

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	EXISTING CONDITIONS & DEMOLITION PLAN
3	ENVIRONMENTAL CONCEPT PLAN
4	PRELIMINARY EROSION/SEDIMENT CONTROL PLAN AND STORMWATER MANAGEMENT NOTES AND DETAILS

SOILS LEGEND			
SOIL	NAME	CLASS	'K' VALUE
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	0.20
GnB	Glenville-Baile silt loams, 0 to 8 percent slopes	C	0.37

HOWARD COUNTY SOIL MAP 13; ELLICOTT CITY SW QUADRANGLE

STORMWATER MANAGEMENT PRACTICES						
AREA ID	LOCATION	DRAINAGE SF.	% IMPERVIOUS	ESDv REQUIRED CU.FT.	ESDv PROVIDED CU.FT.	MICRO-BIORETENTION M-6 (Y/N)
1	LOT 1	8,643	31.0%	281 (STORAGE)	320 (STORAGE)	Y
2	LOT 1	825	100.0%	105	112	Y

STORMWATER MANAGEMENT SUMMARY					
AREA ID	ESDv REQUIRED CU.FT.	ESDv PROVIDED CU.FT.	REV REQUIRED CU.FT.	REV PROVIDED CU.FT.	REMARKS
SITE	530	493	73	201	MICRO-BIORETENTION (M-6) & DRY WELL (M-5)
TOTAL	530	493	73	201	

GROSS AREA = 0.45 AC. (TOTAL)
 LOD = 0.38 ACRES
 RCN = 59.5
 TARGET Pe = 1.6"
 Rv = 0.05 + (0.009) (1); I=21
 = 0.24
 S = 0.22 (73% 'B' Soil, 27% 'C' Soils)
 Rev = (S) (RV) (A)/12
 = (0.22) (0.24) (0.38)/12
 = 0.002 ac-ft or 73 cu-ft

STORMWATER MANAGEMENT DESIGN NARRATIVE

INTRODUCTION:
 THIS REPORT WILL DEMONSTRATE HOW THE CRITERIA SET FORTH IN THE MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II (EFFECTIVE OCTOBER 2000, REVISED MAY 2009) WILL BE SATISFIED ON THIS PROJECT. THE GOAL OF CREATING HYDROLOGY SIMILAR TO THAT OF "WOODS IN GOOD CONDITION" WILL BE ACCOMPLISHED THROUGH THE USE OF THE PRACTICES CONTAINED WITHIN CHAPTER 5 OF SMD MANUAL. THE ACHIEVEMENT OF THIS GOAL WILL REMOVE THE REQUIREMENT OF PROVIDING CHANNEL PROTECTION VOLUME.

GENERAL SITE CONDITIONS:
 LOT 2 IS PART OF THE SUBDIVISION "SHOWN PROPERTY LOTS 1, LOT 2, AND OPEN SPACE LOT 3" WHICH IS ZONED R-20 (RESIDENTIAL: SINGLE). IT IS LOCATED ON TAX MAP 17, PARCEL NO. 19, OF THE HOWARD COUNTY, MARYLAND TAX MAP DATABASE SYSTEM. THE PROPERTY WAS RECORDED AS PLAT NO. 15696 ON NOVEMBER 26, 2002. LOT 2 HAS AN AREA OF 0.450 ACRES AND IS NOT ENCUMBERED BY ANY ON-SITE EASEMENTS (PUBLIC OR PRIVATE), WETLANDS, OR ENVIRONMENTAL SETBACKS. THE DRAINAGE FROM THE AREA OF THE PROPOSED IMPERVIOUS AREAS CONSISTING OF A SINGLE-FAMILY DETACHED HOME WITH LEAD WALK AND DRIVEWAY WILL FLOW BY WAY OF ROOF DRAINS AND GRADING TO THE PROPOSED MICRO-BIORETENTION LOCATED IN THE LEFT SIDE OF THE SUBJECT PROPERTY. THE REMAINING PORTION OF THE LOT DRAINS TO THE SOUTH AND SOUTHEAST TO OPEN SPACE LOT 3 WHERE A WETLAND AREA IS LOCATED. PER THE HOWARD COUNTY WEB SOILS SURVEY, DATED MARCH 2018, SOILS ON THE OVERALL SITE CONSIST OF "GH" GLENELG-URBAN LAND COMPLEX (0 TO 8 PERCENT SLOPES), A TYPE B SOIL, AND "GN" GLENVILLE-BAILE SILT LOAMS (0 TO 8 PERCENT SLOPES), A TYPE C SOIL.

I. NATURAL RESOURCE PROTECTION:
 ALTHOUGH NO NATURAL RESOURCES ARE LOCATED ON THIS SITE, THERE IS ENVIRONMENTALLY SENSITIVE AREAS AND SPECIMEN TREES LOCATED OFF-SITE. THIS PROJECT'S PROPOSED IMPROVEMENTS HAVE BEEN LOCATED ON THE EAST SIDE OF THE LOT LIMITING THE DISTURBANCE IN THE AREA OF THE OFF-SITE SPECIMEN TREE'S CRITICAL ROOT ZONE.

II. MAINTENANCE OF NATURAL FLOW PATTERNS:
 IT IS THE INTENT OF THE PROPOSED DESIGN TO DISCHARGE RUNOFF SIMILAR TO THE CHARACTERISTICS AND DIRECTION OF THIS SITE PRIOR TO ANY OF THE PROPOSED IMPROVEMENTS.

III. REDUCTION OF IMPERVIOUS AREAS THROUGH BETTER SITE DESIGN, ALTERNATIVE SURFACES AND NONSTRUCTURAL PRACTICES:
 THE DESIGN OF THIS PROJECT PROPOSES ONE INDIVIDUAL DRIVEWAY FOR A PROPOSED SINGLE FAMILY DETACHED HOUSE. ALL PROPOSED IMPERVIOUS SURFACES ARE RECEIVING TREATMENT THROUGH USE OF ESD PRACTICES. IT SHOULD ALSO BE NOTED THAT EXISTING IMPERVIOUS AREAS ARE BEING REMOVED AS PART OF THIS PROJECT.

IV. INTEGRATION OF EROSION AND SEDIMENT CONTROLS INTO STORMWATER STRATEGY:
 SUPER SILT FENCE WILL BE UTILIZED TO PROVIDE EROSION AND SEDIMENT CONTROL.

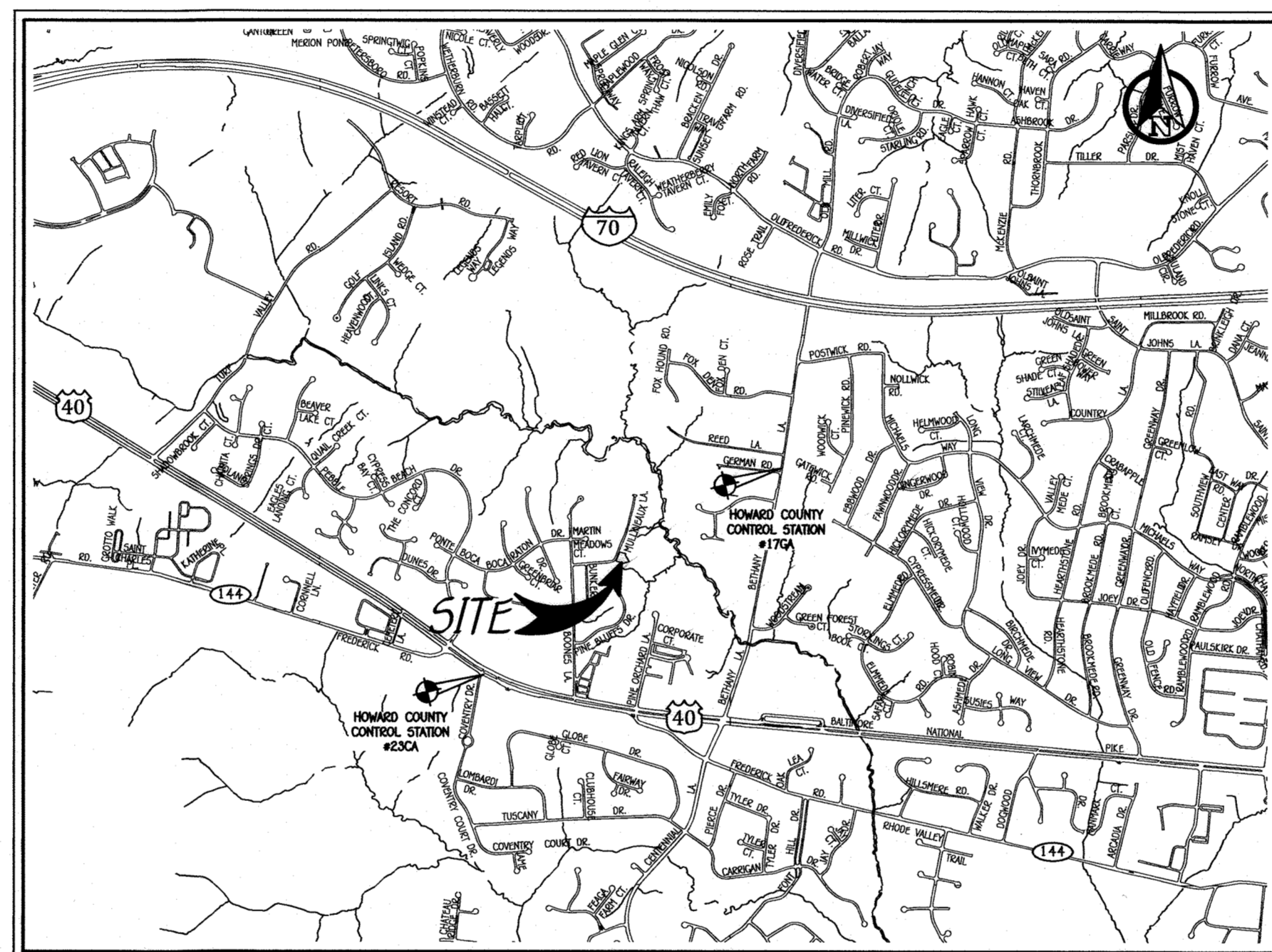
V. IMPLEMENTATION OF ESD PLANNING TECHNIQUES AND PRACTICES TO THE MAXIMUM EXTENT PRACTICABLE (MEP):
 THE FULL REQUIRED ESD VOLUME IS BEING PROVIDED.

VI. REQUEST FOR DESIGN MANUAL WAIVER:
 NO WAIVERS ARE EXPECTED TO BE REQUIRED ON THIS PROJECT.

ENVIRONMENTAL CONCEPT PLAN SHOWN PROPERTY

LOT 2

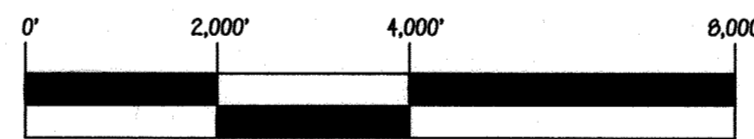
ZONING: R-20 (RESIDENTIAL: SINGLE DISTRICT) TAX MAP No. 17 GRID No. 19 PARCEL No. 129 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND



HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 17QB N 592,656.77 E 1,353,019.98 ELEVATION: 441.515
 HOWARD COUNTY GEODETIC SURVEY CONTROL NO. 23CA N 588,035.645 E 1,348,385.607 ELEVATION: 482.187
 REFER TO HOWARD CO. ADC MAP 28-A6

VICINITY MAP

SCALE: 1" = 2,000'



SCALE: 1" = 2,000'

GENERAL NOTES

- THE SUBJECT PROPERTY IS ZONED R-20 (PER 10/06/13 COMPREHENSIVE ZONING PLAN).
- BOUNDARY IS BASED ON A FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER ON OR ABOUT JANUARY 21, 2002.
- CONTOURS ARE BASED ON A TOPOGRAPHIC FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER ON OR ABOUT NOVEMBER, 2018.
- COORDINATES BASED ON NAD83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL.
 STATIONS NO. 17QA AND NO. 23CA
 HOWARD COUNTY MONUMENT NO. 17QB N 592,656.774 E 1,353,019.981 ELEV. 441.515'
 HOWARD COUNTY MONUMENT NO. 23CA N 588,035.645 E 1,348,385.607 ELEV. 482.187'
- STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009. THIS PLAN PROPOSES THE USE OF ONE (1) M-6 MICRO-BIORETENTION FACILITY AND ONE (1) M-5 DRYWELL.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT. PUBLIC WATER AND SEWER WILL BE UTILIZED FOR THIS PROJECT.
- ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
- THERE ARE NO WETLANDS, STREAMS OR THEIR BUFFERS LOCATED WITHIN THE BOUNDARY OF THIS SITE.
- LANDSCAPING WILL BE PROVIDED AT THE SITE DEVELOPMENT PLAN STAGE OF THIS PROJECT.
- FOREST CONSERVATION REQUIREMENTS FOR THIS PROPOSED SUBDIVISION HAVE BEEN ADDRESSED UNDER F-02-146.
- SOIL BORING INFORMATION WILL BE PROVIDED AT THE NEXT PLAN STAGE OF THIS PROJECT.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF SUBSEQUENT OR ASSOCIATED SUBDIVISION OR SITE DEVELOPMENT PLANS OR RED-LINE REVISIONS. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN, SITE DEVELOPMENT PLAN, OR RED-LINE REVISION PROCESSES. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THE PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.

SITE ANALYSIS DATA CHART

- TOTAL AREA OF THIS SUBMISSION = 0.45 AC.±
- LIMIT OF DISTURBED AREA = 0.38 AC.± (SWM BASED ON LOD)
- PRESENT ZONING DESIGNATION = R-20 (PER 10/06/2013 COMPREHENSIVE ZONING PLAN)
- PROPOSED USE: RESIDENTIAL SINGLE FAMILY DETACHED
- PREVIOUS HOWARD COUNTY FILES: F-02-146
- TOTAL AREA OF FLOODPLAIN LOCATED ON-SITE = 0 AC
- TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0 AC
- TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0.06 AC
- TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 0 AC
- TOTAL AREA OF STREAM (INCLUDING BUFFER) = 0 AC
- TOTAL AREA OF EXISTING FOREST = 0 AC
- TOTAL AREA OF FOREST TO BE RETAINED = 0 AC
- TOTAL AREA OF LOTS / BUILDABLE PARCELS = 0.45 AC
- TOTAL GREEN OPEN AREA (PERVIOUS) = 0.37 AC
- TOTAL IMPERVIOUS AREA = 0.08 AC (WITHIN LOD, EXCLUDES EXISTING IMPERVIOUS)
- TOTAL AREA OF ERODIBLE SOILS = 0.04 AC

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	EX. FEATURES TO BE DEMOLISHED
x 448.5	SPOT ELEVATION
10' 50'	EXISTING STORM DRAIN
12' 60' 30'	PROPOSED STORM DRAIN PIPE
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/ PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT FENCING
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
GhB GnB	SOIL LINES AND TYPES
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	STEEP SLOPES 15% OR GREATER
---	STEEP SLOPES 25% OR GREATER
---	STEEP SLOPES 20% OR GREATER

SHOWN PROPERTY

LOT 2
 3079 MULLINEAUX LANE
 ZONED R-20 (RESIDENTIAL: SINGLE)
 TAX MAP No. 17 GRID No. 19 PARCEL No. 0129
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE, 2021
 SHEET 1 OF 4

ECP-20-042

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2895

Approved: Department Of Planning And Zoning
 Chief, Development Engineering Division 6/30/21 Date
 Chief, Division Of Land Development 6/23/21 Date



PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21476, EXPIRATION DATE: 7/14/21.
 Paul A. Kathan
 FRANK/WALLINGTON E. 6/16/21 Date

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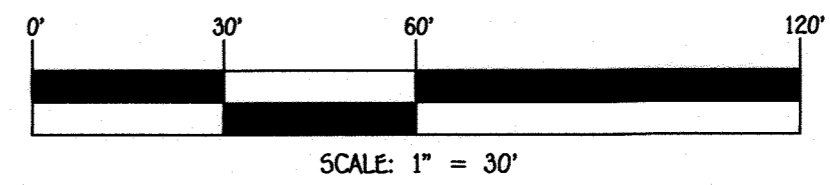
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SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	EX. FEATURES TO BE DEMOLISHED
x 440.5	SPOT ELEVATION
18" SD	EXISTING STORM DRAIN
18" PDP	PROPOSED STORM DRAIN PIPE
EX. W.L.	EXISTING WATER LINE
EX. S.W.L.	EXISTING SEWER LINE
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/ PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT FENCING
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---	STEEP SLOPES 20% OR GREATER



SOILS LEGEND			
SOIL	NAME	CLASS	'K' VALUE
GhB	Glenely-Urban land complex, 0 to 8 percent slopes	B	0.20
GnB	Glenville-Baile silt loams, 0 to 8 percent slopes	C	0.57

HOWARD COUNTY WEBSOILS SURVEY 05/06/19

PLAN VIEW
SCALE: 1" = 30'



EXISTING CONDITIONS & DEMOLITION PLAN

SHOWN PROPERTY

LOT 2
3079 MULLINEAUX LANE
ZONED R-20 (RESIDENTIAL: SINGLE)
TAX MAP No. 17 GRID No. 19 PARCEL No. 0129
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2021
SHEET 2 OF 4

FISHER, COLLINS & CARTER, INC.
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Approved: Department Of Planning And Zoning
Chief, Development Engineering Division
Chief, Division Of Land Development

Date: 6/30/21
Date: 6/30/21

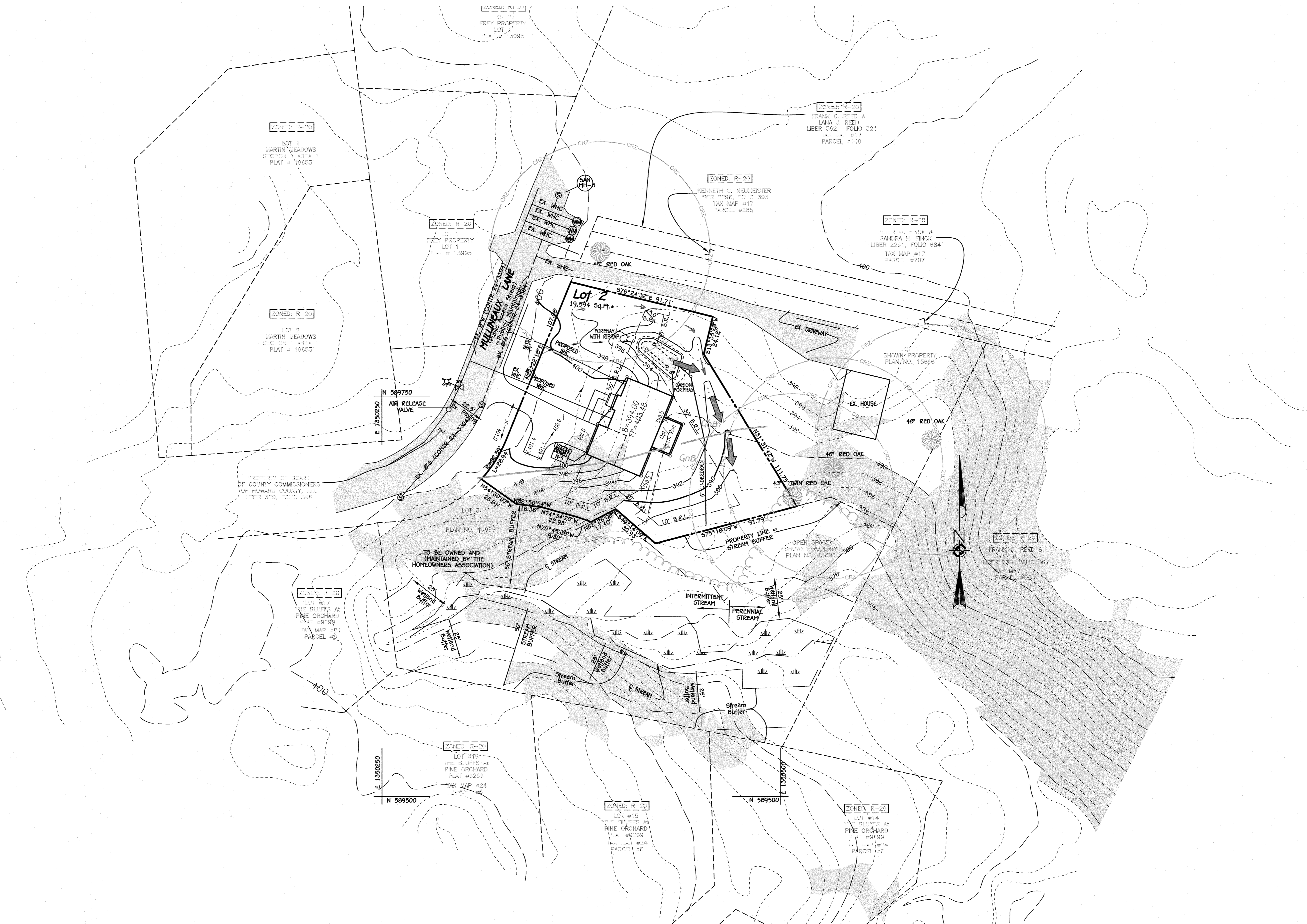


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FRANK M. AVALLANSAN II
Date: 6/16/21

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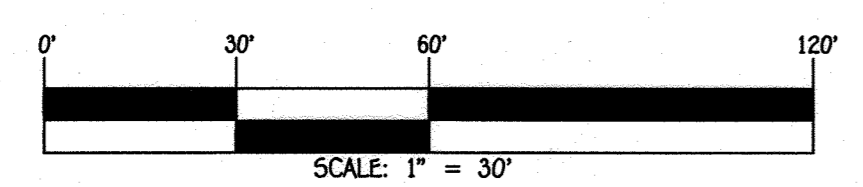
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SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
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□	EX. FEATURES TO BE DEMOLISHED
X 440.5	SPOT ELEVATION
12" 50	EXISTING STORM DRAIN
12" 50	PROPOSED STORM DRAIN PIPE
— EX. FH	EXISTING WATER LINE
— EX. SW	EXISTING SEWER LINE
—	EXISTING CABLE LINE
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—	FOREST CONSERVATION EASEMENT FENCING
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GnB GnS	SOIL LINES AND TYPES
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○	DENOTES EXISTING TREES TO REMAIN
○	CRITICAL ROOT ZONE
▨	STEEP SLOPES 15% OR GREATER
▨	STEEP SLOPES 25% OR GREATER
▨	STEEP SLOPES 20% OR GREATER



PLAN VIEW
SCALE: 1" = 30'

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Approved: Department Of Planning And Zoning
 Chief, Development Engineering Division *[Signature]* 6/30/21
 Chief, Division Of Land Development *[Signature]* 6/30/21



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ENVIRONMENTAL CONCEPT PLAN
SHOWN PROPERTY
 LOT 2
 3079 MULLINEAUX LANE
 ZONED R-20 (RESIDENTIAL: SINGLE)
 TAX MAP No. 17 GRID No. 19 PARCEL No. 0129
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE, 2021
 SHEET 3 OF 4

INFILTRATION AND FILTER SYSTEM CONSTRUCTION SPECIFICATIONS

INFILTRATION AND FILTER SYSTEMS EITHER TAKE ADVANTAGE OF EXISTING PERMEABLE SOILS OR CREATE A PERMEABLE MEDIUM SUCH AS SAND FOR WC, AND RE V. IN SOME INSTANCES WHERE PERMEABILITY IS GREAT, THESE FACILITIES MAY BE USED FOR UP AS WELL. THE MOST COMMON SYSTEMS INCLUDE INFILTRATION TRENCHES, INFILTRATION BASINS, SAND FILTERS, AND ORGANIC FILTERS.

WHEN PROPERLY PLANTED, VEGETATION WILL THRIVE AND ENHANCE THE FUNCTIONING OF THESE SYSTEMS. FOR EXAMPLE, PRE-TREATMENT BUFFERS WILL TRAP SEDIMENTS THAT OFTEN ARE BOUND WITH PHOSPHOROUS AND METALS. VEGETATION PLANTED IN THE FACILITY WILL AID IN NUTRIENT UPTAKE AND WATER STORAGE. ADDITIONALLY, PLANT ROOTS WILL PROVIDE AERATION TO PERMEATE SOIL FOR GROUNDWATER RECHARGE. FINALLY, SUCCESSFUL PLANTINGS PROVIDE AESTHETIC VALUE AND WILDLIFE HABITAT MAKING THESE FACILITIES MORE DESIRABLE TO THE PUBLIC.

DESIGN CONSTRAINTS:

- > PLANTING BUFFER STRIPS OF AT LEAST 20 FEET WILL CAUSE SEDIMENTS TO SETTLE OUT BEFORE REACHING THE FACILITY, THEREBY REDUCING THE POSSIBILITY OF CLOGGING.
- > DETERMINE AREAS THAT WILL BE SATURATED WITH WATER AND WATER TABLE DEPTH SO THAT APPROPRIATE PLANTS MAY BE SELECTED (HYDROLOGY WILL BE SIMILAR TO BIORETENTION FACILITIES, SEE FIGURE A.5 AND TABLE A.4 FOR PLANTING MATERIAL GUIDANCE).
- > PLANTS KNOWN TO SEND DOWN DEEP TAPROOTS SHOULD BE AVOIDED IN SYSTEMS WHERE FILTER FABRIC IS USED AS PART OF FACILITY DESIGN.
- > TEST SOIL CONDITIONS TO DETERMINE IF SOIL AMENDMENTS ARE NECESSARY.
- > PLANTS SHALL BE LOCATED SO THAT ACCESS IS POSSIBLE FOR STRUCTURE MAINTENANCE.
- > STABILIZE HEAVY FLOW AREAS WITH EROSION CONTROL MATS OR SOD.
- > TEMPORARILY DIRECT FLOW FROM SEEDING AREAS UNTIL VEGETATION IS ESTABLISHED.
- > SEE TABLE A.5 FOR ADDITIONAL DESIGN CONSIDERATIONS.

BIO-RETENTION

SOIL BED CHARACTERISTICS

THE CHARACTERISTICS OF THE SOIL FOR THE BIORETENTION FACILITY ARE PERHAPS AS IMPORTANT AS THE FACILITY LOCATION, SIZE, AND TREATMENT VOLUME. THE SOIL MUST BE PERMEABLE ENOUGH TO ALLOW RUNOFF TO FILTER THROUGH THE MEDIA, WHILE HAVING CHARACTERISTICS SUITABLE TO PROMOTE AND SUSTAIN A ROBUST VEGETATION COVER CROP. IN ADDITION, MUCH OF THE NUTRIENT POLLUTANT UPTAKE (NITROGEN AND PHOSPHORUS) IS ACCOMPLISHED THROUGH ABSORPTION AND MICROBIAL ACTIVITY WITHIN THE SOIL PROFILE. THEREFORE, SOILS MUST BALANCE THEIR CHEMICAL AND PHYSICAL PROPERTIES TO SUPPORT BIOTIC COMMUNITIES ABOVE AND BELOW GROUND.

THE PLANTING SOIL SHOULD BE A SANDY LOAM, LOAMY SAND, LOAM (USDA), OR A LOAM/SAND MIX (SHOULD CONTAIN A MINIMUM 35 TO 60% SAND BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BE LESS THAN 25% BY VOLUME (ENVIRONMENTAL QUALITY RESOURCES (EQE), 1996; ENGINEERING TECHNOLOGY INC. AND BIOHABITATS, INC. (ETAB), 1993). SOILS SHOULD FALL WITHIN THE SM, ML, SC CLASSIFICATIONS OR THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). A PERMEABILITY OF AT LEAST 1.0 FEET PER DAY (0.5"/HR) IS REQUIRED (A CONSERVATIVE VALUE OF 0.5 FEET PER DAY IS USED FOR DESIGN). THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER. BRUSH OR SEEDS FROM NOXIOUS WEEDS (E.G., JOHNSON GRASS, MUGWORT, NUTSEDGE, AND CANADA THISTLE OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.) SHOULD NOT BE PRESENT IN THE SOILS. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12 TO 18 LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVERSED BY DOZER TRACKS). THE SPECIFIC CHARACTERISTICS ARE PRESENTED IN TABLE A.3.

TABLE A.3 PLANTING SOIL CHARACTERISTICS

PARAMETER	VALUE
PH RANGE	5.2 TO 7.00
ORGANIC MATTER	1.5 TO 4.0% (BY WEIGHT)
MAGNESIUM	35 LBS. PER ACRE, MINIMUM
PHOSPHORUS (PHOSPHATE - P2O5)	75 LBS. PER ACRE, MINIMUM
POTASSIUM (POTASH - K2O)	85 LBS. PER ACRE, MINIMUM
SOLUBLE SALTS	500 PPM
CLAY	10 TO 25 %
SILT	30 TO 55 %
SAND	35 TO 60%

MULCH LAYER

THE MULCH LAYER PLAYS AN IMPORTANT ROLE IN THE PERFORMANCE OF THE BIORETENTION SYSTEM. THE MULCH LAYER HELPS MAINTAIN SOIL MOISTURE AND AVOIDS SURFACE SEALING, WHICH REDUCES PERMEABILITY. MULCH HELPS PREVENT EROSION, AND PROVIDES A MICROENVIRONMENT SUITABLE FOR SOIL BIOTA AT THE MULCH/SOIL INTERFACE. IT ALSO SERVES AS A PRETREATMENT LAYER, TRAPPING THE FINE SEDIMENTS, WHICH REMAIN SUSPENDED AFTER THE PRIMARY PRETREATMENT.

THE MULCH LAYER SHOULD BE STANDARD LANDSCAPE STYLE, SINGLE OR DOUBLE SHREDED HARDWOOD MULCH OR CHIPS. THE MULCH LAYER SHOULD BE WELL AGED (STOCKPILED OR STORED FOR AT LEAST 12 MONTHS), UNIFORM IN COLOR, AND FREE OF OTHER MATERIALS, SUCH AS WEED SEEDS, SOIL, ROOTS, ETC. THE MULCH SHOULD BE APPLIED TO A MAXIMUM DEPTH OF THREE INCHES. GRASS CLIPPINGS SHOULD NOT BE USED AS A MULCH MATERIAL.

PLANTING GUIDANCE

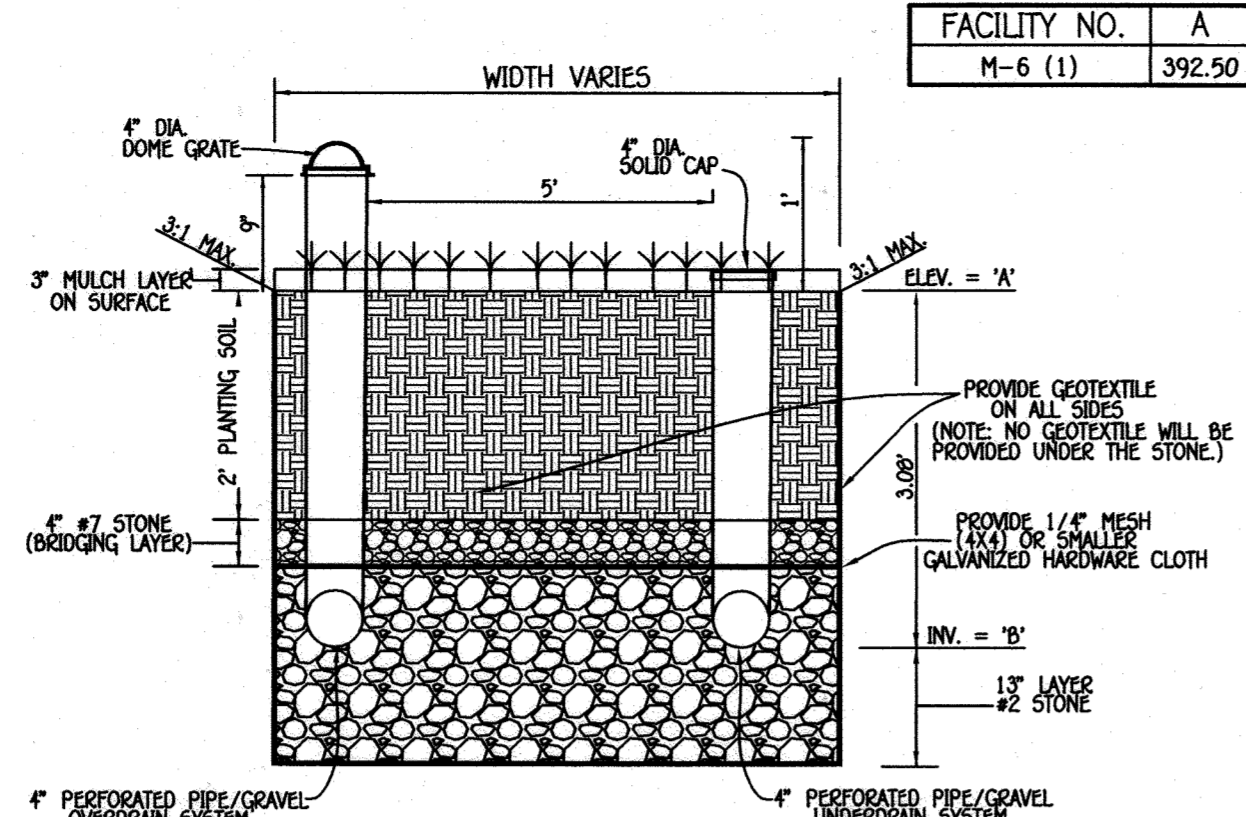
PLANT MATERIAL SELECTION SHOULD BE BASED ON THE GOAL OF SIMULATING A TERRESTRIAL FORESTED COMMUNITY OF NATIVE SPECIES. BIORETENTION SIMULATES AN UPLAND-SPECIES ECOSYSTEM. THE COMMUNITY SHOULD BE DOMINATED BY TREES, BUT HAVE A DISTINCT COMMUNITY OF UNDERSTORY TREES, SHRUBS AND HERBACEOUS MATERIALS. BY CREATING A DIVERSE, DENSE PLANT COVER, A BIORETENTION FACILITY WILL BE ABLE TO TREAT STORMWATER RUNOFF AND WITHSTAND URBAN STRESSES FROM INSECTS, DISEASE, DROUGHT, TEMPERATURE WIND, AND EXPOSURE.

THE PROPER SELECTION AND INSTALLATION OF PLANT MATERIALS IS KEY TO A SUCCESSFUL SYSTEM. THESE ARE ESSENTIALLY THREE ZONES WITHIN A BIORETENTION FACILITY (FIGURE A.5). THE LOWEST ELEVATION SUPPORTS PLANT SPECIES ADAPTED TO STANDING AND FLUCTUATING WATER LEVELS. THE MIDDLE ELEVATION SUPPORTS PLANTS THAT LIKE DRIER SOIL CONDITIONS, BUT CAN STILL TOLERATE OCCASIONAL INUNDATION BY WATER. THE OUTER EDGE

IS THE HIGHEST ELEVATION AND GENERALLY SUPPORTS PLANTS ADAPTED TO DRIER CONDITIONS. A SAMPLE OF APPROPRIATE PLANT MATERIALS FOR BIORETENTION FACILITIES ARE INCLUDED IN TABLE A.4. THE LAYOUT OF PLANT MATERIAL SHOULD BE FLEXIBLE, BUT SHOULD FOLLOW THE GENERAL PRINCIPALS DESCRIBED IN TABLE A.5. THE OBJECTIVE IS TO HAVE A SYSTEM, WHICH RESEMBLES A RANDOM, AND NATURAL PLANT LAYOUT, WHILE MAINTAINING OPTIMAL CONDITIONS FOR PLANT ESTABLISHMENT AND GROWTH. FOR A MORE EXTENSIVE BIORETENTION PLAN, CONSULT ETAB, 1993 OR CLAYTOR AND SCHUELER, 1997.

Table B.4. Materials Specifications for Micro-Bioretenfion, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (2" to 4" deep)	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum
Pea gravel diaphragm	pea gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	ASHTO M-43	No. 57 or No. 59 aggregate (3/8" to 3/4")	
Underdrain piping	1/2" Type PS 28 or ASHTO N-278	4" to 8" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe: 3/8" perf. @ 6" on center. 4 holes per row; minimum of 3" of gravel over pipe; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 28 days, normal weight, air-entrained, according to meet ASTM-615-60	n.a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using precast approved pipe or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 508.2/69; vertical loading (D1-10 or H-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	ASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Dabbas and Gytstone (ASHTO) #10 are not acceptable. No calcium chlorinated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.



TYPICAL SECTION BIO-RETENTION FACILITY (M-6)
NO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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Approved: Department of Planning and Zoning
Chief, Development Engineering Division
Chief, Division of Land Development



PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21476, EXPIRATION DATE: 7/14/21.

PLAN VIEW
SCALE: 1" = 30'

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (M-6)

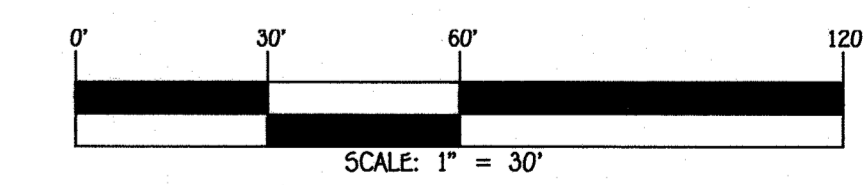
- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR, IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDER BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
- SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

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DEVELOPER
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LEGEND

SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	EX. FEATURES TO BE DEMOLISHED
x 448.5	SPOT ELEVATION
10' 50'	EXISTING STORM DRAIN
10' 50'	PROPOSED STORM DRAIN PIPE
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/ PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT FENCING
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	SOIL LINES AND TYPES
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	STEEP SLOPES 15% OR GREATER
---	STEEP SLOPES 25% OR GREATER
---	STEEP SLOPES 20% OR GREATER



PRELIMINARY EROSION/SEDIMENT CONTROL PLAN AND STORMWATER MANAGEMENT NOTES AND DETAILS

SHOWN PROPERTY
LOT 2
3079 MULLINEAUX LANE
ZONED R-20 (RESIDENTIAL: SINGLE)
TAX MAP NO. 17 GRID NO. 19 PARCEL NO. 0129
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE, 2021
SHEET 4 OF 4