

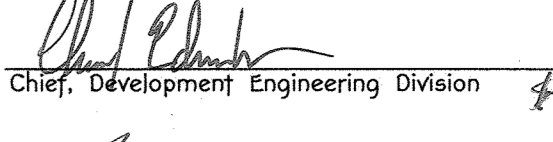
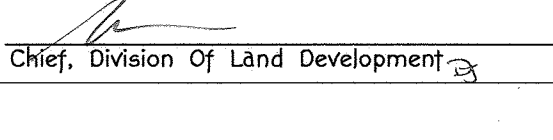
| SHEET INDEX | |
|-------------|---|
| SHEET NO. | DESCRIPTION |
| 1 | TITLE SHEET |
| 2 | ENVIRONMENTAL CONCEPT PLAN |
| 3 | SWM DETAILS |
| 4 | PRELIMINARY SEDIMENT & EROSION CONTROL PLAN |
| 5 | SWM DRAINAGE AREA MAP |

ENVIRONMENTAL CONCEPT PLAN CURTIS PROPERTY

PARCEL 1
ZONED: R-20

TAX MAP: 37 PARCEL: 751 GRID: 1
FIRST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

| CONTROL STATIONS | |
|------------------|---|
| B.M. #1 | HOWARD COUNTY GEODETIC SURVEY CONTROL 37AC - HORIZONTAL - (NAD '83) LOCATED 38.3' NORTHWEST OF THE TRANSFORMER, 13' NORTHEAST OF WATERLOO ROAD, 19.2' NORTH OF HAND BOX. NORTHING 562,341.304 EASTING 1,369,141.415 ELEVATION = 401.372 - VERTICAL - (NAVD '86) |
| B.M. #2 | HOWARD COUNTY GEODETIC SURVEY CONTROL 37A4 - HORIZONTAL - (NAD '83) LOCATED 176.6' SOUTHWEST OF BGE TOWER 10, 26.3' SOUTHEAST OF INLET, 23' WEST OF WATERLOO ROAD CURB. NORTHING 563,835.913 EASTING 1,367,971.706 ELEVATION = 437.273 - VERTICAL - (NAVD '86) |

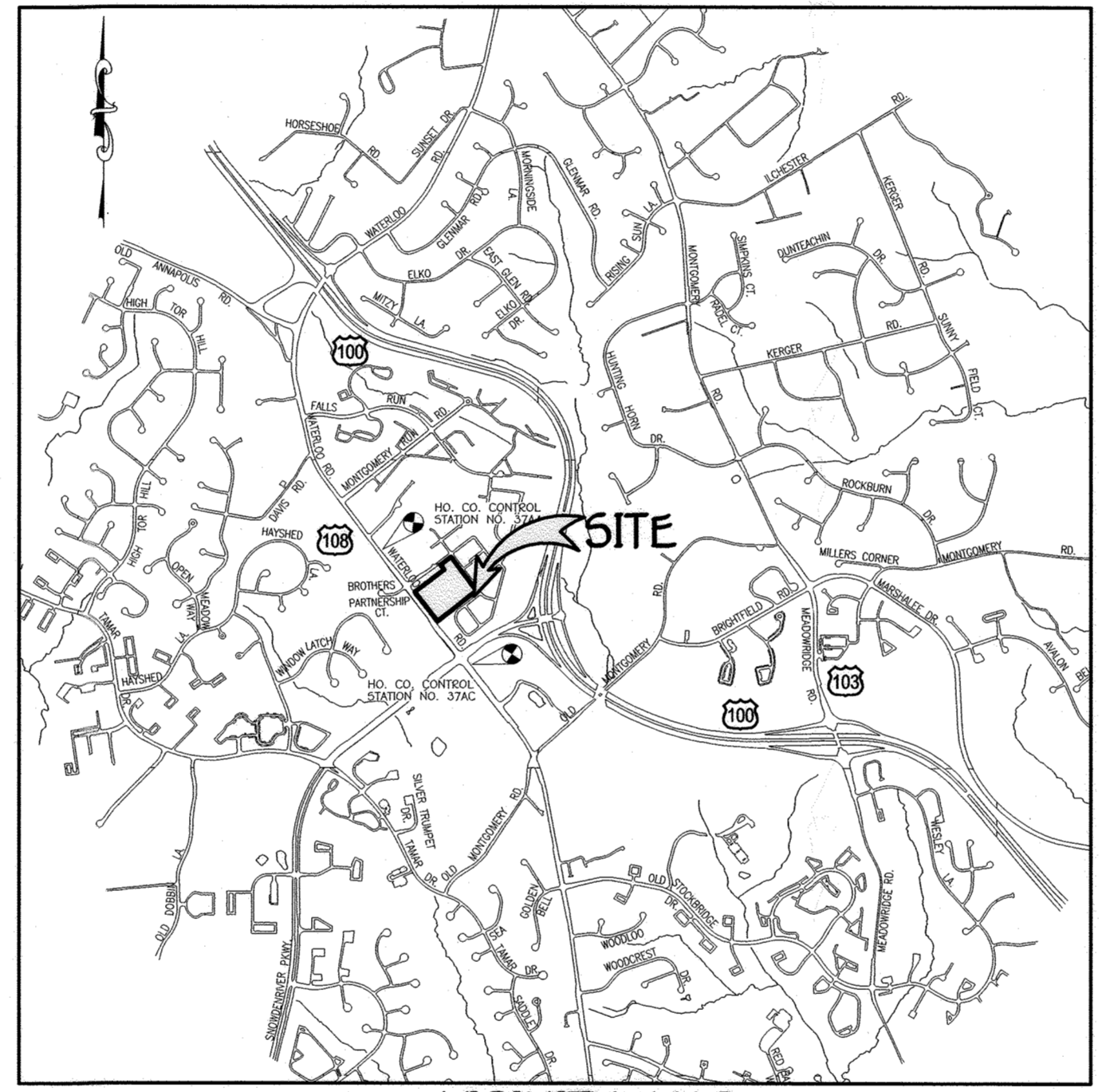
Approved: Department Of Planning And Zoning
 3-16-22
 Chief, Development Engineering Division Date
 3/10/22
 Chief, Division Of Land Development Date

| LEGEND | |
|--------|-------------------------------|
| SYMBOL | DESCRIPTION |
| 408 | EXISTING CONTOUR 2' INTERVAL |
| 410 | EXISTING CONTOUR 10' INTERVAL |
| | EXISTING SAN. SEWER LINE |
| | EXISTING STORM DRAIN LINE |
| | EXISTING WATER LINE |
| | EXISTING GRAVEL/FLAGSTONE |
| | EXISTING CONCRETE |
| | DEMOLITION AREA |
| | EXISTING MACADAM PAVING |
| | EXISTING FENCE |
| | EXISTING STREAM |
| 408 | PROPOSED CONTOUR 2' INTERVAL |
| 410 | PROPOSED CONTOUR 10' INTERVAL |
| | PROPOSED CONCRETE |
| | PROPOSED MACADAM PAVING |
| | EXISTING TREE AND SHRUB |
| | PROPOSED TREE AND SHRUB |
| | SOILS DELINEATION |
| SSF | SUPER SILT FENCE |
| | LIMIT OF DISTURBANCE |

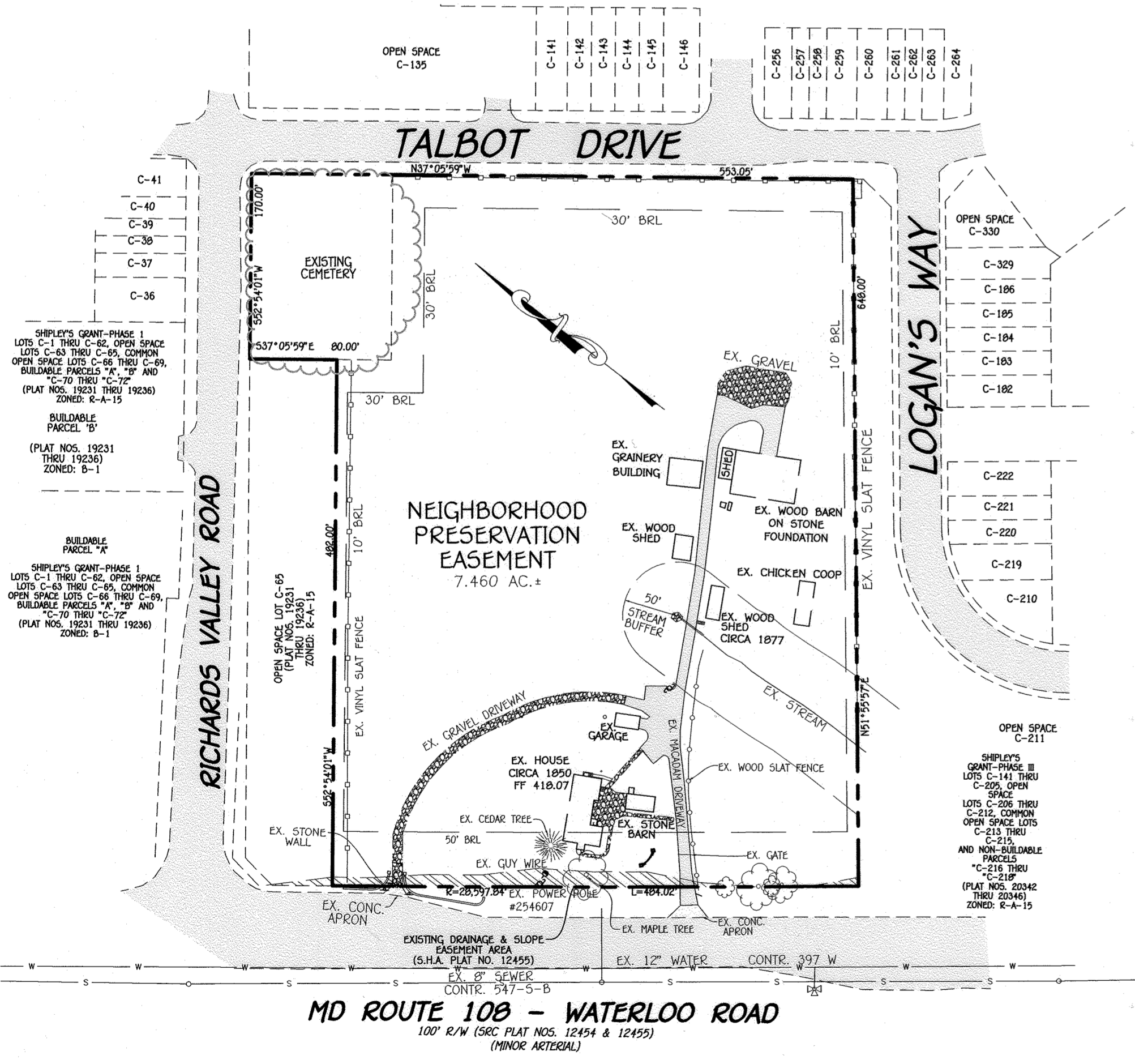
| STORMWATER MANAGEMENT PRACTICES | | | | | | | |
|---------------------------------|------------------------|---------------------------------------|---|-----------------------|---------------------------|---------------------|-------|
| AREA ID | PERMEABLE PAVING (Y/N) | DISCONNECTION OF ROOFTOP RUNOFF (Y/N) | DISCONNECTION OF NON-ROOFTOP RUNOFF (Y/N) | FILTERED INLETS (Y/N) | MICRO BIO-RETENTION (Y/N) | BIO-RETENTION (Y/N) | OTHER |
| PARCEL 1 | NO | NO | NO | NO | NO | YES - 1 | NO |

GENERAL ECP NOTES

- STORMWATER MANAGEMENT HAS BEEN DESIGNED AS "ESD TO THE MEP". PLEASE REFER TO THE ECP REPORT PREPARED BY FISHER, COLLINS & CARTER, INC. DATED AUGUST 2021 FOR ADDITIONAL INFORMATION.
- THE PROPERTY BOUNDARY WAS TAKEN FROM RECORD PLAT F-14-12451 CURTIS PROPERTY PARCEL 1.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF ANY SUBSEQUENT WAIVERS AND ASSOCIATED SUBDIVISION PLAN, SITE DEVELOPMENT PLAN, OR GRADING OR BUILDING PERMIT PLAN. NO WAIVERS FOR DISTURBANCES OF ANY ENVIRONMENTAL AREAS ARE PROPOSED AT THIS TIME. 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, SITE DEVELOPMENT PLAN, OR GRADING AND BUILDING PERMIT STAGES. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE SITE DEVELOPMENT PLAN REVIEW PROCESS.
- THE STORMWATER PRACTICES WILL BE PRIVATELY OWNED AND MAINTAINED.
- EXISTING UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.
- THIS PLAN IS A CONCEPT ONLY AND IS NOT TO BE USED FOR CONSTRUCTION.
- SEE THE DRAINAGE AREA/LOD MAP IN THE ECP REPORT FOR THE DRAINAGE AREA DELINEATION.
- THERE ARE NO WETLANDS, FLOODPLAINS ONSITE. THERE IS AN EXISTING STREAM WITH A REQUIRED 50 FOOT BUFFER.
- THIS PROJECT IS ZONED R-20 PER THE COMPREHENSIVE ZONING PLAN DATED OCTOBER 6, 2013.
- THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTION DIVISION AT (410) 313-1080 AT LEAST (5) FIVE WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- BOUNDARY SURVEY PERFORMED BY: FISHER COLLINS AND CARTER INC. ON OR ABOUT MARCH 2015.
- ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- PROPERTY SUBJECT TO A NEIGHBORHOOD PRESERVATION EASEMENT (DENSITY SENDING) PER PLAT NO. 23420 AS F-14-124-SI.
- EXISTING DWELLING ON THE CURTIS PROPERTY CONTAINS A FOOTPRINT OF 1,690 SQUARE FEET. ANY NEW STRUCTURES SHALL NOT BE GREATER THAN 50% OF THE BUILDING FOOTPRINT OF THE DWELLING UNIT EXISTING AT THE TIME NEIGHBORHOOD PRESERVATION EASEMENT IS RECORDED. HOWEVER, IF THE AVERAGE FOOTPRINT SIZE OF THE NEAREST SIX DWELLINGS IS GREATER THAN THE FOOTPRINT OF THE EXISTING BUILDING, THE DIRECTOR MAY APPROVE A FOOTPRINT THAT DOES NOT EXCEED THE AVERAGE IN ACCORDANCE WITH SECTION 1281.2 OF THE HOWARD COUNTY ZONING REGULATIONS.
- THERE ARE NO FLOODPLAIN AREAS OR STEEP SLOPES WITH A CONTIGUOUS AREA OF 25% OR GREATER LOCATED ON THIS SITE.
- THERE ARE HISTORIC STRUCTURES LOCATED ON THIS SITE IDENTIFIED IN THE HOWARD COUNTY HISTORIC SITE INVENTORY AS HO-439. THIS SITE IS ALSO LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES IN 2006 AS THE CURTIS-SHIPLEY FARMSTEAD.
- THIS PROPERTY IS SUBJECT TO CONDITIONAL USE BA-17-032c. THAT WAS APPROVED ON FEBRUARY 19, 2020 SUBJECT TO THE FOLLOWING CONDITIONS OF APPROVAL.
 - THE PETITIONER SHALL OBTAIN ALL REQUIRED APPROVALS AND PERMITS.
 - ALL DEVELOPMENT SHALL BE IN ACCORDANCE WITH THE REVISED CONDITIONAL USE PLAN DATED JANUARY 22, 2020.
 - THE HOURS OF OPERATION SHALL BE LIMITED TO 7 a.m. TO 9 p.m. MONDAY - FRIDAY AND 9 a.m. TO 6 p.m. SATURDAY AND SUNDAY.



REFERENCED ADC MAP 16, GRID F6
VICINITY MAP
SCALE: 1" = 2000'



EXISTING CONDITIONS

SCALE: 1"=100'

SWM SUMMARY:

| | ESDv PROV'D (cf) | ESDv REQ'D (cf) | NOTES |
|--------------------------|------------------|-----------------|---|
| Bioretention 1 | 2,582 cf | 2,556 cf | Refer to bio comps |
| TOTAL SITE ESDv Provided | 2,582 cf | | Cpv, Rev provided (Rev = 640 cf) |
| TOTAL SITE ESDv Required | | 2,556 cf | Rev Req'd - 348 cf |
| TOTAL QUANTITY | | | ESDv has been met and quantity is not required. |

SITE ANALYSIS DATA CHART

- TOTAL AREA OF THIS SUBMISSION: 324,950 Sq.Ft. (7.460 Ac.)
- LIMIT OF DISTURBED AREA = (48,275 Sq.Ft.) 1.11 Ac.
- PRESENT ZONING DESIGNATION = R-20
- PROPOSED USE: OFFICE
- EXISTING USE: RESIDENTIAL (CURRENTLY SERVING AS OFFICE)
- BUILDING COVERAGE OF SITE: 7,320 SF (0.17 Ac.)
- PREVIOUS HOWARD COUNTY FILES: F-14-12451, HPC-19-07, BA-17-032C.
- TOTAL AREA OF FLOODPLAIN LOCATED ON SITE 0.0 AC.
- TOTAL AREA OF SLOPES IN EXCESS OF 25% = 0.0 AC.
- TOTAL AREA OF SLOPES FROM 15% TO 24.9% = 0.25 AC.
- TOTAL AREA OF WETLANDS (INCLUDING BUFFERS) LOCATED ON SITE = 0.0 AC.
- TOTAL FOREST = 0.62 AC. (WOODED CEMETERY)
- TOTAL GREEN OPEN AREA = 298,822 SF (6.86 AC.)
- TOTAL IMPERVIOUS AREA = 26,311 SF (0.60 AC.)
- AREA OF ERODIBLE SOILS = 0
- PARKING REQUIRED = 17 SPACES
MAX. EMPLOYEES = 12 SPACES
GUEST SPACES = 5 SPACES
MIN. OFFICE = 3.3 SPACES/1,000 SQ. FT. = 2,855/1000x3.3 = 10 SPACES
TOTAL PARKING PROVIDED = 19 SPACES (INCL. 1 HC)

SWM DESIGN NARRATIVE

SITE INFORMATION:

5771 Waterloo Road is zoned R-20 and is located on Tax Map 37, Grid 01, Parcel No. 751 of the Howard County, Maryland Tax Map Database System. The property consists of 7.46 acres, none of which are encumbered with a Preservation Easement Dedicated to Howard County Maryland Agricultural Land Preservation Program.

The existing use for the existing residential historic house is currently serving as Office use per BA-17-032c. The proposed use is the same, but a Site Plan is required to add the required parking spaces needed to support his recently approved use.

NATURAL FEATURES:

The property lies within the Dorsey Run-Little Patuxent River watershed (020600060202). This Parcel consists of an open grassy field with intermittent foliage. The topography utilized for the Site Development Plan is based on Howard County aerial topography supplemented with field run topographic survey performed by FCC.

The site has an existing stream with associated buffers that are not impacted by the proposed grading and site improvements. Discharge from the one Bio-retention facility will maintain the existing flow patterns as best possible.

SOILS INFORMATION:


The soils on the overall site and within the Limit of Disturbance (LOD) consist of: RuB (Russett and Beltsville soils, 2-5% slopes), S1C (Sassafras and Croom soils, 5-10% slopes), GcB (Gladstone-Legore complex, 3-8% slopes), WaA (Watsburg silt loam, 0-3% slopes), and RuA (Russett and Beltsville loam, 0-2% slopes). Within the LOD, soils are 92.7% 'B' soil and 7.3% 'D' soil.

Use of sediment control measures will protect the existing site features during construction.

IMPERVIOUS COVER INFORMATION:

The property is an occupied lot with several existing buildings and a driveway. Proposed impervious areas are standard R-20 improvements including a parking lot and driveway expansion. The proposed improvements will increase the existing impervious area to expand the parking space requirements. This increase is being treated by ESD methods for water quality.



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. 20740, EXPIRATION DATE: 2/22/23.

 ALDO H. VITUCCI, P.E. 1/27/22
 Date

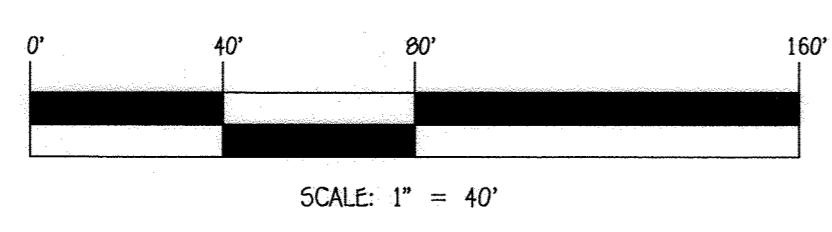
OWNER
 BFEA - CURTIS FARM LLC,
 10225 OLD COURT ROAD
 SUITE 1000
 WOODSTOCK, MD 21163
 410-925-4566

ECP TITLE SHEET
 CURTIS PROPERTY
 PARCEL 1
 ZONED: R-20
 TAX MAP: 37 PARCEL: 751 GRID: 1
 FIRST ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: JANUARY 24, 2022
 SHEET 1 OF 5

| SYMBOL | DESCRIPTION |
|-------------|-------------------------------|
| --- 40B --- | EXISTING CONTOUR 2' INTERVAL |
| --- 410 --- | EXISTING CONTOUR 10' INTERVAL |
| --- | EXISTING SAN. SEWER LINE |
| --- | EXISTING STORM DRAIN LINE |
| --- | EXISTING WATER LINE |
| --- | EXISTING GRAVEL/FLAGSTONE |
| --- | EXISTING CONCRETE |
| --- | DEMOLITION AREA |
| --- | EXISTING MACADAM PAVING |
| --- | EXISTING FENCE |
| --- | EXISTING STREAM |
| --- | PROPOSED CONTOUR 2' INTERVAL |
| --- | PROPOSED CONTOUR 10' INTERVAL |
| --- | PROPOSED CONCRETE |
| --- | PROPOSED MACADAM PAVING |
| --- | EXISTING TREE AND SHRUB |
| --- | PROPOSED TREE AND SHRUB |
| --- | SOILS DELINEATION |
| --- | SUPER SILT FENCE |
| --- | LIMIT OF DISTURBANCE |

| SOIL | NAME | GROUP |
|------|--|-------|
| GcB | Gildstone, 3 to 8 percent slopes, K VALUE = 0.20 | B |
| RuA | Russett and Belleville loam, 0 to 2 percent slopes, K VALUE = 0.43 | C |
| RuB | Russett and Belleville loam, 2 to 5 percent slopes, K VALUE = 0.28 | C |
| SrC | Sassafras and Croon loam, 5 to 10 percent slopes, K VALUE = 0.32 | B |
| WAA | Witchung silt loam, 0 to 3 percent slopes, K VALUE = 0.43 | D |

** DENOTES HIGHLY ERODIBLE SOILS



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.
 Aldo N. Vitucci, P.E.
 Date: 4/21/23

OWNER
 BFEA - CURTIS FARM LLC
 10225 OLD COURT ROAD
 SUITE 1000
 WOODSTOCK, MD 21163
 410-325-4566

ENVIRONMENTAL CONCEPT PLAN
CURTIS PROPERTY
 PARCEL 1
 ZONED: R-20
 TAX MAP: 37 PARCEL: 751 GRID: 1
 FIRST ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: JANUARY 24, 2022
 SHEET 2 OF 5

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 Rev. In some instances where permeability is great, these facilities may be used for Op 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 phosphorus and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide aeration for water 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 suitable 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 (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 | 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 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.

B.4.C Specifications for Micro-Bioretention, Rain Gardens, 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 micro-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 (60%-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 mixed 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 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. Substitute 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.

4. Plant Material

Recommended plant material for micro-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. Fine 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 no 1/8 th 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" x 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 defeats, 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 47 to 62 diameter, slotted or perforated rigid plastic pipe (ASTM F758, 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 center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 6x1) 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".

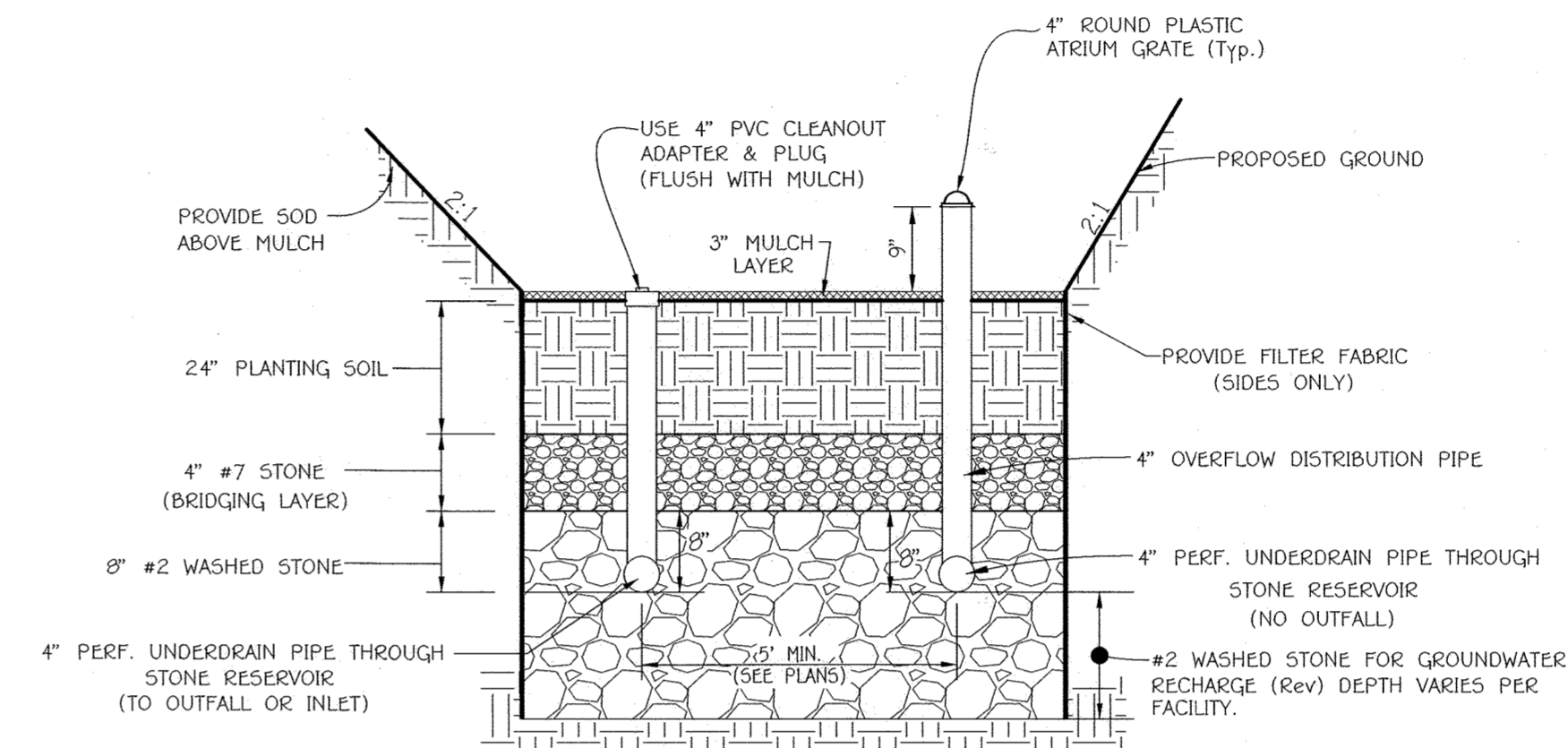
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

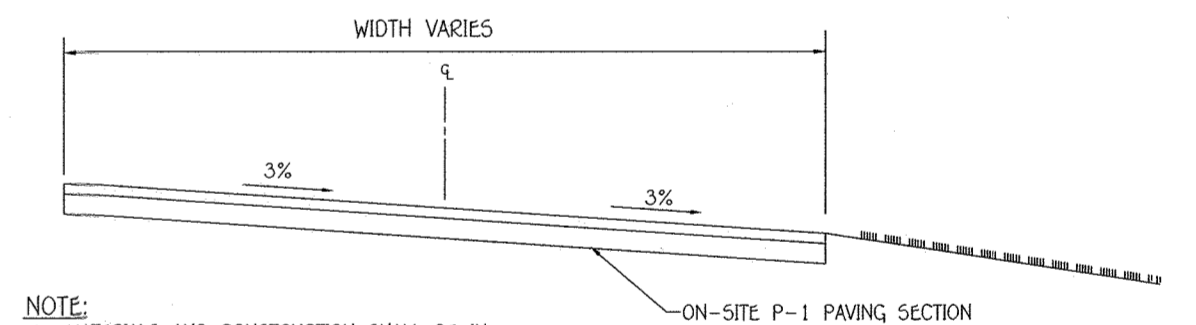
These practices may not be constructed until all contributing drainage area has been stabilized.

Operation And Maintenance Schedule For Homeowners Association Owned & Maintained Bio-Retention Areas (F-6)

- The owner shall maintain the plant material, mulch layer and soil layer annually, 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. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A-4.1 and 2.
- The owner shall perform a plant in the spring and in the fall each year, during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs and replace all deficient stakes and wires.
- The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.
- The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.
- The owner shall maintain all observation wells, clean-outs and perforated underdrains.
- Filter material must be replaced when water remains on the surface of the filter bed for more than 24 hours following a 1 or 2 year storm event or more than 48 hours following a 10 year storm event.



Bio-Retention (F-6) Section With 4" Overflow Distribution Pipe
NO SCALE



Typical Private Drive Cross Slope Section
NOT TO SCALE

STORMWATER MANAGEMENT COUNTY MAINTENANCE NOTE

ALL STORMWATER MANAGEMENT FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION. THE STREET TREES, PERFORATED UNDERDRAINS, FEEDERS, PLANTINGS AND SWALES WILL ALSO BE PRIVATELY OWNED AND MAINTAINED BY THE H.O.A. HOWARD COUNTY WILL ONLY MAINTAIN THE INLET STRUCTURE WITHIN THE MICRO-BIO-RETENTION FACILITIES ADJACENT TO THE PUBLIC RIGHT-OF-WAY (ESD No. 10 & ESD No. 11).



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.

Michael P. Vitucci
ALDO M. VITUCCI, P.E.

1/23/22
Date

OWNER

BFEA - CURTIS FARM LLC,
10225 OLD COURT ROAD
SUITE 1000
WOODSTOCK, MD 21163
410-325-4566

STORMWATER MANAGEMENT DETAILS

CURTIS PROPERTY PARCEL 1

ZONED: R-20
TAX MAP: 37 PARCEL: 751 GRID: 1
FIRST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
DATE: JANUARY 24, 2022
SHEET 3 OF 5

| LEGEND | |
|-------------|-------------------------------|
| SYMBOL | DESCRIPTION |
| --- 400 --- | EXISTING CONTOUR 2' INTERVAL |
| --- 410 --- | EXISTING CONTOUR 10' INTERVAL |
| --- | EXISTING SAN SEWER LINE |
| --- | EXISTING STORM DRAIN LINE |
| --- | EXISTING WATER LINE |
| --- | EXISTING GRAVEL/FLAGSTONE |
| --- | EXISTING CONCRETE |
| --- | DEMOLITION AREA |
| --- | EXISTING MACADAM PAVING |
| --- | EXISTING FENCE |
| --- | EXISTING STREAM |
| --- | PROPOSED CONTOUR 2' INTERVAL |
| --- | PROPOSED CONTOUR 10' INTERVAL |
| --- | PROPOSED CONCRETE |
| --- | PROPOSED MACADAM PAVING |
| --- | EXISTING TREE AND SHRUB |
| --- | PROPOSED TREE AND SHRUB |
| --- | SOILS DELINEATION |
| --- | SUPER SILT FENCE |
| --- | LIMIT OF DISTURBANCE |

| SOILS LEGEND | | |
|--------------|--|-------|
| SOIL | NAME | GROUP |
| GcB | Gladstone, 3 to 8 percent slopes, K VALUE = 0.20 | B |
| RuA | Russeff and Belleville loam, 0 to 2 percent slopes, K VALUE = 0.43 | C |
| RuB | Russeff and Belleville loam, 2 to 5 percent slopes, K VALUE = 0.20 | C |
| **ScC | Sassafras and Croon loam, 5 to 10 percent slopes, K VALUE = 0.32 | B |
| WBA | Witchung all loam, 0 to 3 percent slopes, K VALUE = 0.43 | D |

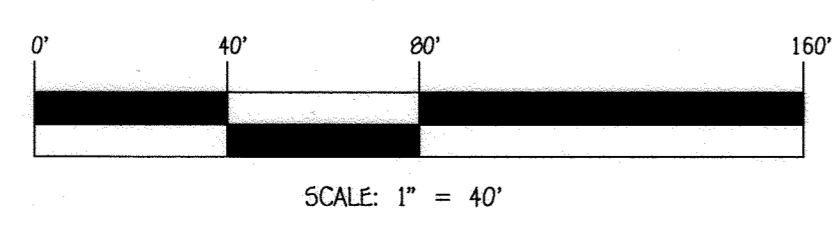
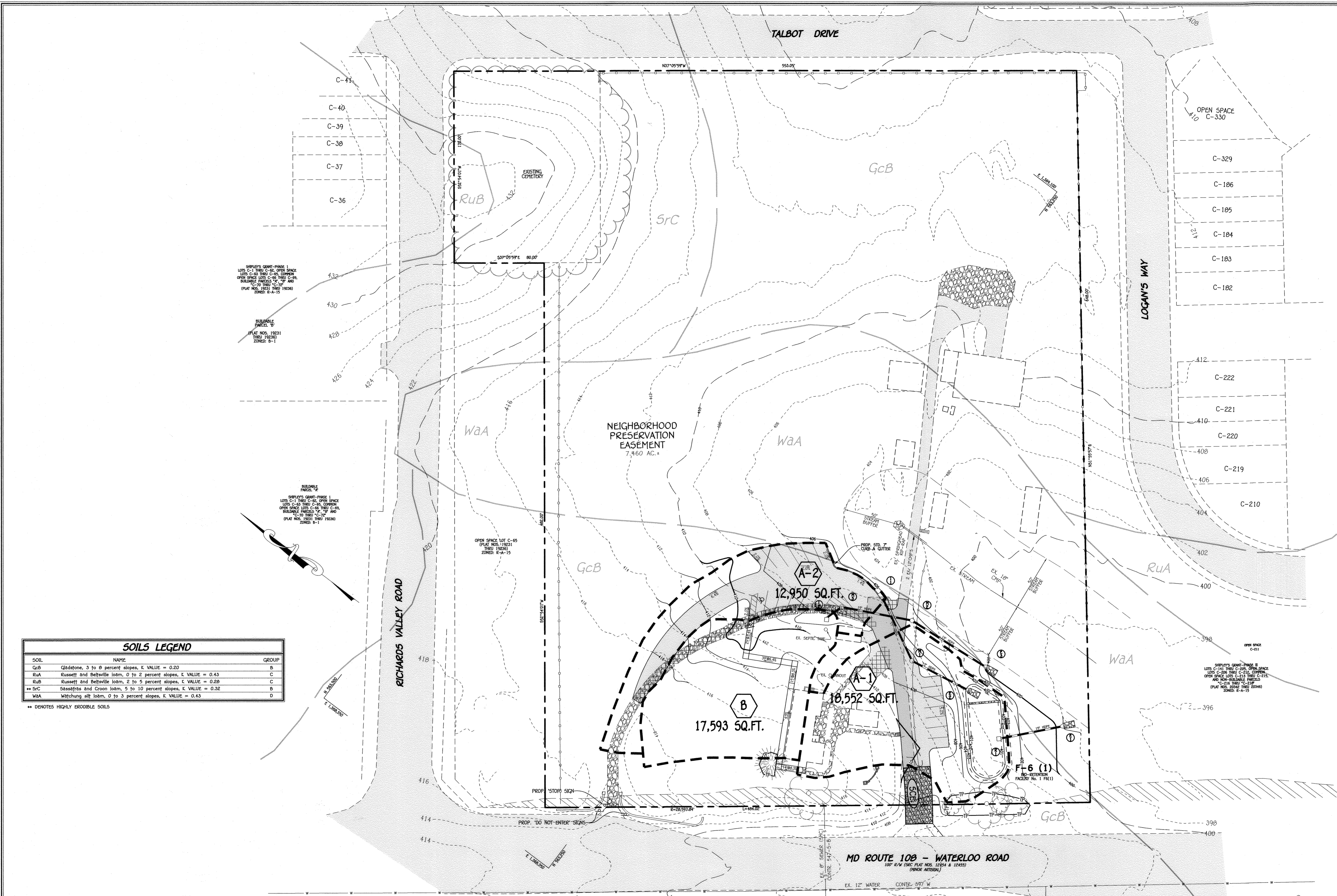
** DENOTES HIGHLY ERODIBLE SOILS

SHIPLEY'S GRANT-PHASE 1
LOTS C-1 THRU C-46, OPEN SPACE
LOTS C-47 THRU C-49, EXISTING
OPEN SPACE LOTS C-50 THRU C-54
AND NON-ADJACENT PARCELS "A", "B" AND
"C" TO THIS LOT
(PLAT NOS. 19231 THRU 19236)
ZONED: R-20

SHIPLEY'S GRANT-PHASE 1
LOTS C-1 THRU C-46, OPEN SPACE
LOTS C-47 THRU C-49, EXISTING
OPEN SPACE LOTS C-50 THRU C-54
AND NON-ADJACENT PARCELS "A", "B" AND
"C" TO THIS LOT
(PLAT NOS. 19231 THRU 19236)
ZONED: R-20

SHIPLEY'S GRANT-PHASE 1
LOTS C-1 THRU C-46, OPEN SPACE
LOTS C-47 THRU C-49, EXISTING
OPEN SPACE LOTS C-50 THRU C-54
AND NON-ADJACENT PARCELS "A", "B" AND
"C" TO THIS LOT
(PLAT NOS. 19231 THRU 19236)
ZONED: R-20

SHIPLEY'S GRANT-PHASE 2
LOTS C-55 THRU C-59, OPEN SPACE
LOTS C-60 THRU C-64, EXISTING
OPEN SPACE LOTS C-65 THRU C-69
AND NON-ADJACENT PARCELS
"A", "B" AND "C" TO THIS LOT
(PLAT NOS. 19237 THRU 19246)
ZONED: R-20



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.
Aldo Michael Vitucci
ALDO M. VITUCCI, P.E.
Date: 3/16/22

OWNER
BFEA - CURTIS FARM LLC
10225 OLD COURT ROAD
SUITE 1000
WOODSTOCK, MD 21163
410-925-4566

SWM DRAINAGE AREA MAP
CURTIS PROPERTY
PARCEL 1
ZONED: R-20
TAX MAP: 37 PARCEL: 751 GRID: 1
FIRST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
DATE: JANUARY 24, 2022
SHEET 5 OF 5