY. IF SEEDED AREAS SEEDED AS		HGS, LLC - A RES COMPANY	5367 TELEPHONE ROAD, WARRENTON, VIRGINIA 20187 P: 703.393.4844 F: 703.393.2934 WWW.RES.US
MCDPS APPROVED FOR: Stormwater Management:	PROJECT: RFP-2 CABIN BRANCH CLIENT: MARYLAND STATE HIGHWAY ADMINISTRATION	NOTES	MONTGOMERY COUNTY, MARYLAND
Approved Date SM FILE # Sediment Control Technical Requirements:	HEREBY CER DOCUMENTS APPROVED BY DULY LICENSE	352	E D OR T I AM A AL
Reviewed Date Approved Date Administrative Requirements:	NC	DT FOR	ЭN
Reviewed Date SEDIMENT CONTROL PERMIT #			
NOTE MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL, IF THE PROJECT HAS NOT STARTED. THIS APPROVAL DOES NOT NEGATE THE NEED FOR A <u>MCDPS ACCESS PERMIT</u> .	PROJECT STA I 1/9/2020 3/10/2022	65% MIT	
DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill	PROJECT MA DESIGNED: DRAWN: JOB NUMBER DESIGN TYPE DATE: SHEET NO:	₹: ::	RC KH KH 102054 STREAM 22/2021

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stream construction sites. <u>IMPLEMENTATION SEQUENC</u>	channel construction sites
The work should consist of installing stream construction sites. <u>IMPLEMENTATION SEQUENC</u> Sediment control measures, pump-a	
IMPLEMENTATION SEQUENC Sediment control measures, pump-a	ng a temporary pump around and supporting measures to divert flow around in-
Sediment control measures, pump-a	T
completed in the following sequence	around practices, and associated channel and bank construction should be
until all necessary easements a in the field prior to construction	e (refer to Detail 1.2): ng the installation of erosion and sediment control measures should not begin nd/or right-of-ways have been acquired. All existing utilities should be marked n. The contractor is responsible for any damage to existing utilities that may nould repair the damage at his/her own expense to the county's or utility
company's satisfaction.2. The contractor should notify that least 5 days before beginning	ne Maryland Department of the Environment or WMA sediment control inspector g construction. Additionally, the contractor should inform the local resource management inspection and enforcement division and the provider of
3. The contractor should conduct county project manager, and th requirements, and the sequence to the pre-construction meeting staging areas and flag all trees	a pre-construction meeting on site with the WMA sediment control inspector, the engineer to review limits of disturbance, erosion and sediment control e of construction. The contractor should stake out all limits of disturbance prior g so they may be reviewed. The participants will also designate the contractor's within the limit of disturbance which will be removed for construction access. <i>v</i> ithin the limit of disturbance without approval from the WMA or local authorit
by the engineer and the sedime	until all sediment and erosion control measures have been installed and approve ant control inspector. The contractor should stay within the limits of the ans and minimize disturbance within the work area whenever possible.
environmental protection and r begin work at the upstream sec construction entrances. In som construction must be followed authority. The contractor shou including grading adjacent to t	nt control measures and approval by the sediment control inspector and the local esource management inspection and enforcement division, the contractor should tion and proceed downstream beginning with the establishment of stabilized he cases, work may begin downstream if appropriate. The sequence of unless the contractor gets written approval for deviations from the WMA or local of only begin work in an area which can be completed by the end of the day he channel. At the end of each work day, the work area must be stabilized and in the channel. Work should not be conducted in the channel during rain events
	ted at the upstream and downstream ends of the work area as shown on the plan aped around the work area. The pump should discharge onto a stable velocity andbags.
TEMPORARY INSTREAM CONSTRUCTION	ON MEASURES MARYLAND DEPARTMENT OF THE ENVIRONME. WATERWAY CONSTRUCTION GUIDELIN
	Revised November 20 PAGE 1.2 - 1
D	2 STANDADDS AND SDECIEICATIONS
<u>B-</u>	3 STANDARDS AND SPECIFICATIONS FOR
<u>B</u> -	
<u>B</u> -	FOR
	FOR LAND GRADING Definition
Reshaping the existing land sur	FOR LAND GRADING Definition
Reshaping the existing land sur improvements.	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si
Reshaping the existing land sur improvements. To provide erosion control and veg	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si <u>Purpose</u> getative establishment for extreme changes in grade. <u>Conditions Where Practice Applies</u>
Reshaping the existing land sur improvements. To provide erosion control and veg	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si <u>Purpose</u> getative establishment for extreme changes in grade. Conditions Where Practice Applies the modifications on steep or long slopes.
Reshaping the existing land sur improvements. To provide erosion control and veg Earth disturbances or extreme grad The grading plan should be based existing topography and desirabl submitted must provide sufficient	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si Purpose getative establishment for extreme changes in grade. Conditions Where Practice Applies the modifications on steep or long slopes. Design Criteria I on the incorporation of building designs and street layouts that fit and utility e natural surroundings to avoid extreme grade modifications. Information topographic surveys and soil investigations to determine limitations that mu on related to slope stability, adjacent properties, drainage patterns, measures for
Reshaping the existing land sur improvements. To provide erosion control and veg Earth disturbances or extreme grad The grading plan should be based existing topography and desirabl submitted must provide sufficient be imposed on the grading operati water removal, and vegetative trea Many jurisdictions have regulation followed. The plan must show exist erosion control, slope stabilization	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si Purpose getative establishment for extreme changes in grade. Conditions Where Practice Applies te modifications on steep or long slopes. Design Criteria I on the incorporation of building designs and street layouts that fit and utilit e natural surroundings to avoid extreme grade modifications. Information topographic surveys and soil investigations to determine limitations that mu on related to slope stability, adjacent properties, drainage patterns, measures for timent, etc. Design procedures already established for land grading that must be sting and proposed contours for the area(s) to be graded including practices for on, and safe conveyance of runoff (e.g., waterways, lined channels, rever- stures). The grading/construction plans are to include the phasing of the
Reshaping the existing land sur improvements. To provide erosion control and veg Earth disturbances or extreme grad The grading plan should be based existing topography and desirabl submitted must provide sufficient be imposed on the grading operati water removal, and vegetative treat Many jurisdictions have regulation followed. The plan must show exist erosion control, slope stabilization benches, grade stabilization struct practices and consideration of the stabilization followed. The plan must show exist erosion control, slope stabilization struct practices and consideration of the stabilization struct 1. Provisions to safely of the stabilization struct and the stabilization struct practices and consideration of the stabilization struct practices and consideration of the stabilization struct practices and consideration struct practices and c	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si <u>Purpose</u> getative establishment for extreme changes in grade. <u>Conditions Where Practice Applies</u> te modifications on steep or long slopes. <u>Design Criteria</u> on the incorporation of building designs and street layouts that fit and utilit e natural surroundings to avoid extreme grade modifications. Information topographic surveys and soil investigations to determine limitations that mu on related to slope stability, adjacent properties, drainage patterns, measures for timent, etc. ms and design procedures already established for land grading that must be sting and proposed contours for the area(s) to be graded including practices for and asfe conveyance of runoff (e.g., waterways, lined channels, rever- sting and proposed contours for the area(s) to be graded including practices for and asfe conveyance of runoff (e.g., waterways, lined channels, rever- sting and proposed contours for the area(s) to be graded including practices for and asfe conveyance of runoff (e.g., waterways, lined channels, rever- sting structure). The grading/construction plans are to include the phasing of the stopologing in the stopologing structure plane area to include the phasing of the stopologing stopologing in the stopologing st
Reshaping the existing land sur improvements. To provide erosion control and veg Earth disturbances or extreme grad The grading plan should be based existing topography and desirabl submitted must provide sufficient be imposed on the grading operati water removal, and vegetative treat Many jurisdictions have regulation followed. The plan must show exit erosion control, slope stabilization benches, grade stabilization struct practices and consideration of the 1. Provisions to safely of to ensure that surface 2. Cut and fill slopes, st slope should be no st	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si <u>Purpose</u> getative establishment for extreme changes in grade. <u>Conditions Where Practice Applies</u> te modifications on steep or long slopes. <u>Design Criteria</u> I on the incorporation of building designs and street layouts that fit and utilit e natural surroundings to avoid extreme grade modifications. Informatic topographic surveys and soil investigations to determine limitations that mu on related to slope stability, adjacent properties, drainage patterns, measures fit timent, etc. I on sand design procedures already established for land grading that must la sting and proposed contours for the area(s) to be graded including practices for on, and safe conveyance of runoff (e.g., waterways, lined channels, rever- tures). The grading/construction plans are to include the phasing of the following: convey surface runoff to storm drains, protected outlets or stable water cours runoff will not damage slopes or other graded areas. abilized with grasses, no steeper than 2:1. (Where the slope is to be mowed, the teeper than 3:1, but 4:1 is preferred because of safety factors related to mowing
Reshaping the existing land sur improvements. To provide erosion control and veg Earth disturbances or extreme grad The grading plan should be based existing topography and desirabl submitted must provide sufficient be imposed on the grading operati water removal, and vegetative treat Many jurisdictions have regulation followed. The plan must show exist erosion control, slope stabilization benches, grade stabilization struct practices and consideration of the 1. Provisions to safely of to ensure that surface 2. Cut and fill slopes, st slope should be no st steep slopes.) Slope shown on the plans. 3. Benching per Detail for 3:1 slopes, when it divide the slope face	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si <u>Purpose</u> getative establishment for extreme changes in grade. <u>Conditions Where Practice Applies</u> te modifications on steep or long slopes. Design Criteria on the incorporation of building designs and street layouts that fit and utilize enatural surroundings to avoid extreme grade modifications. Informatic topographic surveys and soil investigations to determine limitations that mus on related to slope stability, adjacent properties, drainage patterns, measures for timent, etc. mus and design procedures already established for land grading that must la sting and proposed contours for the area(s) to be graded including practices for and safe conveyance of runoff (e.g., waterways, lined channels, rever- stures). The grading/construction plans are to include the phasing of the following: convey surface runoff to storm drains, protected outlets or stable water courses runoff will not damage slopes or other graded areas. abilized with grasses, no steeper than 2:1. (Where the slope is to be mowed, th teeper than 3:1, but 4:1 is preferred because of safety factors related to mowing steeper than 2:1 require special design and stabilization considerations to be B-3-1 whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet texceeds 30 feet; and for 4:1 slopes, when it exceeds 40 feet. Locate benches
 Reshaping the existing land surimprovements. To provide erosion control and veg Earth disturbances or extreme grad The grading plan should be based existing topography and desirabl submitted must provide sufficient be imposed on the grading operati water removal, and vegetative treat Many jurisdictions have regulated followed. The plan must show exiterosion control, slope stabilization benches, grade stabilization of the surface 1. Provisions to safely or to ensure that surface 2. Cut and fill slopes, st slope should be no st steep slopes.) Slope shown on the plans. 3. Benching per Detail for 3:1 slopes, when i divide the slope face rock outcrops, etc. and stabilized to ensure that surface 	FOR LAND GRADING Definition face to provide suitable topography for building facilities and other si Purpose getative establishment for extreme changes in grade. Conditions Where Practice Applies de modifications on steep or long slopes. Design Criteria on the incorporation of building designs and street layouts that fit and utilit e natural surroundings to avoid extreme grade modifications. Informatic topographic surveys and soil investigations to determine limitations that mu on related to slope stability, adjacent properties, drainage patterns, measures for them, etc. ms and design procedures already established for land grading that must be sting and proposed contours for the area(s) to be graded including practices for and asfe conveyance of runoff (e.g., waterways, lined channels, rever- tures). The grading/construction plans are to include the phasing of the following: convey surface runoff to storm drains, protected outlets or stable water courser runoff will not damage slopes or other graded areas. abilized with grasses, no steeper than 2:1. (Where the slope is to be mowed, the teeper than 3:1, but 4:1 is preferred because of safety factors related to mowing s steeper than 2:1 require special design and stabilization considerations to 1 B-3-1 whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet texceeds 30 feet; and for 4:1 slopes, when it exceeds 40 feet. Locate benchess as equally as possible and to convey the water to a stable outlet. Soils, seep







					r.
	STANDARD SYMBOL	DETAIL B-4-6-B TEMPORARY SOIL STANDARD SYMBOL			
RIDGE	ТВ	STABILIZATION MATTING TSSMS - * Ib/ft ²			
		SLOPE APPLICATION (* INCLUDE SHEAR STRESS)	B-4-8 STANDARDS AND SPECIFICATIONS		
HE BANK ELEVATION	N TO PREVENT	OVERLAP OR ABUT	FOR		
			STOCKPILE AREA		
RWISE INDICATED O	N APPROVED PLAN.		Definition		
ESSED CONCRETE B	BEAMS, METAL BEAMS,	6 IN DEEP (MIN.)	A mound or pile of soil protected by appropriately designed erosion and sediment control measures.		ANY ANY C 4
TH TO SUPPORT TH IGERS, BUTT TIGHTL	IE ANTICIPATED LOAD.		Purpose		MP MP 3.29
PREVENT ANY SOIL V.	MATERIAL TRACKED	PREPARED SLOPE	To provide a designated location for the temporary storage of soil that controls the potential for eros sedimentation, and changes to drainage patterns.	sion,	0.00N
H OF THE SPAN. PF IN PLANKS ARE OP	ROVIDE A RUN PLANK PTIONAL, THEY MAY BE	ISOMETRIC_VIEW	Conditions Where Practice Applies		RES RES CES.US
THE DECK TO PRE	EVENT SEDIMENT FROM	CONSTRUCTION SPECIFICATIONS	Stockpile areas are utilized when it is necessary to salvage and store soil for later use.		A - A - A - A - A - A - A - A - A - A -
CABLE OR CHAIN. A	ANCHORING AT ONLY	1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.	Criteria		LLC S3.48
T THAT FLOODWATE DULDERS, OR DRIVEI I FLOATING DOWNST	IN STEEL POSTS.	2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND	1. The stockpile location and all related sediment control practices must be clearly indic erosion and sediment control plan.	ated on the	G, I D3.38
MOVAL MUST NOT E	BE LEFT UNSTABILIZED	DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS	2. The footprint of the stockpile must be sized to accommodate the anticipated volume		HC HC
	T FROM DECKING AND	TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.	and based on a side slope ratio no steeper than 2:1. Benching must be provided in with Section B-3 Land Grading.	accordance	367 1
ENSURE THAT DEC PPED BY BRIDGE. INTS FOR ADEQUATE	MAINTAIN AREAS	3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8	 Runoff from the stockpile area must drain to a suitable sediment control practice. Access the stockpile area from the upgrade side. 		ŭ
IVE STABILIZATION.	4 CALENDAR DAYS.	RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD,	5. Clear water runoff into the stockpile area must be minimized by use of a diversion dev		
	URE PERIOD. PROTECT	12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM. 4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN	an earth dike, temporary swale or diversion fence. Provisions must be made for a concentrated flow in a non-erosive manner.	discharging	
NEL. STORE ALL RE	HE AREA WITHOUT EMOVED MATERIALS IN	4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.	 Where runoff concentrates along the toe of the stockpile fill, an appropriate erosic control practice must be used to intercept the discharge. 	n/sediment	
		5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID	 Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization. 		L
		STRETCHING THE MATTING. 6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY	 8. If the stockpile is located on an impervious surface, a liner should be provided below the facilitate cleanup. Stockpiles containing contaminated material must be covered with ir 	stockpile to	ZO
		6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT. 7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING	sheeting.	- <u>+</u>	ATIC
		ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.	Maintenance		
		8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.	The stockpile area must continuously meet the requirements for Adequate Vegetative Establ	ishment in	AND AND
		9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE	accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20	r than a 2:1	N DMI DMI
ROSION AND SEDIM	2 OF 2	STABILIZATION. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with 3 Land Grading.		
MARYLAND DEPAR	RTMENT OF ENVIRONMENT	U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT			AN A
WATER MANAGE	EMENT ADMINISTRATION	NATURAL RESOURCES CONSERVATION SERVICE 2011 WATER MANAGEMENT ADMINISTRATION	R 43		CABIN I IIGHWA UNTY,
					CC CC CC
	STANDARD SYMBOL	DETAIL E-1 SILT FENCE		D SYMBOL	RF RY
	· ·			MCDPS APPROVED FOR:	
6 IN MIN. FENCE PO RIVEN MIN. 16 IN IN	OST LENGTH NTO GROUND	CONSTRUCTION SPECIFICATIONS		Stormwater Management:	
A		1. USE WOOD POSTS $1\frac{3}{4} \times 1\frac{3}{4} \pm \frac{1}{6}$ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.			
16 IN MIN. H WOVEN SLIT	IEIGHT OF FILM GEOTEXTILE	2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.			AM NA
	EPTH	3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.		•	
INTO GROUN	U)	4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE		Reviewed Date	
		INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION $H-1$ MATERIALS.	PUMP DISCHARGE HOSE	P IN MIN	Ū
		5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.	PLAN VIEW WOODCHIPS, SAND, OR S	STRAW BALES	PROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE
ce post 18 in Min. Ve ground	I.	6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.		SLOPE SM FILE #	DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A
	D	7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.		Sediment Control Technical Requirements:	DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
STATISTICAL,		 8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, 	ELEVATION - FILTER BAG	L8 IN MIN.	LICENSE#: <u>52852</u> EXP. DATE: <u>6/14/</u> 2022
CE POST DRIVEN IIN. OF 16 IN INTO GROUND		REINSTALL FENCE.	1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DE	CVICE. Reviewed Date	<u></u>
			2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO	A	
			STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG. 3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN AC	Approved Date	NOT FOR
L			WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE RATE.	PUMPING Administrative Requirements:	CONSTRUCTION
,			4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATION AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED	SEDIMENT	
TEP 2			FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH B' OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDIT REMOVAL OF THE DEVICE.		REVISIONS:
			5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAY	D. SIZE SEDIMENT CONTROL PERMIT #	
STAPLE POSTS TOGETHER	TSTAPLE		MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERA VALUES (MARV) FOR THE FOLLOWING:		
STAPLE	T-STAPLE		GRAB TENSILE250 LBASTM D-463PUNCTURE150 LBASTM D-483FLOW DATE70 ON (400 (512))ASTM D-483	3	PROJECT STATUS:
			FLOW RATE 70 GAL/MIN/FT ² ASTM D-449 PERMITTIVITY (SEC ⁻¹) 1.2 SEC ⁻¹ ASTM D-449 UV RESISTANCE 70% STRENGTH @ 500 HOURS ASTM D-435	1	1 1/9/2020 65% MIT. PLAN
			APPARENT OPENING SIZE (AOS)0.15-0.18 MMASTM D-475SEAM STRENGTH90%ASTM D-463	1 NOTE	3/10/2022 65% MIT. PLAN REV.
STAPLE] <u>SILT_</u>	TSTAPLE		6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERA CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT	TION KEEP THE DATE OF APPROVAL, IF THE PROJECT HAS NOT STARTED. BECOMES	
<u>VIEW)</u>	1 OF 2	2 OF 2	DISPLACED.	THIS APPROVAL DOES NOT NEGATE THE NEED FOR A <u>MCDPS ACCESS PERMIT</u> .	
EROSION AND SED		MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTR	DPS approval of a sediment control of	
	PARTMENT OF ENVIRONMENT AGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE2011MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF WATER MANAGEMENT ADM	NISTRATION demonstrated compliance with minimum environmental runoff treatment standards and	PROJECT MANAGER: RC
				does not create or imply any right to divert or concentrate runoff onto any adjacent property	DESIGNED: KH DRAWN: KH
				without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or	DESIGN TYPE: STREAM
				ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill	CHEET NO.

17 OF 18

properties.

	STANDARD SYMBOL			STANDARD SYMBOL	
	⊢SF	DETAIL E-1	SILT FENCE	⊢SF	DETAIL F-4
.36 IN MIN. FENCE F DRIVEN MIN. 16 IN I	POST LENGTH INTO GROUND	CONSTRUCTION SPECIFICATIONS			
1		1. USE WOOD POSTS 1¾ X 1¾ ± ¼6 1 AN ALTERNATIVE TO WOODEN POST LESS THAN 1 POUND PER LINEAR F	' USE STANDARD "T" OR "U" SE		
T16 IN MIN. ₩ WOVEN SLIT	HEIGHT OF FILM GEOTEXTILE	2. USE 36 INCH MINIMUM POSTS DRIVE	EN 16 INCH MINIMUM INTO GROU	ND NO MORE THAN 6 FEET APART.	
8 IN MIN. E		 USE WOVEN SLIT FILM GEOTEXTILE , SECURELY TO UPSLOPE SIDE OF FE MID-SECTION. 			
I		4. PROVIDE MANUFACTURER CERTIFICA INSPECTION/ENFORCEMENT AUTHORI REQUIREMENTS IN SECTION H-1 MA	ITY SHOWING THAT THE GEOTEX		
		5. EMBED GEOTEXTILE A MINIMUM OF THE SOIL ON BOTH SIDES OF FABR		GROUND. BACKFILL AND COMPACT	STRAP
NCE POST 18 IN MIN OVE GROUND	Ν.	6. WHERE TWO SECTIONS OF GEOTEXTI ACCORDANCE WITH THIS DETAIL.	ILE ADJOIN: OVERLAP, TWIST, AI	ND STAPLE TO POST IN	FLOW
	Đ	7. EXTEND BOTH ENDS OF THE SILT F 45 DEGREES TO THE MAIN FENCE A OF THE SILT FENCE.			
Shinininini,		8. REMOVE ACCUMULATED SEDIMENT A SEDIMENT REACHES 25% OF FENCE			CONSTRUCTION SPECIFICATION
NCE POST DRIVEN MIN. OF 16 IN INTO GROUND)	REINSTALL FENCE.			1. TIGHTLY SEAL SLEEVE AROUND THE F
					2. PLACE FILTER BAG ON SUITABLE BAS STRAW BALES) LOCATED ON A LEVEL STABILIZED AREA. EXTEND BASE A M
N					3. CONTROL PUMPING RATE TO PREVEN WITH THE MANUFACTURER RECOMMEN RATE.
STEP 2	BIA I				4. REMOVE AND PROPERLY DISPOSE OF AFTER BAG HAS REACHED CAPACITY, FROM THE BAG IN AN APPROVED UP OF THE WORK DAY. RESTORE THE SU REMOVAL OF THE DEVICE.
STAPLE POSTS TOGETHER	STAPLE				5. USE NONWOVEN GEOTEXTILE WITH DO SLEEVE TO ACCOMMODATE A MAXIMU MANUFACTURED FROM A NONWOVEN VALUES (MARV) FOR THE FOLLOWING:
	STAPLE				GRAB TENSILE PUNCTURE FLOW RATE PERMITTIVITY (SEC ⁻¹) UV RESISTANCE APPARENT OPENING SIZE (AOS) SEAM STRENGTH
STAPLE	LSTAPLE 1 OF 2			2 OF 2	6. REPLACE FILTER BAG IF BAG CLOGS CONNECTION BETWEEN PUMP HOSE A DISPLACED.
IL EROSION AND SEI	DIMENT CONTROL	MARYLAND STANDARDS AND S	PECIFICATIONS FOR SOIL EROSIO	N AND SEDIMENT CONTROL	MARYLAND STANDARDS AND SPE
	PARTMENT OF ENVIRONMENT IAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVIC	CE 2011 MA	RYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE

Parameters ¹	Accontable Dange
pH	Acceptable Range 5.0 - 8.5
Moisture content	30% - 60%, wet weight basis
Organic matter content	25% - 65%, dry weight basis
Particle size	% passing a selected mesh size, dry weight basis 3 in (75 mm), 100% passing 1 in (25 mm), 90 – 100% passing 0.75 in (19 mm), 70 – 100% passing 0.25 in (6.4 mm), 30 – 60% passing 0.04 in (1 mm), 30% min. passing
Physical contaminants (manmade inerts)	<1% dry weight basis

Adapted from AASHTO Standards Specs for Compost Filter Socks and EPA Example Compost Filter Parameters.

¹ Recommended test methodologies are provided in Test Methods for the Examination of Composting and Compost (TMEC, The U.S Composting Council).

	Т	able H.2: St	one Size		
ТҮРЕ	SIZE RANGE	d ₅₀	d ₁₀₀		
NUMBER 57 ¹	3/8 to 1 ¹ / ₂ inch	½ in	1 ½ in		
NUMBER 1	2 to 3 inch	2 ½ in	3 in		
RIPRAP ²	4 to 7 inch	5 ½ in	7 in		
(CLASS 0)	4 to 7 mcn	5 72 111	/ 111		
CLASS I	N/A	9 ½ in	15 in		
CLASS II	N/A	16 in	24 in		
CLASS III	N/A	23 in	34 in		

¹ This classification is to be used on the upstream face of stone outlets and check dams.

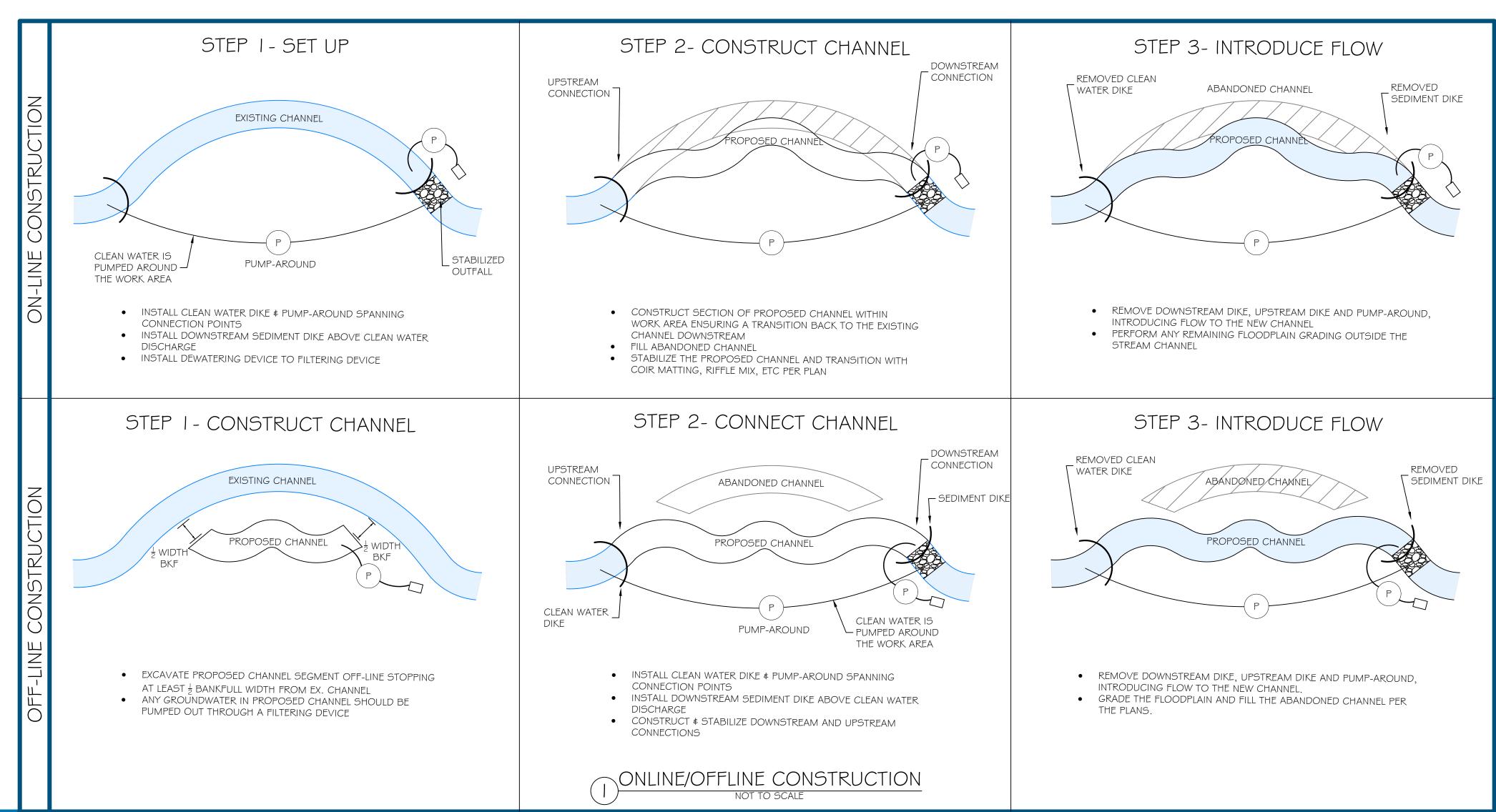
² This classification is to be used for gabions.

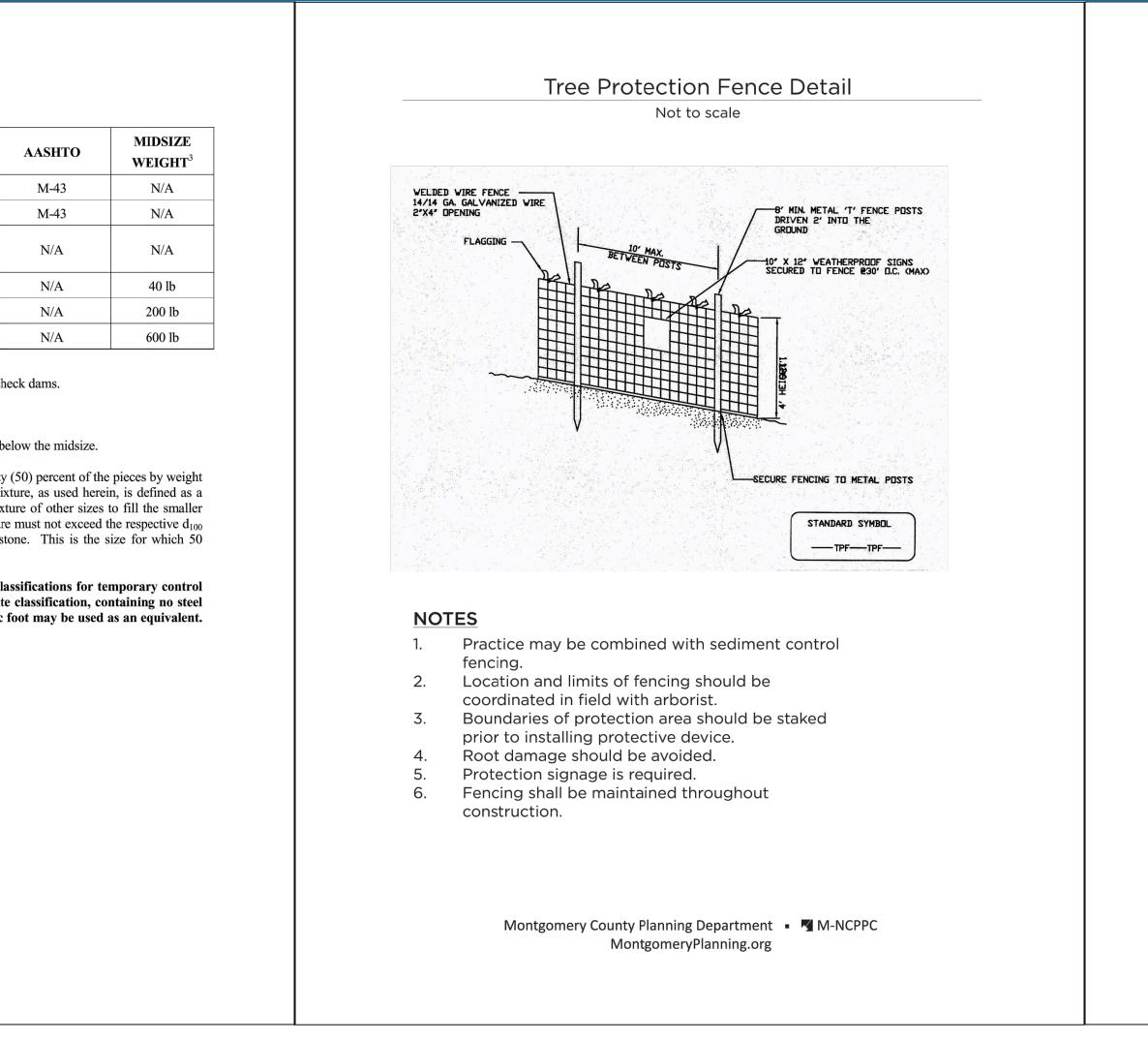
³ Optimum gradation is 50 percent of the stone being above and 50 percent below the midsize.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the charts. A well graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d_{100} selected from Table H.2. The d_{50} refers to the median diameter of the stone. This is the size for which 50 percent, by weight, will be smaller and 50 percent will be larger.

Note: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.

H.2





H-1 STANDARDS AND SPECIFICATIONS

<u>FOR</u> <u>MATERIALS</u>

Table H.1: Geotextile Fabrics

		WO' SLIT GEOTE	FILM	WOV MONOFIL GEOTE	AMENT		OVEN EXTILE
		MINIMU	M AVERAC	E ROLL V	VALUE ¹		
PROPERTY	TEST METHOD	MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	15%	10%	15%	15%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450) lb	900	lb	450) lb
Apparent Opening Size ²	ASTM D-4751	U.S. Si (0.59		U.S. Sie (0.21 1			ieve 70 mm)
Permittivity	ASTM D-4491	0.05	sec ⁻¹	0.28 s	sec ⁻¹	1.1	sec ⁻¹
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% st	rength	70% str	rength	70% s	trength

¹ All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

² Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

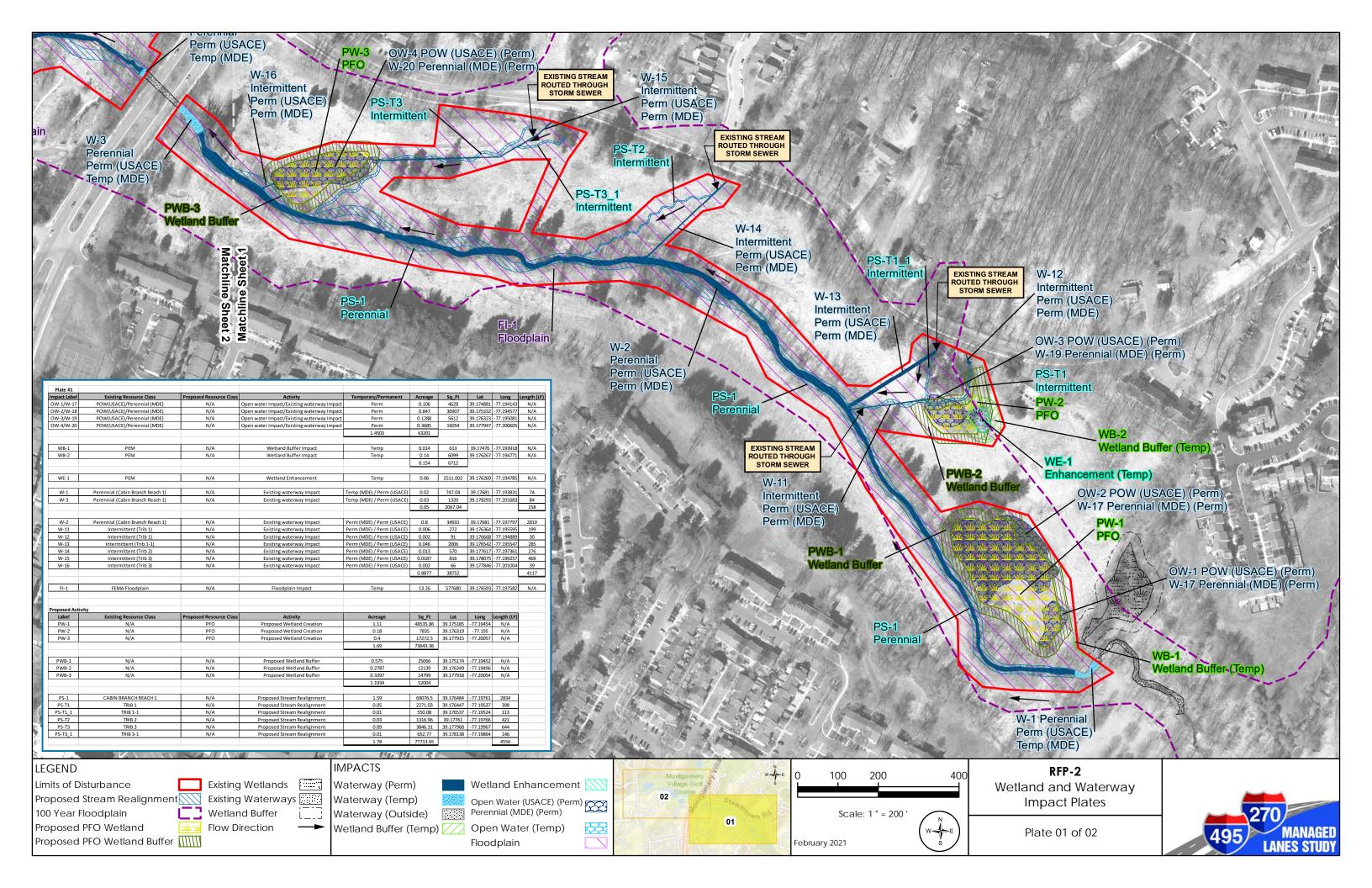
H.1

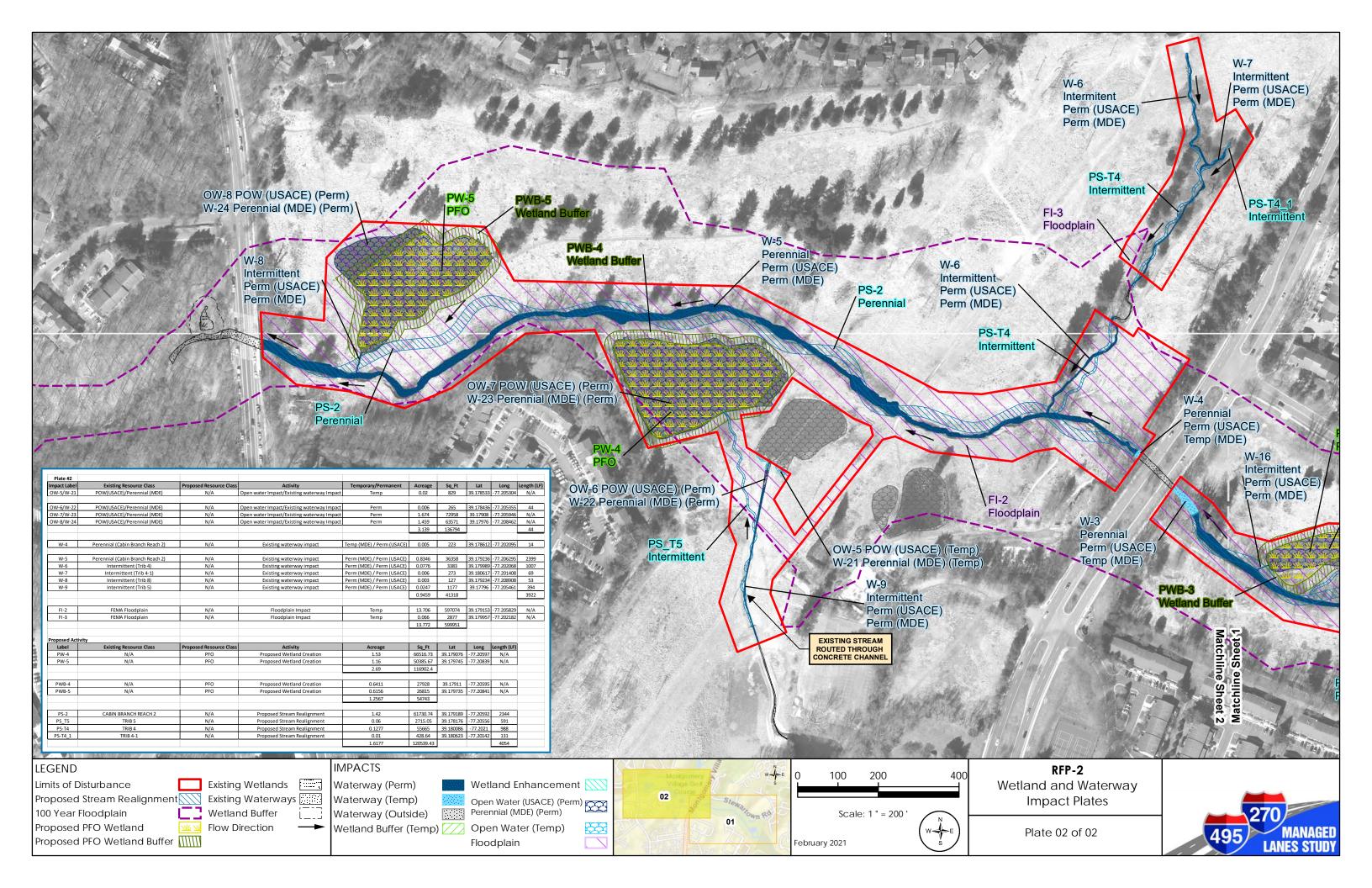
MCDPS APPROVED FOR: Stormwater Management:	PROJECT: RFP-2 CABIN LIENT: MARYLAND STATE HIGHWA ESC DETA MONTGOMERY COUNTY,
	CL
Approved Date	PROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE
SM FILE # Sediment Control Technical Requirements:	DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE#:52852
Reviewed Date	EXP. DATE: <u>6/14/2022</u>
Approved Date	NOT FOR
Administrative Requirements:	CONSTRUCTION
Reviewed Date	REVISIONS:
SEDIMENT CONTROL PERMIT #	
	PROJECT STATUS:
NOTE MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL, IF THE PROJECT HAS NOT STARTED. THIS APPROVAL DOES NOT NEGATE THE	1/9/2020 65% MIT. PLAN 3/10/2022 65% MIT. PLAN REV. 1
NEED FOR A MCDPS ACCESS PERMIT.	
DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.	DRAWN: KH JOB NUMBER: 102054 DESIGN TYPE: STREAM DATE: 11/22/2021

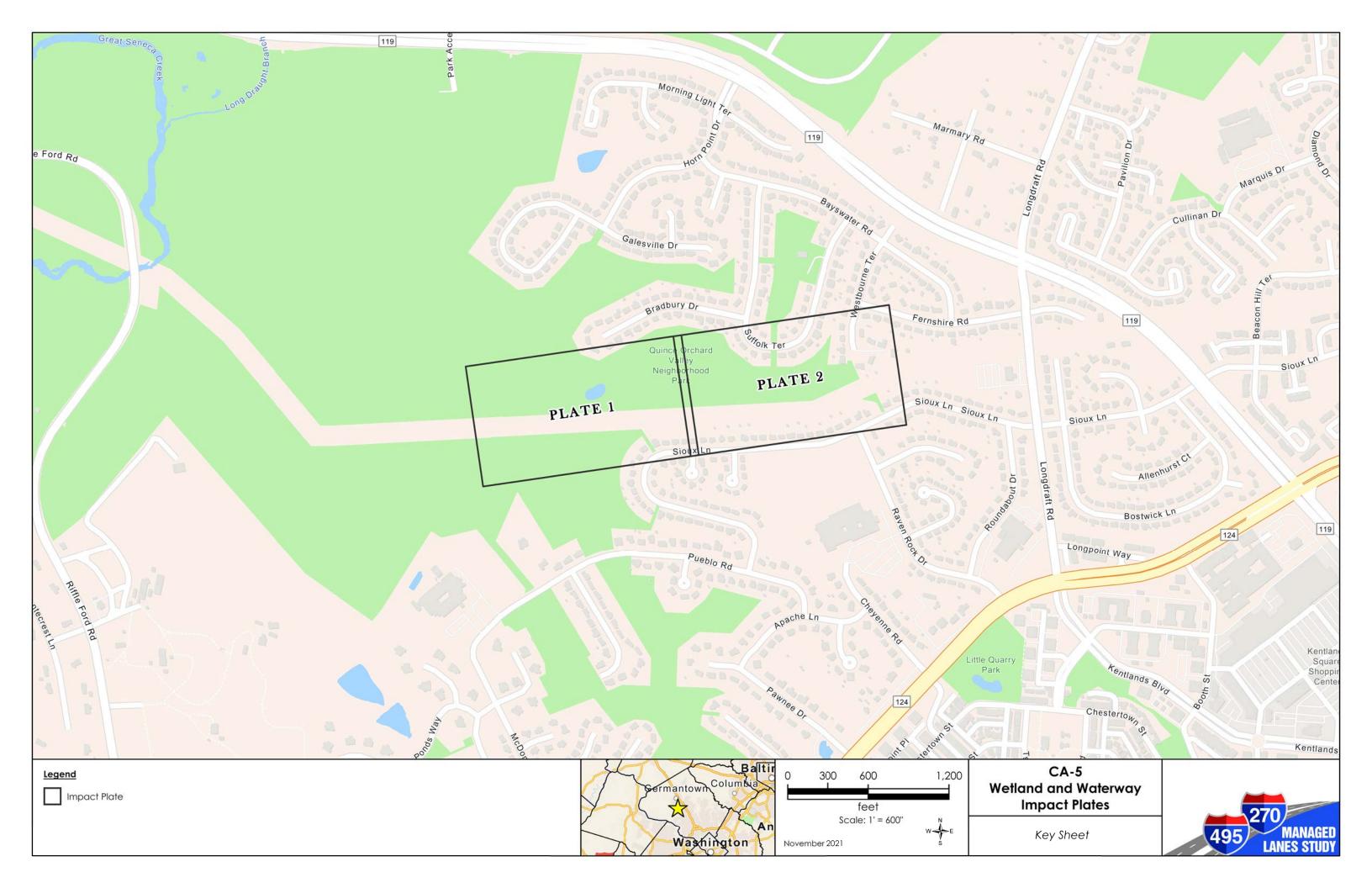
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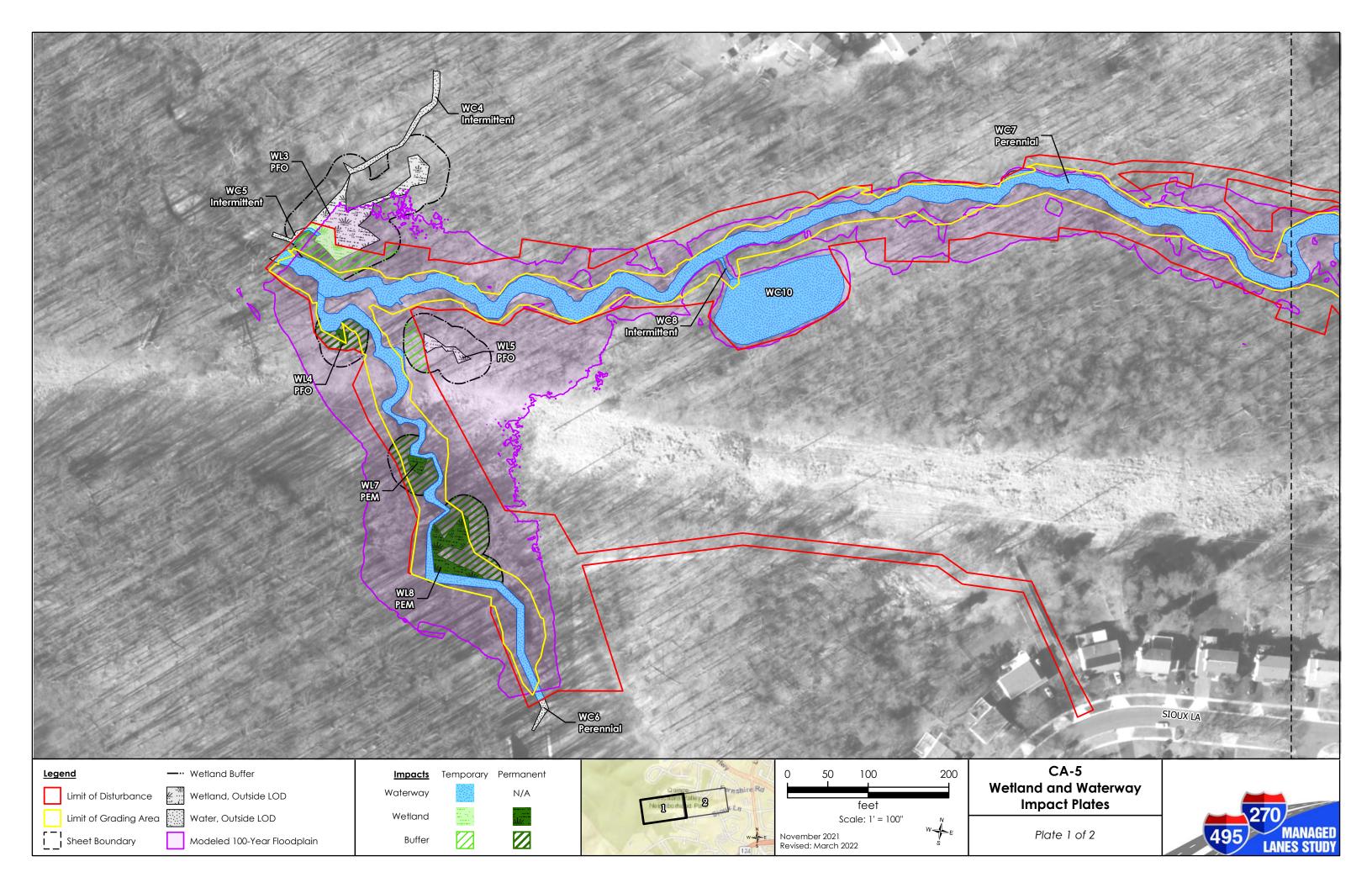
NCLI

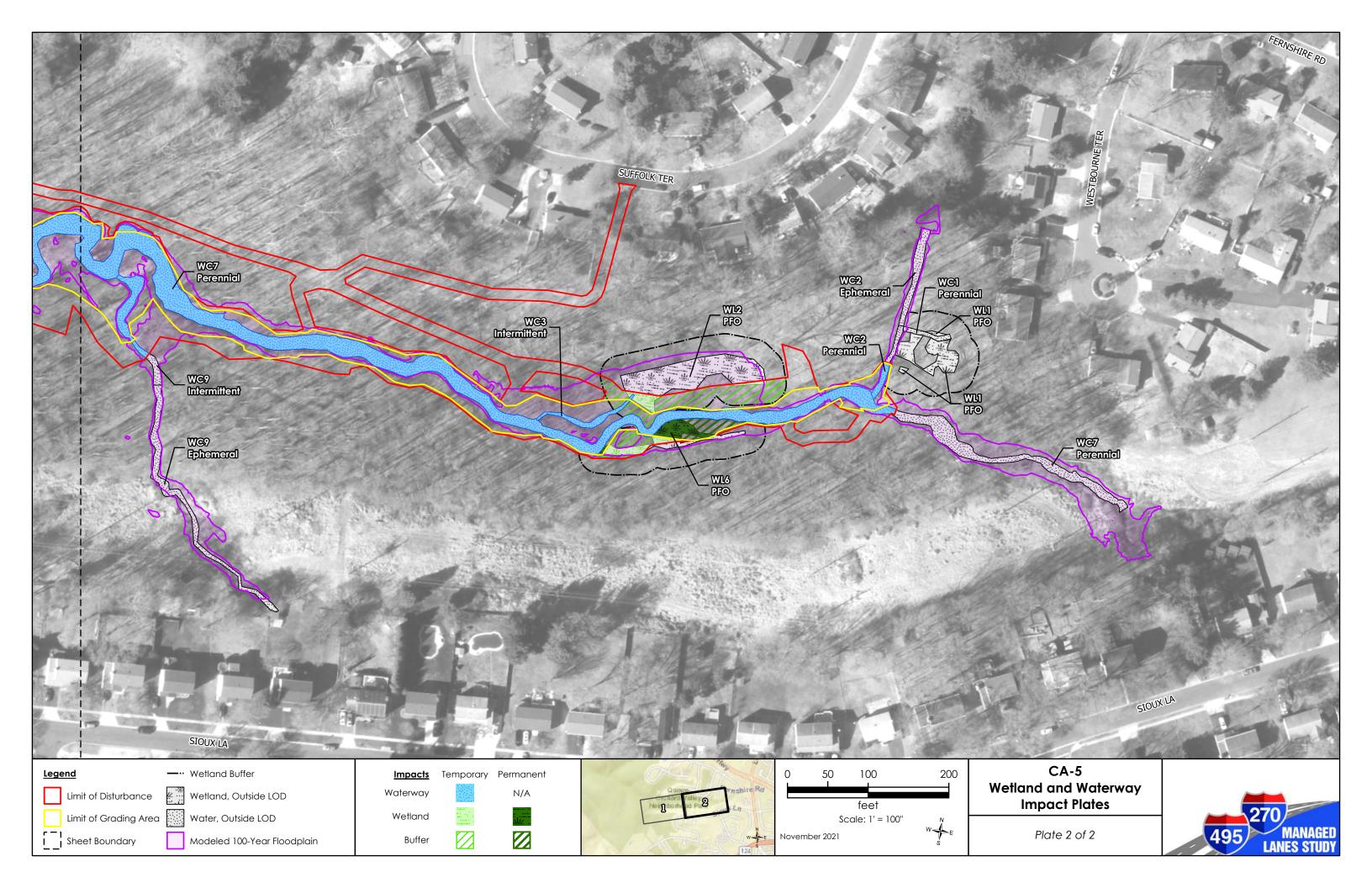
 \int











UNNAMED TRIBUTARY TO GREAT SENICA CREEK (CA-5) MITIGATION SITE IMPACTS

Table E-1: MDE Waterway Impacts Summary

RESOURCE TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)
Perennial	3,605	65,994	0	0
Intermittent	322	2126	0	0
Total:	3,927	68,120	0	0

Table E-2: USACE Waterway Impacts Summary

RESOURCE TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)
Perennial	0	0	3,605	54,392
Intermittent	0	0	322	2,126
Open Water	0	0	0	11602
Ephemeral	0	0	0	0
Total:	0	0	3,927	68,120

Table E-3: MDE & USACE Wetland Impacts Summary

RESOURCE TYPE	TEMPORARY WETLAND IMPACT (SF)	TEMPORARY WETLAND BUFFER IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)	PERMANENT WETLAND BUFFER IMPACT (SF)
PFO	2,343	11,100	1,172	2,929
PSS	0	0	0	0
PEM	0	0	2378	6689
Total:	2,343	11,100	3,550	9,618

UNNAMED TRIBUTARY TO GREAT SENICA CREEK (CA-5) MITIGATION SITE IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)	ІМРАСТ ТҮРЕ
WC2	Perennial	Open Channel	47	327	0	0	Restoration
WC3	Intermittent	Open Channel	139	667	0	0	Restoration
WC5	Intermittent	Open Channel	21	112	0	0	Restoration
WC6	Perennial	Open Channel	759	7,369	0	0	Restoration
WC7	Perennial	Open Channel	2799	46,696	0	0	Restoration
WC8	Intermittent	Open Channel	30	95	0	0	Restoration
WC9	Intermittent	Open Channel	132	1,252	0	0	Restoration
WC10	Perennial	Waterway	0	11,602	0	0	Enhancement
Total:			3,927	68,120	0	0	

Table E-5: USACE Waterway Feature Impacts

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)	ΙΜΡΑCΤ ΤΥΡΕ
WC2	Perennial	Open Channel	0	0	47	327	Restoration
WC3	Intermittent	Open Channel	0	0	139	667	Restoration
WC5	Intermittent	Open Channel	0	0	21	112	Restoration
WC6	Perennial	Open Channel	0	0	759	7,369	Restoration
WC7	Perennial	Open Channel	0	0	2799	46,696	Restoration
WC8	Intermittent	Open Channel	0	0	30	95	Restoration
WC9	Intermittent	Open Channel	0	0	132	1,252	Restoration
WC10	Open Water	Pond	0	0	0	11,602	Enhancement
Total:			0	0	3,927	68,120	

IMPACT ID	CLASSIFICATION	TEMPORARY WETLAND IMPACT (SF)	TEMPORARY WETLAND BUFFER IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)	PERMANENT WETLAND BUFFER IMPACT (SF)	IMPACT TYPE
WL1	PFO	0	85	0	0	Restoration
WL2	PFO	618	5,332	0	0	Restoration
WL3	PFO	1,042	2,953	0	0	Restoration
WL4	PFO	0	0	177	1,645	Restoration
WL5	PFO	0	1,338	0	0	Restoration
WL6	PFO	683	1,392	995	1,284	Restoration
WL7	PEM	0	0	349	2,183	Restoration
WL8	PEM	0	0	2,029	4,506	Restoration
Total:		2,343	11,100	3,550	9,618	

Table E-6: MDE & USACE Wetland Feature Impacts

100-Year Floodplain Temporary Impacts - 198,330 SF (4.55 AC)

Permanent wetland impacts will be replaced onsite via oxbow wetland creation.



ATTACHMENT II RARE, THREATENED, AND ENDANGERED SPECIES COORDINATION



United States Department of the Interior U.S. Fish & Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401 410/573 4575



Online Certification Letter

Today's date: July 9, 2019

Project: SHA Full Delivery of Cabin Branch Stream Restoration

Dear Applicant for online certification:

Thank you for using the U.S. Fish and Wildlife Service (Service) Chesapeake Bay Field Office online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the referenced project in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8573. For information in Delaware you should contact the Delaware Division of Fish and Wildlife, Wildlife Species Conservation and Research Program at (302) 735-8658. For information in the District of Columbia, you should contact the National Park Service at (202) 339-8309.

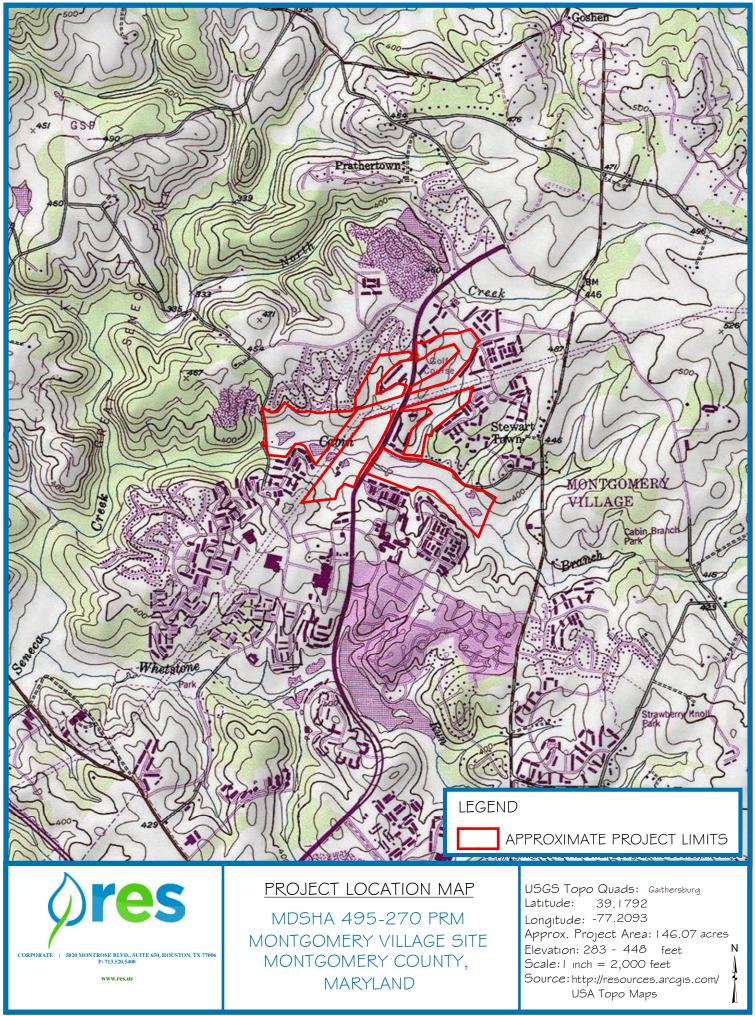
The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay)

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4527.

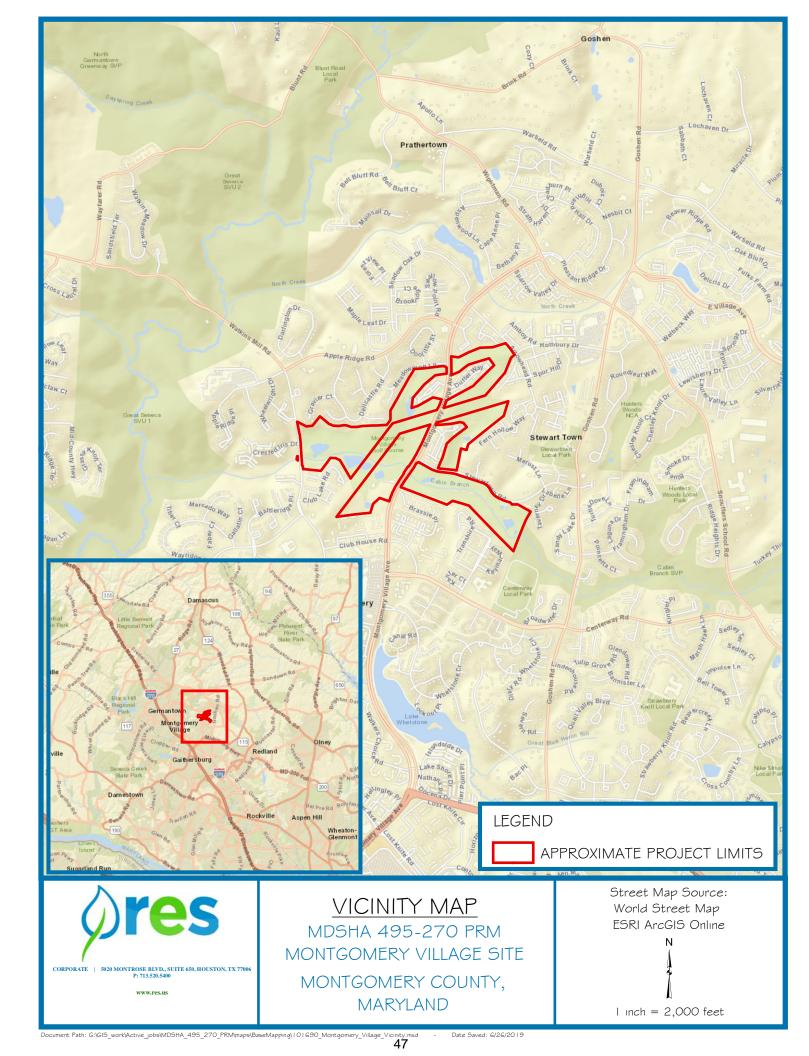
https://www.fws.gov/chesapeakebay/EndSppWeb/ProjectReview/onlineletter.html

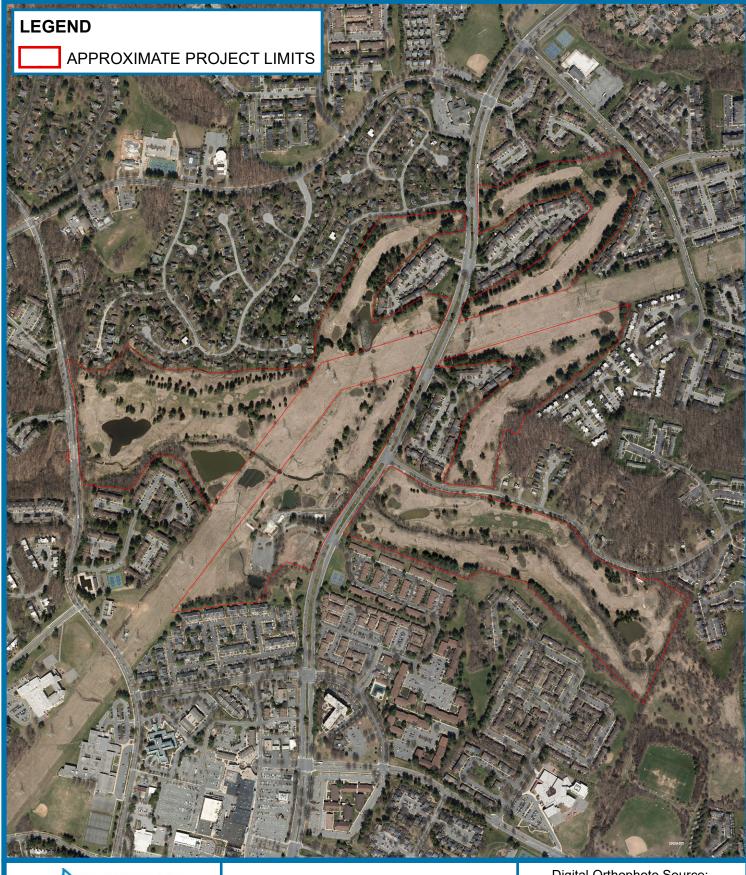
Sincerely,

Genevieve LaRouche Field Supervisor



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DRPORATE | 6575 WEST LOOP SOUTH, SUITE 300 BELLAIRE, TX. 77401 P. 713.520.5400

AERIAL IMAGERY

MDSHA 495-270 PRM MONTGOMERY VILLAGE SITE

MONTGOMERY COUNTY, MD

Digital Orthophoto Source: VBMP Most Recent Imagery Virginia Lambert (VGIN)

1 inch = 750 feet

Date Saved: 6/26/2019



United States Department of the Interior

FISH AND WILDLIFE SERVICE Chesapeake Bay Ecological Services Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401-7307 Phone: (410) 573-4599 Fax: (410) 266-9127 <u>http://www.fws.gov/chesapeakebay/</u> http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html



July 09, 2019

In Reply Refer To: Consultation Code: 05E2CB00-2019-SLI-1709 Event Code: 05E2CB00-2019-E-04280 Project Name: Cabin Branch Stream Mitigation Bank

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/ eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office

177 Admiral Cochrane Drive Annapolis, MD 21401-7307 (410) 573-4599

Project Summary

Consultation Code:	05E2CB00-2019-SLI-1709
Event Code:	05E2CB00-2019-E-04280
Project Name:	Cabin Branch Stream Mitigation Bank
Project Type:	STREAM / WATERBODY / CANALS / LEVEES / DIKES
Project Description:	The proposed project is a stream restoration along approximately 2,143 linear feet of Cabin Branch east of Watkins Mill Road and terminating just west of Centerway Local Park in Montgomery County, Maryland. The stream is a Use-I-P perennial tributary. The project will support the Maryland Department of Transportation State Highway Administration's (SHA) efforts to generate permittee- responsible compensatory stream and wetland mitigation credits for unavoidable impacts associated with construction of SHA's highway development projects.

Project Location:

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/place/39.177741219976554N77.20014874795342W</u>



Counties: Montgomery, MD

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i>	Threatened
No critical habitat has been designated for this species.	
This species only needs to be considered under the following conditions:	
 Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A 	
SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT	
EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule	
Consistency key	
Species profile: https://ecos.fws.gov/ecp/species/9045	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of Engineers District</u>.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER POND

• <u>PUBHx</u>

RIVERINE • R5UBH



Larry Hogan, Governor Boyd Rutherford, Lt. Governor Mark Belton, Secretary Joanne Throwe, Deputy Secretary

19-MIS-009

August 30th, 2018

Juliette Giordano RES 2750 Prosperity Ave. Suite 220 Fairfax, VA 22031

Subject: Fisheries Information for the Cabin Branch Mitigation Bank Montgomery County, Maryland

Dear Ms. Giordano;

The above referenced project has been reviewed to determine fisheries species near the proposed project. The proposed activities include the restoration of approximately 4,236 linear feet of Cabin Branch and its tributaries, enhancement along approximately 1,522 linear feet of Cabin Branch, restoration of 3.12 acres of wetlands, and enhancement of 0.38 acres of wetlands.

This project will impact Cabin Branch which is classified as a Use I-P (public water supply) stream. In general, no in-stream work is allowed in Use I-P streams from March 1st to June 15th of any given year to protect spawning fish. The applicant is encouraged to strictly adhere to the approved sediment and erosion control plan during construction to prevent sedimentation downstream. In addition, part of the project area looks to be within a Sensitive Species Project Review Area so the MDDNR Wildlife & Heritage Service should be contacted in order to see if they have any further comments or concerns about this project.

DNR has documented resident fish species from Cabin Branch and its tributaries by our Maryland Biological Stream Survey. MBSS data can be accessed via the MDDNR web page at <u>http://streamhealth.maryland.gov</u>, allowing access to resource surveys.

Please note that these comments do not constitute a full review by the Maryland Dept. of Natural Resources. Once the final permit is submitted with a full set of plans, a detailed project review will occur.

If you have any further questions, please feel free to contact me at 410 260-8736.

Sincerely;

Christopher adland

Christopher Aadland Environmental Review Program



Corporate Headquarters 5020 Montrose Blvd. Suite 650 Houston, TX 77006 Main: 713.520.5400

July 13, 2018

Mr. Tony Redman, Director Environmental Review Program Department of Natural Resources Tawes State Office Building, E-1 Annapolis, MD 21401

Re: Cabin Branch Mitigation Bank Montgomery County, Maryland

Sent Via Email: environmentalreview.dnr@maryland.gov

Dear Mr. Redman:

Resource Environmental Solutions, LLC (RES) is pleased to submit a project scoping request for a proposed stream and wetland compensatory mitigation bank in Montgomery Village, Montgomery County. The project location is identified on the attached mapping and site description table. The project limits depicted on the maps represent the bank's easement area and the area of potential effect ("APE"). The purpose of the project is to establish a stream and wetland compensatory mitigation bank that will provide stream and wetland credits to offset authorized unavoidable impacts to wetlands and streams within the bank's approved service area. Proposed project activities and existing site conditions are described in more detail below.

The proposed bank project includes the restoration of +/- 4,236 linear feet of Cabin Branch and its tributaries, enhancement along +/- 1,522 linear feet of Cabin Branch, as well as the restoration of 3.12 acres of wetlands and enhancement of 0.38 acres of wetlands. Located at 19550 Montgomery Village Avenue, the project site exists within the former Montgomery Village Golf Club. The project site is in the Great Seneca Stream watershed (Maryland Department of Environment Hydrologic Unit Code ("HUC") 02140208), which is part of the Federal 8-digit HUC 02070008 – Middle Potomac-Catoctin. Restoration activities will occur along the stream corridor between the eastern side of Watkins Mill Road and the western edge of Centerway Park. A 250-foot wide cleared, overhead transmission line right-of-way owned by Pepco extends southwest to northeast across Cabin Branch in the west-central reach of the project site. Restoration activities will likely not occur within this easement.

Cabin Branch is a third-order major tributary with a drainage area of 4.4 square miles of urban development (39% impervious surface) with little or no stormwater management. A non-operational golf course occupies the stream valley along the channel. Conditions within the stream channel exhibit significant bank erosion. The stream is incised with steep, vertical banks (4-foot to 6-foot tall) and is overly wide (~20 feet). A four-foot tall dam exists within the middle portion of the restoration reach disrupting the hydrology and hydraulics of the stream, as well as precluding passage of fish and other aquatic organisms. Development within the watershed has increased the hydrology of the stream resulting in frequent out of bank flooding events.



Most of the tributaries to the main channel flow out of small (<100 acre) watersheds that drain adjacent neighborhoods. A few of the tributaries have stormwater management facilities located along them but most of these facilities are undersized and in need of improvement. Several other streams are piped directly into the main channel without any treatment. Many of the tributaries are experiencing active head cuts and erosion.

Compensatory mitigation credits along the Cabin Branch corridor will be generated using natural channel design methods to restore the targeted stream reach and by restoring former golf course water features into wetlands. Stream credits will be generated through a combination of stream restoration and enhancement by employing natural channel design techniques (e.g. increasing channel sinuosity; reconnecting channel to active floodplain); daylighting piped tributaries; restoring the riparian buffer to 35 feet along each bank; and removing non-native material and former golf course infrastructure. Select areas of wetlands will be established along the restoration reach where existing ponds will be restored to wetland conditions. The site will be operated as a private mitigation bank and will go through the Interagency Review Team ("IRT") approval process.

The bank site's location within a historic golf course landscape provides an opportunity for relocating the stream channel and restoring an active floodplain and stream connectivity with minimal impacts to forested area or other natural resources, since the historic fairway contains few native trees or other resources. In addition, Centerway Park, Cabin Branch Stream Valley Park, and Green Farm Park are located immediately upstream of the site, and Great Seneca Stream Valley Park is located just +/- 0.3-mile downstream of the site. Thus, creating a protected compensatory mitigation bank along this stretch of Cabin Branch will create a continuous, protected stream valley park system.

Please feel free to contact me at (571) 489-0210, or at jgiordano@res.us if you have any questions or need any additional information regarding this project. Thank you for your attention to this matter.

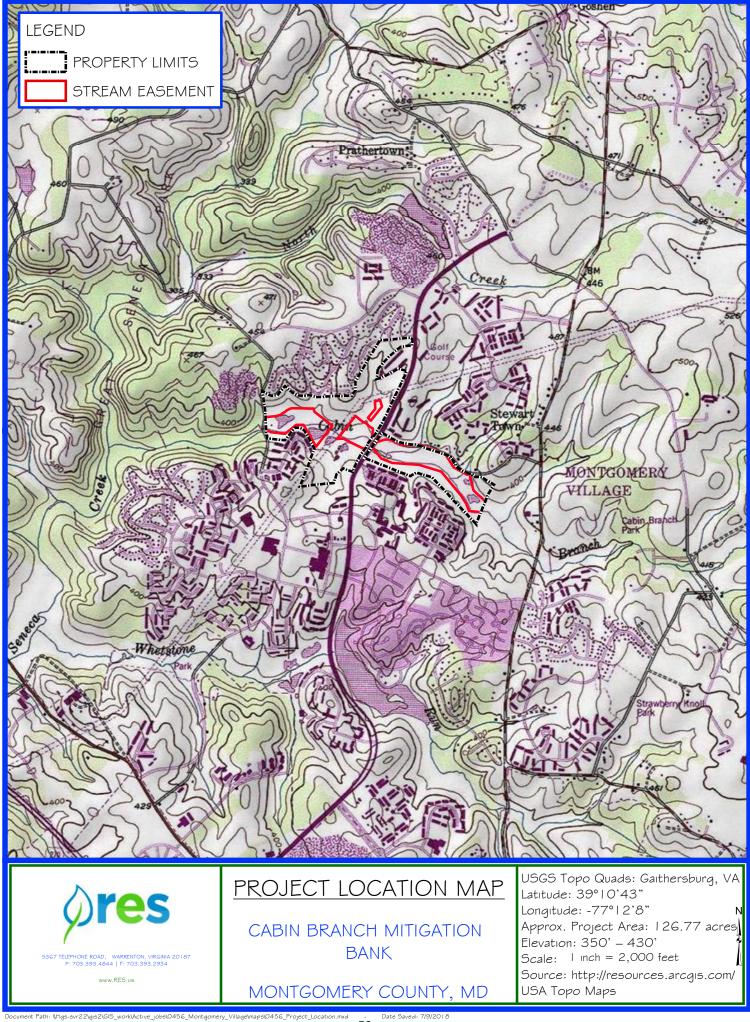
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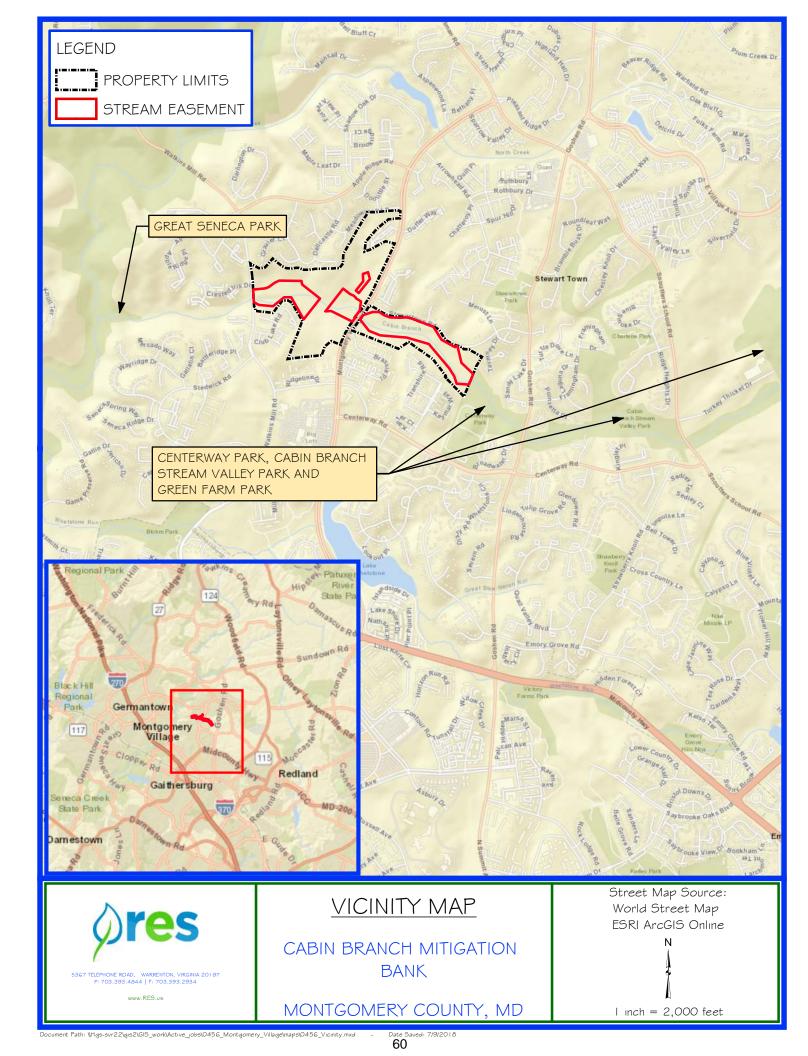
thiordani

Juliette Giordano Environmental Specialist

Enclosures:

- 1) Project Location and Vicinity Maps and Aerial Imagery
- 2) Concept Design Map
- 3) U.S. Fish and Wildlife Information Planning, and Coordination List







AERIAL IMAGERY

CABIN BRANCH MITIGATION BANK Digital Orthophoto Source: World Imagery ESRI ArcGIS Online

LEFHUNE ROAD, WARRENTON, VIRGINIA 20187 P: 703.393.4844 | F: 703.393.2934 www.RES.us

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MONTGOMERY COUNTY, MD

I = 700 feet

ed: 7/9/2018



CONCEPTUAL PLANS DATED JULY 11, 2018* SUBMITTED WITH REVIEW REQUEST OMITTED HERE FOR LENGTH PURPOSES

*SEE CONCEPTUAL PLANS IN ATTACHMENT IV



July 31, 2018

Ms. Juliette Giordano Resource Environmental Solutions, LLC 3000 Falls Road Suite 300A, Mill No. 1 Baltimore, MD 21211

RE: Environmental Review for Cabin Branch Mitigation Bank, Montgomery Village, 19550 Montgomery Village Avenue, Montgomery County, Maryland.

Dear Ms. Giordano:

The Wildlife and Heritage Service has determined that there are no official State or Federal records for listed plant or animal species within the delineated area shown on the map provided. As a result, we have no specific concerns regarding potential impacts or recommendations for protection measures at this time. Please let us know however if the limits of proposed disturbance or overall site boundaries change and we will provide you with an updated evaluation.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne, Environmental Review Coordinator Wildlife and Heritage Service MD Dept. of Natural Resources

ER# 2018.1088.mo



Corporate Headquarters 5020 Montrose Blvd. Suite 650 Houston, TX 77006 Main: 713.520.5400

July 13, 2018

Ms. Lori Byrne Wildlife & Heritage Service Department of Natural Resources Tawes State Office Building, E-1 Annapolis, MD 21401

Re: Cabin Branch Mitigation Bank Montgomery County, Maryland

Sent Via Email: lori.byrne@maryland.gov

Dear Ms. Byrne:

Resource Environmental Solutions, LLC (RES) is pleased to submit a project review request for a proposed stream and wetland compensatory mitigation bank in Montgomery Village, Montgomery County. The project location is identified on the attached mapping and site description table. The project limits depicted on the maps represent the bank's easement area and the area of potential effect ("APE"). The purpose of the project is to establish a stream and wetland compensatory mitigation bank that will provide stream and wetland credits to offset authorized unavoidable impacts to wetlands and streams within the bank's approved service area. Proposed project activities and existing site conditions are described in more detail below.

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Please feel free to contact me at (571) 489-0210, or at jgiordano@res.us if you have any questions or need any additional information regarding this project. Thank you for your attention to this matter.

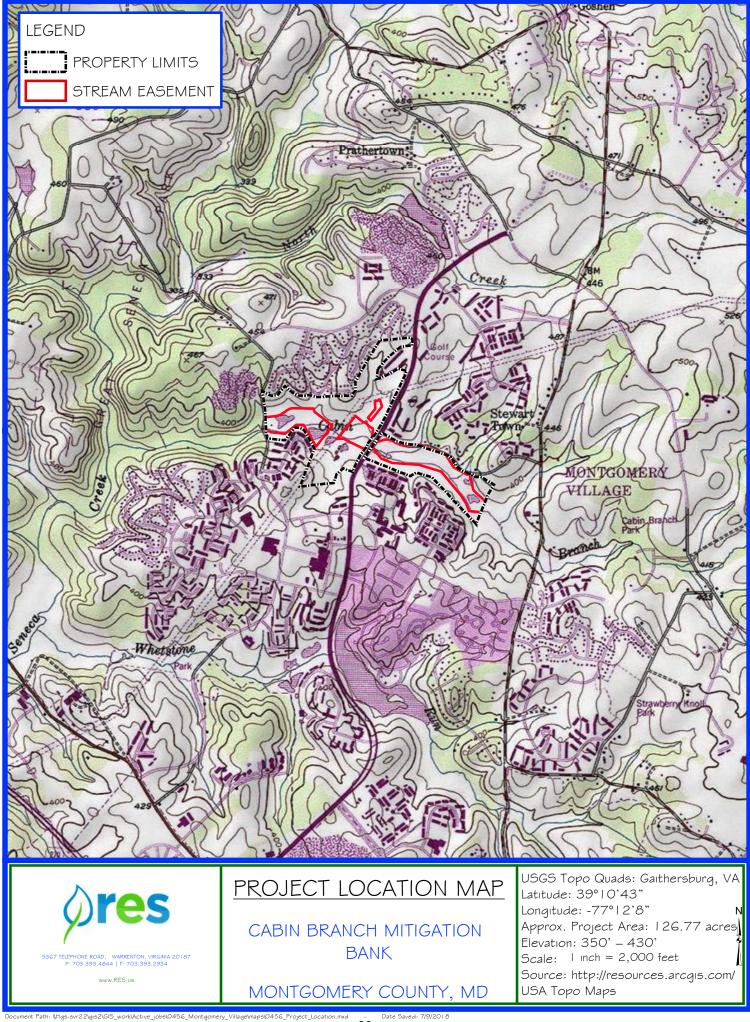
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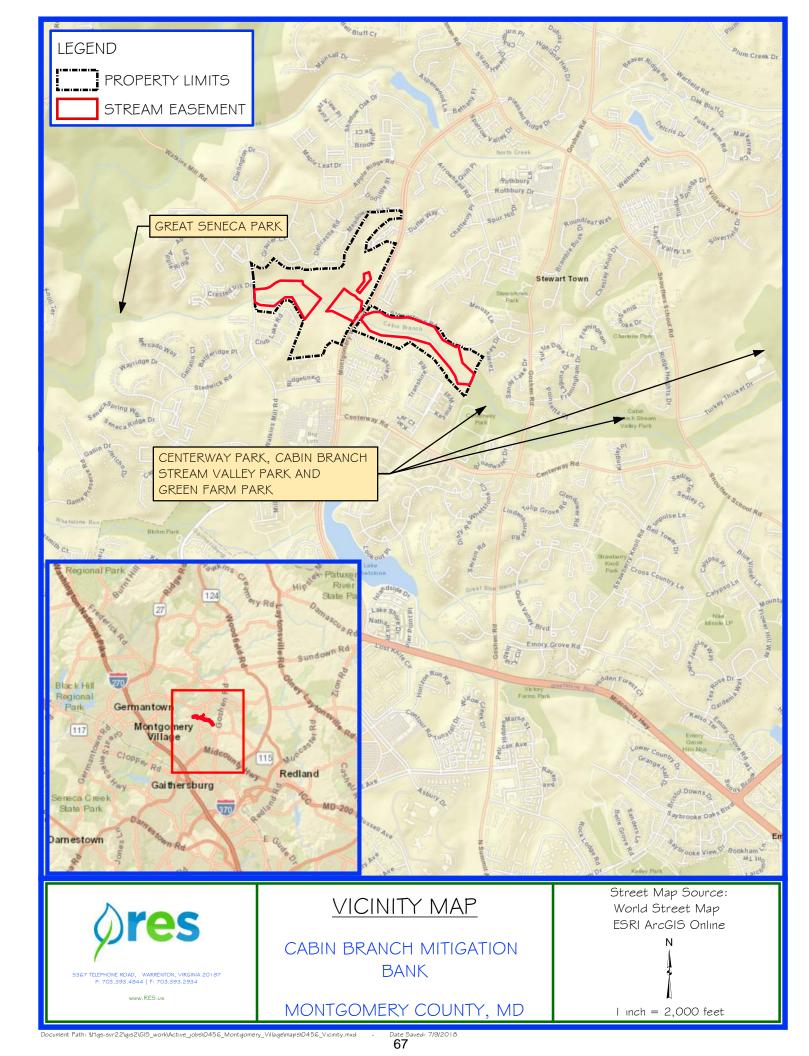
Giordani

Juliette Giordano Environmental Specialist

Enclosures:

- 1) Project Location and Vicinity Maps and Aerial Imagery
- 2) Concept Design Map
- 3) USFWS Trust Resources List







AERIAL IMAGERY

CABIN BRANCH MITIGATION BANK Digital Orthophoto Source: World Imagery ESRI ArcGIS Online



es

Document Path: \\Hgs-svr22\gis2\GIS_work\Active_jobs\0456_Montgomery_Village\maps\0456_Ac

MONTGOMERY COUNTY, MD

I = 700 feet

ed: 7/9/2018



CONCEPTUAL PLANS DATED JULY 11, 2018* SUBMITTED WITH REVIEW REQUEST OMITTED HERE FOR LENGTH PURPOSES

*SEE CONCEPTUAL PLANS IN ATTACHMENT IV

IPaC

Last login May 31, 2018 08:46 AM MDT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

ONSUL

Project information

NAME

Cabin Branch Stream Mitigation Bank

LOCATION

Montgomery County, Maryland

DESCRIPTION

The project entails a proposed stream compensatory mitigation bank consisting of stream restoration activities along approximately 7,000 linear feet of Cabin Branch east of Watkins Mill Road and terminating just west of Centerway Local Park in Montgomery County, Maryland.

Local office

Chesapeake Bay Ecological Services Field Office

└ (410) 573-4599**i** (410) 266-9127

177 Admiral Cochrane Drive

Annapolis, MD 21401-7307

http://www.fws.gov/chesapeakebay/

http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

NOTFORCONSULTATION

71

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Log in to IPaC.
- 2. Go to your My Projects list.
- 3. Click PROJECT HOME for this project.
- 4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA Fisheries</u> for <u>species under their jurisdiction</u>.

- 1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information.
- 2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

THERE ARE NO ENDANGERED SPECIES EXPECTED TO OCCUR AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act^{1} and the Bald and Golden Eagle Protection Act ².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

- 1. The <u>Migratory Birds Treaty Act</u> of 1918.
- 2. The <u>Bald and Golden Eagle Protection Act</u> of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds <u>http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php</u>
- Nationwide conservation measures for birds
 <u>http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf</u>

The birds listed below are birds of particular concern either because they occur on the <u>USFWS Birds of</u> <u>Conservation Concern</u> (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ <u>below</u>. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the <u>E-bird data mapping tool</u> (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found <u>below</u>.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	CU	BREEDING SEASON (IF A BREEDING
		SEASON IS INDICATED FOR A BIRD ON
	\sim	YOUR LIST, THE BIRD MAY BREED IN
	.00	YOUR PROJECT AREA SOMETIME
4		WITHIN THE TIMEFRAME SPECIFIED,
		WHICH IS A VERY LIBERAL ESTIMATE
-7		OF THE DATES INSIDE WHICH THE
$\langle \cap \rangle$		BIRD BREEDS ACROSS ITS ENTIRE
		RANGE. "BREEDS ELSEWHERE"
N		INDICATES THAT THE BIRD DOES NOT
		LIKELY BREED IN YOUR PROJECT
		AREA.)

Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626

Blue-winged Warbler Vermivora pinus

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA Breeds Sep 1 to Jul 31

Breeds May 1 to Jun 30

Cerulean Warbler Dendroica cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/2974</u>	Breeds Apr 28 to Jul 20
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31
Probability of Presence Summary	

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and

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that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

					probabi	lity of pre	esence	breedir	ng season	surve	y effort	— no data
SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Ac or for potential susceptibilities in offshore areas from certain types of development or activities.)		+++++ << (+++++++++++++++++++++++++++++++++++++++	J)ihu	1111	1+11	•		1111	1111
Blue-winged Warbler BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continenta USA)		++++	++++	+++∎	* +++	₩ ₩++	++++	++∎∎	₩ #++	++++	++++	++++
Cerulean Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	+++ <mark>+</mark>	<mark>∳</mark> ∔∔+	++++	++++	++++	+++#	++++	++++	++++
Kentucky Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++ <mark>+</mark> ∔	<u></u> †∎+∎	┿ ┼++	┼╋┼┼	<mark>┼┼┼</mark> ┼	++++	++++	++++	++++

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6/1	5	20	1	Q
0/1	Jت	20		0

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Prairie Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++ # ##		11	1111	+###	+#++	++++	++++	++++
Prothonotary Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	 ••	ŧ ┼┼┼	++++	++++	++++	++++	++++	++++	++++
Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++#+	++++	++++	++++	┼ <mark>┼╪</mark> ┼	 ++	++++	++++	1 4++	+#++	++++	
Rusty Blackbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	+##+	++++	++++	++++	++++	++++	++++	+++#	+++±	++++
Wood Thrush BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	+++11	• C		9	<u>Bu</u>	1111	₩ ₩ ₩ +	++++	++++

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC</u>) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>E-bird Explore Data Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge</u> <u>Network (AKN)</u>. This data is derived from a growing collection of <u>survey, banding, and citizen science datasets</u>.

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Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: <u>The Cornell Lab of Ornithology All About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of Ornithology Neotropical Birds guide</u>. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle</u> <u>Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS Integrative Statistical Modeling and</u> <u>Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf</u> project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts

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from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of Engineers</u> <u>District</u>.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the <u>NWI map</u> to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or

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adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOTFORCONSULTATION

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https://ecos.fws.gov/ipac/project/QH2PGPDIENAZXCBJRTB67ODTRA/resources

Larry Hogan Governor Boyd K. Rutherford

Lt. Governor Gregory Slater

Secretary

Tim Smith, P.E. Administrator

July 23, 2020

Ms. Elizabeth Hughes State Historic Preservation Officer Maryland Historical Trust 100 Community Place Crownsville, MD 21032-2023

Ms. Julie Langan State Historic Preservation Officer Department of Historic Resources 2801 Kensington Avenue Richmond, VA 23221

Dear Ms. Hughes and Ms. Langan:

This letter serves to continue consultation under Section 106 of the National Historic Preservation Act with the Maryland Historical Trust (MHT) and the Virginia Department of Historic Resources (DHR) for Project No. AW073A11, I-495 & I-270 Managed Lanes Study (MLS). The MLS is the first element of a broader I-495 & I-270 Public-Private Partnership (P3) Program which considers improvements along the entire length of I-495 (Capital Beltway) in Maryland, connecting into Virginia's portion of I-495, as well as the entire length of I-270 (Dwight D. Eisenhower Memorial Highway) up to I-70 in Frederick County, Maryland.

MDOT SHA coordinated the project's effect on historic properties and submitted the Cultural Resources Technical Report by letter dated January 10, 2020, with responses received from MHT and DHR dated March 12, 2020, and February 14, 2020, respectively. Per that, and subsequent correspondence with DHR, we understand DHR is awaiting resolution of National Register eligibility of resources in Virginia prior to commenting on the effect determination.

This update includes:

- An expansion of the Area of Potential Effects (APE) to encompass stream and wetland mitigation sites in Maryland
- New and revised eligibility determinations for three architectural resources in Maryland;
- New and revised effect determinations for six historic properties in Maryland;



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Revised Area of Potential Effects

The APE for this project was previously defined as a 250-foot buffer of consideration on either side of the widest proposed alternative's Limits of Disturbance (LOD) (Alt 10). The APE includes additional buffer areas at the American Legion Bridge and elsewhere to capture setting, feeling, and viewshed effects. MDOT SHA has since identified potential environmental mitigation sites where stream and wetland restoration is proposed. Due to the nature of the work at these locations (restoration of existing natural features), the APE is confined to the LOD for each mitigation site, as no substantive visual elements are proposed that would be new or inconsistent with the existing character of these locations. The current known LOD of these sites have been added to the APE (Attachment 1).

Architecture

New and Updated Eligibility Determinations

Using the APE coordinated January 10, 2020, MDOT SHA identified two additional unrecorded architectural resources in Montgomery County, as documented in the attached Determination of Eligibility (DOE) forms (Attachment 2). The Forest Glen Tower (M: 31-81) is a steel lattice tower at Seminary Road and Forest Glen Road (MD 192); MDOT SHA has determined that this former Cold War-era air raid siren tower lacks integrity and is not eligible for listing in the National Register of Historic Places (NRHP). The Morningstar Tabernacle No. 88 Moses Hall and Cemetery (M: 35-212), at I-495 and Seven Locks Road, was the site of a late nineteenth-century African American benevolent society. MDOT SHA has determined that the property is eligible for listing in the NRHP under Criterion A for its association with the African American community in Cabin John and under Criterion C for its example of a vernacular African American American cemetery.

Additionally, MDOT SHA updated the B&O Railroad, Metropolitan Branch (M: 37-16), DOE to provide additional information that expands upon previous surveys of the line (first surveyed in 1979 and determined eligible in 2000) to clarify the period of significance, revise the boundary, and provide a list of contributing and noncontributing resources. The Metropolitan Branch remains eligible for the NRHP. It is significant under Criterion A for its association with transportation and the agricultural and residential development of Frederick and Montgomery counties and under Criterion C for its engineering, representative of nineteenth and twentieth century railroad technology.

The new and updated eligibility determinations are summarized in Table 1, Attachment 3.

Updated Effect Assessments

Both physical effects as well as potential visual, atmospheric, or audible effects were considered within the entire APE. The effect assessment coordinated in the January 10, 2020, letter and

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described in the Cultural Resources Technical Report found no adverse effect to 34 architectural historic properties and an adverse effect on 10 architectural historic properties. MDOT SHA has identified one additional architectural historic property in the APE: the Morningstar Tabernacle No. 88 Moses Hall and Cemetery, which will experience an adverse effect. In addition, new information in the updated DOE has resulted in a revised effect assessment for the B&O Railroad, Metropolitan Branch, which was previously determined to be adverse. In the January 10, 2020, letter, MDOT SHA also identified seven architectural historic properties where effects could not be fully determined. Ongoing project development has resulted in sufficient information to determine effects for four of the seven undetermined properties. Architectural historic properties with new or updated effect determinations are described below.

- Morningstar Tabernacle No. 88 Moses Hall and Cemetery (M: 35-212): Pending MHT concurrence that the resource is NRHP-eligible, MDOT SHA has determined that the project will adversely affect Morningstar Tabernacle No. 88 Moses Hall and Cemetery. The work proposed at this location includes widening along the outside of the I-495 inner loop to construct two new managed lanes and a new ramp to connect the managed lanes with MD 190 at the existing interchange. The width of new pavement beyond the existing edge of the outside shoulder is approximately 55 feet. A retaining wall is proposed along the edge of the proposed outside shoulder to minimize impacts to the property. The wall would retain fill for the widened roadway section. The limits of disturbance (LOD) are offset ten feet behind the proposed retaining wall to accommodate construction and maintenance of the wall, erosion and sediment control, drainage, and landscaping. A noise wall would be constructed within the LOD. As currently designed, the LOD would impact the historic property. Contributing elements within the LOD include portions of the Moses Hall foundation wall, a section of the former access road from Seven Locks Road, and at least one depression possibly marking a grave location. MDOT is continuing to examine engineering avoidance alternatives at this location, but based on current design an adverse effect is expected.
- **B&O Railroad, Metropolitan Branch (M: 37-16)**: Activities at this location are unchanged, but new information in the DOE and further analysis of the LOD have resulted in a revised finding of no adverse effect for the property, pending MHT's concurrence with the revised DOE. The updated DOE form for the Metropolitan Branch demonstrates that the segment of the railroad within the LOD was realigned to the east during the construction of I-495 between 1957 and 1964, and the railroad bridge over I-495 was also completed at this time. The Metropolitan Branch's period of significance is 1873 to 1945, and the bridge and railroad alignment within the project area do not contribute to the significance of the branch. The current LOD include one contributing element of the Metropolitan Branch: Small Structure No. 15046X0, a stone arch culvert which carries Forest Glen Creek beneath the Metropolitan Branch and the adjacent Capitol View Avenue. The structure's southern spandrel wall appears within LOD on some imagery but is excluded from the limits and will not be affected. The project will cross the underground segment of Small Structure No. 15046X0 at the Metropolitan Branch tracks. The LOD at this location represent above-grade impacts, and no physical impacts to the historic property are anticipated; the vertical aspect

Ms. Elizabeth Hughes and Ms. Julie Langan Page Four

of the LOD remains at the surface. Current project engineering is not expected to alter the character of the property, and MDOT SHA is committed to both avoiding physical impacts to the aboveground spandrel wall and limiting ground disturbance along the underground segment of the small structure. Based upon the information presented in the updated DOE and the absence of impacts to Small Structure No. 15046X0, MDOT SHA has determined the project will not adversely affect the B&O Railroad, Metropolitan Branch.

- *Carsondale (PG:73-36)*: Carsondale, one of the earliest suburban residential developments in Maryland to offer Veterans Administration (VA) financing for African American veterans, is eligible for the NRHP under Criterion A. Updated design information has allowed MDOT SHA to make a finding of adverse effect for the property. To accommodate widening along US 50 associated with realigning the US 50/I-495 interchange and replacement of the bridge carrying Whitfield Chapel Road over US 50, the LOD in Carsondale include: a narrow linear area that extends approximately 550 feet where the northern edge of the historic district meets US 50; and a narrow strip that extends 150 along the east side of Whitfield Chapel Road. Activities within Carsondale would consist of tree removal, grading, construction of a retaining wall, and access for construction vehicles and materials. Along Whitfield Chapel Road, the roadway height would be adjusted to meet the elevation of the new bridge across US 50. There are no physical impacts to contributing dwellings, but the LOD encompass minor portions of front or rear yards, including some secondary structures, of nine dwellings that contribute to the district's significance. These include the rear vards of seven dwellings along the north side of Wallace Road (9004, 9010, 9016, 9018, 9104, 9112, 9114) and the front yards of two dwellings on Whitfield Chapel Road (4907 and 4909). These multiple minor impacts to contributing resources will result in a cumulative diminishment of the property's integrity of setting and design.
- Capitol View Park Historic District (M: 31-7): Activities at this location are unchanged, but a detailed review of design needs have resulted in a revised finding of no adverse effect for the property. The LOD are in close proximity to contributing stone walls surrounding the parking lot for the Castle of Forest Glen at 10 Post Office Road. However, MDOT SHA has determined the stone walls will be avoided and no LOD impacts will occur, and the project will not adversely affect the Capitol View Park Historic District.
- *Washington Aqueduct (M: 24-49)*: Activities at this location are unchanged, but MDOT SHA's design development has resulted in a revised finding of no adverse effect for the property. The LOD at this location represent above-grade impacts, and no physical impacts to the historic property are anticipated; the vertical aspect of the APE and LOD remains at the surface at this location, and ground disturbance that would affect the Aqueduct will be prohibited. The project will cross an underground segment of the aqueduct at MacArthur Boulevard. Current project engineering is not expected to alter the character of the property. The project will not adversely affect the Washington Aqueduct.

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Suitland Parkway (PG: 76A-22): Suitland Parkway is listed on the NRHP under Criteria A and C in the areas of transportation and landscape architecture. MDOT SHA has determined that the project will not adversely affect Suitland Parkway. In addition to the widening of the I-495 bridge over Suitland Parkway, activities at this location include grading, tree removal, landscape plantings, erosion and sediment control, construction of an auxiliary pipe to augment the existing culvert conveying Henson Creek beneath I-495, and access for construction vehicles and materials. These activities will not affect any structures that contribute to the significance of Suitland Parkway, including bridges, culverts, stone-lined ditches, stone curbing, and drop inlets. The proposed pipe extension will occur at a pipe constructed for I-495. Improvement and maintenance of the outfall will direct water away from the historic property and reduce environmental degradation along the north side of the parkway, preserving its character. In areas affected by grading and tree removal, landscape plantings consistent with the original design and character of the parkway will be used to replace vegetation and will be maintained. The existing bridges carrying I-495 over Suitland Parkway are currently being widened and replaced by MDOT SHA. The bridges, currently under construction as part of a separate project and not part of the parkway itself, will accommodate the MLS improvements by the reduction of the median on the inside of I-495. The highway over Suitland Parkway will not be additionally widened, and no diminishment of the integrity of those characteristics that qualify the 9.18-mile long parkway for inclusion in the NRHP will result.

MDOT SHA's use of the area impacted by the undertaking (I-495, bridges, relocated creek under I-495 and the proposed additional storm drain/culvert) will be authorized by a highway easement deed. NPS does not have the authority to authorize MDOT SHA use of NPS lands by way of a long-term maintenance agreement or other mechanism. NPS understands the highway easement deed will be issued by FHWA on behalf of the USA in accordance with 23 U.S.C. 107. The highway easement deed will provide MDOT SHA with an easement for their facilities, but NPS will retain the underlying ownership of the land. No character defining features of Suitland Parkway exist within the proposed area of transfer; furthermore, MDOT SHA and FHWA are subject to state (Maryland Historical Trust Act) and federal (Section 106) historic preservation requirements, which would ensure consideration of any impacts resulting from future actions related to these small MDOT SHA easement areas within Suitland Parkway.

The remaining three properties where effects cannot be fully determined will be subject to stipulations of the proposed Programmatic Agreement to avoid, minimize, or mitigate adverse effects as design advances. Updated property effect assessments are summarized in **Attachment 3**. MDOT SHA has determined the project continues to have an adverse effect on architectural historic properties.

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Expanded APE in Maryland

MDOT SHA has conducted a preliminary review of the APE and has determined that the following mitigation sites will either not affect or will have no adverse effect on architectural historic properties.

- *AN-1 (No Architectural Properties Affected)*: This site is a natural area within Crabbs Branch Stream Valley Park and includes no architectural resources
- *AN-3 (No Architectural Properties Affected)*: This site is a natural area within Northwest Branch Stream Valley Park and includes no architectural resources.
- *CA-2 (No Architectural Properties Affected)*: This site is a natural area within Great Seneca Stream Valley Park and includes no architectural resources.
- *CA-3 (No Architectural Properties Affected)*: This site is a natural area within Magruder Branch Stream Valley Park and includes no architectural resources.
- *RFP-1 (No Architectural Properties Affected)*: Includes multiple MIHP resources, all of which have been evaluated and determined not eligible, demolished, or both. The only remaining resource, the Bond Property (PG:60-10), was determined not eligible in November 2001. The Turner/Bond Family Cemetery (PG:60-2) was relocated to Union Cemetery in the 1980s by the Donaldson Funeral Home of Laurel; the cemetery location was field checked by MDOT SHA as below and confirmed to have been completely destroyed by gravel mining.
- *RFP-4 (No Architectural Properties Affected)*: North of Greenock Road, Wilson Owens Branch passes through the golf course of the 1990 Cannon Country Club. A horse shed and fence at 5563 Greenock Road are within an area of proposed grading; however, these structures were constructed after 1981 (according to historical aerials). South of Greenock Road, the work will be confined to wooded areas along the stream bank, and the pre-1978 resources at 5461 and 5339 Greenock Road will not be affected by stream access areas.
- *AN-6 and AN-7 (No Adverse Effect to Architectural Properties)*: These sites include the Beltsville Agricultural Research Center (BARC; PG:62-14), which is listed in the NRHP under Criteria A and C. The restoration of the existing stream will occur within a small portion of the 6500-acre resource and will not introduce new visual or physical elements out of character with the surrounding agricultural landscape; furthermore, no buildings or structures associated with BARC are within the APE. MDOT SHA's proposed stream restoration activities will not alter the characteristics that qualify BARC for the NRHP and do not meet the requirements of 36 CFR §800.5(1), Criteria of Adverse Effect.

MDOT SHA will undertake additional architectural historic property identification efforts at the remaining sites within the expanded APE, and the results will be coordinated during future consultation.

Ms. Elizabeth Hughes and Ms. Julie Langan Page Seven

Archaeology

Maryland

The Study has identified proposed locations of stream restoration and mitigation, wetland creation, and fish passage improvements at eight sites on public lands and eight sites being developed on private lands by design consultants. MDOT SHA archaeologist Richard Ervin assessed the archaeological potential of the public and private mitigation sites, and additional archaeological investigations are being planned as follows. MDOT SHA will provide the results of these investigations when they are available.

MDOT SHA proposes the following archaeological evaluation approaches to the mitigation locations:

Mitigation Site	County	Proposed Work
AN-6 Paint Branch	PG	Phase I archaeology will be undertaken at this site on BARC
Fish Passage, South		property; it is considered to have high archaeological potential
Farm		based on prior sites recorded close to, but outside the LOD,
		and a favorable topographic setting.
AN-7 Paint Branch,	PG	Phase I archaeology will be undertaken at this site on BARC
South Farm		property, which is considered to have high archaeological
		potential based on prior sites recorded close to and within
		the LOD, and a favorable topographic setting. One site is
		recorded within the LOD: 18PR113 is a precontact short-term
		resource procurement site, and its status will be evaluated as
		part of the Phase I.
PA-1 Back Branch	PG	Phase I archaeological recordation will be undertaken at
		18PR605, the Chesapeake Beach Railway. Most of the
		remaining portions of the mitigation site are considered to
		have low archaeological potential based on prior disturbance
		and poorly drained soils. However, limited Phase IA
		archaeological survey will be done in undisturbed, well-
		drained, high potential portions of the LOD.
RFP-3 Tuscarora	FR	Phase I archaeology will be undertaken based on high
Creek (Hope Site)		archaeological potential. One possible archaeological site is
		within the LOD, an Archaic Period quad file site BUCKEY-
		QF02. One standing structure is recorded in the survey area,
		the Hebb-Kline Farmstead (F-1-202).
RFP-4 Cabin-	AA	Phase I archaeology will be undertaken at portions of the site
Branch (Bristol),		that are considered to have high archaeological potential based
Surplus Area,		on prior sites recorded nearby, and favorable topographic
Surplus Streams		setting.

Ms. Elizabeth Hughes and Ms. Julie Langan Page Eight

RFP-6 Mill Swamp Cr	СА	Phase I archaeology will be undertaken at portions of the site that are considered to have high archaeological potential based on favorable topographic setting. No sites are recorded in the LOD, but numerous sites have been recorded nearby,
		especially near the confluence of Pomonkey Creek and the Potomac River. One of these is 18CH73, a large pre-contact period site along the Potomac River 0.8 miles southwest of the LOD. Historic structures are shown in and near the project
		area on historic maps.
RFP-1 Indian Creek Tributaries at Konterra	PG	Based on prior disturbance, no further work is warranted at this time. The proposed LOD has been destroyed by sand and gravel quarrying. The Turner/Bond Family Cemetery (PG:60- 2) was within Mitigation Area 5, located adjacent to but outside the proposed design. It was situated on a bluff overlooking the stream and its floodplain, but the cemetery has been moved. Its location has been destroyed by sand and gravel quarrying, as verified by a field visit by MDOT SHA. MDOT SHA will monitor project plans as the design progresses.
RFP-2 Cabin	MO	Based on prior disturbance and low archaeological potential,
Branch Gaithersburg quad		no further work is warranted at this time. Aerial imagery shows that the site has been disturbed by construction of a
Galuleisburg quad		golf course. Most of the LOD is on frequently flooded soils
		within the active stream floodplain, or slopes steeper than
		15%, settings where significant archaeological resources are
		not expected to occur. MDOT SHA will monitor project
		plans as the design progresses.
RFP-5 Henson Creek (Hovermale)	PG	Based on prior disturbance, no further work is warranted at this time. Most of the project is within areas of Urban land where significant archaeological resources are unlikely to
		occur. One standing structure is recorded in the survey area:
		Hovermale's Tastes Best Ice Cream (PG:80-25). No structures
		are depicted on historic maps (PG Co 1861; USGS East
		Washington 1886, Washington Vicinity 1917). MDOT SHA
AN-1 Crabbs	МО	will monitor project plans as the design progresses. Based on low archaeological potential, no further work is
Branch		warranted at this time. The LOD would mostly be confined to
		areas immediately adjacent to the stream channel, where
		significant archaeological resources are unlikely to occur.
		MDOT SHA will monitor project plans as the design
		progresses. Site 18PR320 (a Late Archaic short-term site) is
		documented approximately 1800 feet upstream of the proposed stream site.

Ms. Elizabeth Hughes and Ms. Julie Langan Page Nine

AN-3 Northwest	MO	Based on low archaeological potential and the negative results
Branch Pebblestone		U 1 U
		of prior survey, no further work is warranted at this time.
Dr.		Prior archaeological work indicates that the LOD is largely
		limited to terrain along Rolling Stone Creek that would have
		been too wet and low for occupation (Wagner 2014:131; in
		Mikolik and Reed [2014]). MDOT SHA will monitor project
		plans as the design progresses. The Bonifant Cemetery on
		North Sherwood Forest Lane, about 750 feet northwest of the
		stream, would not be impacted by the current design. Site
		18MO596 (Late Archaic) is recorded approximately 2000 feet
		to the west of the study area.
CA-2 Lower	MO	Based on low archaeological potential, no further work is
Magruder Branch		warranted at this time. The results of prior archaeological
		survey at the adjacent SC-19 mitigation site (Emory 2011)
		suggest that the APE of CA-2, Lower Magruder Branch, is too
		wet for habitation, and is unlikely to contain significant
		archaeological resources. MDOT SHA will monitor project
		plans as the design progresses.
CA-3 Upper	MO	Based on low archaeological potential, no further work is
Magruder Branch		warranted at this time. The results of prior archaeological
		survey at the nearby SC-19 mitigation site (Emory 2011)
		suggest that the APE of CA-3, Lower Magruder Branch, is too
		wet for habitation, and is unlikely to contain significant
		archaeological resources. MDOT SHA will monitor project
		plans as the design progresses.
CA-5 Seneca Creek	MO	Based on low archaeological potential, no further work is
Tributary		warranted at this time. The LOD is mostly confined to areas
		of occasionally flooded soils on the active floodplain, or
		slopes greater than 15%. MDOT SHA will monitor project
		plans as the design progresses.
		pluis us the design progresses.

MDOT SHA noted several locations requiring additional archaeological study in our January 10, 2020 letter, and those will continue to be proposed as actions to be completed under the proposed Programmatic Agreement. To the extent feasible, limited additional investigations are being conducted at two cemetery locations, the Montgomery County Poor Farm and the Morningstar Tabernacle No. 88 Moses Hall and Cemetery. Preliminary mapping and recordation is underway at the Morningstar Tabernacle No. 88 Moses Hall and Cemetery to identify and record known interments, possible grave sites and depressions, and formal and informal grave markers. The foundation of the lodge building was also partially mapped. Completion of this initial work is pending required legal access to clear bamboo that obscures portions of the cemetery property. The technical report of the results of this work will be provided when it is available; MDOT

Ms. Elizabeth Hughes and Ms. Julie Langan Page Ten

SHA will continue consultation including appropriate consulting parties on additional work expected beyond this surface mapping.

Virginia

No changes to the project, including the APE or effects assessments within Virginia are included in this letter, and it is informational for DHR, although any comments are welcome. MDOT SHA, National Park Service, and DHR will continue to coordinate on the outstanding eligibility and effects issues related to the George Washington Memorial Parkway (GWMP) and archaeological sites within the GWMP park boundaries under separate cover. MDOT SHA has requested an eligibility determination from the Keeper of the National Register regarding the proposed Dead Run Ridges Archaeological District in Fairfax County.

Ongoing Preliminary Engineering

For the overall project, MDOT SHA may require geotechnical borings or other minimally invasive preliminary engineering studies as part of project development prior to completion of Section 106 review. Consistent with MDOT SHA's statewide programmatic agreement, MDOT SHA will ensure cultural resources staff review proposed boring locations to avoid impacts to known archaeological sites. Geotechnical borings are assumed to have minimal potential to affect historic properties, and may inform on the potential for deeply buried surfaces within the LOD. For borings occurring outside MDOT SHA right-of-way, MDOT SHA will coordinate as appropriate with land-managing agencies on such borings.

MDOT SHA respectfully requests any comments on the revised APE, review by MHT of the enclosed information supporting the analysis, and concurrence on the following determinations:

- The Morningstar Tabernacle No. 88 Moses Hall and Cemetery is eligible for the NRHP and will be adversely affected
- The B&O Railroad, Metropolitan Branch, as revised, continues to be eligible for the NRHP but will not experience an adverse effect
- The Forest Glen Tower is **not** eligible for the NRHP
- There will be no adverse effect to the NRHP-eligible properties in Attachment 3, Table 4
- Properties in Attachment 3, Table 2 will experience an adverse effect
- Properties in Attachment 3, Table 3 should be subject to provisions of the proposed Programmatic Agreement to avoid, minimize or mitigate potential adverse effects
- No historic properties will be affected within the expanded APE at the following proposed mitigation sites: AN-1, AN-3, CA-2, CA-3, and RFP-1 (Table 5, Attachment 3).

We request the above responses from MHT by **August 24, 2020**. We look forward to working with the respective State Historic Preservation Offices and additional consulting parties on continued development of the proposed Programmatic Agreement for the MLS undertaking.

Ms. Elizabeth Hughes and Ms. Julie Langan Page Eleven

Please feel free to contact Steve Archer, MDOT SHA Cultural Resources Team Leader at 410-545-8508 or <u>sarcher@mdot.maryland.gov</u> with any questions or information needs on this project.

Sincerely,

Digitally signed by Steve Archer Sha Adobe Acrobat version: 2017.011.30171

Julie M. Schablitsky for Chief Archaeologist/Assistant Division Chief Environmental Planning Division

Attachments

cc:

Mr. Marc Holma, Virginia DHR
Ms. Jeanette Mar, Environmental Manager, FHWA Maryland Division
Mr. Tony Opperman, VDOT
Ms. Mandy Ranslow, ACHP
Mr. John Simkins, FHWA Virginia Division
Mr. Steve Archer, MDOT SHA-EPLD
Ms. Lisa B. Choplin, DBIA, Director, I-495 & I-270 P3 Office, MDOT SHA
Mr. Richard Ervin, MDOT SHA-EPLD
Mr. Jeffrey Folden, P.E., DBIA, Deputy Director, I-495 & I-270 P3 Office, MDOT SHA
Mr. Matt Manning, MDOT SHA-EPLD
Dr. Julie Schablitsky, MDOT SHA-EPLD
I-495 & I-270 MLS Section 106 Consulting Parties

-For Maryland Historical Trust Use Only-Concurrence with the MDOT State Highway Administration's Determination(s) of Eligibility and/or Effects

Project Number: AW073A11MHT Log No.Project Name: I-495 & I-270 Managed Lanes Study (MLS)County: Montgomery and Prince George'sLetter Date: July 23, 2020

The Maryland Historical Trust has reviewed the documentation attached to the referenced letter and concurs with the MDOT State Highway Administration's determinations as follows:

Appropriate Area of Potential Effects (Attachment 1)

- [] Concur
- [] Do Not Concur

Eligibility (as noted in the Eligibility Table [Attachment 3]):

- [] Concur
- [] Do Not Concur

Effect (as noted in the Effects Table [Attachment 3]):

-] No Properties Affected
- [] No Adverse Effect
- [] Conditioned upon the following action(s) (see comments below)
 -] Adverse Effect

Comments:

By:

MD State Historic Preservation Office/ Maryland Historical Trust

Date

Return by U.S. Mail or Facsimile to: Dr. Julie M. Schablitsky, Assistant Division Chief, Environmental Planning Division, MDOT State Highway Administration, P.O. Box 717, Baltimore, MD 21203-0717 Telephone: 410-545-8870 and Facsimile: 410-209-5046 A_Proj Number: 11729

Attachment 3

#dHIW	Name	Type	SHA NR Det.	SHPO Concurrence	Remarks
M: 37-16	B&O Railroad, Metropolitan Branch	Structure	Remains Eligible	Requested 7/2020	Updated DOE provides additional information that expands upon previous surveys (first surveyed in 1979 and determined eligible in October 2000) to clarify the period of significance, revise the boundary, and provide a list of contributing and noncontributing resources.
M: 31-81	Forest Glen Tower	Structure	Not Eligible	Requested 7/2020	Cold War-era air raid siren tower lacks integrity
M: 35-212	Morningstar Tabernacle No. 88 Moses Hall and Cemetery	District	Eligible	Requested 7/2020	Significant under Criteria A for its association with the African American community in Cabin John and under Criterion C for its example of a vernacular African American cemetery. Meets Criteria Consideration D.

Table 2: Properties Experiencing an Adverse Effect

Remarks	Eligible	Eligible
NRHP Criteria	A	A, C, Criteria Consideration D
Period of Significance	1955-1962	1887-1973
SHPO Concurrence	Requested 7/2020	Requested 7/2020
Impact	Adverse	Adverse
Type	District	Landscape
Name	Carsondale	Morningstar Tabernacle No. 88 Moses Hall and Cemetery
MIHP#/DHR#	PG:73-36	M: 35-212

Table 3: Properties Where Effects Cannot Be Fully Determined

MIHP#/DHR#	Name	Type	Impact	SHPO Concurrence	Period of Significance	NRHP Criteria	Remarks
M: 29-59	Carderock Springs Historic District	District	Effects Cannot Be Fully Determined	Concurred 3/2020	1962-1967	A, C	Listed
M: 29-39	Gibson Grove A.M.E. Zion Church	Building	Effects Cannot Be Fully Determined	Concurred 3/2020	1923	A, Criteria Consideration A	Eligible
M: 32-5	Polychrome Historic District	District	Effects Cannot Be Fully Determined	Concurred 3/2020	1934-1935	A, C	Listed

Table 4: Properties Experiencing No Adverse Effect

MIHP#/DHR#	Name	Type	Impact	SHPO Concurrence	Period of Significance	NRHP Criteria	Remarks
M: 37-16	B&O Railroad, Metropolitan Branch	Structure	No Adverse	Requested 7/2020	1873-1945	A, C	Eligible; project will avoid contributing resources
PG:62-14	Beltsville Agricultural Research Center (BARC)	District	No Adverse	Requested 7/2020	Not established		Listed; stream restoration
M: 31-7	Capitol View Park Historic District	District	No Adverse	Requested 7/2020	1887-1941	A, C	Eligible; project will avoid contributing resources
PG:76A-22	Suitland Parkway	District	No Adverse	Requested 7/2020	1942-1944	A, C	Listed
M: 29-49	Washington Aqueduct	Structure	No Adverse	Requested 7/2020	1853-1939	A, C	Listed (NHL); project will avoid below-ground impacts

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Table 5:

	Remarks			Within Beltsville Agricultural Research Center (PG:62-14)	Within Beltsville Agricultural Research Center (PG:62-14)										
	Effect	NPA	NPA	TBD	TBD	NPA	NPA	TBD	TBD	NPA	TBD	TBD	TBD	TBD	TBD
	Archaeology	Low potential; no further work is warranted	Low potential, negative results of prior survey; no further work is warranted	Phase I archaeology will be undertaken	Phase I archaeology will be undertaken	Low potential, negative results of prior survey; no further work is warranted	Low potential, negative results of prior survey; no further work is warranted	Low potential; no further work is warranted	Phase I archaeology will be undertaken	Prior disturbance; no further work is warranted	Prior disturbance and low potential; no further work is warranted	Phase I archaeology will be undertaken	Phase I archaeology will be undertaken	Prior disturbance; no further work is warranted	Phase I archaeology will be undertaken
n Site Summary	Architecture	No architectural resources present	No architectural resources present	No adverse effect	No adverse effect	No architectural resources present	No architectural resources present	Additional evaluation to be completed	Additional evaluation to be completed	No architectural resources present	Additional evaluation to be completed	Additional evaluation to be completed	No architectural resources present	Additional evaluation to be completed	Additional evaluation to be completed
Table 5: Stream and Wetland Mitigation Site Summary	County	Montgomery	Montgomery	Prince George's	Prince George's	Montgomery	Montgomery	Montgomery	Prince George's	Prince George's	Montgomery	Frederick	Anne Arundel	Prince George's	Calvert
Table 5: Stre	Site Number	1-NA	AN-3	AN-6	AN-7	CA-2	CA-3	CA-5	1-A9	RFP-1	RFP-2	RFP-3	RFP-4	RFP-5	RFP-6

Larry Hogan, Governor Boyd Rutherford, Lt. Governor



Maryland DEPARTMENT OF PLANNING MARYLAND HISTORICAL TRUST

September 4, 2020

Dr. Julie M. Schablitsky MDOT State Highway Administration 707 North Calvert Street Baltimore, MD 21202

Re: I-495 & I-270 Managed Lanes Study (MLS) Montgomery and Prince George's Counties, Maryland MDOT SHA Project No. AW073A11

Dear Dr. Schablitsky:

Thank you for providing the Maryland Historical Trust (Trust), the Maryland State Historic Preservation Office, with additional information regarding the above-referenced undertaking. The Maryland Department of Transportation State Highway Administration's (MDOT SHA) submittal represents ongoing consultation to assess the project's effects on historic properties, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, and the Maryland Historical Trust Act of 1985, as amended, State Finance and Procurement Article §§ 5A-325 and 5A-326 of the Annotated Code of Maryland. Trust staff have conducted a thorough review of the materials and we are writing to provide our comments and concurrence.

Revised Area of Potential Effects (APE): Based on ongoing design development, MDOT SHA has expanded the undertaking's APE to include potential environmental mitigation sites and additional buffer areas in the vicinity of the American Legion Bridge. The Trust agrees that the MDOT SHA's redefined APE encompasses the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties.

Additional Identification and Evaluation of Historic Properties within the APE: MDOT SHA conducted additional assessments of the APE to identify historic properties. Determination of Eligibility (DOE) Forms were prepared for two newly identified architectural resources and an existing DOE was updated to identify the property's areas of significance.

The Trust concurs with MDOT SHA that the following properties are <u>eligible</u> for listing in the National Register:

MIHP No. M: 35-212	Morningstar Tabernacle No. 88 Moses Hall and Cemetery This property is eligible for the National Register under Criteria A and C as the site of a 19 th century African American benevolent society and cemetery.
MIHP No. M: 37-16	B&O Railroad, Metropolitan Branch The Metropolitan Branch of the B&O Railroad was determined eligible in 2000. The Trust concurs with the MDOT SHA's updated documentation to identify a period of significance, National Register boundary, and contributing/non-contributing features.

Dr. Julie M. Schablitsky I-495 & I-270 Managed Lanes Study (MLS) Page 2

The Trust concurs with MDOT SHA that the following property is not eligible for listing in the National Register:

MIHP No. M: 31-81 Forest Glen Tower The Trust agrees that the steel lattice tower lacks integrity and is not eligible for National Register-listing.

The potential for significant archeological resources was assessed by MDOT SHA within the expanded APE, including the environmental mitigations sites. We agree with MDOT SHA's recommendations on Pages 7-9 of your letter that additional Phase I investigations are warranted for several environmental mitigation areas. We look forward to receiving the results of this work, along with the analysis of several other locations requiring archeological study as noted in MDOT SHA's 10 January 2020 letter, as project planning continues.

Revised Assessment of Effects: The Trust concurs with MDOT SHA's determination that the overall proposed undertaking will have an <u>adverse effect</u> on historic properties, including archeological properties, in Maryland. Furthermore, the Trust agrees with the following specific findings stated in MDOT SHA's submittal letter dated 23 July 2020 and accompanying attachments:

- In addition to the properties noted as adversely affected in our previous correspondence, we agree that the undertaking will also adversely affect the Carsondale Historic District (MIHP No. PG:73-36) and the Morningstar Tabernacle No. 88 Moses Hall and Cemetery (MIHP No. M: 35-212).
- We agree that the undertaking may affect the historic properties listed in Table 3 (Attachment #3) and further consultation will be needed during design development to consider and address effects.
- We concur that the undertaking will have no adverse effect on the historic properties listed in Table 4 (Attachment #3).

The Trust appreciates MDOT SHA's robust and continuous coordination with our office and other consulting parties in accordance with Section 106. We look forward to working with your office as the project advances to develop and refine avoidance and minimization efforts.

If you have questions or need further assistance, please contact Tim Tamburrino (for historic structures) at <u>tim.tamburrino@maryland.gov</u> or Beth Cole (for archeology) at <u>beth.cole@maryland.gov</u>. Thank you for providing us this opportunity to comment.

Sincerely,

Elizabeth Hughes Director/State Historic Preservation Officer EH/BC/TJT/202003475

cc: Caryn Brookman (SHA) Jeanette Masr (FHWA) Rebeccah Ballo (Montgomery County Planning) Joey Lampl (Montgomery County Parks) Sarah Rogers (Heritage Tourism Alliance of Montgomery County, Inc.) Howard Berger (Prince George's County Planning Department) Aaron Marcavitch (Anacostia Trails Heritage Area, Inc.) Friends of Moses Hall



United States Department of the Interior

FISH AND WILDLIFE SERVICE Chesapeake Bay Ecological Services Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401-7307 Phone: (410) 573-4599 Fax: (410) 266-9127 <u>http://www.fws.gov/chesapeakebay/</u> http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html



April 26, 2022

In Reply Refer To: Project Code: 2022-0036153 Project Name: Cabin Branch Stream Mitigation Bank

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/ executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office

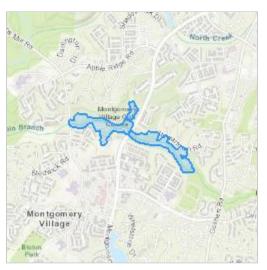
177 Admiral Cochrane Drive Annapolis, MD 21401-7307 (410) 573-4599

Project Summary

•	•
Project Code:	2022-0036153
Event Code:	None
Project Name:	Cabin Branch Stream Mitigation Bank
Project Type:	Mitigation Development/Review - Mitigation or Conservation Bank
Project Description:	The project entails a proposed stream compensatory mitigation bank
	consisting of stream restoration
	activities along approximately 7,000 linear feet of Cabin Branch east of
	Watkins Mill Road and terminating
	just west of Centerway Local Park in Montgomery County, Maryland.

Project Location:

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/@39.17871265,-77.20419629049644,14z</u>



Counties: Montgomery County, Maryland

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis	Threatened
No critical habitat has been designated for this species.	
This species only needs to be considered under the following conditions:	
 Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A 	
SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT	
EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule	
Consistency key	
Species profile: <u>https://ecos.fws.gov/ecp/species/9045</u>	
Species profile: https://ecos.fws.gov/ecp/species/9045	STATUS
Insects	STATUS Candidate
Insects NAME	
Insects NAME Monarch Butterfly Danaus plexippus	
Insects NAME Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species.	
Insects NAME Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:	
Insects NAME Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: • The monarch is a candidate species and not yet listed or proposed for listing. There are	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of</u> <u>Engineers District</u>.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT <u>HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML</u> OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPaC User Contact Information

Agency:Maryland State Highway AdministrationName:Laura CallensAddress:6958 Aviation Blvd, Suite CCity:Glen BurnieState:MDZip:21061EmailIcallens@res.usPhone:2402066732

Lead Agency Contact Information

Lead Agency: Maryland State Highway Administration

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

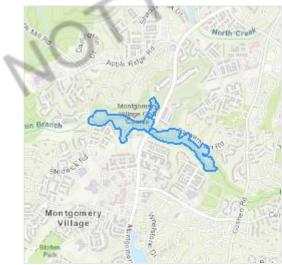
Project information

NAME

Cabin Branch Stream Mitigation Bank

LOCATION

Montgomery County, Maryland



DESCRIPTION

Some(The project entails a proposed stream compensatory mitigation bank consisting of stream restoration

activities along approximately 7,000 linear feet of Cabin Branch east of Watkins Mill Road

and terminating just west of Centerway Local Park in Montgomery County, Maryland.)

Local office

Chesapeake Bay Ecological Services Field Office

\$ (410) 573-4599 (410) 266-9127

177 Admiral Cochrane Drive Annapolis, MD 21401-7307

http://www.fws.gov/chesapeakebay/ und Roconsultation http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

1

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

- 1. Log in to IPaC.
- 2. Go to your My Projects list.
- 3. Click PROJECT HOME for this project.
- 4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the <u>Ecological Services Program</u> of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact <u>NOAA Fisheries</u> for <u>species under their jurisdiction</u>.

- 1. Species listed under the <u>Endangered Species Act</u> are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the <u>listing status page</u> for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
- 2. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of

Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found	Threatened
This species only needs to be considered if the following condition applies:	
 Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: 	
EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE	1
under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key	<101
No critical habitat has been designated for this species. <u>https://ecos.fws.gov/ecp/species/9045</u>	TAT
nsects	IL'
NAME	STATUS
Monarch Butterfly Danaus plexippus	Candidate
Wherever found	Candidate
This species only needs to be considered if the following	
condition applies:	
 condition applies: The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: 	
 condition applies: The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 	
 condition applies: The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: 	

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act^{1} and the Bald and Golden Eagle Protection Act^{2} .

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described <u>below</u>.

- 1. The Migratory Birds Treaty Act of 1918.
- 2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds <u>https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds</u>
- Nationwide conservation measures for birds <u>https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf</u>

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY

	esources
	BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Cerulean Warbler Dendroica cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <u>https://ecos.fws.gov/ecp/species/2974</u>	Breeds Apr 28 to Jul 20
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

Wood Thrush Hylocichla mustelina

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

- 1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
- 2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum
- probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
- 3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (=)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

				obabilit				ling sea		survey o		no data
SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.) Cerulean Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	<u></u> ++++	+++++	++++	Image: A state of the state			+++++	+++++			+ ++++	++++

÷.

Kentucky Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	
Prairie Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	
Prothonotary Warbler BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	
Red-headed Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	

Rusty Blackbird BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA) Wood Thrush ┼┼┼┼ ┼┼┼┼ ┼┼┼┼ ┼┼║║ ║║║║ **BCC Rangewide** (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

<u>Nationwide Conservation Measures</u> describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. <u>Additional measures</u> or <u>permits</u> may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS <u>Birds of Conservation Concern (BCC)</u> and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the <u>Avian Knowledge</u> <u>Network (AKN)</u>. The AKN data is based on a growing collection of <u>survey</u>, <u>banding</u>, <u>and citizen science</u> <u>datasets</u> and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (<u>Eagle Act</u> requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the <u>AKN Phenology Tool</u>.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the <u>Avian Knowledge Network (AKN)</u>. This data is derived from a growing collection of <u>survey</u>, <u>banding</u>, <u>and</u> <u>citizen science datasets</u>.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: <u>The Cornell Lab of Ornithology All</u> <u>About Birds Bird Guide</u>, or (if you are unsuccessful in locating the bird of interest there), the <u>Cornell Lab of</u> <u>Ornithology Neotropical Birds guide</u>. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

- 1. "BCC Rangewide" birds are <u>Birds of Conservation Concern</u> (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
- 2. "BCC BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
- 3. "Non-BCC Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the <u>Eagle Act</u> requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the <u>Northeast Ocean Data</u> <u>Portal</u>. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the <u>NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird</u> <u>Distributions and Abundance on the Atlantic Outer Continental Shelf</u> project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the <u>Diving Bird Study</u> and the <u>nanotag studies</u> or contact <u>Caleb Spiegel</u> or <u>Pam Loring</u>.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to <u>obtain a permit</u> to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the <u>National Wildlife Refuge</u> system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to <u>NWI wetlands</u> and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local <u>U.S. Army Corps of</u> <u>Engineers District</u>.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the <u>NWI map</u> to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or

4/27/22, 8:22 AM

IPaC: Explore Location resources

products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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							<u>S1</u>	REAM M		ION CA	ALCULA						
ACKGR rps Proje oject Nam			tionbin Branch		Corps PM: Date:					3/10/2022		Total S	itream Gai	ns (Funct	ional Fee	t)	5583
t/Long:)' 43", W 77D 12' 08	"	Sponsor:		MDOT SHA	1									0000
ounty:		Montgom	ery		Collaborators		HGS, LLC/	MLA									
			Raw Ch	ange in Re	ach Value (Fu	nctional Fe	eet)	_				Stream M	tigation Adjus	tments		Stream Gains	
each Name	Physiographic Region	Evaluation	Activity.	Resource Type	Length (Feet)	<u>Stream</u> Quality	<u>Channel</u> <u>Ihread</u>	<u>Drainage Area</u> (sqmi)	Raw Reach Value (Functional Feet)	Raw Change in Value (Functional Feet)	<u>Site Sensitivity</u>	Site Protection	Bu	ffer Adjustment	t	(Functional Feet)	REMARKS
	Piedmont	Existing	Preliminary Resource	Perennial	4670		Primary	4.33	2895		1	Easement	Evaluation	Buffer Area (Acres)	Buffer Quality		
abin Branch	Fleamoni	Existing	Evaluation	Wadeable	4670	35%	1	1.77	2075	3653	0.1	0.03	Existing Buffer	6.08	63%	4236	
	Piedmont	Proposed	Restoration/Enhancement	Perennial Wadeable	4680	79%	Primary	4.33	6548		<u>374</u>	<u>123</u>	Proposed Buffer Functional	6.08 I Feet	94%		
	Piedmont	Existing	Preliminary Resource Evaluation	Intermittent	0		Primary	0.15	0		1	Easement	Evaluation	Buffer Area (Acres)	Buffer Quality	_	
Tributary 1	Piedmont	Proposed	Restoration/Enhancement	Intermittent	497.5	14%	Primary	0.48	- 190	<u>190</u>	0.1 20	0.03 Z	Existing Buffer Proposed Buffer	0.58 0.58	60%	225	
						80%	1	0.48					Functional	l Feet Buffer Area	2		
Tributary 2	Piedmont	Existing	Preliminary Resource Evaluation	Intermittent	0	14%	Primary 1	0.02	0	154	0.1	Easement 0.03	Evaluation Existing Buffer	(Acres) 0.54	Buffer Quality 60%	184	
Inbuidry 2	Piedmont	Proposed	Restoration/Enhancement	Intermittent	471		Primary	0.02	154	134	<u>16</u>	<u>5</u>	Proposed Buffer Functional	0.54	94%	104	
	Piedmont	Existing	Preliminary Resource Evaluation	Intermittent	0	80%	Primary	0.08	0		1	Easement	Evaluation	Buffer Area (Acres)	Buffer Quality		
Tributary 3	Piedmont	Proposed	Restoration/Enhancement	Intermittent	723.6	14%	Primary	0.41	237	237	0.1 <u>25</u>	0.03 <u>8</u>	Existing Buffer Proposed Buffer	0.83 0.83	60% 94%	283	
	riedition	Toposed	,	internitient	7 23.0	80%	, 1	0.41	237				Functional	l Feet Buffer Area	13		
Tributary 4	Piedmont	Existing	Preliminary Resource Evaluation	Intermittent	713	39%	Primary	0.13	125	168	0.1	Easement 0.03	Evaluation Existing Buffer	(Acres) 0.93	Buffer Quality 60%	206	
	Piedmont	Proposed	Restoration/Enhancement	Intermittent	812.6	80%	Primary	0.13 0.45	293		<u>18</u>	<u>6</u>	Proposed Buffer	0.93	94%		
	Piedmont	Existing	Preliminary Resource Evaluation	Intermittent	0		Primary	0.06	0		0,1	Easement	Evaluation	Buffer Area (Acres)	Buffer Quality		
Tributary 5	Piedmont	Deserved	Restoration/Enhancement	Intermittent	38.6	14%	Primary	0.41	13	13	<u>0.1</u>	0.03 <u>0</u>	Existing Buffer Proposed Buffer	0.04	60% 94%	15	
	Fleamon	Proposed		merminen	38.0	80%	1	0.41	13			<u>v</u>	Functional	l Feet Buffer Area	1		
abin Branch	Piedmont	Existing	Preliminary Resource Evaluation	Perennial Wadeable	252	35%	Primary	4.3	156		0.1	Improved Protection -0.03	Evaluation Existing Buffer	Acres (Acres) 0.33	Buffer Quality 63%		
(PEPCO)	Piedmont	Proposed	Restoration/Enhancement	Perennial Wadeable	280	33%	Primary	4.3	391	235	24	<u>-0.03</u>	Proposed Buffer Functional	0.33	94%	256	
	Piedmont	Existing	Preliminary Resource	Intermittent	122	79%	p 1 Primary	0.13	21		1	Improved Protection		Buffer Area (Acres)	<u>a</u> Buffer Quality		
ib 4 (PEPCO)	. reamon	LADING	Evaluation	eminelli	122	39%		0.45	21	23	0.1	-0.03	Existing Buffer Proposed Buffer	0.16 0.16	60% 94%	27	
	Piedmont	Proposed	Restoration/Enhancement	Intermittent	123	80%	, 1	0.45	44		3	-1	Functional	l Feet	2		
	Piedmont	Existing	Preliminary Resource Evaluation	Intermittent	0		Primary	0.06	0		1	Improved Protection	Evaluation	Buffer Area (Acres)	Buffer Quality		
b 5 (PEPCO)						14%	Primary	0.41		133	0.1	-0.03	Existing Buffer Proposed Buffer	0.46	60% 94%	150	
	Piedmont	Proposed	Restoration/Enhancement	Intermittent	407			0.41	133		<u>14</u>	-5	Functional	l Feet	z		
	Not Selected	Existing	Preliminary Resource	NA	0				0		0	Select From List	Evaluation	Buffer Area (Acres)	Buffer Quality		
	. tor selected	coming	Evaluation	INA.	0	0%	NA 0	0 FALSE	-	<u>o</u>	0	0	Existing Buffer	(Acres)		NA	

Maryland Stream Mitigation Framework Version 1: Stream Buffer Quality Assessment

Project Name:	RFP-2 Cabin Branch	SBAA (Acres):	6.08
CSBA Name:	Cabin Branch	Infrastructure Area (Acres):	0
Assessor(s):	RC	Wetland Area (Acres):	0
Date:	3/10/2022	Area Credited By Other Prog:	0
Latitude(dec. deg):	39.177353	CSBA (Acres):	6.08
Longitude (dec. deg):	-77.199137	Existing Buffer Quality (%)*:	62.9
Corps Permit Number:		Proposed Buffer Quality (%)*:	94.3

General Notes: Cabin Branch riparian conditions are similar throughout the project site so were scored with a composite score for the entire reach.

General Instructions: Identify your **Stream Buffer Assessment Area** (**SBAA**). The Stream Buffer Assessment Area is the area where the Stream Buffer Quality Assessment Metrics 1 and 2 will occur. The SBAA includes the project area (future conservation easement area) for a given stream reach and any inholdings (Easements/infrastructure, credited wetlands, etc between the SBAA boundary and the stream). The SBAA may not exceed 200 feet from the baseflow channel edge. To determine the **Credited Stream Buffer Area (CSBA)**, subtract the Infrastructure Area and Area Credited by other Programs (TMDL, Wetland Credits, Forest Conservation, etc.) from the SBAA. A CSBA should be selected where vegetation or topography changes significantly. Please use the Wetland Delineation Forms applying the appropriate regional supplement to determine the extent of wetlands in the SBAA and to collect vegetation data. In the metrics below, circle the most applicable metric for your assessed area. Please use the comments box below each metric for any discussion items. Mapping is required showing landscape and project context for the SBAA and CSBA. More information can be found in the **MSMF Version 1: Stream Buffer Assessment Detailed Instructions** . <u>Highlighted cells above are MSMF V.1. Mitigation Calculator input values.</u>

Metrics Applied to Stream Buffer Assessment Area (SBAA)

	Metric 1: % SBAA as wetlands									
Ranges	50%+	30-49%	15-30%	5-15%	0%					
Existing	4	3	3 2 1		0					
Proposed	4	3	2	1	0					
Notes: Only POW within the existing buffer. Areas will be converted to PFO to increase wetlands within the										
buffer area.	buffer area.									
Metric 2: % of SBAA as Utilities/Infrastructure										
Ranges	0	1-5%	5-10%	10-15%	>15%					
Existing	4	3	2	1	0					
Proposed	4	3	2	1	0					
Notes: All ut	Notes: All utilities have been removed from the credit calculations and buffer scores.									
	Metrics Applied to Credited Stream Buffer Area (CSBA)									
	Metri	c 3: Plant Species F	Richness in CSBA (MD)	NAM 2022)						
Ranges	11+	9-10	6-8	2-5	2 or less					

Existing	4	3	2	1	0
Proposed	4	3	2	1	0
•	pric golf course with l	-			
	0	01			
	Metri	c 4: % Canopy Cov	er in the CSBA3 (VA UI	nified 2008)	
Ranges	>60%	30-60%	10%-29%	1-9%	0%
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes: Very	limited existing trees	on the site and ar	e situated primarily alo	ong Cabin Branch and	randomly
	the historic fairways.			0	
		Metric 5: # of Stra	ta in CSBA1 (MDWAM	2022)	
Ranges	4+	3	2	1	0
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:					
Metr	ic 6: Total Cover of h	erbaceous, emerge	ent, and submergent p	olants in CSBA1 (MDW	AM 2022)
Ranges	>75%	51-74%	26-50%	<25%	NA
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes: Sinc	e the golf course has	been out of operat	tion for several years t	here is very little bare	areas outside o
the eroding	stream banks.				
	Metric 7: Invasive	Plant Species (Tot	al Relative % Cover) in	CSBA1 (MDWAM 202	22)
Ranges	<1%	1-10%	11-25%	26-50%	51-100%
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes: Typic	cal invasive species fo	und throughout th	e region. Due to the la	arge watershed of Cab	in Branch it will
be very diffi	icult to maintain inva	sive species cover b	pelow 1%.		
	Metric 8: Mircotopg	raphy and Woody	Debris in CSBA 1,2 (MI	OWAM 2022 & MDE 2	021)
	Woody debris and topographic deviations widespread, covering >15% of the CSBA. Multiple types of woody debris (Snags, downed wood, etc)	Woody debris and topographic deviations common, covering 10-15% of CSBA. Woody debris may lack diversity.	Occasional woody debris and topographic deviations present (Covering 5-9% CSBA) and/or woody debris lacking diversity.	Woody debris and topographic deviations very limited (<5% CSBA coverage) and/or Either woody debris or topographic deviations absent or scarce.	Woody debris and deviations in topography very scarce or not present
Existing	4	3	2	1	0
	4	3	2	1	0
•		arian condition du	e to the historic land u	ise as a golf course and	d the area being
•	ted diversity in the rip				
Notes: Limit	over those years.				
Notes: Limit	over those years. Metric 9: He	eight Above Neare	st Drainage in CSBA4 (Nobre et al. 2011)	
	over those years.				>6 ft
Notes: Limit maintained	over those years. Metric 9: He	eight Above Neare	st Drainage in CSBA4 (Nobre et al. 2011)	

Maryland Stream Mitigation Framework Version 1:	
Stream Buffer Quality Assessment	

Project Name:	RFP-2 Cabin Branch	SBAA (Acres):	2.8
CSBA Name:	Tributaries	Infrastructure Area (Acres):	0
Assessor(s):	RC	Wetland Area (Acres):	0
Date:	3/10/2022	Area Credited By Other Prog:	0
Latitude(dec. deg):	39.177353	CSBA (Acres):	2.8
Longitude (dec. deg):	-77.199137	Existing Buffer Quality (%)*:	60
Corps Permit Number:		Proposed Buffer Quality (%)*:	94.3

General Notes: Tributaries are primarily piped so scored the surrounding buffer in the vicinity of the piped channel.

General Instructions: Identify your **Stream Buffer Assessment Area** (**SBAA**). The Stream Buffer Assessment Area is the area where the Stream Buffer Quality Assessment Metrics 1 and 2 will occur. The SBAA includes the project area (future conservation easement area) for a given stream reach and any inholdings (Easements/infrastructure, credited wetlands, etc between the SBAA boundary and the stream). The SBAA may not exceed 200 feet from the baseflow channel edge. To determine the **Credited Stream Buffer Area (CSBA)**, subtract the Infrastructure Area and Area Credited by other Programs (TMDL, Wetland Credits, Forest Conservation, etc.) from the SBAA. A CSBA should be selected where vegetation or topography changes significantly. Please use the Wetland Delineation Forms applying the appropriate regional supplement to determine the extent of wetlands in the SBAA and to collect vegetation data. In the metrics below, circle the most applicable metric for your assessed area. Please use the comments box below each metric for any discussion items. Mapping is required showing landscape and project context for the SBAA and CSBA. More information can be found in the **MSMF Version 1: Stream Buffer Assessment Detailed Instructions** . <u>Highlighted cells above are MSMF V.1. Mitigation Calculator input values.</u>

	Metric 1: % SBAA as wetlands									
Ranges	50%+	30-49%	15-30%	5-15%	0%					
Existing	4	3	2	1	0					
Proposed	4	3	2	1	0					
Notes:										
Metric 2: % of SBAA as Utilities/Infrastructure										
Ranges	0	1-5%	5-10%	10-15%	>15%					
Existing	4	3	2	1	0					
Proposed	4	3	2	1	0					
Notes:										
Metrics Applied to Credited Stream Buffer Area (CSBA)										
	Metri	c 3: Plant Species I	Richness in CSBA (MD)	NAM 2022)						
Ranges	11+	9-10	6-8	2-5	2 or less					

Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:	4	5	2	L 1	0
NOLES.					
	Metri	ic 4: % Canopy Cov	er in the CSBA3 (VA U	nified 2008)	
Ranges	>60%	30-60%	10%-29%	1-9%	0%
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:				•	
	-	Metric 5: # of Stra	ta in CSBA1 (MDWAM	2022)	
Ranges	4+	3	2	1	0
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:					
		· · · · ·	ent, and submergent p	-	-
Ranges	>75%	51-74%	26-50%	<25%	NA
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:					
	Metric 7: Invasive	Plant Species (Tot	al Relative % Cover) ir	CSBA1 (MDWAM 202	22)
Ranges	<1%	1-10%	11-25%	26-50%	51-100%
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:	· · · · ·			_	-
	Metric 8: Mircotopg	raphy and Woody	Debris in CSBA 1,2 (MI	OWAM 2022 & MDE 2	021)
	Woody debris and			Woody debris and	
	topographic deviations	Woody debris and	Occasional woody debris	topographic deviations	
Description	widespread, covering	topographic	and topographic	very limited (<5% CSBA	Woody debris and
	>15% of the CSBA.	deviations common,	deviations present	coverage) and/or Either	deviations in
	Multiple types of woody debris (Snags, downed	-	(Covering 5-9% CSBA) and/or woody debris	woody debris or	topography very
	wood, etc)	CSBA. Woody debris may lack diversity.	lacking diversity.	topographic deviations absent or scarce.	scarce or not present
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:			-		<u> </u>
-		-	st Drainage in CSBA4 (I Contraction of the second se	
Ranges	0-2 ft	2.1-3 ft	3.1-4 ft	4.1-6 ft	>6 ft
Existing	4	3	2	1	0
Proposed	4	3	2	1	0
Notes:					

	EXISTING a					EL STREAM			ON-BAS	ED		
Watershed:	Middle Potomac - Catoctin				Rater(s):	R	RC/BW					
Stream:	Cabin Branch				Date:	3/	3/10/2022					
Reach Length:	5008 linear feet				Latitude:		39.177353					
Photo(s):	See Attached				Longitude: -77.199137							
		1				_				0		
Reach ID:	Cabin Branch	<u> </u>				Reach Total E		-	134/170	Quality	/: Ex: 0.35 Pi	rop:0.79
		Functio	on-based F	kapio	a Reach Le	vel Stream Ass		ent				
Assessment Parameter	Measurement Method	d Functioning			Category Functioning-at-Risk					Not Functioning		
Runoff			Strea	m Fı	unction Pyra	amid Level 1 Hy	/drolog	ay				
	1. Concentrated Flow	No potential for concentrated flow/impairments from adjacent land use			Some potential for concentrated flow/impairments to reach restoration site, however, measures are in place to protect resources				Potential for concentrated flow/impairments to reach restoration site and no treatments are in place			
	Existing Condition	10	9	8	7	6	5		4	3	2	1
	Proposed Condition	10	9	8	7	6	5		4	3	2	1
	2. Flashiness	Non-flashy flow regime as a result of rainfall patterns, geology, and soils, impervious cover less than 6%			Semi-flashy flow regime as a result of rainfall patterns, geology, and soils, impervious cover 7 - 15%					Flashy flow regime as a result of rainfall patterns, geology, and soils, impervious cover greater than 15%		
	Existing Condition	10	9	8	7	6	5		4	3	2	1
	Proposed Condition	10	9	8	7	6	5		4	3	2	1
	Stream Function Pyramid Level 1 Hydrology Overall EXISTING Condition F FAR NF Score:7											
	Stream Function Pyram			-			ו F	FAR	NF	Sco	ore:14	
Stream Function Pyramid Level 2 Hydraulics												
tability)	3. Bank Height Ratio (BHR)	<1.20			1.21 - 1.50					>1.50		
	Existing Condition	10	9	8	7	6	5		4	3	2	1
	Proposed Condition	10	9	8	7	6	5		4	3	2	1
	4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams)	>2.2		2.1 - 1.4				<1.4				
alo	Existing Condition	10	9	8	7	6	5		4	3	2	1
plain Connectivity (Vertical Stability)	Proposed Condition	10	9	8	7	6	5		4	3	2	1
	4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	>1.4			1.3 - 1	5 - 1.1			<1.1			
ctiv	Existing Condition	10	9	8	7	6	5		4	3	2	1
ne	Proposed Condition	10	9	8	7	6	5		4	3	2	1
Floodplain Cor	5. Floodplain Drainage	no concentrated flow; runoff is primarily sheet flow; hillslopes < 10%; hillslopes >200 ft from stream; ponding or wetland areas and litter or debris jams are well represented			runoff is equally sheet and concentrated flow (minor gully and rill erosion occurring); hillslopes 10 - 40%; hillslopes 50 - 200 ft from stream; ponding or wetland areas and litter or debris jams are minimally represented					>40%; hillslopes <50 ft		
	Existing Condition	10	9	8	7	6	5		4	3	2	1
	Proposed Condition		9	8	7	6	5		4	3	2	1
	6. Vertical Stability Extent	Stable			Localized Instability				Widespread Instability			
	Existing Condition	10	9	8	7	6	5		4	3	2	1
	Proposed Condition	10	9	8	7	6	5		4	3	2	1
9	Stream Function Pyram	id Level 2	Hydraulics	s Ov	erall EXISTI	NG Condition	F	FAR	NF	Sco	ore:14	
Stream Function Pyramid Level 2 Hydraulics Overall EXISTING Condition F FAR NF Score:14 Stream Function Pyramid Level 2 Hydraulics Overall PROPOSED Condition F FAR NF Score:36												

Lateral Stability Riparian Vegetation (Score =Average of Left and right (Score = Average of Left and bank, max score of 10) Right bank, max score of 10) 22 20 20 20 20 20 20 20 20 20 20 20 20 2	Aleasurement Method Riparian Vegetation one (EPA, 1999, nodified) Left Bank Existing Left Bank Proposed Right Bank Proposed Right Bank Proposed Dominant Bank Erosion tate Potential Existing Condition (Right Bank) Proposed Condition (Right Bank) Proposed Condition (Left bank) Proposed Condition (Left bank) Lateral Stability Extent Existing Condition (Left Bank)	Riparian width o vegeta diversity a activities o invasive s 10 10 10 10 0 Dominate poi BEHI/NB3 L/M, L	zone exter f >100 feet ation comm and density do not imp species not or sparse 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	nds to a ; good nunity /; human act zone; t present 8 8 8 8 8 8 8 8 8 8 8 8 7 7 1, L/L,	Riparian zo composit activities re 7 7 7 7 7 Domina	Functionin el 3 Geomorp dion is dominated greatly impact ze epresented and a 6 6 6 6 6 6 6 6 8 te bank erosion r c Rating: M/L, H/M, Vi 6	hology width of 25-100 by 2 or 3 speci one; invasive sp iter the commun 5 5 5 5 5 3 ate potential is rr M/H, L/Ex, H/L	es; human pecies well hity 4 4 4 4 4 moderate	Riparia a width no ripa to h majori 3 3 3 3 3 3 3 3 3 3 5 8 EHI/ H/Ex,	ot Function an zone exted of <25 feet; irian vegetat uman activity ty of vegetat invasive 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	ends to little c ion du ties; ttion is <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u> <u>1</u>
Lateral Stability Riparian Vegetation (Score =Average of Left and right (Score = Average of Left and bank, max score of 10) 1 6	one (EPA, 1999, nodified) Left Bank Existing Left Bank Proposed Right Bank Proposed Right Bank Proposed Dominant Bank Erosion tate Potential Existing Condition (Right Bank) Proposed Condition (Right Bank) Existing Condition (Left Bank) Proposed Condition (Left Bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	Riparian width o vegeta diversity a activities o invasive s 10 10 10 10 0 minate po BEHI/NBS L/M, L 10 10	zone exter f >100 feet ation comm and density do not imp species not or sparse 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	nds to a ; good iunity ; human act zone; t present 8 8 8 8 sion rate w /VL, L/L, M/VL 8 8	Riparian zo composit activities re 7 7 7 7 Domina BEHI/NBS F	ine extends to a v tion is dominated greatly impact zo gresented and a 6 6 6 6 te bank erosion r c Rating: M/L, M/M, H/L, H/M, Vi	width of 25-100 by 2 or 3 speci one; invasive sp lter the commun 5 5 5 5 5 ate potential is r M/H, L/Ex, H/L H/VL, Ex/VL	es; human pecies well hity 4 4 4 4 moderate , M/VH, M/Ex,	a width no ripa to h majori 3 3 3 3 0 0 min rate BEHI/ H/Ex, Ex/V	of <25 feet; rian vegetat uman activil ty of vegetat invasive 2 2 2 2 2 2 2 1 2 2 2 1 2 2 1 2 2 1 2 2 1 2 1 2 2 1 2 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	i little c ion du ties; ttion is 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Lateral Stability Riparian Vegetation (Score =Average of Left and right (Score = Average of Left and bank, max score of 10) [] [] [] []	one (EPA, 1999, nodified) Left Bank Existing Left Bank Proposed Right Bank Proposed Right Bank Proposed Dominant Bank Erosion tate Potential Existing Condition (Right Bank) Proposed Condition (Right Bank) Existing Condition (Left Bank) Proposed Condition (Left Bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	vidth o vegeta diversity a activities invasive s 10 10 10 10 Dominate po BEHI/NBS L/M, L 10 10 10	f >100 feet ation comm and density do not impy species not or sparse 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	; good junity /; human act zone; t present 8 8 8 sion rate w //L, L/L, M/VL 8 8	composit activities re 7 7 7 7 Domina BEHI/NBS F	tion is dominated greatly impact zc opresented and a 6 6 6 6 te bank erosion r c Rating: M/L, M/M, H/L, H/M, V/	by 2 or 3 speci one; invasive sp Iter the communi- 5 5 5 5 ate potential is r M/H, L/Ex, H/L H/VL, Ex/VL	es; human pecies well hity 4 4 4 4 moderate , M/VH, M/Ex,	a width no ripa to h majori 3 3 3 3 0 0 min rate BEHI/ H/Ex, Ex/V	of <25 feet; rian vegetat uman activil ty of vegetat invasive 2 2 2 2 2 2 2 1 2 2 2 1 2 2 1 2 2 1 2 2 1 2 1 2 2 1 2 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1 ion du ties; tion is 1 1 1 1 1 1 1 1 1 1 1 1 1
Lateral Stability (Score =Average of Left and right bank, max score of 10) [-6	Left Bank Proposed Right Bank Existing Right Bank Proposed . Dominant Bank Erosion (ate Potential Existing Condition (Right bank) Proposed Condition (Left bank) Proposed Condition (Left Bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	10 10 Dominate po BEHI/NB3 L/M, L 10 10	9 9 9 e bank eros tential is lo or S Rating: L /H, L/VH, ! 9 9 9 9	8 8 sion rate w //L, L/L, M//L 8 8	7 7 Domina BEHI/NBS F 7	6 6 te bank erosion r c Rating: M/L, M/M, H/L, H/M, Vi	5 5 ate potential is r M/H, L/Ex, H/L H/VL, Ex/VL	4 4 moderate , M/VH, M/Ex,	3 3 Domin rate BEHI/ H/Ex, Ex/V	2 2 nate bank er potential is or NBS Rating VH/H, Ex/M, H, VH/VH, E	1 1 rosion high J: H/H, , Ex/H Ex/Ex
Lateral Stability (Score =Average of Left and right bank, max score of 10) 01 - 6	Right Bank Existing Right Bank Proposed . Dominant Bank Erosion tate Potential Existing Condition (Right bank) Proposed Condition (Left bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	10 10 Dominate po BEHI/NB3 L/M, L 10 10 10	9 9 9 2 bank eros tential is lo or S Rating: L //H, L/VH, ! 9 9 9 9 9	8 8 sion rate w /VL, L/L, M/VL 8 8	7 7 Domina BEHI/NBS F 7	6 6 te bank erosion r c Rating: M/L, M/M, H/L, H/M, VI	5 5 ate potential is r M/H, L/Ex, H/L H/VL, Ex/VL	4 4 moderate , M/VH, M/Ex,	3 Domin rate BEHI/ H/Ex, Ex/V	2 nate bank er potential is or NBS Rating VH/H, Ex/M, H, VH/VH, E	1 rosion high j: H/H, , Ex/H Ex/Ex
Lateral Stability (Score =Average of Left and right bank, max score of 10) 0	Right Bank Proposed Dominant Bank Erosion Late Potential Existing Condition (Right bank) Proposed Condition (Left bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	10 Dominate po BEHI/NB3 L/M, L 10 10	9 e bank eros or S Rating: L /H, L/VH, ! 9 9 9 9	8 sion rate w /VL, L/L, M/VL 8 8	7 Domina BEHI/NBS F 7	6 te bank erosion r c Rating: M/L, M/M, H/L, H/M, Vi	5 ate potential is r M/H, L/Ex, H/L H/VL, Ex/VL	4 moderate , M/VH, M/Ex,	3 Domin rate BEHI/ H/Ex, Ex/V	2 nate bank er potential is or NBS Rating VH/H, Ex/M H, VH/VH, E	1 rosion high J: H/H, , Ex/H Ex/Ex
9.	. Dominant Bank Erosion tate Potential Existing Condition (Right bank) Proposed Condition (Right Bank) Existing Condition (Left bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	Dominate poi BEHI/NBS L/M, L 10 10	e bank eros tential is lo or S Rating: L J/H, L/VH, I 9 9 9	sion rate w /VL, L/L, M/VL 8 8	Domina BEHI/NBS F 7	te bank erosion r c Rating: M/L, M/M, H/L, H/M, Vi	ate potential is or M/H, L/Ex, H/L H/VL, Ex/VL	moderate , M/VH, M/Ex,	Domin rate BEHI/ H/Ex, Ex/V	nate bank er potential is or NBS Rating VH/H, Ex/M H, VH/VH, E	rosion high I: H/H, , Ex/H Ex/Ex
9.	tate Potential Existing Condition (Right bank) Proposed Condition (Right Bank) Existing Condition (Left bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	BEHI/NBS L/M, L 10 10 10	or S Rating: L _/H, L/VH, I 9 9 9	/VL, L/L, M/VL 8 8	7	Rating: M/L, M/M, H/L, H/M, V	M/H, L/Ex, H/L H/VL, Ex/VL		H/Ex, Ex/V	NBS Rating VH/H, Ex/M H, VH/VH, E	, Ex/H Ex/Ex
9.	(Right bank) Proposed Condition (Right Bank) Existing Condition (Left bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	10 10 10	9 9	8		6	5	4	3	2	1
9.	(Right Bank) Existing Condition (Left bank) Proposed Condition (Left Bank) Lateral Stability Extent Existing Condition	10	9		7				1	4	
9.	(Left bank) Proposed Condition (Left Bank) . Lateral Stability Extent Existing Condition		-	8		6	5	4	3	2	1
9.	(Left Bank) . Lateral Stability Extent Existing Condition	10			7	6	5	4	3	2	1
10	Existing Condition	1	9	8	7	6	5	4	3	2	1
		10	Stable 9	8	7	Localized 6	Instability 5	4	Wide 3	spread Insta	,
	Proposed Condition	10	9	8	7	6	5	4	3	2	1
lete if stream is ephemeral)		banks, rub and large stable hab allow full o potential (are not ne	d logs, und oble, grave rocks, or o bitat and at colonizatior i.e., logs/sr ew fall and i	l, cobble ther stage to n nags that		at high en			lacking	te unstable	
rear		transient)									
if st	Existing Condition Proposed Condition	10 10	9	8	7	6	5	4	3 3	2	1
11 Ra	1a. Pool-to-Pool Spacing atio (Watersheds < 10 mi ²)	10	4.0 - 5.0			3.0 - 4.0 o			-	< 3.0 or >7.0	
not	Existing Condition	10	9	8	7	6	5	4	3	2	1
ĝ	Proposed Condition	10	9	8	7	6	5	4	3	2	1
Ai Si Ra	1b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²)		5.0 - 7.0			3.5 - 5.0 o	r 7.0 - 8.0		Ŀ	<3.5 or >8.0)
ver	Existing Condition	10	9	8	7	6	5	4	3	2	1
Jo Ra	Proposed Condition 2a. Pool Max Depth atio/Depth Variability	10	9 >1.5	8	7	6 1.2 ·	5 - 1.5	4	3	2 <1.2	1
) (Gi	Gravel Bed Streams) Existing Condition	10	9	8	7	6	5	4	3	2	1
12	Proposed Condition 2b. Pool Max Depth Ratio/Depth Variability	10	9 >1.2	8	7	6	5	4	3	2	1
	Sand Bed Streams) Existing Condition	10	9	8	7	6	5	4	3	2	1
	Proposed Condition	10	9	8	7	6	5	4	3	2	1
u alian 11	1. Pool-to-Pool Spacing			ate Gradi	ent Perennia	al Streams in Co					
eme Ba	atio (3-5% Slope)		2.0 - 4.0		_	4.0 -				>6.0	
	Existing Condition Proposed Condition	10 10	9	8	7	6	5 5	4 4	3 3	2	1
	2. Pool Max Depth Ratio/Depth Variability		>1.5	2		1.2 -		Ŧ	~	<1.2	
Bec (Do	Existing Condition	10	9	8	7	6	5	4	3	2	1
ot s	Proposed Condition	10	9	8	7	6	5	4	3	2	1

Reach ID:	Cabin Branch				Reach Score/	Reach Total	Ex. 60/170 P	rop.: 134/170	Quality	: Ex: 0.35 Pi	op:0.79
		Functi	ion-based	Rapic	l Reach Lev	el Stream As	sessment				
Assessment						Cate	egory				
Parameter	Measurement Method	Fu	nctioning			Functioni	ng-at-Risk		N	ot Functio	oning
		Stre	am Funct	ion Py	yramid Level	4 Physicoch	nemical				
Water Quality and Nutrients (Do not complete if stream is ephemeral)	13. Water Appearance and Nutrient Enrichment (USDA 1999)	colored; ob depth 3 to (colored); no surface; no submerged Clear wate reach; dive community quantities of	or clear but ojects visible 6 ft (less if s o oil sheen o o noticeable d objects or n r along entir erse aquatic includes lov of many speces; little alga sent	at lightly on film on rocks. e plant v cies of	visible to dep no oil shee	oth 0.5 to 3.0 ft; in on water surf er along entire r	may have sli ace. Fairly cl	n events; objects ght green color; ear or slightly ate algal growth	appeara time; ob depth< water m other ob pollutar mats, su sheen c foam or odor of sewage pollutar Pea-gre water al dense s macrop stream;	bid or mudc ance most o ance most o ance most o loss trislow violable bright voious water to the stright water of the surface scum or heavy cose a surface; or chemicals, , or other ts. een, gray, or fong entire r tands of hytes cloggi severe alge creating thi	f the at moving green; r algal , t tof s strong pil, brown each; ng al
ž	Existing Condition	10	9	8	7	6	5	4	3	2	1
anı	Proposed Condition 14. Detritus (Petersen, 1992)	10	9	8	7	6	5	4	3	2	1
tter Quality		and wood c	nsisting of le without sed overing it	iment			ment	debris without	black odo de	rganic sedir in color and r (anaerobic etritus abser	d foul ;) or
Ŵ	Existing Condition	10	9	8	7	6	5	4	3	2	1
	Proposed Condition	10	9	8	7	6	5	4	3	2	1
Str	eam Function Pyramid	Level 4 P	hysicoche	emica	I Overall EXI	STING Cond	ition F	FAR NF	5	Score:7	
Stre	eam Function Pyramid	Level 4 Pl	hysicoche	mical	Overall PRC	POSED Con	dition F	FAR NF	S	core:11	
				uncti	on Pyramid I	_evel 5 Biolo					
nis	15. Macroinvertebrate		Abundant	0	7		are 🗧	4		Not present	
ean	Existing Condition Proposed Condition	10 10	9	8	7	6	5	4 4	3	2	1
Biology (Do not complete if stream is ephemeral)	16. Macroinvertebrate Tolerance		intolerant sp		,	Limited intole	-		-	tolerant spe	
iolo	Existing Condition	10	9	8	7	6	5	4	3	2	1
ept ept	Proposed Condition	10	9	8	7	6	5	4	3	2	1
lot e	17. Fish Presence		Abundant				are			Not present	
Jo r	Existing Condition	10 10	9	8	7	6	5	4	3	2	1
e	Proposed Condition If existing biology is FAR or NF, provide description of cause(s)	10	9	0	,	o	5	4	3	2	
St	ream Function Pyramid	Level 5 F	Bioloav Ov	/erall	EXISTING C	ondition F	FAR	NF	Sc	ore: 15	
	ream Function Pyramid							NF		ore: 20	
51	ream Function Pyramid	Level 5 E	Sidlogy O\	rail	FROPUSED	Condition 1	FAR	INF .	30		

Reach ID:	Cabin Branch]	Reach Score/Reach Total	Ex. 60/170 Prop.: 134/170	Quality: Ex: 0.35 Prop:0.79
		Function-based Rapic	I Reach Level Stream A	ssessment	
Assessment			Cat	egory	
Parameter	Measurement Method	Functioning	Function	ing-at-Risk	Not Functioning
		Bankfull Determination	and Rosgen Stream Cla	assification	
Rosgen Stream T	ype (Observation): EX - F F	PRO - C/Bc			
Regional Curve (circle one): Piedmon	t Coastal Plain	Allegheny Plateau/Ridge	e and Valley Urban	Karst
DA (sqmi)	4.32				
BF Width (ft)	26.2-27.0			BF Area (sqft)	40.6-50.7
BF Depth (ft)	1.5-1.94			Percent Impervious (%)	21.3
		Field	d Measurements		
F	Parameter		Measureme	nts and Ratios	
Water surface to elevation differen	geomorphic feature ce	Existing Min:1.6, Max: 2.5, Avg.:2.0			
Riffle Mean Depth	n at Bankfull Stage (dbkf)	Existing Min:1.7, Max: 2.29, Avg.:2.09	Proposed: 1.73 & 1.84		
Riffle Width at Ba	nkfull Stage (Wbkf)	Existing Min:17.1, Max:22.5, Avg.:20.2	Proposed: 23.2 & 25.6		
Riffle XS Area at (Abkf = dbkf*Wb		Existing Min: 34.4, Max: 45.8, Avg.:40.3	Proposed: 40.18 & 41.12		
	Width (Wfpa) (Wfpa=Width mined by 2xDmax)	Existing Not calculated at all XS Minimum 28.23	Target: 92.8 & 102.4		
Entrenchment R	atio (ER) (ER=Wfpa/Wbkf)	Existing Min: 1.4, Max: 1.93 Avg: 1.6	Target 4.0		
Low Bank Height	t (LBH)	Existing Min: 4.09, Max: 5.52, Avg.:4.53	Proposed: 2.3 & 2.4		
Riffle Maximum D (Dmax)	epth at Bankfull Stage	Existing Min: 1.95, Max: 3.35, Avg.:2.56	Proposed: 2.3 & 2.4		
Bank Height Rat (BHR=LBH/Dmax		Existing Min: 1.46, Max: 2.24, Avg.:1.79	Proposed: 1.0		
BEHI/NBS Rating	is and Lengths	H/M, H/L, M/M, M/L, L/L	L/L		
Pool to Pool Spac	cing (P-P)	Ranges from 47-168	Proposed: Min:104, Max:168, Avg.:136.6		
Pool to Pool Spa P Ratio=P-P/Wbl	acing Ratio (P-P Ratio) (P- kf)	Range from 2.4-8.4	Proposed: Min:4.4, Max:7.0, Avg.:5.7		
Pool Maximum De (Dmbkfp)	epth at Bankfull Stage	n/a	Proposed: 4.3 & 4.6		
Pool Depth Ratio Ratio=Dmbkfp/d	o (Dmbkfp Ratio) (Dmbkfp bkf)	n/a	Proposed: 2.5		
Macroinvertebrate	e Taxa Observed	n/a	n/a		

	EXISTING a				EL STREA LD DATA		TION-BAS	ED		
Vatershed:	Middle Potomac - Catoctin			Rater(s):		RC/BW				
tream:	Un -Named Tributary to Cabin	Branch		Date:		3/10/2022				
ach Length:	542 linear feet			Latitude:		39.177353				
noto(s):	See Attached			Longitude:		-77.199137				
each ID:	Trib 1			Reach Score	Reach Total	Ex. 24/170 Pro	p.: 136/170	Quality	: Ex: 0.14 P	rop:0.8
	·	Function-b	ased Rapio	d Reach Lev	el Stream A	ssessment				
Accord					Cat	egory				
Assessment Parameter	Measurement Method	Functio	ning		Function	ng-at-Risk		No	ot Functio	oning
	<u> </u>		Stream Fu	Inction Pyra	mid Level 1	Hydrology				
	1. Concentrated Flow	No potential for flow/impairm adjacent la	ents from		al for concentra te, however, me resc			flow/imp restor	al for conce pairments to ation site an ents are in	o reach nd no
	Existing Condition	10 9	8	7	6	5	4	3	2	1
Ψ	Proposed Condition	10 9	8	7	6	5	4	3	2	1
Runoff	2. Flashiness	Non-flashy flow result of rainfa geology, ar impervious cove 6%	ll patterns, nd soils,		/ flow regime as y, and soils, im			result o geol	flow regim f rainfall pa ogy, and so ous cover g than 15%	atterns, pils,
	Existing Condition	10 9	8	7	6	5	4	3	2	1
	Proposed Condition	10 9	8	7	6	5	4	3	2	1
	Stream Function Pyran	nid Level 1 Hy	drology Ov	erall EXISTI	NG Conditio	n F <mark>FA</mark>	R NF	Sco	re:5	
	Stream Function Pyram	id Level 1 Hyd	Irology Ov	erall PROPO	SED Conditi	on F FAF	NF	Scor	e:11	
			Stream Fu	Inction Pyra	mid Level 2 I	Hydraulics				
	3. Bank Height Ratio (BHR)	<1.2	D		1.21	- 1.50			>1.50	
	Existing Condition	10 9	8	7	6	5	4	3	2	1
	Proposed Condition	10 <mark>9</mark>	8	7	6	5	4	3	2	1
oility)	4a. Entrenchment									
Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams)	>2.2			2.1	- 1.4			<1.4	
al Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA	10 9	8	7	6	5	4	3	2	1
rtical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams)			7 7			4 4	3		1 1
vity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	10 9	8 8		6 6	5			2	
ctivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial	10 9 10 9	8 8		6 6	5 5 - 1.1 5			2 2	
nnectivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	10 9 10 9 >1.4	8 8	7	6 6 1.3	5 5 - 1.1	4	3	2 2 <1.1	1
Floodplain Connectivity (Vertical Stability)	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition	10 9 10 9 >1.4 10 9	8 8 8 ated flow; y sheet flow; y sheet flow; s, hillslopes am; ponding am; ponding am; ponding are well	7 7 7 runoff is equ and rill erosi 50 - 200 ft fro	6 6 1.3 6	5 5 - 1.1 5 concentrated flot woncentrated flot iillslopes 10 - 4 ling or wetland	4 4 4 w (minor gully 0%; hillslopes areas and litter	3 3 3 cono presen and rill e >40%; from st wetland debris	2 2 <1.1 2	1 1 0ws e gully Ilslopes <50 ft ling or litter of ot well
Floodplain Connectivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition	10 9 10 9 10 9 10 9 10 9 no concentra runoff is primarii hillslopes < 10°	8 8 8 ated flow; y sheet flow; y sheet flow; 6; hillslopes am; ponding s and litter or are well nted 8	7 7 7 runoff is equ and rill erosi 50 - 200 ft fro or de	6 1.3 6 6 ally sheet and d on occurring); f m stream; pond sbris jams are n 6	5 5 - 1.1 5 concentrated fic iillslopes 10 - 4 ling or wetland ninimally repres 5	4 4 w (minor gully 0%; hillslopes areas and litter ented 4	3 3 3 cond presen and rill 6 >40%; from st wetland debris repres 3	2 2 <1.1 2 2 centrated flot t (extensive erosion); hill hillslopes iream, ponc areas and jams are no sented or all 2	1 1 0ws e gully Ilslopes <50 ft litter of ot well bsent 1
Floodplain Connectivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition 5. Floodplain Drainage	10 9 10 9 10 9 10 9 10 9 no concentra runoff is primarii hillslopes < 10° >200 ft from stre or wetland areas debris jams represe 10 9 10 9 10 9	8 8 8 ated flow; y sheet flow; 6; hillslopes am; ponding s and litter or are well nted 8 8 8	7 7 7 and rill erosi 50 - 200 ft fro or de	6 1.3 6 6 ally sheet and of on occurring); f m stream; pono sbris jams are n 6 6 6	5 5 - 1.1 5 concentrated flc iillslopes 10 - 4 ling or wetland ninimally repres 5 5	4 4 w (minor gully 0%; hillslopes areas and litter ented	3 3 cond presen and rill e >40%; from st wetland debris repres 3 3	2 2 <1.1 2 centrated flut (extensive erosion); hill hillslopes ream; ponc areas and jams are no sented or al 2 2	1 1 1 1 1 1 1 1 1 1 1 1 1 1
Floodplain Connectivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition 5. Floodplain Drainage Existing Condition	10 9 10 9 10 9 10 9 10 9 no concentra runoff is primarii hillslopes < 10°	8 8 8 ated flow; y sheet flow; 6; hillslopes am; ponding s and litter or are well nted 8 8 8	7 7 7 and rill erosi 50 - 200 ft fro or de 7 7	6 1.3 6 6 ally sheet and o on occurring); f m stream; ponc ebris jams are n 6 6 Localized	5 - 1.1 5 concentrated flc iillslopes 10 - 4 ling or wetland ninimally repres 5 5 1 Instability	4 4 w (minor gully 0%; hillslopes areas and litter sented 4 4	3 3 cond presen and rill e >40%; from st wetland debris repres 3 3	2 2 <1.1 2 2 centrated flot t (extensive erosion); hill hillslopes iream, ponc areas and jams are no sented or all 2	1 1 1 1 1 1 1 1 1 1 1 1 1 1
Floodplain Connectivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition 6. Vertical Stability Extent Existing Condition	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 200 ft from stre or wetland areas debris jams represe 10 9 10 9 10 9 10 9	8 8 8 ated flow; y sheet flow; y sheet flow; y sheet flow; y sheet flow; are usell nted 8 8 8 8 8 8	7 7 7 and rill erosi 50 - 200 ft fro or de 7 7 7	6 6 1.3 6 6 ally sheet and d on occurring); f m stream; ponc ebris jams are n 6 6 6 Localized 6	5 5 - 1.1 5 concentrated fld iillslopes 10 - 4 iing or wetland ninimally repres 5 5 1 Instability 5	4 4 4 ww (minor gully 0%; hillslopes areas and litter vented 4 4 4	3 3 conc presen and rill e >40%; from st wetland debris repres 3 3 Wides 3	2 2 <1.1 2 centrated flr tt (extensive errosion); hill pream; ponc areas and jams are no sented or al 2 2 spread Insta 2	1 1 0 ws e gully llslopes <50 ft litter o ot well bsent 1 1 ability 1
Floodplain Connectivity (Vertical Stat	(Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Proposed Condition Proposed Condition 6. Vertical Stability Extent	10 9 10 9 10 9 10 9 10 9 no concentra runoff is primarii hillslopes < 10°	8 8 8 ated flow; y sheet flow; 6; hillslopes am; ponding s and litter or are well nted 8 8 8 8	7 7 7 and rill erosi 50 - 200 ft fro or de 7 7	6 1.3 6 6 ally sheet and o on occurring); f m stream; ponc ebris jams are n 6 6 Localized	5 - 1.1 5 concentrated flc iillslopes 10 - 4 ling or wetland ninimally repres 5 5 1 Instability	4 4 w (minor gully 0%; hillslopes areas and litter sented 4 4	3 3 conc presen and rill e >40%; from st wetland debris repres 3 3 Wides	2 2 <1.1 2 centrated flut t (extensive tream; ponc areas and jams are no sented or al 2 2 spread Insta	1 1 0ws e gully llslopes <50 ft litter o ot well bsent 1 1 ability

						Cat	egory				
sessment arameter	Measurement Method	Fu	Inctionin	g			ng-at-Risk		N	lot Function	oning
		Str	eam Fun	ction P	yramid Lev	el 3 Geomorp	hology		1		
Riparian Vegetation (Score = Average of Left and Right bank, max score of 10)	7. Riparian Vegetation Zone (EPA, 1999, modified)	width o vegeta diversity a activities o invasive s	zone exter f >100 feet, ation comm and density do not impa species not or sparse	; good iunity /; human act zone;	composit activities	ne extends to a ion is dominated greatly impact z presented and a	by 2 or 3 speci one; invasive s	es; human becies well	a width no ripa to h	an zone ext of <25 feet rian vegetal numan activi ity of vegeta invasive	; little tion du ities;
tipa e = bar	Left Bank Existing	10	9	8	7	6	5	4	3	2	1
la v v	Left Bank Proposed	-	9	8	7	6	5	4	3	2	1
Rig Rij	Right Bank Existing		9	8	7	6	5	4	3	2	1
	Right Bank Proposed	10	9	8	7	6	5	4	3	2	1
Lateral Stability (Score =Average of Left and right bank, max score of 10)	8. Dominant Bank Erosion Rate Potential	po BEHI/NBS	e bank eros tential is lo or S Rating: L ./H, L/VH, N	w /VL, L/L,		Rating: M/L, M/M	or .		rate BEHI H/Ex,	nate bank e potential is or /NBS Rating VH/H, Ex/M /H, VH/VH, I	high g: H/H I, Ex/H
Lateral Stability Average of Leff ik, max score of	Existing Condition (Right bank)	10	9	8	7	6	5	4	3	2	1
Later =Avera nk, ma	Proposed Condition (Right Bank) Existing Condition	10	9	8	7	6	5	4	3	2	
Score	(Left bank) Proposed Condition	10	9	8	7	6	5	4	3	2	1
ಲ	(Left Bank)		-	0	1			4	-		
	9. Lateral Stability Extent		Stable				Instability			espread Inst	
	Existing Condition Proposed Condition		9	8	7	6	5	4 4	3	2	1
	10. Shelter for Fish and	-	9 an 70% of	0		6 x of stable habita	-	-		2 an 20% mix	
	1999)	fish cover;	colonization	ags,	populations	ial; adequate ha ; presence of ac out not yet prepa	ditional substra	te in the form	habitat than de	habitat; lack availability esirables ob	less vious;
um is ephemeral)	1999)	fish cover; submerge banks, rub and large stable hab allow full c potential (are not ne	colonizatio	n and ags, lercut l, cobble ther stage to n nags that	populations	; presence of ac out not yet prepa	ditional substra	te in the form	habitat than de	availability esirables ob ite unstable	less vious;
stream is ephemeral)		fish cover; submerge banks, rub and large stable hab allow full c potential (are not ne transient)	colonization ; mix of sna d logs, und oble, gravel rocks, or of oitat and at colonization i.e., logs/sr w fall and r	n and ags, lercut l, cobble ther stage to n nags that not	populations of new fall, b	; presence of ac ut not yet prepa at high en	lditional substra red for coloniza d of scale)	ite in the form tion (may rate	habitat than de substra lacking	availability esirables ob ate unstable	less vious; or
e if stream is ephemeral)	1999) Existing Condition Proposed Condition	rish cover; submerge banks, rub and large stable hab allow full o potential (are not ne transient) 10	colonization mix of sna d logs, und oble, gravel rocks, or of pitat and at colonization i.e., logs/sr	n and ags, lercut l, cobble ther stage to n nags that	populations	; presence of ac out not yet prepa	ditional substra	te in the form	habitat than de substra	availability esirables ob ite unstable	less vious;
complete if stream is ephemeral)	Existing Condition	rish cover; submerge banks, rub and large stable hab allow full o potential (are not ne transient) 10	colonization ; mix of sna d logs, und oble, gravel rocks, or of oitat and at colonization i.e., logs/sr w fall and r 9	n and ags, lercut l, cobble ther stage to n nags that not	populations of new fall, b	; presence of ac ut not yet prepa at high en <u>6</u> 6	lditional substra red for coloniza d of scale)	te in the form tion (may rate	habitat than de substra lacking 3 3	availability esirables ob ate unstable 2	less vious; or <u>1</u> 1
v not complete if stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition	fish cover; submerge banks, rut and large stable hal allow full cover potential (are not ne transient) 10 10	colonizatioi ; mix of sna d logs, und bble, gravel rocks, or ol pitat and at zolonizatior i.e., logs/sr w fall and r 9 9 9 4.0 - 5.0 9	n and ags, lercut l, cobble ther stage to n ags that not 8 8 8 8	populations of new fall, b 7 7 7	; presence of ac ut not yet prepa at high en 6 3.0 - 4.0 c 6	ditional substra red for coloniza d of scale) 5 5 r 5.0 - 7.0 5	te in the form tion (may rate 4 4 4	habitat than de substra lacking 3 3 3	availability sirables ob the unstable 2 2 < 3.0 or >7. 2	less vious; or 1 1 0
(Do not complete if stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition	fish cover; submerge banks, rut and large stable hal allow full cover potential (are not ne transient) 10 10	colonizatioi ; mix of sna d logs, und bble, gravel rocks, or of vitat and at colonizatior i.e., logs/sr w fall and r 9 9 9	n and ags, lercut l, cobble ther stage to n nags that not <u>8</u>	populations of new fall, b 7 7	; presence of ac ut not yet prepa at high en <u>6</u> <u>6</u> <u>3</u> .0 - 4.0 c	ditional substra red for coloniza d of scale) 5 5 9 7 5.0 - 7.0	te in the form tion (may rate 4 4	habitat than de substra lacking 3	availability ssirables ob ate unstable 2 2 < 3.0 or >7.	less vious; or 1 1 0
sity (Do not complete if stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition	fish cover; submerge banks, rut and large stable hat allow full d potential (are not ne transient) 10 10 10	colonizatioi ; mix of sna d logs, und bble, gravel rocks, or ol pitat and at zolonizatior i.e., logs/sr w fall and r 9 9 9 4.0 - 5.0 9	n and ags, lercut l, cobble ther stage to n ags that not 8 8 8 8	populations of new fall, b 7 7 7	; presence of ac ut not yet prepa at high en 6 6 3.0 - 4.0 c 6 6 6	ditional substra red for coloniza d of scale) 5 5 r 5.0 - 7.0 5	te in the form tion (may rate 4 4 4	habitat than de substra lacking 3 3 3 3	availability sirables ob the unstable 2 2 < 3.0 or >7. 2	less vious; or 1 1 0
versity (Do not complete if stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition	fish cover; submerge banks, rut and large stable hat allow full d potential (are not ne transient) 10 10 10 10	colonizatioi ; mix of sna d logs, und bble, gravel rocks, or of vibtat and at colonizatior i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9	n and ags, lercut ther stage to n nags that not 8 8 8 8 8 8 8 8 8 8	populations of new fall, b 7 7 7 7 7 7 7 7 7 7 7	; presence of ac ut not yet prepa at high en 6 6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6	ditional substra red for coloniza d of scale) 5 5 5 7 7 5.0 - 7.0 5 5 7 7 .0 - 8.0 5	te in the form tition (may rate	habitat than de substra lacking 3 3 3 3 3 3 3 3	availability ssirables ob te unstable 2 2 3.0 or >7. 2 2 3.5 or >8. 2	less vious; or 1 1 0
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Bedform Diversity (Do not complete if stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Ratio/Depth Variability (Sand Bed Streams)	fish cover; submerge banks, rut and large stable hat allow full opotential (are not ne transient) 10 10 10 10 10 10 10 10	colonizatio ; mix of sna d logs, und bble, gravel rocks, or of vilat and at zolonizatio , logs/sr w fall and r 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5 9 9 9	n and ags, lercut i, cobble ther stage to n nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	; presence of ac ut not yet preparative at high en 6 6 3.0 - 4.0 c 6 6 6 3.5 - 5.0 c 6 6 6 6 1.2 6 6 6 1.2 6 1.1	ditional substra red for coloniza d of scale) 5 5 5 7 7 5.0 - 7.0 5 5 7 7 .0 - 8.0 5 5 - 1.5 5 5 - 1.2	te in the form tion (may rate	habitat than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	availability sirables ob ite unstable < 3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1	less vious; or 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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Bedform Diversity (Do not compl	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 2a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Stope) Existing Condition Proposed Condition Proposed Condition	fish cover; submerge banks, rub and large stable hab allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	colonizatio ; mix of sna d logs, und bble, gravel rocks, or of vibta and at zolonizatior i.e., logs/sra w fall and r 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5 9 9 9 >1.2 9 9 2.0 - 4.0 9	n and ags, lercut i, cobble ther stage to n ags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	populations of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	; presence of ac ut not yet preparation at high en 6 6 6 3.0 - 4.0 c 6 6 6 1.2 6 6 6 1.2 6 6 6 1.1 1 6 6 6 1.1 1 6 6 6 6 1.1 1 6 6 6 6	(ditional substra red for coloniza d of scale) 5 5 5 7 7 .0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 5 - 1.2 5 5 - 6.0 5	te in the form tion (may rate	habitat than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	availability sirables ob ite unstable < 3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 <1.1 2 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 2 <1.1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Iess vious; or 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1
Bedform Diversity (Do not compl	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition 2a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition	fish cover; submerge banks, rut and large stable hat allow full o potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	colonizatio ; mix of sna d logs, und bble, gravel rocks, or of oilat and at zolonizatio , logs/sr w fall and r 9 9 4.0 - 5.0 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5 9 9 9 2.0 - 4.0 9 9 9 5.1.2	n and ags, lercut i, cobble ther stage to n ags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	populations of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	; presence of ac ut not yet preparative at high en at h	5 5 5 5 7 5 5 5 7 7.0 - 8.0 5 5 7 7.0 - 8.0 5 5 -1.5 5 6.0 5 5 - 5 - 5 - 6.0 - 5 - - 5 - 1.5	te in the form tion (may rate	habitat than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	availability sirables ob ite unstable <3.0 or >7. 2 2 <3.5 or >8. 2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 <1.1 2 2 <1.1 2 <1.1 2 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	less vious; or 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral) stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 2a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Stope) Existing Condition Proposed Condition Proposed Condition	fish cover; submerge banks, rub and large stable hab allow full c potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	colonizatio ; mix of sna d logs, und bble, gravel rocks, or of viltat and at zolonization 9 9 4.0 - 5.0 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5 9 9 5.1.2 9 9 9 5.1.2 9 9 9 5.1.2 9 9 9 5.1.2	n and ags, lercut i, cobble ther stage to n ags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	populations of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	; presence of ac ut not yet preparation at high en 6 6 6 3.0 - 4.0 c 6 6 6 1.2 6 6 6 1.2 6 6 6 1.1 1 6 6 6 1.1 1 6 6 6 6 1.1 1 6 6 6 6	ditional substrared for coloniza d of scale) 5 5 6 5 5 7 7.0 5 5 7 5 5 - 1.5 5 - 1.2 5 - 1.2 5 - 1.2 5 - 6.0 5 5	te in the form tion (may rate	habitat than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	availability sirables ob ite unstable <3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 2 <1.2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	less vious; or 1 1 0 1

Reach ID:	Trib 1				Reach Score/	Reach Total	Ex. 24/170 P	rop.: 136/170	Quality	: Ex: 0.14 P	rop:0.8
		Funct	ion-based	Rapid	I Reach Lev	el Stream As	sessment				
Assessment						Cate	gory				
Parameter	Measurement Method	Fu	inctioning			Functionin	ng-at-Risk		No	ot Functio	oning
		Stre	eam Func	tion Py		4 Physicoch					
al)	Nutrient Enrichment (USDA 1999)	colored; ol depth 3 to colored); n surface; no submerged Clear wate reach; dive community quantities	, or clear bu bjects visible 6 ft (less if s or oil sheen o noticeable d objects or er along enti erse aquatic y includes lo of many spe tes; little alge esent	e at slightly on film on rocks. re plant w ecies of	visible to dep no oil shee	oth 0.5 to 3.0 ft; r en on water surfa	may have sli ace. Fairly cl each; moder	n events; objects ght green color; ear or slightly ate algal growth	appeara time; ob depti< (water m other ob pollutan mats, su sheen o foam on odor of o sewage, pollutan Pea-gre water al dense s macroph stream;	en, gray, or ong entire r	f the e at moving green; r algal a, at of r strong oil, r brown reach; ing al
ž	Existing Condition	10	9	8	7	6	5	4	3	2	1
anc	Proposed Condition	10	9	8	7	6	5	4	3	2	1
tter Quality	14. Detritus (Petersen, 1992)	and wood	onsisting of I d without sec covering it	diment		d wood scarce; f sedin	nent		black odor de	rganic sedii in color and (anaerobic etritus absei	d foul c) or
Ň	Existing Condition	10	9	8	7	6	5	4	3	2	1
	Proposed Condition	10	9	8	7	6	5	4	3	2	1
Stre	eam Function Pyramid	Level 4 F	hysicoch	emica	I Overall EXI	STING Condi	ition F	FAR NF	S	Score:4	
Stre	am Function Pyramid I	Level 4 P	hysicoche	mical	Overall PRC	POSED Con	dition F	FAR NF	S	core:16	
				Functio	on Pyramid I	Level 5 Biolog					
. <u>s</u>	15. Macroinvertebrate		Abundant			Ra				Not present	
earr	Existing Condition Proposed Condition	10 10	9	8	7	6	5	4	3	2	1
<u> </u>	16. Macroinvertebrate Tolerance		9 t intolerant s	8 species	/	Limited intole	-		-	z tolerant spe	1 ecies
enerolo	Existing Condition	10	9	8	7	6	5	4	3	2	1
ep gi	Proposed Condition	10	9	8	7	6	5	4	3	2	1
oto	17. Fish Presence		Abundant			Ra				Not present	
Ĕ	Existing Condition	10	9	8	7	6	5	4	3	2	1
Ð	Proposed Condition	10	9	8	7	6	5	4	4	2	1
1	If existing biology is FAR or NF, provide description of cause(s)	Stream is o	currently pip	oed.							
	no om Eurotion Duramia			verall	EXISTING C	ondition	F FAR	NF	Sc	ore: 3	
St	ream Function Pyramic	Levers	Diology C		EVICE HILLO C		F FAN		00	016. 3	

Reach ID:	Trib 1		Reach Score/Reach Total	Ex. 24/170 Prop.: 136/170	Quality: Ex: 0.14 Prop:0.8
		Function-based Rapi	d Reach Level Stream A	ssessment	
Assessment			Cat	egory	
Parameter	Measurement Method	Functioning	Function	ing-at-Risk	Not Functioning
		Bankfull Determinatio	n and Rosgen Stream Cl	assification	
Rosgen Stream T	ype (Observation) EX - Stre	am is currently piped PRO - 0	2		
Regional Curve (circle one): Piedmon	t Coastal Plain	Allegheny Plateau/Ridge	e and Valley Urban	Karst
DA (sqmi)	0.15				
BF Width (ft)	5.6-7.1			BF Area (sqft)	2.7-4.4
BF Depth (ft)	0.48-0.62			Percent Impervious (%)	21.3
		Fie	Id Measurements		
F	Parameter		Measureme	nts and Ratios	1
Water surface to elevation different	geomorphic feature ce	Ex- Channel is piped Upstream Reference: 0.3-0.7; avg: 0.51			
Riffle Mean Depth	n at Bankfull Stage (dbkf)	Ex- Channel is piped Upstream Reference: 0.32-0.65; avg.: 0.54	Proposed: 0.39 & 0.49		
Riffle Width at Ba	nkfull Stage (Wbkf)	Ex- Channel is piped Upstream Reference: 4.7-8.1; avg.: 6.48	Proposed: 5.0 & 6.6		
Riffle XS Area at (Abkf = dbkf*Wb		Ex- Channel is piped Upstream Reference: 2.5-4.3; avg.: 3.40	Proposed: 1.95 & 3.24		
	Width (Wfpa) (Wfpa=Width mined by 2xDmax)	Ex- Channel is piped Upstream Reference: 6.0-9.1; avg.: 8.4	Target: 20 & 26.4		
Entrenchment R	atio (ER) (ER=Wfpa/Wbkf)	Ex- Channel is piped Upstream Reference: 1.12-1.45; avg.: 1.31	Target 4.0		
Low Bank Height	: (LBH)	Ex- Channel is piped Upstream Reference: 0.96-3.75; avg.: 2.51	Proposed: 2.3 & 2.4		
Riffle Maximum D (Dmax)	epth at Bankfull Stage	Ex- Channel is piped Upstream Reference: 0.42-1.10; avg.: 0.82	Proposed: 0.5 & 0.6		
Bank Height Rat (BHR=LBH/Dmax		Ex- Channel is piped Upstream Reference: 2.3-3.6; avg.: 2.9	Proposed: 1.0		
BEHI/NBS Rating	s and Lengths	Ex- Channel is piped	L/L		
Pool to Pool Spac	sing (P-P)	Ex- Channel is piped	Proposed: Min: 21, Max: 46, Avg.: 34		
Pool to Pool Spa P Ratio=P-P/Wbl	acing Ratio (P-P Ratio) (P- <f)< td=""><td>Ex- Channel is piped</td><td>Proposed: Min:3.2, Max:7.3, Avg.:5.6</td><td></td><td></td></f)<>	Ex- Channel is piped	Proposed: Min:3.2, Max:7.3, Avg.:5.6		
Pool Maximum De (Dmbkfp)	epth at Bankfull Stage	Ex- Channel is piped	Proposed: 1.0 & 1.2		
Pool Depth Ratic Ratio=Dmbkfp/d	o (Dmbkfp Ratio) (Dmbkfp bkf)	Ex- Channel is piped	Proposed: 2.5		
Macroinvertebrate	e Taxa Observed	Ex- Channel is piped	n/a		

Value relation Made Patomac - Calcolin Rain(1): RCHW Un-Ammed Findbardy to Cabin Branch Date: 39.17233. Complication 39.17233. Non-Instruction The 2 Reach Score/Reach Total E.2.40170 Prop.: 158/170 Oublity: Ex: 0.14 Prop. Reach Brown Reach Score/Reach Total E.2.40170 Prop.: 158/170 Oublity: Ex: 0.14 Prop. Reach Brown Category Functioning Functioning-at-Risk Not Function Reach Brown Stream Function Stream Function Stream Function Prop. Non-flash floor constrating dipacent land or constrating dipacent		EXISTING a				EL STREA		TION-BAS	ED			
Un-Aumont Probability Ocable Branch Date: 3110202 421 imar freed Landbact Longblact 77.1013 Complication 77.1013 sate // So Attached Complication 77.1013 Complication 77.1017 See Attached Complication Complication Complication See Attached Complication Complicat	atershed:	Middle Potomac - Catoctin			Rater(s):		RC/BW					
Mach Length: 29:17:33 Longlude: 29:17:33 (77:199137) See Altached Longlude: 29:17:33 (77:199137) Quality: Ex: 0.14 Pop Exact ScoreReach Total Ex. 24/12 Prop:: 150/170 Quality: Ex: 0.14 Pop Category Measurement Method Functioning Functioning-strained Functioning at Particular Pop:: 150/170 Outsity: Ex: 0.14 Pop Category Measurement Method Total Concentrate Over Method Functioning at Particular Pop:: 150/170 Outsity: Ex: 0.14 Pop Category Measurement Method Total Stream Function Pyramid Level 1 Hydrology Poperation 10 0 8 7 6 5 4 3 2 Proposed Condition 10 8 7 6 5 4 3 2 Proposed Condition 10 8 7 6 5 4 3 2 Steristing Condition 10 8 7 6 5 4 3 2 Steam Function Pyramid Level 1 Hydrology Overall EXISTING Condition F FAR NF Score:Steam Steam Stea	eam:	Un -Named Tributary to Cabin	Branch		,							
Operation See Attached Longtude: 77.199137 Quality: Ex: 0.14 Prop. ability Trink 2 Reach Score/Reach Total Ex. 24/170 Prop:: 136/170 Quality: Ex: 0.14 Prop. sessment Function-based Rapid Reach Level Stream Assessment Category Potential for concentration sessment Reach Level Thydrology Functioning-4Risk Not Functioning-4Risk Flash for reaction for functioning-4Risk	ach Length:	421 linear feet			-							
But ID Trie 2 Reach Score/Reach Total Ex. 24/170 Prop: 150/17 Quality: Ex: 0.14 Prop Proposed Condition Stream Function-based Rapid Reach Level Stream Assessment Category Category Stream Function Pyramid Level 1 Hydrology Not Functioning -at-Risk Proposed Condition 10 9 Risk functioning -at-Risk Not Functioning -at-Risk Proposed Condition 10 9 Risk functioning -at-Risk Not Functioning -at-Risk Not Functionin Find Paters <th colsp<="" td=""><td>0</td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td></th>	<td>0</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	0				-						
Function-based Rapid Rach Level Stream Assessment Sessessment Parameter Category Sessessment Parameter Category Stream Function Pyramid Level 1 Hydrology Functioning-at-Risk Not Function Pyramid Level 1 Hydrology 1 Concentrated Flow No potential for concentrate flow impairments from impairments from impairments from regime as a result of rainfall patterns geology, and soils, impairVious cover 7 - 15% Flash flow regime as a result of rainfall patterns geology, and soils, impairVious cover 7 - 15% Flash flow regime as a result of rainfall patterns geology, and soils, impairVious cover 7 - 15% Stream Function Pyramid Level 1 Hydrology Overall PROPOSED Condition T Flash flow regime as a result of rainfall patterns geology, and soils, impairVious cover 7 - 15% Stream Function Pyramid Level 1 Hydrology Overall PROPOSED Condition T Flash N Figure Stream Function Pyramid Level 1 Hydrology Overall PROPOSED Condition T Flash N Figure Ata 2	ach ID:		1		_ 0	Posch Total		on : 126/170	Quality	: Fx: 0.14 P	ron:0 i	
Seessment Parameter Measurement Method Functioning Functioning Functioning-at-Risk Not Functioning- Potential for concentrate flow/impairments for adjacent land use 1 Concentrated Flow No potential for concentrate modificent land use Some potential for concentrate flow/impairments for restoration site, however, measures are in place to protect restoration site, however, measures are inplace to protect restoration site, impervious cover 7 - 15%. Flash flow regime as a result of rainfall patterns, geology, and solis, impervious cover 7 - 15%. Flash flow regime as a result of rainfall patterns, geology, and solis, impervious cover 7 - 15%. Existing Condition 10 9 8 7 6 5 4 3 2 Stream Function Pyramid Level 1 Hydrology Overall EXISTING Condition T FAR NF Score:11 Stream Function Pyramid Level 1 Hydrology Overall PROPOSED Condition T 5 4 3 2 Proposed Condition 10		1110 2	Function-ba	sed Rapio				op 136/170	<u></u>		. opioie	
Sessessimilie Measurement Method Functioning Functioning-st-Risk Not Functioning Stream Function Pyramid Level 1 Hydrology Stream Function Pyramid Level 1 Hydrology 1 Concentrated Flow No potential for concentrated flow impairments to restoration site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualization site, however, measures are in place to protect individualizations, and the site protect individualizations, and the site and the analytic set individualizations are protected individualizations. The set individualization site and protection and the analytic set individualization set individualizations. The set individualization set individualization set individualinte and the set individualinte andividualization set				•								
Image: constraint of the second state of th		Measurement Method	Function	ing					N	ot Functio	oning	
Non-Display in the potential for concentrated is some potential to cancel rate of the concentrated frow measures are in place to protein and use resources from with partments to resources from with partments to resources 1. Concentrated Flow 1. Concentrated Flow 1. Concentrated Flow Proposed Condition 10 9			:	Stream Fi	unction Pyra	mid Level 1	Hydrology					
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Non-flashy flow regime as a result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, impervious cover result of rainfall patterns, geology, and soils, and soil a		Existing Condition	10 9	8	7	6	5	4	3	2	. 1	
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Stream Function Pyramid Level 1 Hydrology Overall EXISTING Condition F FAR NF Score:5 Stream Function Pyramid Level 1 Hydrology Overall PROPOSED Condition F FAR NF Score:11 Stream Function Pyramid Level 2 Hydraulics A for 5 4 3 2 A Existing Condition 10 9 8 7 6 5 4 3 2 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Concentrated flow; runoff is equally		Existing Condition	10 9	8	7	6	5	4	3	2	1	
Stream Function Pyramid Level 1 Hydrology Overall PROPOSED Condition F FAR NF Score:11 Stream Function Pyramid Level 2 Hydraulics Store:11 3. Bank Height Ratio <1.20		Proposed Condition	10 9	8	7	6	5	4	3	2	1	
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BHR) C1.20 1.21-1.50 51.50 Existing Condition 10 9 8 7 6 5 4 3 2 4a. Entrenchment (Meandering streams) in alluvial valleys or Rosgen C, E, DA Streams) >2.2 2.1-1.4 <1.4												
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Aa. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) >2.2 2.1 - 1.4 <1.4 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Weild you way to be a streams 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 S. Floodplain Drainage No concentrated flow; runoff is primarily sheet flow; runoff is			<1.20				-			>1.50		
Existing Condition1098765432Proposed Condition10987654326. Vertical Stability ExtentStableLocalized InstabilityWidespread InstabilityExisting Condition10987654326. Vertical Stability ExtentStableLocalized InstabilityWidespread InstabilityExisting Condition1098765432		(BHR) Existing Condition	10 9		7	1.21 6	- 1.50 5		-	2	1	
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Listing Condition1098765432Existing Condition1098765432Proposed Condition10987654326. Vertical Stability ExtentStableLocalized InstabilityWidespread InstabilityWidespread InstabilityExisting Condition1098765432	rtical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition	10 9 10 9 >2.2 10 9	8	777	1.21 6 6 2.1 6	- 1.50 5 5 - 1.4 5	4	3	2 2 <1.4 2	1	
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Proposed Condition 10 9 8 7 6 5 4 3 2 6. Vertical Stability Extent Stable Localized Instability Widespread Instability Widespread Instability Existing Condition 10 9 8 7 6 5 4 3 2	nnectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition	10 9 10 9 2.2 2.2 10 9 10 9 10 9 >1.4 9	8 8 8 8	7 7 7 7 7 7	1.21 6 6 2.1 6 6 1.3 6	- 1.50 5 5 - 1.4 5 - 1.1 5 5	4 4 4 4	3 3 3 3 3 3	2 2 <1.4 2 2 <1.1 2	1 1 1	
6. Vertical Stability Extent Stable Localized Instability Widespread Instability Existing Condition 10 9 8 7 6 5 4 3 2	Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition valleys or Rosgen B Streams) Existing Condition Proposed Condition Proposed Condition	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 no concentral runoff is primarily hillslopes < 10%	8 8 8 8 ed flow; sheet flow; ; hillslopes m; ponding and litter or re well	7 7 7 7 7 7 7 7 7 7 0 7 0 7 0 7 0 7 0 7	1.21 6 6 2.1 6 6 1.3 6 6 6 ally sheet and c on occurring); fm	- 1.50 5 5 - 1.4 5 - 1.1 5 - 1.1 5 5 concentrated fl iillslopes 10 ting or wetland	4 4 4 4 www.cminor gully 40%; hillslopes a reas and litter	3 3 3 3 3 conc preser and rill >40% from st wetland debris	2 2 <1.4 2 <1.1 2 centrated flut t (extensive erosion); hill thillslopes tream; ponc areas and jams are no	1 1 1 ows e gully Ilslope: <50 ft ding or ot well	
Existing Condition 10 9 8 7 6 5 4 3 2	Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Proposed Condition 5. Floodplain Drainage	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 no concentrat runoff is primarily hillslopes < 10%	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7 0 7 7 0 7 0 7 0 7	1.21 6 6 1.3 6 6 1.3 6 6 ally sheet and c on occurring); f m stream; pond sbris jams are n	- 1.50 5 5 - 1.4 5 - 1.1 5 5 - 1.1 5 5 - 1.1 5 5 - 1.1 5 - 1.1 5 - 1.1 5 - 1.1 - 1.1 - 5 - 5 - 5 - 1.1 - 5 - 5 - 5 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7	4 4 4 4 w (minor gully 40%; hillslopes l areas and litter isented	3 3 3 3 3 3 cont preser and rill >40% from st wetland debris represer	2 2 <1.4 2 <1.1 2 centrated flut t (extensive erosion); hill thillsopes tream; ponc areas and jams are no sented or a	1 1 1 ows e gully Ilslope <50 ft ding or litter o ot well	
	Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition 5. Floodplain Drainage Existing Condition	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 no concentral runoff is primarily hillslopes < 10%	8 8 8 8 ed flow; sheet flow; ; hillslopes and litter or rre well ted 8	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1.21 6 6 1.3 6 6 1.3 6 6 ally sheet and c on occurring); f m stream; pond abris jams are n 6 6	- 1.50 5 - 1.4 5 - 1.4 5 - 1.1 5 - 1.1 5 5 - 1.1 5 5 - 1.1 5 5 - 1.1 5 5 - 1.1 5 5 - 1.2 5 - 5 - 1.2 5 - 1.2 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	4 4 4 4 0w (minor gully 40%; hillslopes I areas and litter rssented 4	3 3 3 3 3 conc preser and rill >40% from st wetland debris representation 3	2 2 <1.4 2 <1.1 2 centrated flut (extensive erosion); hil ; hillslopes tream; ponc i areas and j areas and j areas are n sented or a 2	1 1 1 1 1 0 ws e gully llslope <50 ft ding or litter o ot well bsent	
Proposed Condition 10 9 8 7 6 5 4 3 2	Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Froposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Proposed Condition Condition Proposed Condition Proposed Condition Existing Condition C	10 9 10 9	8 8 8 8 ed flow; sheet flow; shielslopes m; ponding and litter or rer well ted 8 8	7 7 7 7 7 7 7 7 7 7 7 50 - 200 ft fro or du 7 7	1.21 6 6 2.1 6 6 1.3 6 6 6 ally sheet and c on occurring); h m stream; ponc m stream; ponc bris jams are n 6 6 6 Localizec	- 1.50 5 5 - 1.4 5 - 1.4 5 - 1.1 5 5 - 1.1 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 www (minor gully 40%; hillslopes I areas and litter isented 4 4 4	3 3 3 3 cont preser and rill s40% from st wetland debris repres 3 3 Wides	2 2 2 <1.4 2 centrated flut tt (extensive erosion); hill jams are no sented or al jams are no se	1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Stream Function Pyramid Level 2 Hydraulics Overall EXISTING Condition F FAR NF Score:4	Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Froposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Oroposed Condition Froposed Condition Condition Froposed Condition Existing Condition Condition Condition Existing Condition Condition Existing Condition Existing Condition Con	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 no concentrat runoff is primarily hillslopes < 10%	8 8 8 8 ed flow; sheet flow; sheet flow; ; hillslopes m; ponding and litter or re well ted 8 8 8	7 7 7 7 7 7 7 7 7 7 50 - 200 ft fro or do 7 7 7	1.21 6 6 1.3 6 6 6 1.3 6 6 6 1.3 6 6 6 1.3 6 6 6 1.3 6 6 6 1.3 6 6 6 6 1.3 6 6 6 6 6 6 6 6 6 6 6 6 6	- 1.50 5 5 - 1.4 5 - 1.4 5 - 1.1 5 - 1.1 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 0 w (minor gully 40%; hillslopes I areas and litter sented 4 4 4 4	3 3 3 3 3 cone preser and rill s40% from st wetland debris represer 3 3 Wides 3	2 2 <1.4 2 <1.1 2 centrated flut (extensive rerosion); hili areas and jams are nu sented or al 2 2 spread Insta 2	1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	

						Cate	egory				
sessment arameter	Measurement Method	Fu	unctionin	g			ng-at-Risk		N	ot Function	oning
		St	ream Fun	ction P	yramid Lev	el 3 Geomorp	hology		1		
Riparian Vegetation (Score = Average of Left and Right bank, max score of 10)	7. Riparian Vegetation Zone (EPA, 1999, modified)	width o veget diversity activities	i zone exter of >100 feet ation comm and density do not impa species not or sparse	; good iunity /; human act zone;	composit activities	one extends to a v tion is dominated greatly impact z spresented and a	by 2 or 3 speci one; invasive sp	es; human becies well	a width no ripa to h	an zone ext of <25 feet rian vegetal numan activi ity of vegeta invasive	; little tion du ties;
Ripa e = ba	Left Bank Existing	10	9	8	7	6	5	4	3	2	1
g i ç	Left Bank Proposed	10	9	8	7	6	5	4	3	2	1
Ri Ri	Right Bank Existing	10	9	8	7	6	5	4	3	2	1
	Right Bank Proposed	10	9	8	7	6	5	4	3	2	1
Lateral Stability (Score =Average of Left and right bank, max score of 10)	8. Dominant Bank Erosion Rate Potential	po BEHI/NB	e bank eros otential is lo or S Rating: L L/H, L/VH, I	w /VL, L/L,		Rating: M/L, M/M,	or .		rate BEHI, H/Ex,	nate bank e potential is or /NBS Rating VH/H, Ex/M /H, VH/VH, I	high g: H/H, , Ex/H
Lateral Stability Average of Leff. Ik, max score of	Existing Condition (Right bank)	10	9	8	7	6	5	4	3	2	1
Later =Avera nk, ma	Proposed Condition (Right Bank)	10	9	8	7	6	5	4	3	2	1
score = bai	Existing Condition (Left bank) Proposed Condition	10	9	8	7	6	5	4	3	2	1
S	(Left Bank)		9	8	7	6	5	4	3	2	1
	9. Lateral Stability Extent		Stable				Instability			espread Inst	ability
	Existing Condition		9	8	7	6	5	4	3	2	1 1
	Proposed Condition 10. Shelter for Fish and		9 1an 70% of	8	7 20-70% mi	6 x of stable habita	5 at: suited for full	4 colonization	3 Less th	2 an 20% mix	
-		submerge banks, rul	; mix of sn d logs, und bble, grave	lercut		at high en	d of scale)		substra	ite unstable	or
um is ephemeral		stable hal allow full potential (are not ne	rocks, or o bitat and at colonizatior (i.e., logs/sr ew fall and r	ther stage to า าags that			,		lacking		
tream is ephemeral	Evicting Condition	stable hal allow full potential (are not ne transient)	bitat and at colonizatior (i.e., logs/sr ew fall and r	ther stage to า nags that not	7	6		4	lacking		
è if stream is ephemeral	Existing Condition Proposed Condition	stable hal allow full o potential (are not ne transient) 10	bitat and at colonizatior (i.e., logs/sr ew fall and r 9	ther stage to n nags that not 8	777	6	5	4 4			<u>1</u>
complete if stream is ephemeral)	Existing Condition Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²)	stable hal allow full o potential (are not ne transient) 10	bitat and at colonizatior (i.e., logs/sr ew fall and r	ther stage to า nags that not		6	5		lacking 3 3	2	<mark>1</mark> 1
not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 ml ²) Existing Condition	stable hat allow full o potential (are not ne transient) 10 10	bitat and at colonizatior (i.e., logs/sr ew fall and r 9 9 4.0 - 5.0 9	ther stage to n nags that not 8	7	6 3.0 - 4.0 c 6	5 5 v 5.0 - 7.0 5	4	lacking 3 3 3	2 2 < 3.0 or >7. 2	1 1 0
(Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition	stable hat allow full o potential (are not ne transient) 10 10	bitat and at colonizatior (i.e., logs/sr ew fall and r 9 9 4.0 - 5.0	ther stage to nags that not <u>8</u> 8	7	6 3.0 - 4.0 c	5 5 r 5.0 - 7.0	4	lacking 3 3	2 2 < 3.0 or >7.	1 1 0
sity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing	stable hat allow full o potential (are not ne transient) 10 10	bitat and at colonizatior (i.e., logs/sr ew fall and r 9 9 4.0 - 5.0 9	ther stage to nags that not 8 8 8	7	6 3.0 - 4.0 c 6 6	5 5 v 5.0 - 7.0 5	4	3 3 3 3 3 3	2 2 < 3.0 or >7. 2	1 1 0 1
versity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 m ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 m ²) Existing Condition	stable hal allow full of potential (are not net transient) 10 10 10 10	bilat and at colonization (i.e., logs/sr ww fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9	ther stage to hags that not 8 8 8 8 8 8	7 7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6	5 5 r 5.0 - 7.0 5 5 r 7.0 - 8.0 5	4 4 4 4	3 3 3 3 3 3 3 3 3	2 2 < 3.0 or >7. 2 2 <3.5 or >8. 2	1 1 0 1 0 1
Diversity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 m ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 m ²) Existing Condition Proposed Condition	stable hal allow full of potential (are not net transient) 10 10 10 10	bitat and at colonization (i.e., logs/sr aw fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0	ther stage to nags that not 8 8 8 8 8	7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c	5 5 r 5.0 - 7.0 5 5 r 7.0 - 8.0	4 4 4	3 3 3 3	2 2 < 3.0 or >7. 2 2 <3.5 or >8.	1 1 0 1 0 1
tdform Diversity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 m ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 m ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams)	stable hat allow full i potential (are not ne transient) 10 10 10 10 10 10	bitat and at colonizatior (i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 6 1.2	5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 5 5 - 1.5	4 4 4 4 4	3 3 3 3 3 3 3 3 3 3	2 2 < 3.0 or >7. 2 <3.5 or >8. 2 2 <1.2	1 1 0 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition	stable hat allow full a potential (are not ne transient) 10 10 10 10 10 10 10	bitat and at colonization (i.e., logs/sr w fall and i 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5 9	ther stage to n ags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 1.2 6	5 5 r 5.0 - 7.0 5 5 r 7.0 - 8.0 5 5 - 1.5 5	4 4 4 4 4 4 4	1acking 3	2 2 < 3.0 or >7. 2 2 <3.5 or >8. 2 2 <1.2 2	1 1 0 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability	stable hat allow full a potential (are not ne transient) 10 10 10 10 10 10 10	bitat and at colonizatior (i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 6 1.2 6 6 6	5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 5 5 - 1.5	4 4 4 4 4	3 3 3 3 3 3 3 3 3 3	2 2 < 3.0 or >7. 2 <3.5 or >8. 2 2 <1.2	1 1 0 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Pr	stable hat allow full apotential (are not ne transient) 10 10 10 10 10 10 10 10 10 10	bitat and at colonization (i.e., logs/sr w fall and i 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 5.1.5 9 9 9 5.1.2 9	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 6 1.2 6 6 6	$5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\$	4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 < 3.0 or >7. 2 2 <3.5 or >8. 2 2 <1.2 <1.2 2 2	1 1 0 1 1 1 1 1 1
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Bedform Diversity (Do not compl	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition <td< td=""><td>stable hal allow full optimized potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>bitat and at colonizatior (i.e., logs/sr w fall and i 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 ×1.2 9 9 2.0 - 4.0 9</td><td>ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8</td><td>7 7 7 7 7 7 7 7 ent Perennia</td><td>6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 1.2 6 6 6 1.1 1.1 6 6 6 1.1 4.0 6 6 6 1.2 6 6 6 6 1.2 6 6 6 6 1.2 6 6 6 6 6 6 6 6 6 6 6 6 6</td><td>5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5</td><td>4 4 4 4 4 4 4 4 4 4 4 4 4</td><td>3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</td><td>2 2 <3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 2 2 3 5 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7</td><td>1 1 0 1 1 1 1 1 1 1 1 1</td></td<>	stable hal allow full optimized potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	bitat and at colonizatior (i.e., logs/sr w fall and i 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 ×1.2 9 9 2.0 - 4.0 9	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 ent Perennia	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 1.2 6 6 6 1.1 1.1 6 6 6 1.1 4.0 6 6 6 1.2 6 6 6 6 1.2 6 6 6 6 1.2 6 6 6 6 6 6 6 6 6 6 6 6 6	5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 <3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 2 2 3 5 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7	1 1 0 1 1 1 1 1 1 1 1 1
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Bedform Diversity (Do not compl	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition <td< td=""><td>stable hal allow full optimized potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>bitat and at colonizatior (i.e., logs/sr w fall and i 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 ×1.2 9 9 2.0 - 4.0 9</td><td>ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8</td><td>7 7 7 7 7 7 7 7 ent Perennia</td><td>6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 1.2 6 6 6 1.1 6 6 6 1.1 6 6 6 4.0 6 6 6 6 6 1.2 6 6 6 6 6 1.2 6 6 6 6 6 6 6 6 6 6 6 6 6</td><td>5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5</td><td>4 4 4 4 4 4 4 4 4 4 4 4 4</td><td>3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</td><td>2 2 <3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 2 2 3 5 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7</td><td>1 1 0 1 1 1 1 1 1 1 1 1</td></td<>	stable hal allow full optimized potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	bitat and at colonizatior (i.e., logs/sr w fall and i 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 ×1.2 9 9 2.0 - 4.0 9	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 ent Perennia	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 1.2 6 6 6 1.1 6 6 6 1.1 6 6 6 4.0 6 6 6 6 6 1.2 6 6 6 6 6 1.2 6 6 6 6 6 6 6 6 6 6 6 6 6	5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 <3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 <1.1 2 2 2 2 2 2 3 5 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7	1 1 0 1 1 1 1 1 1 1 1 1
Bedform Diversity (Do not comp	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Conditi	stable hat allow full apotential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	bitat and at colonizatior (i.e., logs/sr w fall and i 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0 9 9 9 >1.2 9 9 9 2.0 - 4.0 9 9 9 2.0 - 4.0 9 9 9 9 2.1.5 9 9 9 9 9 9 2.1.5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 9 7 9 7 7 9 7 7 7 7 7 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 1.2 6 6 1.1 6 6 6 1.1 6 6 6 1.1 1.1	5 5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 - 1.5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.5 5 5 - 1.5 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4 4	lacking 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 3.5 or >8. 2 3.1 2 3.1 2 3.1 3.1 2 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1 3.1	1 1 0 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral)	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed C	stable hat allow full apotential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	bitat and at colonizatior (i.e., logs/sr w fall and r 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.5 9 9 >1.2 9 9 2.0 - 4.0 9 9 2.0 - 4.0	ther stage to nags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 7 7 7 7 7 9 7 9 9 7 9 7 9 7 9 7	6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 6 1.2 6 6 6 1.1 6 6 6 1.1 6 6 6 1.2 1.2 6 6 6 1.2 1.2 6 6 6 1.2 1.2 6 6 6 1.2 1.2 1.1 6 6 6 1.2 1.1 6 6 6 1.2 1.1 1.1 6 6 6 1.1 1.1 1.1 1.1	5 5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 5 - 1.5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 <3.0 or >7. 2 2 <3.5 or >8. 2 <1.2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 <1.1 2 2 2 2 2	1 1 0 1 1 1 0 1 1 1 1 1 1 1 1 1

Trib 2				Reach Score/	Reach Total	Ex. 24/170 P	rop.: 136/170	Quality	: Ex: 0.14 P	rop:0.8
	Funct	ion-based	Rapid	I Reach Lev	el Stream As	sessment				
					Cate	gory				
Measurement Method	Fu	nctioning	I		Functionir	ng-at-Risk		N	ot Functio	ning
	Stre	eam Func	tion Py		-					
Nutrient Enrichment (USDA 1999)	colored; ol depth 3 to colored); n surface; no submerged Clear wate reach; dive community quantities macrophyt	bjects visible 6 ft (less if s to oil sheen b noticeable d objects or er along enti erse aquatic v includes lo of many spe es; little alg	e at slightly on film on rocks. re plant w ecies of	visible to dep no oil shee	oth 0.5 to 3.0 ft; i on on water surfa er along entire r	may have sli ace. Fairly cl each; moder	ght green color; ear or slightly	appeara time; ob depth< (water m other ob pollutan mats, su sheen o foam on odor of sewage pollutan Pea-gre water al dense s macropl stream;	Ince most o lects visible 0.5 ft; slow n aybe bright vious water ts; floating urface scum r face scum r heavy coas surface; or chemicals, o or other ts. en, gray, or ong entire r tands of nytes cloggi severe alge severe alge	the at moving green; algal , t of strong pil, brown each; ng
Existing Condition	10	9	8	7	6	5	4	3	2	1
Proposed Condition	10	9	8	7	6	5	4	3	2	1
14. Detritus (Petersen, 1992)	and wood	d without see	diment		sedir	ment		black odor de	in color and (anaerobic etritus abser	l foul) or nt
Ų	-	-								1
Proposed Condition	10	9	8	7	6	5	4	3	2	1
am Function Pyramid	Level 4 F	hysicoch	emica	I Overall EXI	STING Condi	ition F	FAR NF	S	core:4	
am Function Pyramid I	Level 4 P	hysicoche	emical	Overall PRC	POSED Con	dition F	FAR NF	S	core:16	
			Functio	on Pyramid I						
			•	-						
0	-	-								1
16. Macroinvertebrate		-		/		-		-		1 ecies
	10	9	8	7	6	5	4	3	2	1
	10			7	6	5	4	3		1
17. Fish Presence			-					-		<u> </u>
Existing Condition	10	9	8	7	6	5	4	3	2	1
Proposed Condition	10	9	8	7	6	5	4	4	2	1
If existing biology is FAR or NF, provide description of cause(s)	Stream is o	currently pip	oed.							
ream Function Pyramic	d Level 5	Biology C)verall	EXISTING C	ondition	F FAR	NF	Sc	ore: 3	
	Measurement Method I3. Water Appearance and Nutrient Enrichment USDA 1999) Existing Condition Proposed Condition I5. Macroinvertebrate Existing Condition Proposed Condition Proposed Condition I5. Macroinvertebrate Tolerance Existing Condition Proposed Condition Froposed Condition Froposed Condition Proposed Condition Proposed Condition Froposed Condition Froposed Condition Proposed Condition Froposed Condit	Existing Condition 10 Proposed Condition 10 <t< td=""><td>Existing Condition 10 9 Proposed Condition 10 9 14. Detritus (Petersen, 1992) Mainly consisting of 1 and word without sea covering it Existing Condition 10 9 9 14. Detritus (Petersen, 1992) Mainly consisting of 1 and wood without sea covering it Existing Condition 10 9 9 Proposed Condition 10 9 9 14. Detritus (Petersen, 1992) Mainly consisting of 1 and wood without sea covering it Existing Condition 10 9 9 Proposed Co</td><td>Existing Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition<!--</td--><td>Existing Condition 10 9 8 7 Proposed Condition 10</td><td>Existing Condition 10 9 8 7 6 Proposed Condition 10 9</td></td></t<> <td>Function-based Rapid Reach Level Stream Assessment Measurement Method Category Functioning Functioning-at-Risk Stream Function Pyramid Level 4 Physicochemical Stream Function Pyramid Level 4 Physicochemical 13. Water Appearance and Nutrient Enrichment USDA 1999) Very clear, or clear but tea- colored; objects visible at depth 3 to 6 ft (less if slight) colored); no oil sheen on surface; no noticeable film on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness especially after storn on stream substrate Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5 Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5</td> <td>Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5</td> <td>Function-based Rapid Reach Level Stream Assessment Category Category Stream Function Pyramid Level 4 Physicochemical Stream Function Pyramid Level 4 Physicochemical Teques or clear but tea- dopth 3 to 6 ft (less if slighty colored; ho oil sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no addres water al growth present Walking Condition 10 9 8 7 6 5 4 3 Proposed Condition 10 9 8 7 6 5 4 3 Hainly consisting of leaves and wood without sediment covering it Leaves and wood scarce; fine organic debris without sediment Far NF S Stream Function Pyramid Level 4 Physicochemical Overall PROPOSED Condition F FAR NF S Stream Function Pyramid Level 4 Physico</td> <td>Function-based Rapid Reach Level Stream Assessment Category Measurement Method Stream Function Pyramid Level 4 Physicochemical Stream Function Pyramid Level 4 Physicochemical Warent Enclower of base to the set to care of chycle wishle at colored, chycles wishle at colored, chycles wishle at colored, chycles to rocks. Clear water along entire reach: moderal algor oth submerged objects or rocks. Clear water along entire reach: moderal algor oth mater along entire reach: moderal algor oth mate</td>	Existing Condition 10 9 Proposed Condition 10 9 14. Detritus (Petersen, 1992) Mainly consisting of 1 and word without sea covering it Existing Condition 10 9 9 14. Detritus (Petersen, 1992) Mainly consisting of 1 and wood without sea covering it Existing Condition 10 9 9 Proposed Condition 10 9 9 14. Detritus (Petersen, 1992) Mainly consisting of 1 and wood without sea covering it Existing Condition 10 9 9 Proposed Co	Existing Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition </td <td>Existing Condition 10 9 8 7 Proposed Condition 10</td> <td>Existing Condition 10 9 8 7 6 Proposed Condition 10 9</td>	Existing Condition 10 9 8 7 Proposed Condition 10	Existing Condition 10 9 8 7 6 Proposed Condition 10 9	Function-based Rapid Reach Level Stream Assessment Measurement Method Category Functioning Functioning-at-Risk Stream Function Pyramid Level 4 Physicochemical Stream Function Pyramid Level 4 Physicochemical 13. Water Appearance and Nutrient Enrichment USDA 1999) Very clear, or clear but tea- colored; objects visible at depth 3 to 6 ft (less if slight) colored); no oil sheen on surface; no noticeable film on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness especially after storn on stream substrate Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5 Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5	Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5	Function-based Rapid Reach Level Stream Assessment Category Category Stream Function Pyramid Level 4 Physicochemical Stream Function Pyramid Level 4 Physicochemical Teques or clear but tea- dopth 3 to 6 ft (less if slighty colored; ho oil sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no al sheen on water surface. Fairly clear or slight gree color: no addres water al growth present Walking Condition 10 9 8 7 6 5 4 3 Proposed Condition 10 9 8 7 6 5 4 3 Hainly consisting of leaves and wood without sediment covering it Leaves and wood scarce; fine organic debris without sediment Far NF S Stream Function Pyramid Level 4 Physicochemical Overall PROPOSED Condition F FAR NF S Stream Function Pyramid Level 4 Physico	Function-based Rapid Reach Level Stream Assessment Category Measurement Method Stream Function Pyramid Level 4 Physicochemical Stream Function Pyramid Level 4 Physicochemical Warent Enclower of base to the set to care of chycle wishle at colored, chycles wishle at colored, chycles wishle at colored, chycles to rocks. Clear water along entire reach: moderal algor oth submerged objects or rocks. Clear water along entire reach: moderal algor oth mater along entire reach: moderal algor oth mate

Reach ID: Trib 2]	Reach Score/Reach Total	Ex. 24/170 Prop.: 136/170	Quality: Ex: 0.14 Prop:0.8
		Function-based Rapic	I Reach Level Stream A	ssessment	
Assessment			Cat	egory	
Parameter Measurer	nent Method	Functioning	Function	ing-at-Risk	Not Functioning
		Bankfull Determination	n and Rosgen Stream Cla	assification	
Rosgen Stream Type (Observ	ation) EX - Stre	am is currently piped PRO - C			
Regional Curve (circle one):	Piedmon	t Coastal Plain	Allegheny Plateau/Ridge	e and Valley Urban	Karst
DA (sqmi) 0.02					
BF Width (ft) 2.3-3.3				BF Area (sqft)	0.6-1.1
BF Depth (ft) 0.25-0.32				Percent Impervious (%)	21.3
		Fiel	d Measurements		
Parameter			Measureme	nts and Ratios	
Water surface to geomorphic elevation difference	feature	Ex- Channel is piped			
Riffle Mean Depth at Bankfull	Stage (dbkf)	Ex- Channel is piped	Proposed: 0.24		
Riffle Width at Bankfull Stage	(Wbkf)	Ex- Channel is piped	Proposed: 3.2		
Riffle XS Area at Bankfull St (Abkf = dbkf*Wbkf)	age	Ex- Channel is piped	Proposed: 0.78		
Floodprone Area Width (Wfpa at elevation determined by 2xl		Ex- Channel is piped	Target: 12.8		
Entrenchment Ratio (ER) (El	R=Wfpa/Wbkf)	Ex- Channel is piped	Target 4.0		
Low Bank Height (LBH)		Ex- Channel is piped	Proposed: 0.35		
Riffle Maximum Depth at Bank (Dmax)	full Stage	Ex- Channel is piped	Proposed: 0.35		
Bank Height Ratio (BHR) (BHR=LBH/Dmax)		Ex- Channel is piped	Proposed:1.0		
BEHI/NBS Ratings and Lengt	IS	Ex- Channel is piped	L/L		
Pool to Pool Spacing (P-P)		Ex- Channel is piped	Proposed: Min: 16, Max: 24, Avg.: 20		
Pool to Pool Spacing Ratio (P Ratio=P-P/Wbkf)	P-P Ratio) (P-	Ex- Channel is piped	Proposed: Min:5, Max:7.5, Avg.:6.3		
Pool Maximum Depth at Bankt (Dmbkfp)	ull Stage	Ex- Channel is piped	Proposed: 0.6		
Pool Depth Ratio (Dmbkfp R Ratio=Dmbkfp/dbkf)	atio) (Dmbkfp	Ex- Channel is piped	Proposed:2.5		
Macroinvertebrate Taxa Obse	rved	Ex- Channel is piped	n/a		

	EXISTING a				EL STREA		ION-BAS	ED		
/atershed:	Middle Potomac - Catoctin			Rater(s):		RC/BW				
tream:	Un -Named Tributary to Cabin	Branch		Date:	-	3/10/2022				
ach Length:	8016 linear feet			Latitude:	-	39.177353				
noto(s):	See Attached			_Longitude:		-77.199137				
each ID:	Trib 3			Reach Score	/Reach Total	Ex. 24/170 Pro	p.: 136/170	Quality	: Ex: 0.14 P	rop:0.8
		Function	-based Rapi	d Reach Lev	/el Stream As	sessment				
Assessment					Cate	egory				
Parameter	Measurement Method	Funct	tioning		Functioni	ng-at-Risk		No	ot Functio	oning
	•	<u>u</u>	Stream F	unction Pyra	mid Level 1 H	lydrology				
	1. Concentrated Flow	flow/impai	or concentrated rments from t land use		al for concentra te, however, me reso	asures are in p		flow/imp restor	al for conce pairments to ation site an ents are in	o reach nd no
	Existing Condition	10	9 8	7	6	5	4	3	2	1
Ħ	Proposed Condition	10	9 8	7	6	5	4	3	2	1
Runoff	2. Flashiness	result of rain geology, impervious c	ow regime as a nfall patterns, and soils, over less than 5%		y flow regime as y, and soils, imp			result o geol	flow regim f rainfall pa logy, and so ous cover o than 15%	atterns, oils,
	Existing Condition	10	9 8	7	6	5	4	3	2	1
	Proposed Condition	10	9 8	7	6	5	4	3	2	1
	Stream Function Pyran	nid Level 1 H	ydrology O	/erall EXISTI	NG Condition	n F <mark>FA</mark> l	RNF	Sco	re:5	
	Stream Function Pyram	id Level 1 H	ydrology Ov		SED Conditio	on F FAR	NF	Scor	re:11	
	Stream Function Pyram	id Level 1 H		erall PROPC	SED Condition		NF	Scor	re:11	
	Stream Function Pyram 3. Bank Height Ratio (BHR)			erall PROPC	mid Level 2 H		NF	Scor	r e:11 >1.50	
	3. Bank Height Ratio (BHR) Existing Condition	<1 10	Stream Fu .20 9 8	erall PROPC unction Pyra	mid Level 2 H 1.21	lydraulics - 1.50 5	4	3	>1.50	1
	3. Bank Height Ratio (BHR)	<1	Stream Fu	erall PROPC	mid Level 2 H	lydraulics - 1.50			>1.50	1
	3. Bank Height Ratio (BHR) Existing Condition	<1 10 10	Stream Fu .20 9 8	erall PROPC unction Pyra	mid Level 2 H 1.21	lydraulics - 1.50 5 5	4	3	>1.50	
	3. Bank Height Ratio (BHR) Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA	<1 10 10 >: 10	Stream Fr 9 8 9 8 2.2 9 9 8	erall PROPC unction Pyra	mid Level 2 F 1.21 6 6 2.1 6	lydraulics - 1.50 - 5 - 1.4 5	4 4	3 3 3 3	>1.50 2 2 <1.4 2	
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams)	<1 10 10 >:	Stream Fi 9 8 9 8 2.2 2.2	erall PROPC unction Pyra	mid Level 2 H	lydraulics - 1.50 5 - 1.4	4 4	3 3	>1.50 2 2 <1.4	1
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	<1 10 10 10 10 10 10	Stream Fr 9 8 9 8 2.2 9 9 8	erall PROPC unction Pyra	mid Level 2 F 1.21 6 6 2.1 6	lydraulics - 1.50 - 5 - 1.4 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	4 4	3 3 3 3	>1.50 2 2 <1.4 2	1
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial	<10 10 10 10 10 10 10 10	Stream Fi 1.20 9 8 9 8 2.2 9 8 8 9 8 8	erall PROPC unction Pyra 7 7 7 7 7 7	mid Level 2 F 1.21 6 6 2.1 6 6 1.3 6	lydraulics - 1.50 - 1.50 - 1.4 - 1.4 - 5 - 1.1 - 5	4 4	3 3 3 3 3	>1.50 2 2 <1.4 2 <1.1 2	1 1 1
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	<10 10 10 10 10 10 >>	Stream Fr 1.20 9 8 9 8 2.2 9 8 9 8 9 8 1.4 1.4	erall PROPC unction Pyra 7 7 7 7 7	mid Level 2 F 1.21 6 2.1 6 6 6 1.3	Hydraulics - 1.50 5 - 5 - 1.4 5 - 1.1	4 4 4 4 4	3333	>1.50 2 2 <1.4 2 2 <1.1	1 1 1
Floodplain Connectivity (Vertical Stability)	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition	<1 10 10 10 10 10 10 10 10 10 10 10 10 10	Stream Fi 1.20 9 8 9 8 2.2 9 8 9 8 9 8 1.4 9 8	runoff is equ and rill erosi 50 - 200 ft fro	mid Level 2 F 1.21 6 6 2.1 6 6 1.3 6	System - 1.50 5 5 - 1.4 5 - 1.1 5 - 1.1 5 - 5	4 4 4 4 4 4 w (minor gully 2%; hillslopes areas and litter	3 3 3 3 3 3 3 conc presen and rill e >40%; from st wetland debris	>1.50 2 2 <1.4 2 <1.1 2	1 1 1 0ws e gully Ilslopes <50 ft Jing or litter or ot well
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Proposed Condition 5. Floodplain Drainage Existing Condition	<pre><1 10 10 10 10 10 10 10 10 10 10 10 10 10</pre>	Stream Fr .20 9 8 9 8 2.2 9 8 9 8 9 8 1.4 9 8 9 8 1.4 9 8 9 8 1.4 9 8 9 8 1.4 9 8 9 8 1.4 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	runoff is equ and rill erosi 50 - 200 ft fro or do 7	6 6 6 6 6 6 6 6 1.3 6 6 6 1.3 6 6 6 9 9 9 9 1.3 9 6 6 6 9 9 9 1.3 9 1.3 9 6 6 1.3 9 6 9 1.3 9 1.3 9 1.3 9 1.3 9 1.3 9 1.3 9 1.3 9 1.3 9 1.4 9 1.5 9 1.6 10 1.5 10 1.5 10 1.5 10 1.5 10 1.5 10	Hydraulics - 1.50 5 - 1.4 5 - 1.4 - 5 - 1.1 5 - 1.1 5 - 0.1 5 - 1.1 5 - 1.1 5 - 1.1 5 - 1.1 5 - 5	4 4 4 4 4 4 w (minor gully 0%; hillslopes areas and litter ented 4	3 3 3 3 3 3 3 3 cono presen and rill e >40%; from st wetland debris repres 3	>1.50 2 2 <1.4 2 <1.1 2 <1.1 2 centrated fl th (extensive errosion); hillslopes ream; ponc areas and jams are no sented or all 2	1 1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Existing Condition Proposed Condition	<pre><1 10 10 10 10 10 10 10 10 10 10 10 10 10</pre>	Stream Fr 1.20 9 8 9 8 9 8 9 8 9 8 9 8 1.4 9 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	runoff is equ and rill erosi 50 - 200 ft fro or de	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 9 9 9 9 1.3 6 6 6 9 9	Hydraulics - 1.50 5 - 1.4 5 - 1.4 5 - 1.1 5 - 1.1 5 - 0.1 5 - 1.1 5 - 0.1 5 - 1.1 5 5 - 0.1 5 5 5 5 5 5 5 5	4 4 4 4 4 w (minor gully 0%; hillslopes areas and litter ented	3 3 3 3 3 3 3 3 conc presen and rill e >40%; from st wetland debris represe 3 3	>1.50 2 2 <1.4 2 <1.1 2 centrated flot t (extensive ream, ponc areas and jams are no sented or al 2 2	1 1 1 1 0 0 0 0 1 0 0 0 1 0 0 1 0 0 0 1 0 0 0 0 1 0
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Streams) Existing Condition Proposed Condition Existing Condition Proposed Condition Propos	10 5 10 10 10 10 5 10 10 10 10 5 10 10 10 10 5 10 10 10 5 10 10 10 5 10 10 5 10 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 5 10 10 10 5 10 10 10 5 10 10 10 5 10 10 10 10 10 10 10 10 10 10 10 10 10 10	Stream Fr 1.20 9 8 9 8 9 8 9 8 9 8 9 8 1.4 9 9 8 1.4 9 9 8 varily sheet flow; arily sheet flow; arily sheet flow; arily sheet flow; as and litter or ms are well sented 9 8 9 8 9 8 9 8 9 8 9 8	runoff is equ and rill erosi 50 - 200 ft fro or do 7 7	mid Level 2 F	Isso 5 5 - 1.50 5 - 1.4 5 - 1.1 5 - 1.1 5 - 1.1 5 - 1.1 5 - 5 - 1.1 5 - 5 - 1.1 5 5 - 5 - 5 - 5 - 5 5 - 5 - 5	4 4 4 4 4 4 w (minor gully %; hillslopes areas and litter ented 4 4	3 3 3 3 3 3 3 3 3 cond presen and rill & s40% from st wetland debris repres 3 3 Wides	>1.50 2 2 <1.4 2 <1.1 2 contrated flot t (extensive errorsion); hill hillslopes ream; pono areas and jams are no asented or al 2 2 spread Insta	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition db. Entrenchment (Non meandering streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Froposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition F. Floodplain Drainage Existing Condition Proposed Condition	<10 10	Stream Fi 1.20 9 8 9 8 9 8 9 8 9 8 9 8 9 8 1.4 9 8 9 8 1.4 sas and flow; analysheet flow; analysheet flow; as and littler or orns are well sented 9 8 9 8 9 8 9 9 8 9 8 8	runoff is equ and rill erosi 50 - 200 ft fro or do 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	mid Level 2 F	Iydraulics - 1.50 5 - 1.4 5 - 1.4 - 5 - 1.1 5 - 1.1 5 - 1.1 5 - 5 - 1.1 5 - 5 - 1.1 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 5 - 5 5	4 4 4 4 4 4 w (minor gully 9%; hillslopes areas and litter ented 4 4 4	3 3 3 3 3 3 3 3 cond presen and rill e >40%, from st wetland debris repres 3 3 Wides 3	>1.50 2 2 <1.4 2 <1.1 2 centrated fld tt (extensive erosion); hill jams are no sented or al 2 2 spread Insta 2	1 1 1 1 1 0 ws e gully lislope: <50 ft fiing or litter o vell bbsent 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Floodplain Connectivity (Vertical Stability)	3. Bank Height Ratio (BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Streams) Existing Condition Proposed Condition Existing Condition Proposed Condition Propos	<10 10	Stream Fi 1.20 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 1.4 9 8 9 8 1.4 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	runoff is equad in the rost of	6 6 6 6 6 6 6 6 1.3 6 6 6 1.3 6 6 6 9 9 1.3 9 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Iydraulics - 1.50 5 - 1.4 5 - 1.4 - 5 - 1.1 5 - 1.1 5 - 1.1 5 - 5 - 1.1 5 - 5 - 1.1 5 - 5 - 1.1 5 - 5 - 1.1 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	4 4 4 4 4 4 4 w (minor gully 9%; hillslopes areas and litter ented 4 4 4 4	3 3 3 3 3 3 3 3 cond presen and rill e >40%, from st wetland debris repres 3 3 Wides 3 3	>1.50 2 2 <1.4 2 <1.1 2 contrated flot t (extensive errorsion); hill hillslopes ream; pono areas and jams are no asented or al 2 2 spread Insta	1 1 1 1 1 0 0 ws e gully llslope: <50 ft tilter o twell llstope: <50 ft 1 1 2 bisent 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

		Func	tion-base	d Rapid	Reach Le	vel Stream As	sessment				
ssessment						Cate	egory				
Parameter	Measurement Method	F	unctioning	g		Functioni	ng-at-Risk		N	ot Functio	oning
		St	ream Fun	ction P	yramid Lev	el 3 Geomorp	hology				
Riparian Vegetation (Score = Average of Left and Right bank, max score of 10)	7. Riparian Vegetation Zone (EPA, 1999, modified)	width o veget diversity activities	n zone exten of >100 feet; ation commi and density do not impa species not or sparse	good unity ; human act zone;	composit activities	ne extends to a v ion is dominated greatly impact zo ppresented and a	by 2 or 3 speci one; invasive sp	es; human becies well	a width no ripa to h	an zone exte of <25 feet rian vegetat uman activi ity of vegeta invasive	; little c tion du ities;
kipa e = bar	Left Bank Existing	10	9	8	7	6	5	4	3	2	1
ght Co H	Left Bank Proposed	10	9	8	7	6	5	4	3	2	1
Ri (S	Right Bank Existing	10	9	8	7	6	5	4	3	2	1
	Right Bank Proposed	10	9	8	7	6	5	4	3	2	. 1
Lateral Stability (Score =Average of Left and right bank, max score of 10)	8. Dominant Bank Erosion Rate Potential	po BEHI/NB	e bank eros otential is lov or S Rating: L/ L/H, L/VH, N	w VL, L/L,		Rating: M/L, M/M,	or .		rate BEHI/ H/Ex,	nate bank e potential is or VBS Rating VH/H, Ex/M H, VH/VH, I	high g: H/H, l, Ex/H
Lateral Stability Average of Left Ik, max score of	Existing Condition (Right bank)	10	9	8	7	6	5	4	3	2	1
Later =Avera nk, ma	Proposed Condition (Right Bank)	10	9	8	7	6	5	4	3	2	1
score = ba	Existing Condition (Left bank) Proposed Condition	10	9	8	7	6	5	4	3	2	1
<u>s</u>)	(Left Bank)		9	8	7	6	5	4	3	2	1
	9. Lateral Stability Extent		Stable				Instability			spread Inst	
	Existing Condition Proposed Condition		9	8	7	6	5	4 4	3 3	2	1
	10. Shelter for Fish and		9 1an 70% of	0		6 x of stable habita		-		2 an 20% mix	
ete if stream is ephemeral)		submerge banks, ru and large stable ha allow full potential	; mix of sna ed logs, unde bble, gravel, rocks, or ot bitat and at colonization (i.e., logs/sn ew fall and n	ercut , cobble ther stage to nags that	on new lan, L	ut not yet prepa at high en		aon (nay tale		sirables ob [,] te unstable	
trea	Existing Condition	,	9	8	7	6	5	4	3	2	1
elfs	Proposed Condition		9	8	7	6	5	4	3	2	1
complete	11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²)		4.0 - 5.0			3.0 - 4.0 o	r 5.0 - 7.0			< 3.0 or >7.	0
not	Existing Condition		9	8	7	6	5	4	3	2	1
ĝ	Proposed Condition	10	9	8	7	6	5	4	3	2	1
rsity	11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²)		5.0 - 7.0				r 7.0 - 8.0			<3.5 or >8.0	
ive	Existing Condition Proposed Condition		9	8	7	6	5 5	4 4	3 3	2	1
0	12a. Pool Max Depth Ratio/Depth Variability	IU	9 >1.5	0	/	6 1.2 ·		4	3	2 <1.2	1
form						0	F	4	3	2	1
Sedform I	(Gravel Bed Streams) Existing Condition	10	9	8	7	6	5				1
Bedform Diversity (Do not compl	Existing Condition Proposed Condition		9 9	8 8	7 7	6	5 5	4	3	2	
Bedform I	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams)	10	9 >1.2	8	7	6 1.1 ·	5 - 1.2	-		<1.1	
Bedform	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition	10	9 >1.2 9	8	7 7	6 1.1 6	5 - 1.2 5	4	3	<1.1 2	
	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams)	10	9 >1.2 9 9	8 8 8	7 7 7 7	6 1.1 6 6	5 - 1.2 5 5	4 4		<1.1	
	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing	10	9 >1.2 9 9 Modera	8 8 8	7 7 7 7	6 1.1 6 6 1 Streams in Co	5 - 1.2 5 5 5	4 4	3	<1.1 2 2	
	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Stope) Existing Condition	10 10 10 10	9 >1.2 9 9 Modera 2.0 - 4.0 9	8 8 ate Gradi	7 7 ent Perennia 7	6 1.1 6 6 1 Streams in Co 4.0	5 - 1.2 5 5 5 5 5 5 6.0 5	4 4 4	3 3 3	<1.1 2 2 >6.0 2	1
	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Stope) Existing Condition Proposed Condition 12. Pool Max Depth	10 10 10 10	9 >1.2 9 9 Modera 2.0 - 4.0	8 8 ate Gradi	7 7 7 ent Perennia	6 1.1 6 6 1 Streams in Co 4.0	5 - 1.2 5 5 biluvial Valleys - 6.0 5 5	4 4	3 3	<1.1 2 2 >6.0	1
	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition 12. Pool Max Depth Ratio/Depth Variability	10 10 10 10 10	9 >1.2 9 Modera 2.0 - 4.0 9 9 >1.5	8 8 ate Gradi 8 8	7 7 ent Perennia 7 7	6 1.1 6 6 1 Streams in Co 4.0 6 6 6 1.2	5 - 1.2 5 5 5 5 6.0 5 5 - 1.5	4 4 4 4 4	3 3 3 3	<1.1 2 >6.0 2 2 <1.2	1 1 1
Bedform Diversity (Do not complete if stream is ephemeral)	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Stope) Existing Condition Proposed Condition 12. Pool Max Depth	10 10 10 10 10 10	9 >1.2 9 9 Modera 2.0 - 4.0 9 9	8 8 ate Gradi	7 7 ent Perennia 7	6 1.1 6 6 11 Streams in Co 4.0 6 6	5 - 1.2 5 5 biluvial Valleys - 6.0 5 5	4 4 4	3 3 3	<1.1 2 >6.0 2 2	1 1 1 1 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral)	Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition 12. Pool Max Depth Ratio/Depth Variability Existing Condition	10 10 10 10 10 10 10 10	9 >1.2 9 9 Modera 2.0 - 4.0 9 9 >1.5 9 9	8 8 ate Gradi 8 8 8 8 8 8	7 7 ent Perennia 7 7 7 7 7 7	6 1.1 6 6 4.0 6 6 6 6 1.2 6 6 6	5 - 1.2 5 5 5 biluvial Valleys - 6.0 5 5 - 1.5 5 5	4 4 4 4 4 4	3 3 3 3 3 3 3	<1.1 2 >6.0 2 2 <1.2 2	1 1 1 1

				Reach Score/	Reach Total	EX. 24/1/0	Prop.: 136/170	Quality	/: Ex: 0.14 P	rop:0.8	
	Functio	on-based F	Rapid	I Reach Lev	el Stream A	ssessmen	t				
					Ca	tegory					
Measurement Method	Fun	nctioning			Function	ing-at-Ris	(N	ot Functio	oning	
			-								
Nutrient Enrichment USDA 1999)	colored; obj depth 3 to 6 colored); no surface; no submerged Clear water reach; diver community i quantities o macrophyte	ects visible a 6 ft (less if sliv 0 oil sheen or noticeable fil objects or ro along entire rse aquatic p includes low f many speci s; little algal	at ghtly n Im on icks. Iant	visible to dep no oil shee	th 0.5 to 3.0 f n on water su er along entire	t; may have s rface. Fairly o e reach; mode	light green color; clear or slightly	appeara time; ob depth< water m other ob pollutar mats, su sheen c foam or odor of sewage pollutar Pea-gre water al dense s macrop stream;	ance most o ojects visible 0.5 ft; slow i naybe bright ovious water ths; floating a urface scum or heavy coa n surface; or chemicals, o n, or other nts. een, gray, or long entire r stands of hytes cloggi severe alga	the at moving green; , algal , t of strong pil, brown each; ng	
Existing Condition	10	9	8	7	6	5	4	3	2	1	
14. Detritus (Petersen, 1992)	Mainly con and wood	nsisting of lea	aves		l wood scarce	; fine organic		3 2 1 Fine organic sediment - black in color and foul odor (anaerobic) or detritus absent			
Existing Condition	10	9	8	7	6	5	4	3	2	1	
Proposed Condition	10	9	8	7	6	5	4	3	2	1	
am Function Pyramid	Level 4 Pl	hysicochei	mica	I Overall EXI	STING Con	dition F	FAR NF	5	Score:4		
am Function Pyramid I	Level 4 Ph	ysicochen	nical	Overall PRO	POSED Co	ndition F	FAR NF	S	Score:16		
			inctio	on Pyramid I				T			
			0	7			A				
Ų	-	-	-							1	
16. Macroinvertebrate Tolerance		-	-	,	-	-		-			
Existing Condition	10	9	8	7	6	5	4	3	2	1	
Proposed Condition	10	9	8	7	6	5	4	3	2	1	
17. Fish Presence											
	10	9	8					3	2	1	
f existing biology is FAR or			-	/	6	5	4	4	2		
eam Function Pyramic	d Level 5 E	Biology Ov	erall	EXISTING C	ondition	F FAR	NF	So	core: 3		
				PROPOSED		F FAR	NF	Sc	ore:24		
	Existing Condition Proposed Condition Proposed Condition A. Detritus (Petersen, 1992) Existing Condition Proposed Condition Proposed Condition Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Fish Presence Existing Condition Proposed Condition Proposed Condition Proposed Condition Forposed Condition Proposed Condition Proposed Condition Fish Presence Existing Condition Proposed Condition Forposed Condition Proposed Condition Fish Presence Existing Condition Fish Presence Existing Condition Proposed Condition Fish Presence Existing Start Fish Presence Existing Start Proposed Condition Feristing biology is FAR or Figure (s) East Figure Condition Figure (s) East Figu	Measurement Method Fur 3. Water Appearance and Jutrient Enrichment USDA 1999) Very clear, colored; obj depth 3 to 6 colored; no surface; no submerged Clear water reach; diver community quantities o macrophyte growth press Existing Condition 10 Proposed Condition 10 Proposed Condition 10 Proposed Condition 10 4. Detritus (Petersen, 1992) Mainly cor and wood accor Existing Condition 10 Proposed Condition 10 Proposed Condition 10 Proposed Condition 10 Bar Function Pyramid Level 4 Ph 10 Stacroinvertebrate Abundant i Colerance Existing Condition 10 Proposed Condition 10	Measurement Method Functioning 3. Water Appearance and Nutrient Enrichment USDA 1999) Very clear, or clear but to colored; objects visible a colored; objects visible a colored; objects or or Clear water along entire reach; diverse aquatic p community includes low quantities of many speci macrophytes; little algal growth present Existing Condition 10 9 Proposed Condition 10 9 Proposed Condition 10 9 A. Detritus (Petersen, 1992) Mainly consisting of leat and wood without sedit covering it Existing Condition 10 9 Proposed Condition 10 9 Broposed Condition 10 9 Proposed Condition 10 9 Broposed Condition 10 9 Proposed Condition 10 9 Proposed Condition 10 9 For poseed Condition 10 9 For poseed Condition	Measurement Method Functioning 3. Water Appearance and Autrient Enrichment USDA 1999) Very clear, or clear but tea- colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on sufface; no noticeable film on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Existing Condition 10 9 8 Proposed Condition 10 9 8 Proposed Condition 10 9 8 A. Detritus (Petersen, 1992) Mainly consisting of leaves and wood without sediment covering it 8 Proposed Condition 10 9 8	Measurement Method Functioning Stream Function Pyramid Level 3. Water Appearance and Vatrient Enrichment USDA 1999) Very clear, or clear but teaclored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on suffrace; no noticeable film on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent Clouvication of the second seco	Measurement Method Functioning Function Stream Function Pyramid Level 4 Physicod (solved; objects visible at usph 1999) Frequent cloudiness espect visible to depth 0.5 to 3.0 for oil sheen on water su greenish water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness espect visible to depth 0.5 to 3.0 no oil sheen on water su greenish water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness espect visible to depth 0.5 to 3.0 no oil sheen on water su greenish water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Existing Condition 10 9 8 7 6 Proposed Condition 10 9 8 7 6 Existing Condition 10 9 8 7 6 Proposed Condition 10 9 8 7 6 Existing Condition 10 9 8 7 6 am Function Pyramid Level 4 Physicochemical Overall EXISTING Con am Function Pyramid Level 4 Physicochemical Overall EXISTING Con am Function Pyramid Level 4 Abundant F Existing Condition 10 9	Measurement Method Category Functioning Functioning-at-Risk 3. Water Appearance and Utrient Enrichment USDA 1999) Very clear, or clear but tea- colored; objects visible at epith 3 to 6 ft (less if slightly colored); no oil sheen on surface; no noticeable film on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness especially after stor visible to depth 0.5 to 3.0 ft; may have s no oil sheen on water surface. Fairly or surface; no noticeable film on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness especially after stor on stream substrate 4. Detritus (Petersen, 1992) Mainly consisting of leaves and wood without sediment covering it Leaves and wood scarce; fine organic sediment Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5 Franction Pyramid Level 4 Physicochemical Overall EXISTING Condition 10 9 8 7 6 5 Froposed Condition 10 9 8 7 6 5	Measurement Method Functioning Functioning-at-Risk 3. Water Appearance and Very clear, or clear but tea- colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on water surface. Fairly clear or slightly greenish water along entire reach; moderate algal growth submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; litte algal growth present Frequent cloudiness especially after storm wents; objects on oil sheen on water surface. Fairly clear or slightly greenish water along entire reach; moderate algal growth submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; litte algal growth present Frequent cloudiness especially after storm wents; objects macrophytes; litte algal growth present Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 and Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF am Function Pyramid Level 4 Physicochemical Overal	Measurement Method Functioning Functioning Functioning-at-Risk N 3. Water Appearance and Very clear, or clear but tea- turged region 3 to 61 (less if slightly colored), no oil sheen on water surface. Fairly clear or slightly colored), no oil sheen on water surface. Fairly clear or slightly colored), no oil sheen on water surface. Fairly clear or slightly colored), no oil sheen on water surface. Fairly clear or slightly colored), no oil sheen on water surface. Fairly clear or slightly colored), no oil sheen on water surface. Fairly clear or slightly greenish water along entire reach: diverse aquatic plant community includes low quantities of many species of macrophytes; title algal growth present Frequent cloudiness especially after storm events; objects verous, no oil sheen on water along entire reach; moderate algal growth water at on stream substrate Stream Function Pyramid Level 4 Physicochemical pollutar mats, si sheen or odar of sewage pollutar pearmet. Existing Condition 10 9 8 7 6 5 4 3 Mainly consisting of leaves and wood without sediment coverting it Leaves and wood scarce; fine organic debris without sediment Fine of black od do Existing Condition 10 9 8 7 6 5 4 3 Proposed Condition 10 9 8 7 6 5 4 3 Mainly consisting of leaves and wo	Measurement Method Category Functioning Functioning-training Functioning-training Not Function 3Water Appearance and View (c) bects view (c) objects	

Reach ID:	Trib 3]	Reach Score/Reach Total	Ex. 24/170 Prop.: 136/170	Quality: Ex: 0.14 Prop:0.8
		Function-based Rapie	d Reach Level Stream A	ssessment	
Assessment			Cat	egory	
Parameter	Measurement Method	Functioning	Function	ing-at-Risk	Not Functioning
		Bankfull Determination	n and Rosgen Stream Cla	assification	
Rosgen Stream T	ype (Observation) EX - Stre	am is currently piped PRO - C	;		
Regional Curve (circle one): Piedmon	t Coastal Plain	Allegheny Plateau/Ridge	e and Valley Urban	Karst
DA (sqmi)	0.13				
BF Width (ft)	5.2-6.6			BF Area (sqft)	2.3-3.9
BF Depth (ft)	0.45-0.58			Percent Impervious (%)	21.3
		Fiel	d Measurements		
F	Parameter		Measureme	nts and Ratios	I
Water surface to elevation different	geomorphic feature ce	Ex- Channel is piped Upstream Reference: 0.57			
Riffle Mean Depth	n at Bankfull Stage (dbkf)	Ex- Channel is piped Upstream Reference: 0.5	Proposed: 0.36 & 0.48		
Riffle Width at Ba	nkfull Stage (Wbkf)	Ex- Channel is piped Upstream Reference: 5.52	Proposed: 4.6 & 6.2		
Riffle XS Area at (Abkf = dbkf*Wb		Ex- Channel is piped Upstream Reference: 2.8	Proposed: 1.65 & 2.97		
	Width (Wfpa) (Wfpa=Width mined by 2xDmax)	Ex- Channel is piped Upstream Reference: 5.9	Target: 18.4 & 24.8		
Entrenchment R	atio (ER) (ER=Wfpa/Wbkf)	Ex- Channel is piped Upstream Reference: 1.1	Target 4.0		
Low Bank Height	: (LBH)	Ex- Channel is piped Upstream Reference: 2.7	Proposed: 0.5 & 0.66		
Riffle Maximum D (Dmax)	epth at Bankfull Stage	Ex- Channel is piped Upstream Reference: 0.7	Proposed: 0.5 & 0.66		
Bank Height Rat (BHR=LBH/Dmax		Ex- Channel is piped Upstream Reference: 3.9	Proposed: 1.0		
BEHI/NBS Rating	s and Lengths	Ex- Channel is piped	L/L		
Pool to Pool Spac	sing (P-P)	Ex- Channel is piped	Proposed: Min: 20, Max: 40, Avg.: 30		
Pool to Pool Spa P Ratio=P-P/Wbl	acing Ratio (P-P Ratio) (P- <f)< td=""><td>Ex- Channel is piped</td><td>Proposed: Min:4.3, Max:8.3, Avg.:5.4</td><td></td><td></td></f)<>	Ex- Channel is piped	Proposed: Min:4.3, Max:8.3, Avg.:5.4		
Pool Maximum De (Dmbkfp)	epth at Bankfull Stage	Ex- Channel is piped	Proposed: 0.9 & 1.2		
Pool Depth Ratic Ratio=Dmbkfp/d	o (Dmbkfp Ratio) (Dmbkfp bkf)	Ex- Channel is piped	Proposed: 2.5		
Macroinvertebrate	e Taxa Observed	Ex- Channel is piped	n/a		

	EXISTING a	nd PROPOS		ACH LEV MENT FIE			TION-BAS	ED			
atershed:	Middle Potomac - Catoctin			Rater(s):		RC/BW					
ream:	Un -Named Tributary to Cabin	Branch		Date: 3/10/2022							
ach Length:	1033 linear feet			-	Latitude: 39.177353						
ioto(s):	See Attached			Longitude:		-77.199137					
each ID:	Trib 4			Reach Score	/Reach Total	Ex. 66/170 P	rop.: 136/170	Quality: Ex: 0.39 Prop:0.8			
		Function-ba	sed Rapio	d Reach Lev	el Stream A	ssessment	·				
			-		Cat	tegory					
Assessment Parameter	Measurement Method	Function	ing			ing-at-Risk		Not Functioning			
	<u>.</u>	:	Stream Fu	unction Pyra	mid Level 1	Hydrology					
	No potential for concentrated flow/impairments from adjacent land use Some potential for concentrated flow/impairments to reach restoration site, however, measures are in place to protect resources								al for conce pairments to ration site an nents are in	o reach nd no	
	Existing Condition	10 9	8	7	6	5	4	3	2	. 1	
μ,	Proposed Condition	10 9	8	7	6	5	4	3	2	1	
Runoff	2. Flashiness	Non-flashy flow r result of rainfall geology, and impervious cover 6%	patterns, I soils,		/ flow regime a y, and soils, im		ainfall patterns, er 7 - 15%	result o geo	/ flow regim of rainfall pa logy, and so ious cover g than 15%	atterns, oils,	
	Existing Condition	10 9	8	7	6	5	4	3	2	1	
	Proposed Condition	10 9	8	7	6	5	4	3	2	1	
	Stream Function Pyran	AR NF	Sco	ore:9							
	Stream Function Pyram	id Level 1 Hydr	ology Ov	erall PROPO	SED Condit	ion F F/	R NF	Sco	re:11		
			Stream Fu	Inction Pyra	mid Level 2	Hvdraulics					
	I										
	3. Bank Height Ratio (BHR)	<1.20			1.21	- 1.50			>1.50		
	(BHR) Existing Condition	10 9	8	7	1.21 6	- 1.50 5	4	3	2	1	
tability)	(BHR)		8 8		1.21 6 6	- 1.50	4	3 3		1	
al Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA	10 9 10 9		7	1.21 6 6	- 1.50 5 5			2		
rtical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams)	10 9 10 9 >2.2	8	7 7	1.21 6 6 2.1	- 1.50 5 5	4	3	2 2 <1.4	1	
vity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	10 9 10 9 >2.2 10 9	8	7 7 7 7	1.21 6 6 2.1 6 6	- 1.50 5 - 1.4 5	4	3	2 2 <1.4 2	1	
ctivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition	10 9 10 9 2.2 2.2 10 9 10 9 10 9 >1.4 10	8 8 8 8	7 7 7 7 7 7	1.21 6 2.1 6 6 1.3 6	- 1.50 5 5 - 1.4 5 5 3- 1.1 5	4 4 4 4	3 3 3 3 3	2 2 <1.4 2 2 <1.1 2	1 1 1 1 1 1	
Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams)	10 9 10 9 >2.2 10 9 10 9 10 9 10 9 >1.4	8 8 8 8 ed flow; sheet flow; sheet flow; ; hillslopes m; ponding and litter or re well	7 7 7 7 7 7 7 7 7 7 0 7 0 200 ft fro	1.21 6 2.1 6 6 1.3 6 6 6 8	- 1.50 5 5 - 1.4 5 5 3 - 1.1 5 5 concentrated 1 hillslopes 10 - ding or wetlan	4 4 4 flow (minor gully 40%; hillslopes d areas and litter	3 3 3 3 3 con preser and rill >40% from s wetlanc debris	2 2 <1.4 2 2 <1.1	1 1 1 0ws e gully Ilslopes <50 ft Jing or litter of ot well	
Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition S. Floodplain Drainage Existing Condition	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 no concentrat runoff is primarily hillslopes < 10%	8 8 8 8 ed flow; sheet flow; i hillslopes and litter or re well ted 8	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1.21 6 6 2.1 6 6 1.3 6 6 ally sheet and on occurring); m stream; pon- ebris jams are n 6	- 1.50 5 5 - 1.4 5 3 - 1.1 5 5 5 concentrated 1 hillslopes 10 - ding or wettan minimally repr	4 4 4 flow (minor gully 40%; hillslopes d areas and litter esented 4	3 3 3 3 3 con preser and rill >40% from s wetlanc debris repre 3	2 2 <1.4 2 <1.1 2 centrated flut t (extensive erosion); hill ; hillslopes tream; ponc d areas and a areas and a sense or al 2	1 1 1 1 0 0 0 0 1 1 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0	
Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Proposed Condition	10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 10 9 no concentrat runoff is primarily hillslopes < 10%	8 8 8 8 ed flow; sheet flow; sheet flow; sheet flow; shillslopes m; ponding and litter or re well ted 8 8 8	7 7 7 7 7 7 7 runoff is equ and rill erosi 50 - 200 ft fro or de	1.21 6 6 2.1 6 6 1.3 6 6 6 ally sheet and on occurring); m stream; pone ebris jams are n 6 6 6	- 1.50 5 5 - 1.4 5 3 - 1.1 5 5 3 - 1.1 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 flow (minor gully 40%; hillslopes d areas and litter esented	3 3 3 3 con preser and rill >40% from s wetlanc debris repre 3 3	2 2 <1.4 2 <1.1 2 centrated flut t (extensive tream; ponc a lareas and a lareas and	1 1 1 1 0 0 0 0 1 1 1 0 0 0 1 1 0 0 0 1 1 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 1 0 1 0	
Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Froposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Proposed Condition Condition Proposed Condition Proposed Condition Existing Condition C	10 9 10 9	8 8 8 8 ed flow; sheet flow; shillslopes m; ponding and litter or ire well led 8 8 8	7 7 7 7 7 7 7 7 7 7 7 50 - 200 ft fro or de 7 7	1.21 6 2.1 6 6 1.3 6 6 6 ally sheet and on occurring); m stream; pone ebris jams are n 6 6 6 Localizet	- 1.50 5 5 - 1.4 5 5 3 - 1.1 5 5 3 - 1.1 5 5 5 5 6 1.1 5 5 5 6 1.1 5 5 5 6 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7	4 4 4 flow (minor gully 40%; hillslopes d areas and litter esented 4 4	3 3 3 3 con preser and rill >40% from s wetlanc debris repre 3 3 Wide	2 2 2 <1.4 2 centrated flut t (extensive erosion); hill jams are no sented or al jams are no sen	1 1 1 1 1 0 0 0 0 1 1 1 0 0 1 0 1 0 0 1 0 0 0 1 1 0 0 0 1 1 0	
Floodplain Connectivity (Vertical Stability)	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Proposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Proposed Condition Froposed Condition Condition Proposed Condition Existing Condition Condition Condition Existing Condition Condition Existing Condition Existing Condition Co	10 9 10 9	8 8 8 8 ed flow; sheet flow; sheet flow; sheet flow; sheet flow; shillslopes m; ponding and litter or re well ted 8 8 8	7 7 7 7 7 7 7 7 7 7 50 - 200 ft fro or de 7 7 7	1.21 6 6 1.3 6 6 6 1.3 6 6 6 8 1.3 6 6 6 6 1.3 6 6 6 6 1.3 6 6 6 6 1.3 6 6 6 6 6 6 6 6 6 6 6 6 6	- 1.50 5 5 - 1.4 5 5 3 - 1.1 5 5 5 concentrated 1 hillslopes 10 - ding or wetlan minimally repr 5 5 5 d Instability 5	4 4 4 4 flow (minor gully 40%; hillslopes d areas and litter esented 4 4 4 4	3 3 3 3 con- preser and rill >40% from s wetlanc debris repre 3 3 Wide: 3	2 2 <1.4 2 <1.1 2 centrated flut tt (extensive rosion); hill jams are nu sented or al jams are nu sented or al 2 2 spread Insta 2	1 1 1 1 0 ws e gully llslope <50 ft ding or litter o soft well bsent 1 1 1 2 2 2 1 1 1 1 2 2 3 1 1 2 3 2 3 1 2 3 1 2 3 1 2 3 3 1 2 3 1 2 3 1 1 1 1	
	(BHR) Existing Condition Proposed Condition 4a. Entrenchment (Meandering streams in alluvial valleys or Rosgen C, E, DA Streams) Existing Condition Proposed Condition 4b. Entrenchment (Non meandering streams in colluvial valleys or Rosgen B Streams) Existing Condition Proposed Condition Froposed Condition 5. Floodplain Drainage Existing Condition Proposed Condition Proposed Condition Condition Proposed Condition Proposed Condition Existing Condition C	10 9 10 9	8 8 8 8 ed flow; sheet flow; sheet flow; sheet flow; sheet flow; shillslopes m; ponding and litter or re well ted 8 8 8 8 8 8	7 7 7 7 7 7 7 7 7 50 - 200 ft fro or de 50 - 200 ft fro or de 7 7 7 7	1.21 6 2.1 6 6 1.3 6 6 6 ally sheet and on occurring); m stream; pon- ebris jams are n 6 6 6 Localize- 6 6 6	- 1.50 5 5 - 1.4 5 5 3 - 1.1 5 5 3 - 1.1 5 5 5 6 - 1.1 5 5 6 1 1 5 5 5 6 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 flow (minor gully 40%; hillslopes d areas and litter esented 4 4	3 3 3 3 3 compreser and rill y-40% from s wetlanc debris repre 3 3 Wide: 3 3	2 2 2 <1.4 2 centrated flut t (extensive erosion); hill jams are no sented or al jams are no sen	1 1 1 1 1 0 0 0 1 1 1 1 0 0 1 1 1 0 0 1 1 1 0 0 1	

Sessential arameter Measurement Method Functioning Functioning Functioning Functioning Not Functioning Stream Function Pyramid Level 3 Geomorphology Stream Function Pyramid Level 3 Geomorphology Riparian zone extends to a work hol of 100 feet; species composition is dominated by 2 of 3 species; human activities greatly impact zone; invasive species well activities greatly impact zone; invasive activities greatly impact zon	sessment						Cat	egory				
Program Program <t< th=""><th>arameter</th><th>Measurement Method</th><th>Fu</th><th>unctionin</th><th>g</th><th></th><th></th><th></th><th></th><th>N</th><th>ot Functio</th><th>oning</th></t<>	arameter	Measurement Method	Fu	unctionin	g					N	ot Functio	oning
Dominant Bank Events Dominant		•	Sti	ream Fun	ction P	yramid Lev	el 3 Geomorp	hology				
Number of the second	rrian Vegetation Average of Left and nk, max score of 10)	Zone (EPA, 1999,	width o vegeta diversity a activities invasive s	f >100 feet ation comm and density do not impa species not	; good iunity /; human act zone;	composit activities	ion is dominated greatly impact z	by 2 or 3 speci one; invasive s	ies; human pecies well	a width no ripa to h	n of <25 feet; nrian vegetat numan activi rity of vegeta	; little d tion du ties;
Non- transmission Right Bank Propose 10 9 7 6 5 4 3 2 Image: Second Se	tipa e = bai	Left Bank Existing	10	9	8	7	6	5	4	3	2	1
Non- transmission Right Bank Propose 10 9 7 6 5 4 3 2 Image: Second Se	ght Cor	Left Bank Proposed	10	9				5	4	3		1
United bank Erosion Rate Potential Dominate bank erosion rate potential is moderate potential moderate potential is moderate potential is moderate potentia mo	Ri (S		-									1
B Dominate Bank Erosion Rate Potential Dominate Bank Erosion Rate Potential Dominate Bank Erosion PEH/NBS Rating: HL HU, LH, LVH, UVL, LH, LH, LVH, UVL, LH, LH, UVH, UVL, EVINB Rating: HL HU, MA, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Tate potential is ing or BEH/NBS Rating: HL HUL, HM, VHVL, EXVL Description BEH/NBS Rating HUL, HM, VHVL, EXVL Description BEH/NBS		Right Bank Proposed	10	9	8	7	6	5	4	-		1
Lett Bark Videspread Instability Widespread Instability 9. Lateral Stability Extent 10 9 8 7 6 5 4 3 2 10. Sheller for Fish and Macroinvertebrates (EPA 1999) Greater than 70% of substrate favorable for epifuanal colonization and fish cover, mix of snags, submerged logs, undercut banks, rubble, gravel, cobble and large rocks, or other potential i, dequate habitat (: maintenance of potential; adequate habitat (: maintenance of potential; adequate habitat) Substrate involution potential; adequate habitat (: maintenance of potential; adequate habitat) Isses than 20% mix of stable habitat; lack of potential icke, fogsisnags that are not new fail and not transient) Isses than 20% mix of stable habitat; lack of potential (: e., logsisnags that are not new fail and not transient) Isses than 20% mix of stable habitat; lack of alacking Existing Condition 10 9 8 7 6 5 4 3 2 Tha Pool-to-Pool Spacing Ratio (Watersheet S to m ²) 4.0 - 5.0 3.0 - 4.0 or 5.0 - 7.0 <3.0 or >7.0 <3.0 or >7.0 <3.5 or >8.0 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7	ility _eft and right e of 10)		po BEHI/NB	tential is lo or S Rating: L	w /VL, L/L,		c Rating: M/L, M/M	or , M/H, L/Ex, H/L		rate BEHI, H/Ex,	potential is or /NBS Rating VH/H, Ex/M	high g: H/H, , Ex/H
Left banks Utel to answer Widespread Instability Widespread Instability 9 1.ateral Stability Extent Stable 10 9 8 7 6 5 4 3 2 10 Sheller for Fish and Macroinvertebrates (EPA 1999) Stable factor fish and Macroinvertebrates (EPA 1999) Greater than 70% of epifaunal colonization and fish over; mix of snags, submerged logs, undercut banks, rubble, gravel, cobble and large rocks, or other stable habitat and at stage to allow full colonization 10 9 8 7 6 5 4 3 2 Existing Condition potential (1, e, logg/snags that are not new fall and not transient) 7 6 5 4 3 2 Proposed Condition allow full colonization potential (1, e, logg/snags that are not new fall and not transient) 8 7 6 5 4 3 2 11a Pool-to-Pool Spacing Ratio (Watershee's 10 m²) 4.0 - 5.0 3.0 - 4.0 or 5.0 - 7.0 <3.0 or >7.0 <3.5 - 5.0 or 7.0 - 8.0	al Stat ige of I ix scor	(Right bank)	10	9	8	7	6	5	4	3	2	1
Left banks Utel to answer Widespread Instability Widespread Instability 9 1.ateral Stability Extent Stable 10 9 8 7 6 5 4 3 2 10 Sheller for Fish and Macroinvertebrates (EPA 1999) Stable factor fish and Macroinvertebrates (EPA 1999) Greater than 70% of epifaunal colonization and fish over; mix of snags, submerged logs, undercut banks, rubble, gravel, cobble and large rocks, or other stable habitat and at stage to allow full colonization 10 9 8 7 6 5 4 3 2 Existing Condition potential (1, e, logg/snags that are not new fall and not transient) 7 6 5 4 3 2 Proposed Condition allow full colonization potential (1, e, logg/snags that are not new fall and not transient) 8 7 6 5 4 3 2 11a Pool-to-Pool Spacing Ratio (Watershee's 10 m²) 4.0 - 5.0 3.0 - 4.0 or 5.0 - 7.0 <3.0 or >7.0 <3.5 - 5.0 or 7.0 - 8.0	Later =Avera nk, ma	(Right Bank)	10	9	8	7	6	5	4	3	2	1
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10. Sheller for Fish and Macroinvertebrates (EPA (1999) Greater than 70% of substrate four solid potential (adequate habital for minitenance of substrate four solid potential (adequate habital for minitenance of substrate four solid potential (adequate habital for minitenance of stable habital (adequate habital for potential (adequate habital for stable habital availability less of new fail, but not yet prepared for colonization (mey rate habital availability less of new fail, but not yet prepared for colonization motions are solid potential (adequate habital for allow full colonization potential (addequate at high end of scale) Image: term habital availability less habital availability habital availability less habital availability less habital										-		1
Macroinvertebrates (EPA 1999) substrate favorable for end fish cover, mix of snags, submerged logs, undercut banks, rubble, grave, cobble and large rocks, or other stable habitat and at stage to allow full colonization potential (i.e., logs)snags that are not new fall and not transient) potential: adequate habitat and at stage allow full colonization potential (i.e., logs)snags that are not new fall and not transient) new fall, but not yet prepared for colonization (may rate at high end of scale) stable habitat: lack of habitat available, logs) Existing Condition 10 9 8 7 6 5 4 3 2 Isstand withit 10 9 8 7 6 5 4 3 2 Isstand conting 4.0 - 5.0 3.0 - 4.0 or 5.0 - 7.0 < 3.0 or >7.0 < 3.0 or >7.0 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10			-	-	8			-	-			1 of
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Moderate Gradient Perennial Streams in Colluvial Valleys I1. Pool-to-Pool Spacing Ratio (3-5% Slope) 2.0 - 4.0 4.0 - 6.0 >6.0 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 12. Pool Max Depth Ratio/Genth Variability >1.5 1.2 - 1.5 <1.2	Bedform Diversity (Do not complete if stream is ephemeral)	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability	submerge banks, rut and large stable hat allow full of potential (are not ne transient) 10 10 10 10 10 10 10	d logs, und ble, gravei rocks, or o bitat and at zolonizatior i.e., logs/sr w fall and n 9 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 >1.5 9 9	ags, lercut I, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	6 6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 6 1.2 6 6 6 6	5 5 5 5 97 5.0 - 7.0 5 5 97 7.0 - 8.0 5 5 - 1.5 5 5 5	4 4 4 4 4 4 4 4 4 4	than de substration lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7. 2 2 3.5 or >8.0 2 2 <1.2 2 2 <1.2 2 2	1 1 0 1 0 1 1 1 1 1 1 1 1 1
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Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2	Bedform Diversity (Do not comp	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition <td< td=""><td>submerge banks, rut and large stable had allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>d logs, und bble, gravel rocks, or o jultar and at colonizatior i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0</td><td>ags, lercut l, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8</td><td>of new fall, b</td><td>6 6 6 3.0 - 4.0 c 6 6 6 6 6 6 6 6 6 6 1.2 6 6 6 6 6 6 1.1 6 6 1.1 6 6 4.0</td><td>red for coloniza d of scale) 5 5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 - 1.2 5 - 5 - 6.0</td><td>4 4 4 4 4 4 4 4 4 4 4 4 4 4 3</td><td>than de substra- lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</td><td>2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >6.0</td><td>1 1 0 1 0 1 1 1 1 1 1 1 1 1</td></td<>	submerge banks, rut and large stable had allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	d logs, und bble, gravel rocks, or o jultar and at colonizatior i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0	ags, lercut l, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	of new fall, b	6 6 6 3.0 - 4.0 c 6 6 6 6 6 6 6 6 6 6 1.2 6 6 6 6 6 6 1.1 6 6 1.1 6 6 4.0	red for coloniza d of scale) 5 5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 - 1.2 5 - 5 - 6.0	4 4 4 4 4 4 4 4 4 4 4 4 4 4 3	than de substra- lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >6.0	1 1 0 1 0 1 1 1 1 1 1 1 1 1
Ratio/Depth Variability >1.5 1.2 - 1.5 <1.2 Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2	Bedform Diversity (Do not comp	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition <td< td=""><td>submerge banks, rut and large stable hat allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10</td><td>d logs, und bble, gravel rocks, or o bble, gravel rocks, or o bble, gravel solonizatior i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0 9</td><td>ags, lercut l, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8</td><td>of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7</td><td>0 6 6 6 3.0 - 4.0 c 6 6 6 3.5 - 5.0 c 6 6 6 6 6 6 6 1.2 6 6 6 1.2 6 6 6 1.1 6 6 1.1 6 6 1.1 6 6 6 1.1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6</td><td>red for coloniza d of scale) 5 5 5 5 5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 5 - 1.2 5 5 5 5 - 5 5 5 - 5 5 5 - 5 5 5 - 5 5 5 5</td><td>4 4 4 4 4 4 4 4 4 4 4 4 4 5 5</td><td>than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3</td><td>2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >6.0 2</td><td>1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td></td<>	submerge banks, rut and large stable hat allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	d logs, und bble, gravel rocks, or o bble, gravel rocks, or o bble, gravel solonizatior i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0 9	ags, lercut l, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0 6 6 6 3.0 - 4.0 c 6 6 6 3.5 - 5.0 c 6 6 6 6 6 6 6 1.2 6 6 6 1.2 6 6 6 1.1 6 6 1.1 6 6 1.1 6 6 6 1.1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	red for coloniza d of scale) 5 5 5 5 5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 5 - 1.2 5 5 5 5 - 5 5 5 - 5 5 5 - 5 5 5 - 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4 5 5	than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >8. 2 2 3.5 or >6.0 2	1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Existing Condition 10 9 8 7 6 5 4 3 2 Proposed Condition 10 9 8 7 6 5 4 3 2	Bedform Diversity (Do not comp	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition	submerge banks, rut and large stable hat allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	d logs, und bble, gravel rocks, or o julta and at colonizatior i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0 9 9 9	ags, lercut l, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	6 6 6 3.0 - 4.0 c 6 6 3.5 - 5.0 c 6 6 6 1.2 6 6 6 1.1 1.1 6 6 6 1.1 1.1 6 6 6 4.0 6 6 6 1.2 6 6 6 6 6 6 6 6 6 6 6 7 1.2 6 6 6 6 6 7 7 7 8 7 8 7 8 7 8 7 8 7 8 7	red for coloniza d of scale) 5 5 5 5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 5 - 1.2 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 - 1.2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4 5 5	than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 <3.5 or >8. 2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 <1.0 2 2 2 <1.0 2 2 2 <1.0 2 2 2 <1.0 2 2 2 <1.0 2 2 2 2 <1.0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Bedform Diversity (Do not comp	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition Proposed Condition 12. Pool Max Depth Ratio/Depth Variability	submerge banks, rut and large stable had allow full optential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	d logs, und bble, gravel rocks, or o bitat and at colonization i.e., logs/sr w fall and n 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 2.0 - 4.0 9 9 2.0 - 4.0 9 9 3 2.0 - 4.0	ags, lercut l, cobble ther stage to hags that as 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	6 6 3.0 - 4.0 c 6 6 6 3.5 - 5.0 c 6 6 6 6 1.2 6 6 6 6 1.1 6 6 6 1.1 6 6 6 1.1 6 6 6 1.1 2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 1.1 1.2 6 6 6 6 6 1.1 1.2 6 6 6 6 6 1.1 1.2 6 6 6 6 6 1.1 1.2 6 6 6 6 6 6 1.1 1.2 6 6 6 6 6 6 1.1 1.2 6 6 6 6 6 6 6 6 1.1 1.2 6 6 6 6 6 6 1.1 1.1 1.1 6 6 6 6 6 6 1.1 1.1	red for coloniza d of scale) 5 5 5 7 5.0 - 7.0 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.2 5 5 - 1.2 5 5 - 1.2 5 5 - 1.5	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 5	than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7.1 2 2 3.5 or >8.0 2 2 3.5 or >8.0 2 2 3.5 or >8.0 2 2 3.5 or >8.0 2 2 3.5 or >8.0 2 3.5 or >7.1 2 3.5 or >7.1 2 3.5 or >7.1 2 3.5 or >8.0 2 3.5 or >8.0 2 3.5 or >7.1 2 3.5 or >8.0 2 3.5 or >8.0 2 3.5 or >7.1 2 3.5 or >8.0 2 3.5 or >8.0 3.5 or >8.0 2 3.5 or >8.0 2 3.5 or >8.0 2 3.5 or >8.0 2 3.5 or >8.0 2 3.5 or >8.0 3.5 or	1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1
	Bedform Diversity (Do not comp	Proposed Condition 11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²) Existing Condition Proposed Condition 11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Conditi	submerge banks, rut and large stable had allow full of potential (are not ne transient) 10 10 10 10 10 10 10 10 10 10 10 10 10	d logs, und bble, gravel rocks, or o jultar and at colonization i.e., logs/sr w fall and r 9 9 4.0 - 5.0 9 9 5.0 - 7.0 9 9 5.0 - 7.0 9 9 >1.5 9 9 >1.2 9 9 2.0 - 4.0 9 9 >1.2 9 9 9 >1.2 9 9 9 >1.2 9 9 9 >1.2 9 9 9 9 >1.2 9 9 9 9 2.0 - 4.0 9 9 9 9 2.1.5 9 9 9 9 9 2.1.5 9 9 9 9 9 2.1.5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ags, lercut l, cobble ther stage to hags that not 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	of new fall, b 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	6 1.1 6 6 6 1.1 6 6 1.1 6 6 1.1 6 6 1.1 6 6 1.2 6	red for coloniza d of scale) 5 5 5 5 5 5 5 7 7.0 - 8.0 5 5 - 1.5 5 - 1.5 5 - 1.5 5 - 1.5 5 - 1.5 5 - 1.5 5 5 - 1.5 5 5 - 1.5 5 5 5 - 1.5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	than de substra lacking 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 3.0 or >7. 2 2 3.5 or >8. 2 2 <3.5 or >8. 2 2 <1.2 2 <1.1 2 2 <1.1 2 2 <1.1 2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 <1.2 2 2 2 <1.2 2 2 2 <1.2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	vious; or 1 1 0 1 1

Reach ID:	Trib 4				Reach Score/	Reach Total	Ex. 66/170 P	rop.: 136/170	Quality	: Ex: 0.39 P	rop:0.8	
		Functi	ion-based	Rapic	I Reach Lev	el Stream As	sessment					
Assessment						Cate	gory					
Parameter	Measurement Method	Fu	nctioning			Functionin	ıg-at-Risk		N	ot Functio	oning	
		Stre	eam Funct	tion Py		4 Physicoch						
Water Quality and Nutrients (Do not complete if stream is ephemeral)	13. Water Appearance and Nutrient Enrichment (USDA 1999)	colored; ob depth 3 to colored); n surface; no submerged Clear wate reach; dive community quantities	, or clear bu ojects visible 6 ft (less if 8 o oil sheen o noticeable d objects or r along entii erse aquatic r includes lo of many spe es; little alga sent	e at slightly on film on rocks. re plant w scies of	visible to dep no oil shee	th 0.5 to 3.0 ft; r n on water surfa	may have sli ace. Fairly cl each; moder	n events; objects ght green color; ear or slightly ate algal growth	appeara time; ob depth< i water m other ob pollutan mats, su sheen co foam on odor of sewage pollutan Pea-gre water al dense s macropl stream;	bid or mudc ance most o jects visible 0.5 ft; slow u waybe bright vious wate ts; floating urface scum ir heavy cos s urface; or chemicals, , or other ts. een, gray, or ong entire r tands of nytes cloggi severe alge creating thi	f the e at moving green; r algal i, at of e strong oil, bil, bown reach; ing al	
ž	Existing Condition	10	9	8	7	6	5	4	3	2	1	
put	Proposed Condition	10	9	8	7	6	5	4	3	2	1	
ater Quality a	14. Detritus (Petersen, 1992)	and wood c	onsisting of I I without sec covering it	diment		d wood scarce; f sedin	nent		Fine organic sediment - black in color and foul odor (anaerobic) or detritus absent			
ŝ	Existing Condition	10	9	8	7	6	5	4	3	2	1	
	Proposed Condition	10	9	8	7	6	5	4	3	2	1	
Str	eam Function Pyramid	Level 4 P	hysicoch	emica	Overall EX	STING Condi	tion F	FAR NF	5	Score:8		
Stre	eam Function Pyramid	Level 4 Pl	hysicoche	mical	Overall PRC	POSED Con	dition F	FAR NF	S	core:16		
	-			unctio	on Pyramid	_evel 5 Biolog			T			
uis.	15. Macroinvertebrate		Abundant	0	7	Ra				Not present		
ean	Existing Condition Proposed Condition	10 10	9	8	7	6	5	4	3	2	1	
Biology (Do not complete if stream is ephemeral)	16. Macroinvertebrate Tolerance		9 intolerant s	-	1	Limited intole	-		-	z tolerant spe		
plet	Existing Condition	10	9	8	7	6	5	4	3	2	1	
ie a da	Proposed Condition	10	9	8	7	6	5	4	3	2	1	
ot c	17. Fish Presence		Abundant			Ra			-	Not present		
ы с	Existing Condition	10	9	8	7	6	5	4	3	2	1	
ĕ	Proposed Condition	10	9	8	7	6	5	4	3	2	1	
	If existing biology is FAR or NF, provide description of cause(s)											
St	ream Function Pyramid	Level 5 E	Biology O	verall	EXISTING C	ondition F	FAR	NF	Sc	ore: 12		
	ream Function Pyramic							NF		ore:24		
31	i cum runction ryrainit	Cevel 3	Biology O	verall					30	0.0.24		

Reach ID:	Trib 4]	Reach Score/Reach Total	Ex. 66/170 Prop.: 136/170	Quality: Ex: 0.39 Prop:0.8
		Function-based Rap	id Reach Level Stream A	ssessment	
Assessment			Cat	tegory	
Parameter	Measurement Method	Functioning	Function	ing-at-Risk	Not Functioning
		Bankfull Determination	on and Rosgen Stream Cl	assification	
Rosgen Stream T	ype (Observation): EX - C/F	PRO - C			
Regional Curve (o	circle one): Piedmon	t Coastal Plain	Allegheny Plateau/Ridg	e and Valley Urban	Karst
DA (sqmi)	0.13				
BF Width (ft)	5.3-6.7			BF Area (sqft)	2.4-4.0
BF Depth (ft)	0.46-0.59			Percent Impervious (%)	21.3
		-			
		Fie	eld Measurements		
F	Parameter		Measureme	ents and Ratios	
Water surface to elevation different	geomorphic feature ce	Existing Min:0.39, Max: 0.55, Avg.: 0.48			
Riffle Mean Depth	n at Bankfull Stage (dbkf)	Existing Min:0.44, Max: 0.55, Avg.: 0.48	Proposed: 0.31, 0.47 & 0.39		
Riffle Width at Ba	nkfull Stage (Wbkf)	Existing Min:2.93, Max: 4.59, Avg.: 3.82	3.8, 5.0 & 6.0		
Riffle XS Area at (Abkf = dbkf*Wb		Existing Min:1.53, Max: 2.18, Avg.: 1.83	Proposed: 1.18, 1.95 & 2.82		
	Width (Wfpa) (Wfpa=Width mined by 2xDmax)	Existing Min:4.44, Max: 7.80, Avg.: 5.56	Target: 8.4, 20 & 24		
Entrenchment R	atio (ER) (ER=Wfpa/Wbkf)	Existing Min:1.10, Max: 1.84, Avg.: 1.47	Target 2.2 / 4.0		
Low Bank Height	t (LBH)	Existing Min:1.0, Max: 1.95, Avg.: 1.29	Proposed: 0.42, 0.5 & 0.6		
Riffle Maximum D (Dmax)	epth at Bankfull Stage	Existing Min:0.56, Max: 0.72, Avg.: 0.63	Proposed: 0.42, 0.5 & 0.6		
Bank Height Rat (BHR=LBH/Dmax		Existing Min:1.38, Max:2.86, Avg.: 1.98	Proposed: 1.0		
BEHI/NBS Rating	is and Lengths	H/M, H/L, M/M, M/L, L/L	L/L		
Pool to Pool Spac	cing (P-P)	Existing Avg.: 39.4	Proposed: Min: 12, Max: 49, Avg.: 25		
Pool to Pool Spa P Ratio=P-P/Wbl	acing Ratio (P-P Ratio) (P- kf)	Existing Avg.: 10.32	Proposed: Min:2.3, Max:5.1, Avg.:5.0		
Pool Maximum De (Dmbkfp)	epth at Bankfull Stage	Existing Avg.: 1.29	Proposed: 0.8, 1.0 & 1.2		
Pool Depth Ratio Ratio=Dmbkfp/d	o (Dmbkfp Ratio) (Dmbkfp bkf)	Existing Avg.: 2.7	Proposed: 2.5		
Macroinvertebrate	e Taxa Observed	n/a	n/a		

Instant Instant ream: Un -Named Tributary to Cabin Branch Date: 3/10/2022 aach Length: 554 linear feet Latitude: 39.177353 noto(s): See Attached Longitude: -77.199137 aach ID: Trib 5 Reach Score/Reach Total Ex. 24/170 Prop.: 136/170 Quality: Ex: 0.14 Prop:0.8		EXISTING a			ACH LEVI MENT FIE			TION-BAS	ED			
Un-Atunet Dutation (a Cabin Branch	Vatershed:	Middle Potomac - Catoctin			Rater(s)		RC/BW					
Bask Insurgite Sale Attached Laithede Bit7733 tool(a) See Attached Congliade 37.7199137 Quality: E: 0.14 Prop.0.8 See Attached Excettor-based Rapid Reach ScoreReent Total Ex.24179 Prop:: 138417 Quality: E: 0.14 Prop.0.8 Assessment Parameter Measurement Method Tenctioning Functioning Reach ScoreReent Attached Not Functioning Stream Function Pyramid Level 1 Hydrology Some platial for concentrated for an attached in a do for attached in attached in attached in a do	Stream:	Un -Named Tributary to Cabin	Branch									
Obte(s) See Attached Longlustic :77.199137 Same 10: Titis 5 Reach Scon/Reach Total E.2.24179 Prop:: 138/17 Quality: Et: 0.14 Prop.8.0 Sessessmeth Measurement Method Function/mag Function/mag Category Parameter Concentrated Flow Functioning Function Pyramid Lovel 1 Hydrology Pointal for concentrated flow/mainments for magineers in rate of prainteers in rate of	each Length:	554 linear feet										
Bach ID: Tes 5 Reach Score/Reach Total E. 24/170 Prop.: 136/172 Quality: Ex: 6.14 Prop.0.8 Summer Figure 10:10:10:10:10:10:10:10:10:10:10:10:10:1	-											
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		Func	tion-base	d Rapid	Reach Le	vel Stream As	sessment				
ssessment						Cate	egory				
arameter	Measurement Method	F	unctioning	g		Functioni	ng-at-Risk		N	ot Functio	oning
		St	ream Fun	ction P	yramid Lev	el 3 Geomorp	hology				
	7. Riparian Vegetation Zone (EPA, 1999,										
Riparian Vegetation (Score = Average of Left and Right bank, max score of 10)	diversity and density; human activities do not impact zone; invasive species not present or sparse							a width no ripa to h	an zone exte of <25 feet rian vegetat uman activi ty of vegeta invasive	; little c tion du ties;	
Rip ore= ntba	Left Bank Existing	10	9	8	7	6	5	4	3	2	1
Sco	Left Bank Proposed	10 10	<mark>9</mark> 9	8	7	6	5	4 4	3	2	1
<u>е</u> К	Right Bank Existing Right Bank Proposed	-	9	8	7	6	5	4	3 3	2	1
Ĕ			e bank eros			e bank erosion r		moderate	Domi	nate bank e potential is	rosion
Lateral Stability (Score =Average of Left and right bank, max score of 10)	8. Dominant Bank Erosion Rate Potential	BEHI/NB	otential is lov or S Rating: L/ L/H, L/VH, N	VL, L/L,		c ating: M/L, M/M,	br		BEHI/ H/Ex,	or NBS Rating VH/H, Ex/M H, VH/VH, I	g: H/H, , Ex/H,
II Stat ge of I x scol	Existing Condition (Right bank)	10	9	8	7	6	5	4	3	2	1
Lateral Stability Average of Left Ik, max score of	Proposed Condition (Right Bank)	10	9	8	7	6	5	4	3	2	1
ore =/ ban	Existing Condition (Left bank)	10	9	8	7	6	5	4	3	2	1
(Sc	Proposed Condition (Left Bank)	10	9	8	7	6	5	4	3	2	1
	9. Lateral Stability Extent		Stable				Instability			spread Inst	
	Existing Condition Proposed Condition	10 10	9	8	7	6	5	4 4	3	2	1
	10. Shelter for Fish and	-	9 han 70% of	0		ہ k of stable habita			-	∠ an 20% mix	
ete if stream is ephemeral)		submerge banks, ru and large stable hal allow full potential	r; mix of sna ed logs, und bble, gravel rocks, or ot bitat and at colonization (i.e., logs/sn ew fall and r	ercut , cobble ther stage to nags that	of new fall, b	ut not yet prepa at high en	red for coloniza d of scale)	tion (may rate		sirables ob [,] te unstable	
stre	Existing Condition	,	9	8	7	6	5	4	3	2	1
te if	Proposed Condition	10	9	8	7	6	5	4	3	2	1
comple	11a. Pool-to-Pool Spacing Ratio (Watersheds < 10 mi ²)		4.0 - 5.0			3.0 - 4.0 a	or 5.0 - 7.0		<	< 3.0 or >7.	0
not	Existing Condition	10	9	8	7	6	5	4	3	2	1
	Proposed Condition	10	9	8	7	6	5	4	3	2	1
ě		1	5.0 - 7.0			3.5 - 5.0 o	r 7.0 - 8.0		.	<3.5 or >8.0	0
sity (De	11b. Pool-to-Pool Spacing Ratio (Watersheds > 10 mi ²)								-	2	1
/ersity (Do	Ratio (Watersheds > 10 mi ²) Existing Condition		9	8	7	6	5	4	3		1
Diversity (Do	Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition		9 9	8 8	7 7	6 6	5 5	4 4	3 3	2	
lform Diversity (Do	Ratio (Watersheds > 10 ml ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability					6				2 <1.2	
Bedform Diversity (Do	Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth		9			6	5				1
Bedform Diversity (Do not compl	Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition	10	9 >1.5	8	7	6 1.2	5 - 1.5	4	3	<1.2	
Bedform Diversity (Do	Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition	10	9 >1.5 9	8	7	6 1.2 - 6 6	5 - 1.5 5	4	3	<1.2 2	
Bedform Diversity (Do	Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition	10 10 10 10	9 >1.5 9 9 >1.2 9	8 8 8 8	7 7 7 7 7	6 1.2 6 6 1.1 6	5 - 1.5 5 - 1.2 5	4 4 4 4	3 3 3 3	<1.2 2 <1.1 2	1
	Ratio (Watersheds > 10 mi ²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams)	10 10 10 10	9 >1.5 9 9 >1.2 9 9 9	8 8 8 8 8 8	7 7 7 7 7 7	6 1.2 - 6 6 1.1 - 6 6	5 - 1.5 5 - 1.2 5 5	4 4 4 4 4	3 3 3	<1.2 2 <1.1	1
	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing	10 10 10 10	9 >1.5 9 9 >1.2 9 9 9 9 Modera	8 8 8 8 8 8	7 7 7 7 7 7	6 1.2 6 6 1.1 6 6 6 1 Streams in Co	5 - 1.5 5 - 1.2 5 5 5 5 5 5 0lluvial Valleys	4 4 4 4 4	3 3 3 3	<1.2 2 <1.1 2 2	1
	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition Existing Condition	10 10 10 10 10 10	9 >1.5 9 9 >1.2 9 9 9 Modera 2.0 - 4.0 9	8 8 8 8 8 ate Gradi	7 7 7 7 1 1 1 1 1 1 7 7 7 7	6 1.2 6 6 1.1 6 6 1 Streams in Co 4.0 6	5 - 1.5 5 - 1.2 5 5 5 5 5 5 0lluvial Valleys - 6.0 5	4 4 4 4 4 4	3 3 3 3 3 3	<1.2 2 <1.1 2 2 >6.0 2	1
	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition	10 10 10 10 10	9 >1.5 9 9 >1.2 9 9 9 9 2.0 - 4.0 9 9 9	8 8 8 8 8 ate Gradi	7 7 7 7 ent Perennia	6 1.2 6 6 1.1 6 6 1 Streams in Co 4.0 6 6 6	5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 5 1 1 1 2 1 2 1 2 1 2 5 5 5 5	4 4 4 4 4	3 3 3 3 3	<1.2 2 <1.1 2 2 <1.1 2 2 2 2 2 2 2	1
	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition 12. Pool Max Depth Ratio (3-5% Slope) Existing Condition Proposed Condition 12. Pool Max Depth Ratio/Depth Variability	10 10 10 10 10 10 10	9 >1.5 9 9 >1.2 9 9 0 2.0 - 4.0 9 9 9 9 2.0 - 4.0	8 8 8 8 ate Gradi 8 8 8 8	7 7 7 ent Perennia 7 7 7	6 1.2 6 6 1.1 6 6 1 Streams in Co 6 6 6 1.2	5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 - 1.5	4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3	<1.2 2 <1.1 2 2 <1.1 2 2 >6.0 2 2 <1.2	
Bedform Diversity (Do not complete if Bedform Diversity (Dc stream is ephemeral)	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition	10 10 10 10 10 10	9 >1.5 9 9 >1.2 9 9 9 9 2.0 - 4.0 9 9 9	8 8 8 8 8 ate Gradi	7 7 7 7 1 1 1 1 1 1 7 7 7 7	6 1.2 6 6 1.1 6 6 1 Streams in Co 4.0 6 6 6	5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 5 1 1 1 2 1 2 1 2 1 2 5 5 5 5	4 4 4 4 4 4	3 3 3 3 3 3	<1.2 2 <1.1 2 2 <1.1 2 2 2 2 2 2 2	1
	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition Proposed Condition Proposed Condition 11. Pool-to-Pool Spacing Ratio (3-5% Slope) Existing Condition Proposed Condition 12. Pool Max Depth Ratio (3-5% Slope) Existing Condition Proposed Condition 12. Pool Max Depth Ratio/Depth Variability	10 10 10 10 10 10 10 10	9 >1.5 9 9 >1.2 9 9 9 2.0 - 4.0 9 9 9 2.0 - 4.0 9 9 9 51.5 9	8 8 8 8 8 8 8 8 8 8 8 8 8	7 7 7 ent Perennia 7 7 7 7	6 1.2 6 6 1.1 6 6 1 Streams in Co 4.0 6 6 1.2 6	5 - 1.5 5 - 1.2 5 5 5 5 5 5 5 6.0 5 5 - 1.5 5 5	4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3	<1.2 2 <1.1 2 2 >6.0 2 2 <1.2 2	1 1 1 1 1 1
Bedform Diversity (Do not complete if stream is ephemeral)	Ratio (Watersheds > 10 mi²) Existing Condition Proposed Condition 12a. Pool Max Depth Ratio/Depth Variability (Gravel Bed Streams) Existing Condition Proposed Condition 12b. Pool Max Depth Ratio/Depth Variability (Sand Bed Streams) Existing Condition Proposed Condition	10 10 10 10 10 10 10 10 10	9 >1.5 9 9 >1.2 9 9 Modera 2.0 - 4.0 9 9 >1.5 9 9 >1.5	8 8 8 8 8 ate Gradi 8 8 8 8 8 8	7 7 7 ient Perennia 7 7 7 7 7 7 7	6 1.2 6 6 1.1 6 6 1 Streams in Co 4.0 6 6 6 1.2 6 6 6 6	5 -1.5 5 -1.2 5 5 5 5 5 5 5 -6.0 5 5 -1.5 5 5 5	4 4 4 4 4 4 4 4 4 4	3 3 3 3 3 3 3 3 3 3 3	<1.2 2 <1.1 2 2 >6.0 2 2 <1.2 2	1 1 1 1 1 1

Trib 5				Reach Score/	Reach Total	Ex. 24/170 P	rop.: 136/170	Quality	: Ex: 0.14 P	rop:0.8	
	Funct	ion-based	I Rapid	I Reach Lev	el Stream As	sessment					
					Cate	egory					
Measurement Method	Fu	inctioning	I		Functioni	ng-at-Risk		N	ot Functio	oning	
			-		-						
Nutrient Enrichment (USDA 1999)	colored; ol depth 3 to colored); n surface; no submerged Clear wate reach; dive community quantities macrophyt	bjects visible 6 ft (less if no oil sheen o noticeable d objects or er along enti- erse aquatio v includes lo of many spe- res; little alg	e at slightly on film on rocks. re plant w ecies of	visible to dep no oil shee	oth 0.5 to 3.0 ft; in on water surf er along entire i	may have sli ace. Fairly cl reach; moder	ght green color; ear or slightly	appeara time; ob depth< i water m other ob pollutan mats, su sheen co foam on odor of sewage pollutan Pea-gre water al dense s macropj stream;	ance most o jects visible 0.5 ft; slow i aybe bright vvious watel ts; floating urface scum r heavy cos a surface; or chemicals, o , or other ts. en, gray, or ong entire r tands of hytes cloggi severe alg	f the at at a the set of the set	
Existing Condition	10	9	8	7	6	5	4	3	2	1	
Proposed Condition	10	9	8	7	6	5	4	3	2	1	
	and wood	d without se covering it	diment		sedi	ment		Fine organic sediment - black in color and foul odor (anaerobic) or detritus absent			
Existing Condition	-	-					4			1	
Proposed Condition	10	9	8	7	6	5	4	3	2	1	
eam Function Pyramid	Level 4 F	Physicoch	emica	I Overall EXI	STING Cond	ition F	FAR NF	5	Score:4		
am Function Pyramid I	Level 4 P	hysicoch	emical	Overall PRC	POSED Con	dition F	FAR NF	S	core:16		
			Functio	on Pyramid I							
15. Macroinvertebrate				_							
0	-	-	-							1	
16. Macroinvertebrate		-		/	-	-		-		1 ecies	
	10	9	8	7	6	5	4	3	2	1	
Proposed Condition	10	9	8	7	6	5	4	3	2	1	
17. Fish Presence											
Existing Condition	10	9	8	7	6	5	4	3	2	1	
Proposed Condition	10	9	8	7	6	5	4	4	2	1	
If existing biology is FAR or NF, provide description of cause(s)	Stream is	currently a	concrete	channel.							
ream Function Pyramic	d Level 5	Biology C	Overall	EXISTING C	ondition	F FAR	NF	Sc	ore: 3		
	Measurement Method 13. Water Appearance and Nutrient Enrichment (USDA 1999) Existing Condition Proposed Condition Proposed Condition Proposed Condition 14. Detritus (Petersen, 1992) Existing Condition Pyramid am Function Pyramid 15. Macroinvertebrate Existing Condition Proposed Condition Proposed Condition 15. Macroinvertebrate Existing Condition Proposed Condition Proposed Condition 16. Macroinvertebrate Tolerance Existing Condition Proposed Condition 17. Fish Presence Existing Condition 18. Fish Presence Existing Condition 19. Fish Presence Existing Condi	Existing Condition 10 Proposed Condition 10 15. Macroinvertebrate Abundant Existing Condition 10 Proposed Condition 10 Proposed Condition 10 16. Macroinvertebrate Abundant Existing Condition 10 Proposed Condition 10	Existing Condition 10 9 14. Detritus (Petersen, 1992) Mainly consisting of and whout see covering it Existing Condition 10 9 14. Detritus (Petersen, 1992) Mainly consisting of and whout see covering it Existing Condition 10 9 Proposed Condition 10 9 Proposed Condition 10 9 Proposed Condition 10 9 Existing Condition 10 9 Proposed Condition 10 9 15. Macroinvertebrate Abundant Stream Tolerance Abundant 9 Proposed Condition 10 9 Proposed Condition 10 9 15. Macroinvertebrate Abundant Abundant Existing Condition 10 9 9 Proposed Condition 10 9 15. Macroinvertebrate Abundant Abundant Existing Condition 10 9 9 17. Fish Presence Abundant 10 9 </td <td>Existing Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition 10 9 8</td> <td>Existing Condition 10 9 8 7 Proposed Condition 10</td> <td>Function-based Rapid Reach Level Stream As Measurement Method Cate Functioning Functioni Stream Function Pyramid Level 4 Physicoch 13. Water Appearance and Nutrient Enrichment (USDA 1999) Very clear, or clear but tea- colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent Couldiness especia on stream Existing Condition 10 9 8 7 6 Proposed Co</td> <td>Function-based Rapid Reach Level Stream Assessment Category Measurement Method Stream Function Pyramid Level 4 Physicochemical Nutrient Enrichment USDA 1999) Very clear, or clear but tea- colored; objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness especially after store on stream substrate Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5 14. Detritus (Petersen, 1992) Mainly consisting of leaves and wood without sediment covering it Leaves and wood scarce; fine organic sediment 5 Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5</td> <td>Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5</td> <td>Function-based Rapid Reach Level Stream Assessment Category Category Functioning Functioning-at-Risk N Stream Function Pyramid Level 4 Physiocchemical Stream Function Pyramid Level 4 Physiocchemical Total Colspan="2">Stream Function Pyramid Level 4 Physiocchemical USDA 1989) Stream Function Pyramid Level 4 Physiocchemical Stream Function Pyramid Level 4 Physiocchemical Output totage of the stream function pyramid Level 4 Physiocchemical USDA 1989) Notice and the stream function pyramid Level 4 Physiocchemical Notice and the stream function pyramid Level 4 Physiocchemical Output totage of the stream function pyramid Level 4 Physiocchemical Notice and the stream function pyramid Level 4 Physiocchemical Notice and the stream function pyramid Level 4 Physiocchemical Stream Water and performantly includes low of quantities of namy species of macroparties intereach, model and and the stream function pyramid Level 4 Physiocchemical Overall Paral Main wood without sediment covering it Mainly consisting of leaves and wood scaree; fine organic debris without sediment covering it<td>Function-based Rapid Reach Level Stream Assessment Category Measurement Method Category Stream Function Pyramid Level 4 Physicochemical Nutrient Enrichment USDA 1960) Value Appearance and Wary dear, or dearb tub, the regeneric objects withle at colored; objects withle at the first and the first and the order of the objects of the objects or objects within Enrichment USDA 1960) Very tubid or mude appearance mod to colored; objects or rocks. Clear water along entrie of each diverse aqualic plant commit in cludes or equality the quantities of many species of marcophystes. Ittle adjai growth present Single Clear of the objects on stream substrate Very tubid or mude appearance mod to color of objects with explicit data adjain the colsmany species of marcophystes. Ittle adjai growth present Single Clear of the appearance mod to color of objects or home colsman severe adjaint of the adjaint growth present Existing Condition 10 B T G 5 4 3 2 41. Detritius (Petersen, 1982) Mainly consisting of leaves and function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF Score:4 am Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF Score:4 am Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F</td></td>	Existing Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition 10 9 8 Existing Condition 10 9 8 Proposed Condition 10 9 8	Existing Condition 10 9 8 7 Proposed Condition 10	Function-based Rapid Reach Level Stream As Measurement Method Cate Functioning Functioni Stream Function Pyramid Level 4 Physicoch 13. Water Appearance and Nutrient Enrichment (USDA 1999) Very clear, or clear but tea- colored; objects visible at depth 3 to 6 ft (less if slightly colored); no oil sheen on submerged objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent Couldiness especia on stream Existing Condition 10 9 8 7 6 Proposed Co	Function-based Rapid Reach Level Stream Assessment Category Measurement Method Stream Function Pyramid Level 4 Physicochemical Nutrient Enrichment USDA 1999) Very clear, or clear but tea- colored; objects or rocks. Clear water along entire reach; diverse aquatic plant community includes low quantities of many species of macrophytes; little algal growth present Frequent cloudiness especially after store on stream substrate Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5 14. Detritus (Petersen, 1992) Mainly consisting of leaves and wood without sediment covering it Leaves and wood scarce; fine organic sediment 5 Existing Condition 10 9 8 7 6 5 Proposed Condition 10 9 8 7 6 5	Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Existing Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5 4 Proposed Condition 10 9 8 7 6 5	Function-based Rapid Reach Level Stream Assessment Category Category Functioning Functioning-at-Risk N Stream Function Pyramid Level 4 Physiocchemical Stream Function Pyramid Level 4 Physiocchemical Total Colspan="2">Stream Function Pyramid Level 4 Physiocchemical USDA 1989) Stream Function Pyramid Level 4 Physiocchemical Stream Function Pyramid Level 4 Physiocchemical Output totage of the stream function pyramid Level 4 Physiocchemical USDA 1989) Notice and the stream function pyramid Level 4 Physiocchemical Notice and the stream function pyramid Level 4 Physiocchemical Output totage of the stream function pyramid Level 4 Physiocchemical Notice and the stream function pyramid Level 4 Physiocchemical Notice and the stream function pyramid Level 4 Physiocchemical Stream Water and performantly includes low of quantities of namy species of macroparties intereach, model and and the stream function pyramid Level 4 Physiocchemical Overall Paral Main wood without sediment covering it Mainly consisting of leaves and wood scaree; fine organic debris without sediment covering it <td>Function-based Rapid Reach Level Stream Assessment Category Measurement Method Category Stream Function Pyramid Level 4 Physicochemical Nutrient Enrichment USDA 1960) Value Appearance and Wary dear, or dearb tub, the regeneric objects withle at colored; objects withle at the first and the first and the order of the objects of the objects or objects within Enrichment USDA 1960) Very tubid or mude appearance mod to colored; objects or rocks. 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Detritius (Petersen, 1982) Mainly consisting of leaves and function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF Score:4 am Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF Score:4 am Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F</td>	Function-based Rapid Reach Level Stream Assessment Category Measurement Method Category Stream Function Pyramid Level 4 Physicochemical Nutrient Enrichment USDA 1960) Value Appearance and Wary dear, or dearb tub, the regeneric objects withle at colored; objects withle at the first and the first and the order of the objects of the objects or objects within Enrichment USDA 1960) Very tubid or mude appearance mod to colored; objects or rocks. Clear water along entrie of each diverse aqualic plant commit in cludes or equality the quantities of many species of marcophystes. Ittle adjai growth present Single Clear of the objects on stream substrate Very tubid or mude appearance mod to color of objects with explicit data adjain the colsmany species of marcophystes. Ittle adjai growth present Single Clear of the appearance mod to color of objects or home colsman severe adjaint of the adjaint growth present Existing Condition 10 B T G 5 4 3 2 41. Detritius (Petersen, 1982) Mainly consisting of leaves and function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF Score:4 am Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F FAR NF Score:4 am Function Pyramid Level 4 Physicochemical Overall EXISTING Condition F	

Reach ID:	Trib 5]	Reach Score/Reach Total	Ex. 24/170 Prop.: 136/170	Quality: Ex: 0.14 Prop:0.8
		Function-based Rapi	d Reach Level Stream A	ssessment	
Assessment			Cat	egory	•
Parameter	Measurement Method	Functioning	Function	ing-at-Risk	Not Functioning
		Bankfull Determinatio	n and Rosgen Stream Cl	assification	
Rosgen Stream T	ype (Observation) EX - Strea	am is currently concrete chan	nel PRO - C		
Regional Curve (circle one): Piedmon	t Coastal Plain	Allegheny Plateau/Ridge	e and Valley Urban	Karst
DA (sqmi)	0.06				
BF Width (ft)	3.6-4.9			BF Area (sqft)	1.3-2.2
BF Depth (ft)	0.35-0.45			Percent Impervious (%)	21.3
		Fio	Id Measurements		
		110			
F	Parameter		Measureme	nts and Ratios	
Water surface to elevation differen	geomorphic feature ce	Ex- Channel is in concrete channel			
Riffle Mean Depth	n at Bankfull Stage (dbkf)	Ex- Channel is in concrete channel	Proposed: 0.36		
Riffle Width at Ba	nkfull Stage (Wbkf)	Ex- Channel is in concrete channel	Proposed: 4.6		
Riffle XS Area at (Abkf = dbkf*Wb		Ex- Channel is in concrete channel	Proposed: 1.65		
	Width (Wfpa) (Wfpa=Width mined by 2xDmax)	Ex- Channel is in concrete channel	Target: 18.4		
Entrenchment R	atio (ER) (ER=Wfpa/Wbkf)	Ex- Channel is in concrete channel	Target 4.0		
Low Bank Height	t (LBH)	Ex- Channel is in concrete channel	Proposed: 0.5		
Riffle Maximum D (Dmax)	epth at Bankfull Stage	Ex- Channel is in concrete channel	Proposed: 0.5		
Bank Height Rat (BHR=LBH/Dmax		Ex- Channel is in concrete channel	Proposed: 1.0		
BEHI/NBS Rating	is and Lengths	Ex- Channel is in concrete channel	L/L		
Pool to Pool Spac	cing (P-P)	Ex- Channel is in concrete channel	Proposed: Min: 21, Max: 30, Avg.: 26		
Pool to Pool Spa P Ratio=P-P/Wbl	acing Ratio (P-P Ratio) (P- kf)	Ex- Channel is in concrete channel	Proposed: Min:4.6, Max:6.5, Avg.:5.7		
Pool Maximum De (Dmbkfp)	epth at Bankfull Stage	Ex- Channel is in concrete channel	Proposed: 0.9		
Pool Depth Ratio Ratio=Dmbkfp/d	o (Dmbkfp Ratio) (Dmbkfp bkf)	Ex- Channel is in concrete channel	Proposed: 2.5		
Macroinvertebrate	e Taxa Observed	Ex- Channel is in concrete channel	n/a		

Cabin Branch



Cabin Branch





Tributary 1, 2, and 3 (general riparian conditions)



Tributary 4





Tributary 5



