

SHEET INDEX	
SHEET NO.	TITLE SHEET
1	TITLE SHEET
2	ENVIRONMENTAL CONCEPT PLAN
3	SWM DETAILS AND PROFILES
4	PRELIMINARY SEDIMENT & EROSION CONTROL PLAN
5	SWM DRAINAGE AREA MAP

Approved: Department Of Planning And Zoning
[Signature] 10.14.21
 Chief, Development Engineering Division
 Chief, Division Of Land Development
 Date
 Date

ENVIRONMENTAL CONCEPT PLAN

JOURNEY'S END

LOTS 1 THRU 3
 & OPEN SPACE LOTS 4 & 5
 4253 NEW CUT ROAD
 TAX MAP No. 25 GRID No. 20 PARCEL NO. 72

STORMWATER MANAGEMENT PRACTICES								
AREA ID	PERMEABLE PAVING A-2 (Y/N)	DISCONNECTION OF ROOFTOP RUNOFF N-1 (Y/N)	DISCONNECTION OF NON-ROOFTOP RUNOFF N-2 (Y/N)	FILTERRA INLETS (Y/N)	MICRO-BIRETENTION M-6 (Y/N)	BIO-RETENTION F-6 (Y/N)	SUBMERGED GRAVEL WETLAND M-2	DRYWELL M-5
LOT 1	NO	NO	NO	NO	NO	NO	NO	YES - 2
LOT 2	NO	NO	NO	NO	NO	NO	NO	YES - 2
LOT 3	NO	NO	NO	NO	NO	NO	NO	YES - 2
O.S. LOT 4	NO	NO	NO	NO	NO	YES - 1	NO	NO

GENERAL NOTES

- Subject Property Zoned R-ED.
- Property Information:
 Tax Map No. 25
 Tax Parcel No. = 72
 Grid No. = 20
 Total Area = 1.99 Ac.
 Recording Data = L 09914 F 00701; L 5051 F 634;
 L 09955 F 00011; PLAT 18132, F-05-134
 Election District = Second
- Property will be Served By Public Water & Public sewer
- Subdivision Data:
 Proposed No. Of Buildable Lots = 3
 Proposed No. Of Open Space Lots = 2
 Area Of Buildable Lots = 30,541 sq. ft. (0.7 Ac.)
 Area Of Roadway Dedication = N/A
 Area Of Open Space Lots = 48,919 (1.12 Ac.)
 Total Area Recorded = 1.99 Ac.
- On-Site Stormwater Management For Water Quality Volume And Groundwater Recharge Volume Are Being Provided In A Bio-Retention Facility Per Criteria Of The MDE Stormwater Management Design Manual. This subdivision is required to provide management for the 100-year and 2016 Ellicott City Flood Storm (see General Note 6)
- Stormwater management will be provided in accordance with the 2010 MDE Chapter 5 regulations and the latest Howard County design manual, Vol. 1, Chapter 5 adopted on or around May 4, 2010. Groundwater recharge volume will be provided through the use of a stone reservoir located beneath the micro-bioretenion facility. The required ESD volumes will be provided by on lot Drywells and a micro-bioretenion facility. Overbank Flood Protection Volume and Extreme Flood Volumes for this site will be provided by the micro-bioretenion facility located on Open Space Lot 4. An additional 10% of quality management is required in the reduction of this developed peak flows rates. An Disturbance to create the pond and associated piping is considered an essential disturbance in accordance with C800-2016 & section 16.116(c)1) of the Howard County Subdivision Regulations. This micro-bioretenion facility will be providing routing of the 100-year storm and the 2016 Ellicott City Flood Storm. These facilities will be privately owned and maintained by the HOA.
- There is no Steep Slopes On This Site.
- No Non-Tidal Wetlands Exist On Site Based On An Evaluation By Eco-Science Professionals Inc.
- There is No Existing 100 Year Floodplain Located On This Property.
- Contour Information Is Based On Field Run Topography By Fisher, Collins Collins & Carter Inc. On July 23, 2020.
- Landscaping will be provided at the SDP plan phase.
- Coordinates Based On Nad '83, Maryland Coordinate System As Projected By Howard County Geodetic Control Stations No. 25GA And No. 25GB.
 Station No. 25GA
 North 579,483.667
 East 1,371,171.838 ELEV: 381.902
 Station No. 25GB
 North 577,875.934
 East 1,368,199.62 ELEV: 410.934
- B.R.L. Denotes Building Restriction Line.
- For Flag Or Pipestem Lots, Refuse Collection, Snow Removal And Road Maintenance To Be Provided At The Junction Of Flag/Pipestem And The Road Right Of Way And Not Onto The Flag/Pipestem Driveway.
- Driveways Shall Be Provided Prior To Issuance Of A Use And Occupancy Permit For Any New Dwellings To Ensure Safe Access For Fire And Emergency Vehicles Per The (Minimum) Requirements:
 a) Width - 12 Feet (16 Feet Serving More Than One Residence);
 b) Surface - Six (6") Inches Of Compacted Crusher Run Base With Tar And Chip Coating.
 c) Geometry - Maximum 15% Grade, Maximum 10 Change And 45-Foot Turning Radius;
 d) Structures (Culverts/Bridges) - Capable Of Supporting 25 Gross Tons (H25-Loading);
 e) Drainage Elements - Capable Of Safely Passing 100 Year Flood With No More Than 1 Foot Depth Over Surface;
 f) Structure Clearances - Minimum 12 Feet;
 g) Maintenance - Sufficient To Ensure All Weather Use.
- All Lot Areas Are More Or Less (+)
- Distances Shown Are Based On Surface Measurement And Not Reduced To Nad '83 Grid Measurement.
- Since This Is A Minor Subdivision, A Traffic Study Is Not Required Per Plat #18132.
- No Cemeteries Exist On This Site Based On A Visual Site Visit And An Examination Of The Howard County Cemetery Inventory Map.
- Forest Stand Delineation Was Prepared By Eco-Science Professionals, Inc. Dated March 9, 2004. In Conjunction With Plat #18132 (F-05-134).
- This plat complied with the requirements of Section 16.1200 of the Howard County Code for forest conservation through on-site forest retention (0.5 Ac. = 25%) F-05-134, PLAT 18132.
- The Owner, Tenant, And/Or Their Agents Shall Be Responsible For Maintenance Of The Required Landscaping, Plant Materials, Berms, Fences And Walls. All Plant Materials Shall be Maintained In Good Growing Condition, And When Necessary, Replaced With New Materials To Ensure Continued Compliance With Applicable Regulations. All Other Required Landscaping Shall be Permanently Maintained In Good Condition, And When Necessary, Repaired Or Replaced.
- Property is Subject To Taylor Properties Community Association Requirements including the HOA covenants. Recorded in L09914 F. 00701.
- Lots Shown Are Subject To The Ellicott City Water Company Annual Assessments for 33-Years For Water And Sewer.
- Property is Subject To An Overall Lot Easement For Communications Cable By Ellicott City Cable Company.
- Approval of the ECP does not constitute approval of the future plan submissions. Additional comments may be issued at each plan submission.
- This ECP Plan is the first step and must be approved before the site development plan which will comply with Section 107.0.G. of the Zoning regulations.
- This site development plan for lots 1, 2 & 3 must be approved by the Planning Board in accordance with Section 107.0.G.

SWM NARRATIVE

INTRODUCTION:

THIS REPORT WILL DEMONSTRATE HOW THE COSTS 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.

GENERAL SITE CONDITIONS:

JOURNEY'S END IS A 3 LOT SINGLE FAMILY SUBDIVISION WITH NO EXISTING BUILDINGS ON-SITE. PROPERTY IS ZONED R-ED AND LOCATED ON TAX MAP 25, GRID 20, PARCEL NO. 72, OF THE HOWARD COUNTY, MARYLAND TAX MAP DATABASE SYSTEM. THIS SUBDIVISION WILL UTILIZE PROPOSED PUBLIC WATER AND SEWER EXTENSIONS. THE PROPERTY IS LOCATED IN THE ELLICOTT CITY AREA OF HOWARD COUNTY, DEBARS TO THE PATAPSCO RIVER, AND IN THE WATERSHED OF THE PATAPSCO RIVER (02130906). WATER RUNOFF FLOWS FROM THE SOUTHEAST TO NORTHWEST. THIS PROPERTY IS RELATIVELY RECTANGULAR IN SHAPE AND IS PARTIALLY WOODED. GLENVILLE-CODORUS SILT LOAMS (GbB) TYPE "C" SOIL, LECORE-RELAY GRAVELLY LOAMS (Lr) "D/C" SOILS, MOUNT LUCAS SILT LOAM (Msb) TYPE "C" SOIL, AND WATCHUNG SILT LOAM (Wsb) TYPE "D" SOIL. THE RUNOFF FROM A PORTION OF THE DRIVEWAYS AND ROOFS OF THE PROPOSED HOUSES WILL BE TREATED BY A BIORETENTION (F-6). THE REMAINING RUNOFF FROM THE DRIVEWAYS WILL BE TREATED BY A BIORETENTION (F-6).

I. NATURAL RESOURCE PROTECTION:

ENVIRONMENTALLY SENSITIVE AREAS DO NOT EXIST ON-SITE.

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 UTILIZES ONE SHARED DRIVEWAY FOR THREE PROPOSED SINGLE FAMILY DETACHED HOUSES. STRUCTURAL PRACTICES AS PERMITTED IN CHAPTER 3, AS A BIORETENTION FACILITY (F-6) IS BEING PLANNED BECAUSE THIS PROJECT IS IN THE ELLICOTT CITY FLOOD AREA. THE FRONT OF THE HOUSES WILL BE TREATED BY THE ONE BIORETENTION FACILITY. CHAPTER 5 DRY WELLS (M-5) FOR ESD STORAGE HAVE BEEN PROVIDED ON LOT TO SUPPLEMENT THE (F-6) BIO IN THE OVERALL DESIGN.

IV. INTEGRATION OF EROSION AND SEDIMENT CONTROLS INTO STORMWATER STRATEGY:

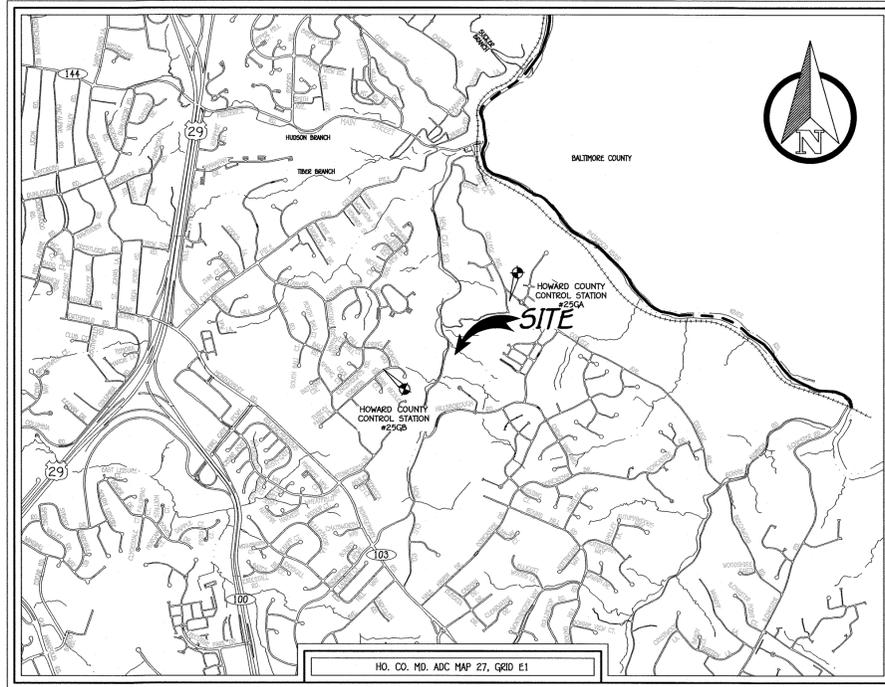
IT IS ANTICIPATED THAT A SEDIMENT TRAP WILL BE NEEDED BECAUSE OF THE STEEPER SLOPES ONCE THE SITE IS GRUBBED. EARTH Dikes OR SILT FENCE DIVERSION WILL BE NEEDED TO DIRECT THE RUNOFF INTO THE TRAP. SILT FENCE AND SUPER SILT FENCE WILL BE USED. NO OFF-SITE DRAINAGE EASEMENTS WILL BE REQUIRED. IT IS ANTICIPATED THAT ALL CUT WILL BE UTILIZED ON-SITE FOR CONSTRUCTION AT TIME OF FINAL PANS.

V. IMPLEMENTATION OF ESD PLANNING TECHNIQUES AND PRACTICES TO THE MAXIMUM EXTENT PRACTICABLE (MEP)

THE PE AMOUNT IS BEING PROVIDED BY THE BIORETENTION FACILITY AND PLANNED ON-SITE. THE SLOPES ARE TOO STEEP TO OBTAIN ANY DISCONNECTIONS. THE ESD AMOUNT IS BEING PROVIDED BY THE PLANNED BY A BIORETENTION FACILITY.

VI. REQUEST FOR DESIGN MANUAL WAIVER:

NO WAIVERS RELATED TO STORMWATER MANAGEMENT ARE BEING REQUESTED AT THIS TIME.

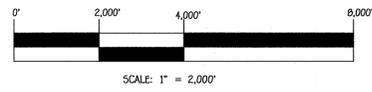


SITE ANALYSIS DATA CHART

- A. TOTAL AREA OF THIS SUBMISSION: 86,772 Sq.Ft. (1.99 Ac.)
 LOT 1 = 9,735.29 sq.ft. (0.22 Ac.)
 LOT 2 = 10,239.24 sq.ft. (0.24 Ac.)
 LOT 3 = 10,566.05 sq. ft. (0.24 Ac.)
- B. LIMIT OF DISTURBED AREA = (43,722 Sq.Ft.) 1.0 Ac.+
- C. PRESENT ZONING DESIGNATION R-ED
- D. PROPOSED USE: SINGLE FAMILY DETACHED HOUSING
- E. NET TRACT AREA = 79,443 sq.ft. (1.823 Ac.)
- F. DENSITY ALLOWED:
 2 UNITS/ACRE X 1.99 = 3 UNITS
- G. BUILDING COVERAGE OF SITE: 4,755.76 (0.109 Ac.)
- H. PREVIOUS HOWARD COUNTY FILES: F-05-134-(PLAT 18132)
- I. TOTAL AREA OF FLOODPLAIN LOCATED ON SITE 0.0 AC.
- J. TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0.38 AC. (ONSITE)
- K. TOTAL AREA OF SLOPES FROM 15% TO 24% = 1.12 AC.+
- L. TOTAL AREA OF WETLANDS (INCLUDING BUFFERS) LOCATED ON SITE = 0 AC.+
- M. TOTAL FOREST 1.15 Ac. (0.40 Ac. TO BE REMOVED)
- N. TOTAL GREEN OPEN AREA OF LOT 4 = 12,879.41 SF = 0.3 Ac.
 LOT 5 = 36,039.75 SF = 0.82 AC
- O. TOTAL IMPERVIOUS AREA = 10,430.44 sq.ft. (0.24 Ac.+)
- P. AREA OF ERODIBLE SOILS = 1.99 Ac.

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 BALDRE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461 - 2899



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. 20748, EXPIRATION DATE: 2/22/23.
[Signature]
 ALDO M. VITUCCI, P.E.
 9/28/21

OWNER
 Historic Ellicott Properties, Inc.
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland
 21117-9616

DEVELOPER
 Autumn Development Corporation
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland
 21117-9616

TITLE SHEET
 4253 NEW CUT ROAD
JOURNEY'S END
 LOTS 1 THRU 3
 & OPEN SPACE LOTS 4 & 5
 TAX MAP NO.: 25 GRID NO.: 20 PARCEL NO.: 72
 ZONED R-ED
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 1, 2021
 SHEET 1 OF 5

DRY WELL NOTE:
 ALL DRY WELLS ARE 7' x 7' x 4'

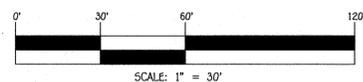
SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
GoB	Glenville-Codorus silt loams, 0 to 8 percent slopes	C	0.49
LrF	Legore-Relay gravelly loams, 25 to 65 percent slopes, very stony	B/C	0.64
MoB	Mount Lucas silt loam, 3 to 8 percent slopes, stony	C	0.37
WcB	Watchung silt loam, 3 to 8 percent slopes, stony	D	0.43

HOWARD COUNTY SOILS MAP PAGE 14; ELICOTT CITY SE QUADRANGLE
 ALL SOILS ONSITE ARE HIGHLY ERODIBLE.

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
×	SPOT ELEVATION
18" SD	EXISTING STORM DRAIN
12" RCP	PROPOSED STORM DRAIN PIPE
CL W	EXISTING WATER LINE
SW	PROPOSED WATER
SE	EXISTING SEWER LINE
PS	PROPOSED SEWER
CG	EXISTING CABLE LINE
GL	EXISTING GAS LINE
OW	EXISTING OVERHEAD WIRE
PP	PROPOSED PAVING/PATH
SS	PROPOSED SIDEWALKS
FC	FOREST CONSERVATION EASEMENT (RETENTION)
FE	FOREST CONSERVATION EASEMENT FENCING
LD	LIMIT OF DISTURBANCE
SSF	SUPER SILT FENCE
SF	SILT FENCE
ET	EXISTING TREE LINE
PT	PROPOSED TREE LINE
M-5	DRYWELL (M-5)-TYPICAL
MoB	SOIL LINES AND TYPES
W	EXISTING WETLANDS & WETLAND BUFFER
B	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
RL	PROPOSED ROOF LEADER
RT	DENOTES EXISTING TREES TO BE REMOVED
RT	DENOTES EXISTING TREES TO REMAIN
CRZ	CRITICAL ROOT ZONE
SC	STABILIZED CONSTRUCTION ENTRANCE
SF	SUPER SILT FENCE
S	15%-24.99% STEEP SLOPES
S	25% AND GREATER STEEP SLOPES
SE	SWM EASEMENT



ENVIRONMENTAL CONCEPT PLAN
JOURNEY'S END
 LOTS 1 THRU 3
 & OPEN SPACE LOTS 4 & 5
 TAX MAP NO.: 25 GRID NO.: 20 PARCEL NO.:72
 ZONED R-ED
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 1, 2021
 SHEET 2 OF 5



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. 10100. EXPIRATION DATE: 2/22/25.
 Michael Vitucci
 ALSO: M. VITUCCI, P.E.
 9/29/21
 Date

OWNER
 Historic Ellicott Properties, Inc.
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland 21117-5616

DEVELOPER
 Autumn Development Corporation
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland 21117-5616

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 Ee v. in some instances where permeability is great, these facilities may be used for Qp 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 arteries for stormwater 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 divert flows from seeded 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 vegetative 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 (EQ2), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications of 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, Nutedge, 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

Table with 2 columns: Parameter and Value. Includes 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 (0 to 5%), Silt (30 to 55%), Sand (35 to 60%).

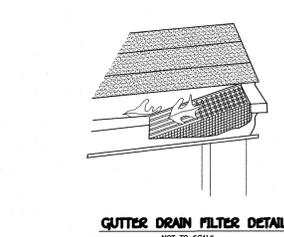
Mulch Layer

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 finer sediments, which remain suspended after the primary pretreatment.

The mulch layer should be standard landscape style, single or double shredded 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. There 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 Clayton and Schueler, 1997.



OPERATION AND MAINTENANCE SCHEDULE FOR DRYWELLS (M-5)

- A. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.
B. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
C. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE DATE AT WHICH THE FACILITY DRAINS.
D. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
E. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
F. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN MONITORED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

FISHER, COLLINS & CARTER, INC. CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS. CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE, ELLICOTT CITY, MARYLAND 21042. (410) 461 - 2899

B.4.C Specifications for Bioretention, Landscape Infiltration & Infiltration Berms

1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

- Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (50%-65%) and compost (35% to 40%) or sandy loam (30%, coarse sand (30%), and compost (40%).
Clay Content - Media shall have a clay content of less than 5%.
pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be added into the soil to increase or decrease pH.
There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.
3. Compaction
It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoses to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive soil compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.
Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to restructure the soil profile through the 12 inch compaction zone. Subsoiling methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.
Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.
When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.
When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

3. Plant Material

Recommended plant material for bioretention practices can be found in Appendix A, Section A.2.3.

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/20th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball. Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers, detritus, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

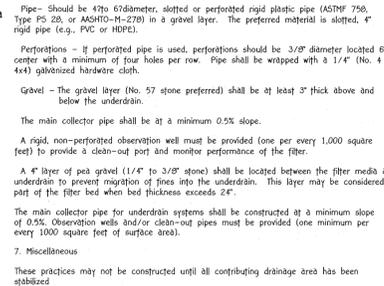
6. Underdrains

Underdrains should meet the following criteria:

- Pipe - Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F 756, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x4) galvanized hardware cloth.
Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
The main collector pipe shall be at a minimum 0.5% slope.
A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.
A 4" layer of pea gravel (1/4" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

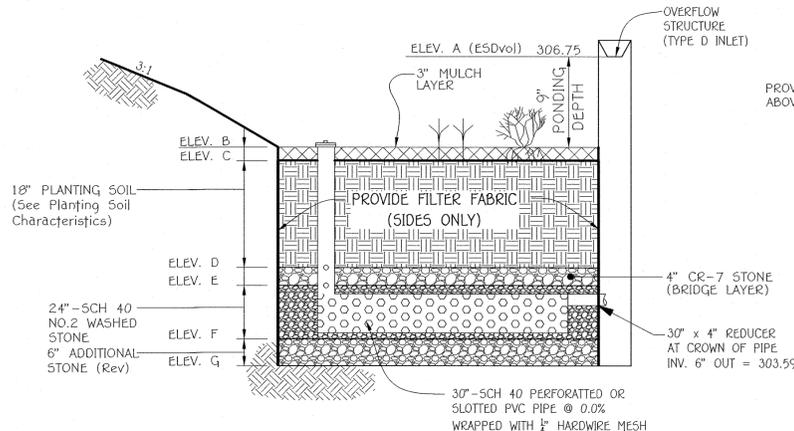
These practices may not be constructed until all contributing drainage areas has been stabilized.



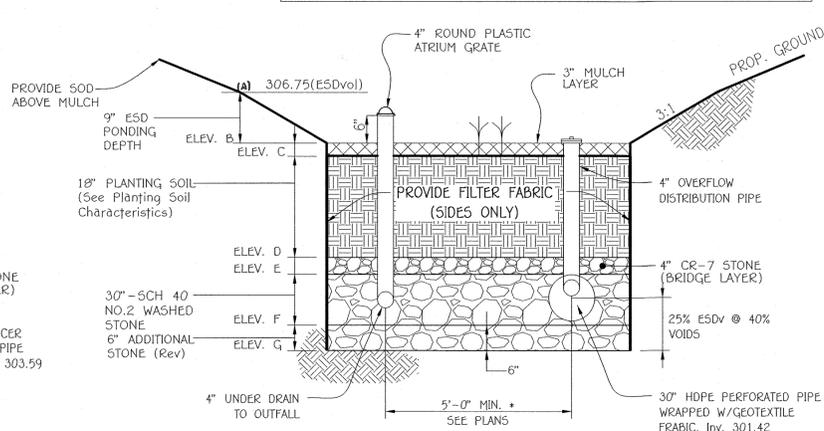
DRYWELL (M-5) NO SCALE

MICRO-BIORETENTION NOTES

- 1. ONLY THE SIDES OF THE MICRO-BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO-BIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDER DRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5' MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLAN)



MICRO-BIORETENTION (UNDERDRAIN)(M-6) NO SCALE

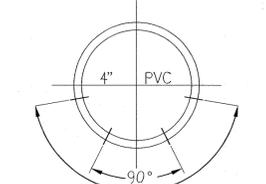


MICRO-BIORETENTION (OVERFLOW)(M-6) NO SCALE

Table titled MICRO-BIORETENTIONS with columns A through I and rows for filter types and quantities. Values range from 306.75 to 306.00.

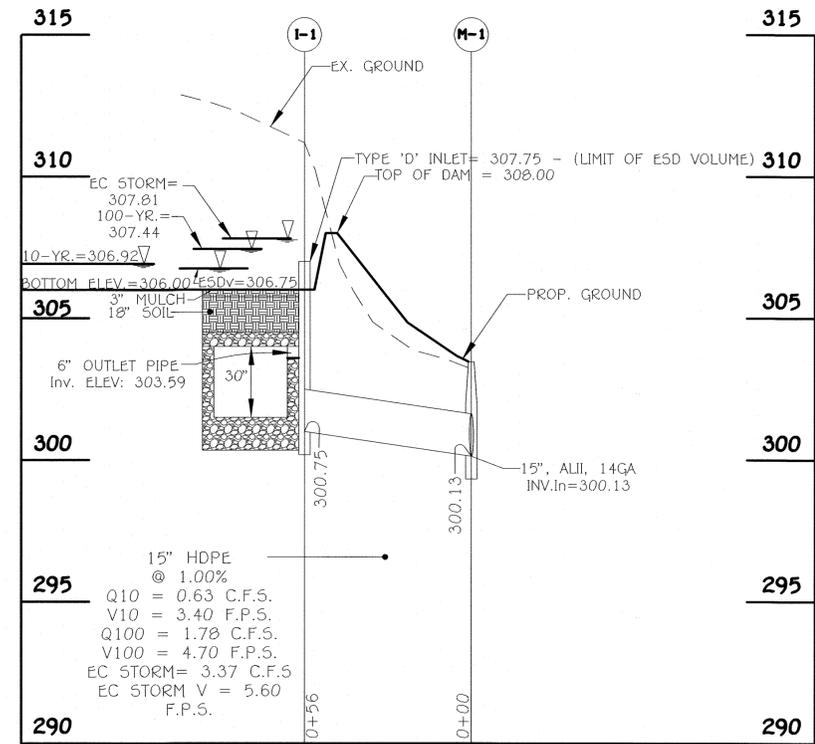
Approved: Department Of Planning And Zoning. Chief, Development Engineering Division. Date: 10-4-21. Chief, Division Of Land Development. Date: 10/4/21.

PIPE SIZE: 4" HOLE SIZE: 3/8" CENTER TO CENTER: 3" ROWS OF HOLES: 2 @ 90° 2 @ 160° (+/-3°)

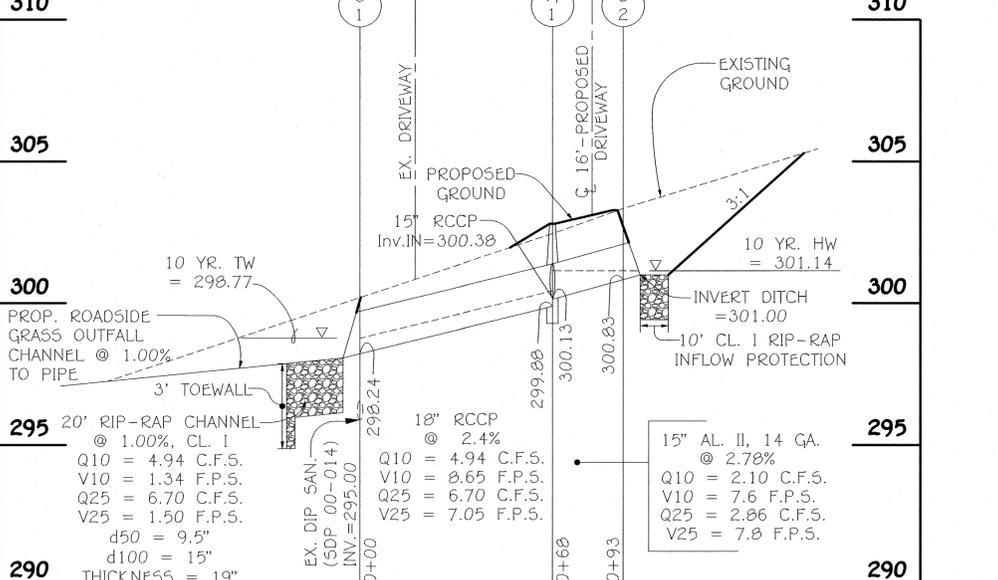


NOTE: WRAP PERFORATED PVC W/ 4x4 GALVANIZED HARDWARE CLOTH

SCH 40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE NO SCALE



PROFILE BMP OUTFALL SCALE HORIZ. 1" = 30' VERT. 1" = 3'



PROFILE CULVERT PROFILE (1) SCALE HORIZ. 1" = 30' VERT. 1" = 3'



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. 20748, EXPIRATION DATE: 2/22/23.

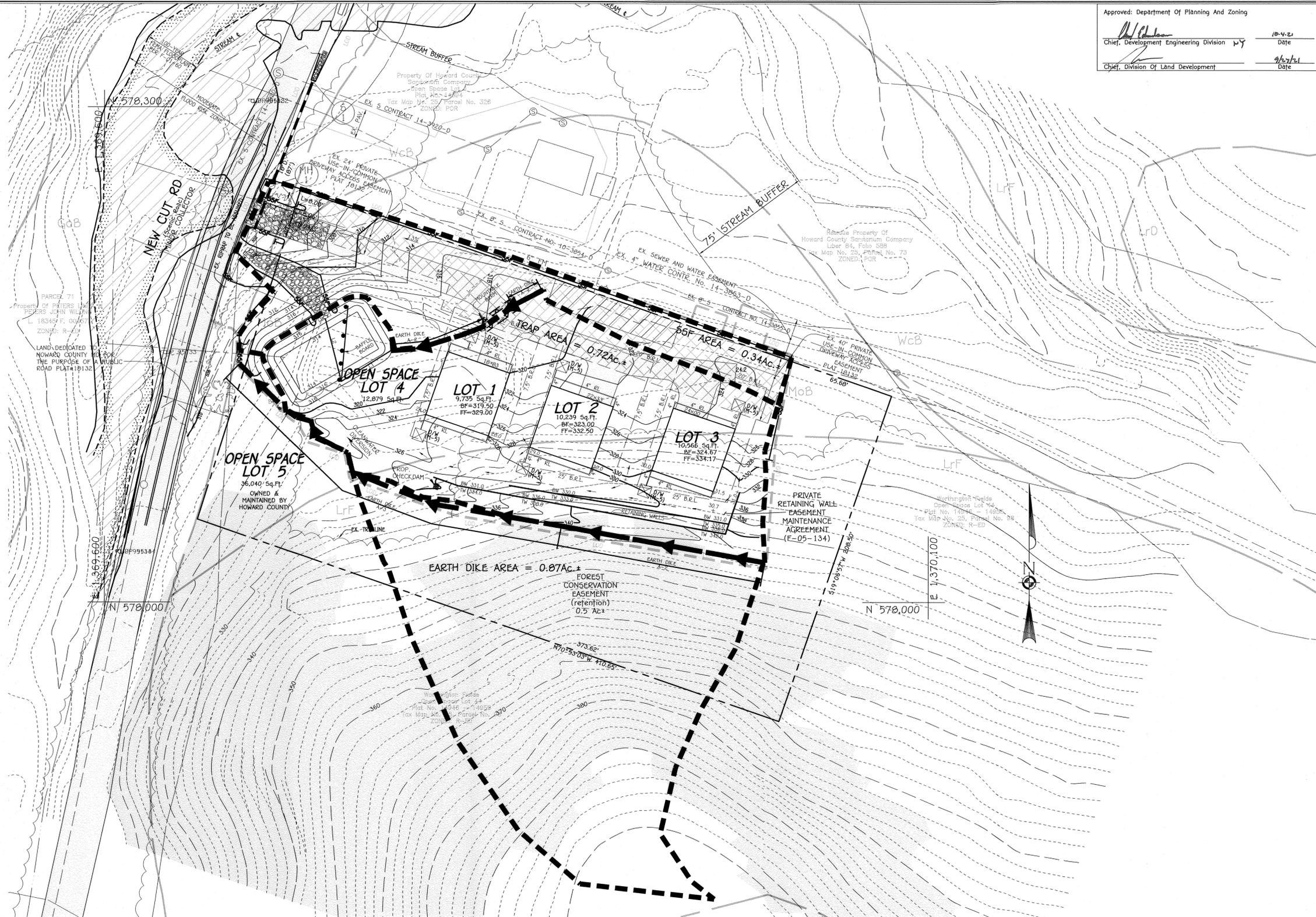
OWNER: Historic Ellicott Properties, Inc. c/o Taylor Property Group. DEVELOPER: Autumn Development Corporation c/o Taylor Property Group.

SWM DETAILS AND PROFILES JOURNEY'S END LOTS 1 THRU 3 & OPEN SPACE LOTS 4 & 5 TAX MAP NO.: 25 GRID NO.: 20 PARCEL NO.:72 ZONED R-ED SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: A5 SHOWN DATE: SEPTEMBER 1, 2021 SHEET 3 OF 5 ECP-20-053

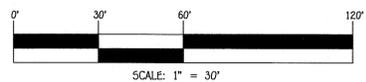
SOILS LEGEND			
SOIL	NAME	CLASS	K-VALUE
GoB	Glenville-Codorus silt loams, 0 to 8 percent slopes	C	0.39
LrF	Legore-Relay gravelly loams, 25 to 65 percent slopes, very stony	C	0.67
MoB	Mount Lucas silt loam, 3 to 8 percent slopes, stony	C	0.49
WaB	Watchung silt loam, 3 to 8 percent slopes, stony	D	0.43

HOWARD COUNTY SOILS MAP PAGE 14: Ellicott City SE quadrangle
ALL SOILS ONSITE ARE HIGHLY ERODIBLE.

Approved: Department Of Planning And Zoning
 Chief, Development Engineering Division *[Signature]* 10-1-21
 Date
 Chief, Division Of Land Development *[Signature]* 9/27/21
 Date



CONCEPTUAL SEDIMENT & EROSION CONTROL PLAN



LEGEND	
SYMBOL	DESCRIPTION
--- (dashed)	EXISTING CONTOUR 2' INTERVAL
--- (long dashed)	EXISTING CONTOUR 10' INTERVAL
--- (short dashed)	PROPOSED CONTOUR 10' INTERVAL
--- (dash-dot)	PROPOSED CONTOUR 2' INTERVAL
•	SPOT ELEVATION
--- (solid)	EXISTING STORM DRAIN
--- (dashed)	PROPOSED STORM DRAIN PIPE
--- (solid)	EXISTING WATER LINE
--- (dashed)	PROPOSED SEWER
--- (solid)	PROPOSED WATER
--- (dashed)	EXISTING CABLE LINE
--- (solid)	EXISTING GAS LINE
--- (dashed)	EXISTING OVERHEAD WIRE
--- (solid)	PROPOSED PAVING/PATH
--- (dashed)	PROPOSED SIDEWALKS
--- (dashed)	FOREST CONSERVATION EASEMENT (RETENTION)
--- (dashed)	FOREST CONSERVATION EASEMENT FENCING
--- (dashed)	LIMIT OF DISTURBANCE
--- (dashed)	SUPER SILT FENCE
--- (dashed)	SILT FENCE
--- (dashed)	EXISTING TREE LINE
--- (dashed)	PROPOSED TREE LINE
--- (dashed)	DRYWELL (M-5)-TYPICAL
--- (dashed)	SOIL LINES AND TYPES
--- (dashed)	EXISTING WETLANDS & WETLAND BUFFER
--- (dashed)	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
--- (dashed)	PROPOSED ROOF LEADER
--- (dashed)	DENOTES EXISTING TREES TO BE REMOVED
--- (dashed)	DENOTES EXISTING TREES TO REMAIN
--- (dashed)	CRITICAL ROOT ZONE
--- (dashed)	STABILIZED CONSTRUCTION ENTRANCE
--- (dashed)	SUPER SILT FENCE
--- (dashed)	15%-24.99% STEEP SLOPES
--- (dashed)	25% AND GREATER STEEP SLOPES
--- (dashed)	SWM EASEMENT



PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 2/22/23.
[Signature]
 ALDO M. VITUCCI, P.E.
 Date: 9/28/21

OWNER
 Historic Ellicott Properties, Inc.
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland
 21117-5616

DEVELOPER
 Autumn Development Corporation
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland
 21117-5616

PRELIMINARY SEDIMENT & EROSION CONTROL PLAN
JOURNEY'S END
 LOTS 1 THRU 3
 & OPEN SPACE LOTS 4 & 5
 TAX MAP NO.: 25 GRID NO.: 20 PARCEL NO.:72
 ZONED R-ED
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 1, 2021
 SHEET 4 OF 5

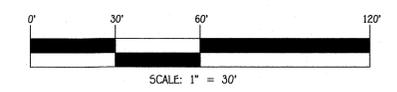
SOILS LEGEND				
SOIL	NAME	CLASS	K VALUE	
GoB	Glenville-Codorus silt loams, 0 to 8 percent slopes	C	0.39	
LfF	Legore-Relay gravelly loams, 25 to 65 percent slopes, very stony	B/C	0.67	
MoB	Mount Lucas silt loam, 3 to 8 percent slopes, stony	C	0.49	
WaB	Watchung silt loam, 3 to 8 percent slopes, stony	D	0.43	

HOWARD COUNTY SOILS MAP PAGE 14; Ellicott City SE quadrangle
 ALL SOILS ONSITE ARE HIGHLY ERODIBLE.

Tc PATH DATA				
AREA	SEG ID	LENGTH	FLOW TYPE	SLOPE
A-1	A - B	75'	OVERLAND FLOW	2.00%
	B - C	125'	SHALE FLOW, n = 0.24	2.98%
	C - D	80'	SHALLOW CONC. FLOW - UNPAVED	17.72%

SWM DRAINAGE AREA SUMMARY TABLE						
DRAINAGE AREA	AREA AC. +/-	RCN	T/c Hrs.	10-YR. Q cfs	100-YR. Q cfs	EC Flood Q cfs
A-1	0.68	84	0.21	2.41	3.67	6.64

LEGEND
 DRAINAGE AREA TO FACILITY (F-6)
 TIME OF CONCENTRATION PATH



PROPOSED SWM
 DRAINAGE AREA MAP
JOURNEY'S END
 LOTS 1 THRU 3
 & OPEN SPACE LOTS 4 & 5
 TAX MAP NO.: 25 GRID NO.: 20 PARCEL NO.: 72
 ZONED R-ED
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: SEPTEMBER 1, 2021
 SHEET 5 OF 5



PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20748, EXPIRATION DATE: 2/22/23.
 Aldo M. Vitucci
 ALDO M. VITUCCI, P.E.

OWNER
 Historic Ellicott Properties, Inc.
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland
 21117-5616

DEVELOPER
 Autumn Development Corporation
 c/o Taylor Property Group
 8 Park Center Court, Suite 200
 Owings Mills, Maryland
 21117-5616