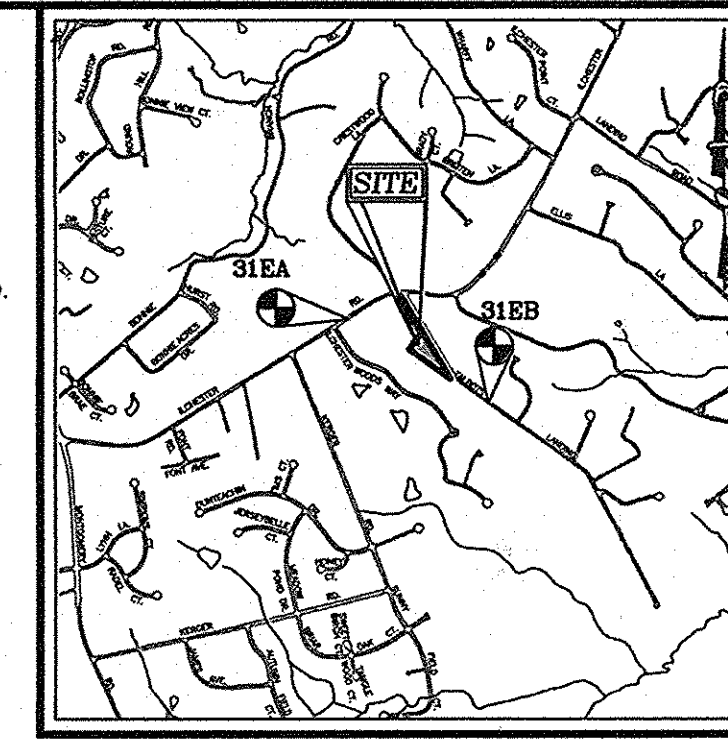


ENVIRONMENTAL CONCEPT PLAN WRIGHT PROPERTY LOT 5 & 6 A RE-SUBDIVISION OF WRIGHT PROPERTY LOT 3

BENCHMARKS

HOWARD COUNTY BENCHMARK 31EA
N 569641.17 E 1374816.01 ELEV. 468.84
1/4 MI. WEST OF RT-103
HOWARD COUNTY BENCHMARK 31EB
N 568731.03 E 1376273.569 ELEV. 452.63
TALBOT LANDING RD 0.3 MIL EAST OF ILLICESTER RD.



VICINITY MAP

SCALE: 1"=2,000'
ADC MAP COORDINATE: 4936, F-4

LOT	GROSS AREA	PIPESTEM AREA	NET AREA
5	43,171 SF	10,992 SF	32,179 SF
6	29,708 SF	NA	29,708 SF

SITE DATA

LOCATION: TAX MAP 31, BLOCK 15
PARCEL: 545
1ST ELECTION DISTRICT
PRESENT ZONING: R-20
GROSS AREA OF PROJECT: 1.67 AC.
LIMIT OF DISTURBANCE: 0.39 AC.
PROPOSED USE OF SITE: RESIDENTIAL (SFD)
NUMBER OF RESIDENTIAL LOTS PROPOSED: 2 LOTS
AREA OF RESIDENTIAL LOTS PROPOSED: 1.67 AC.
OPEN SPACE REQUIRED: 0.00 AC.
OPEN SPACE PROVIDED: 0.00 AC.
IMPERVIOUS AREA: 0.21 AC.
AREA OF STREAM/BUFFER: 0.00 AC.
AREA OF WETLANDS/BUFFER: 0.00 AC.
AREA OF STEEP SLOPES (25% OR GREATER): 0.00 AC.
AREA OF MODERATE SLOPES (15% TO 25%): 0.225 AC.
AREA OF FLOOD PLAIN: 0.00 AC.
NET PROJECT AREA: 1.673 AC.
AREA OF EXISTING FOREST COVER: 0.00 AC.
AREA OF ERODIBLE SOILS: 0.00 AC.

GENERAL NOTES

- THE TOPOGRAPHY SHOWN HEREON IS BASED ON A FIELD TOPOGRAPHIC SURVEY WITH 2-FOOT CONTOURS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED AUGUST, 2013.
- THE PROJECT BOUNDARY SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED AUGUST, 2013.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO CEMETERIES OR GRAVE SITES LOCATED ON THE SUBJECT PROPERTY.
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING RAIN GARDENS (M-7) AND NON ROOFTOP DISCONNECT (N-2) WHICH WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNER.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
- THE SUBJECT PROPERTY IS ZONED "R-20" IN ACCORDANCE WITH THE 10/6/13 COMPREHENSIVE ZONING PLAN.
- THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
- THE PROPOSED SUBDIVISION AND RELATED CONSTRUCTION WILL HAVE MINIMAL EFFECT ON EXISTING ENVIRONMENTAL FEATURES AND BUFFERS.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS, APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 31EA AND 31EB WERE USED FOR THIS PROJECT.
- NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THE PROPERTY.
- THERE ARE NO 100-YR FLOODPLAIN, WETLANDS, STREAMS NOR STEEP SLOPES (25% OR GREATER) LOCATED ON SITE.
- THE ENVIRONMENTAL RESOURCES FOR THIS SITE ARE IN ACCORDANCE WITH A REPORT PREPARED BY JOHN CANOLES OF ECO-SCIENCE PROFESSIONALS, INC. DATED DECEMBER 17, 2013.
- SEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
- FOREST STAND DELINEATION PLAN WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED DECEMBER 17, 2013.
- A TOTAL OF 2 LOTS ARE PROPOSED UNDER THIS PLAN.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM(S), OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN STAGES AND/OR RED-LINE REVISION PROCESS. 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 PLAN REVIEW PROCESS.
- A 30.5" AMERICAN BEECH SPECIMEN TREE (ST-1) LOCATED ON THIS SITE IS TO REMAIN.
- THE EXISTING HOUSE AND BARBEQUE ARE ON LOT 5 TO REMAIN.
- REFERENCE DPZ FILE NO. F-83-07.
- SECTIONS 16.12A AND 16.1200 OF THE REGULATIONS REGARDING PERIMETER LANDSCAPING AND FOREST CONSERVATION WILL BE ADDRESSED WITH REVIEW OF THE FINAL SUBDIVISION PLANS AND PLAT.
- TALBOT LANDING WAS ACCEPTED JUNE 30, 1987 AS A PUBLIC ROAD.

NO.	NORTH	EAST
201	569879.4651	1375332.4926
202	569882.7767	1375359.6284
203	569919.6197	1375874.4345
204	569497.2082	1375560.4792
610	569330.3517	1375440.8895

LEGEND:

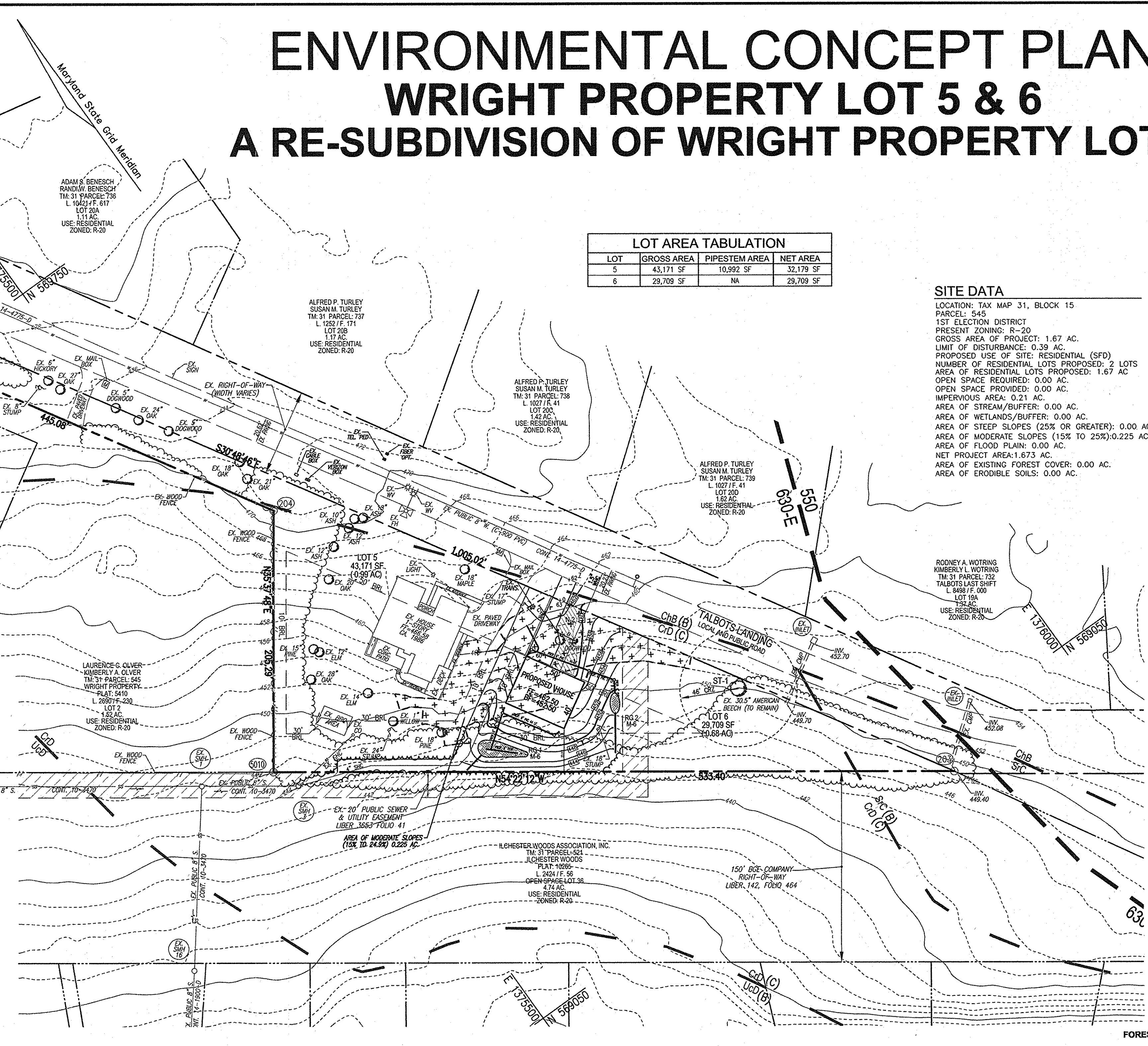
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREENE
- PROPOSED TREENE
- EXISTING TREES
- SPECIMEN TREE
- EXISTING FENCE
- PROPOSED STORMDRAIN
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SHE SIC2
- SOILS
- MODERATE STEEP SLOPES (15% TO 24.9%)
- NON-ROOFTOP DISCONNECT (N-2)
- PROPOSED RAIN GARDEN (M-6)

DESCRIPTION	SHEET NO.
COVER SHEET, LAYOUT AND GRADING PLAN	1 OF 2
SEDIMENT CONTROL PLAN, FOREST STAND DELINEATION, SWM NOTES AND DETAILS	2 OF 2

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DATE: 6-25-14

DATE: 6/24/14



LAYOUT PLAN

SCALE: 1"=50'

INTRODUCTION

The purpose of this report is to address Environmental Site Design for the proposed two lot re-subdivision of Lot 3, Wright Property. This report will address the ESD for the new lot which will accommodate a new single family detached lot. The existing house and driveway will remain on the other lot. The site is located on the south side of Talbot's Landing and east of Illicesther Road. The site includes several individual trees but there are no areas which contain wetlands and there are no wetlands located on site. There is a 30.5" Beech specimen tree which is not located in the development area and will remain. The property backs to open space which includes BGE overhead electric facilities.

Based on the current Natural Resources Conservation Service, National Cooperative Soil Survey the soils are predominantly classified as Chillum-Russell loams and is considered Hydrologic Soil Group "C". The site drains to the south into the adjacent open space. The slopes vary from 5% to 15% and there are no steep slopes. The total property is 1.62 acres and is triangular in shape. Due to the geometry and the proposed lot areas, there will not be any further subdivision.

METHODOLOGY

The stormwater management system for this project is designed utilizing the Maryland Department of the Environment 2007 Environmental Site Design, Chapter 2. The overall site P_c was computed and is 1.0". Therefore stormwater management practices address water quality volume (WQV) and recharge volume (RCV). In accordance with the MDE manual and Howard County ESD Bulletin #1, 2007 MDE Treatment Train Example, Step 4, the ESD practices can address the P_c for the site impervious area and no further treatment is required for the remaining grass area (single family detached in certain situations). Therefore the ESD for this project considers treatment of the driveway and rooftops to account for P_c 1.0".

Specifically the driveway is considered to be non-rooftop disconnect (N-2). The pervious ratio is greater than 0.5:1 and impervious ratio is 1:1 and therefore, P=1.0" has been achieved. The rooftop is managed in two rain gardens (M-6) each accommodating 1,200 of roof.

CONCLUSION

The proposed re-subdivision will create one additional lot which will be approximately 29,709 square feet and will include one house and a driveway (approximately 2,900 of new impervious). The impervious coverage of the proposed lot is approximately 7% of the existing house and driveway will be retained on the balance of the property (approximately 40,858 square feet). Due to the geometry and area of the two lots, they are eligible to be further subdivided. The ESD requirements for the lots will be accommodated by non-rooftop disconnect (N-2) and rain gardens (M-6). These practices will be privately owned and maintained.

There are no impacts proposed to environmental resources which include one specimen tree. The natural drainage patterns have been preserved with the site drainage discharging to the south property line. There will be any impacts to adjacent properties. There are no floodplains located within the subject property.

The project will be designed so that artwork will balance within the site to the greatest extent possible. The 2011 Sediment and Erosion Control Standards will be utilized to protect existing environmental features which will predominantly be achieved through the use of silt fence and other techniques.

SITE SPECIFIC INFORMATION

PERFORMANCE STANDARDS MDE STORMWATER DESIGN MANUAL VOLUME 1

#1 Site design shall minimize the generation of stormwater and maximize pervious areas for stormwater treatment.

The proposed site design proposes one new driveway and proposed house on a relatively large lot (29,709 sf). The impervious coverage of the entire proposed lot is 7% and when considering the limit of disturbance only, the impervious coverage is 19%. The criteria for using ESD practices are based on capturing and retaining enough rainfall so that the runoff leaving a site is reduced to a level equivalent to a wooded site in good condition as determined using United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) methods (e.g., TR-55).

#2 Stormwater runoff generated from development and discharged directly into a jurisdictional wetland or waters of the State of Maryland shall be adequately treated.

All runoff from the subject site will be treated utilizing the Environmental Site Design practices including non-rooftop disconnects and rain gardens. The site does not discharge directly to or within the Waters of the State of Maryland.

#3 Annual groundwater recharge rates shall be maintained by promoting infiltration through the use of structural and non-structural methods. At a minimum, the aspect

The ESD practices proposed promote the infiltration of runoff.

#4 Water quality management shall be provided through the use of structural and/or non-structural practices.

The proposed site design will incorporate non-rooftop disconnects and rain gardens. Per Chapter 2, Section 2.2 Environmental Site Design (ESD) Sizing Criteria, the proposed system design cannot be controlled. In addition, safe conveyance of the 100-year storm event through stormwater management practices shall be provided.

#5 Structural BMPs used for new development shall be designed to remove 80% of the average annual peak development total suspended solids load (TSS) and 40% of the average annual peak development total phosphorus load (TP). It is presumed that a BMP compliant with this performance standard if it is:

- Sized to capture the prescribed water quality volume (WQV)
- Designed according to the specific performance criteria outlined in the MDE manual
- Constructed properly, and
- Maintained regularly

In accordance with the Environmental Site Design (ESD) Sizing Criteria, the proposed practices are assumed to provide adequate TSS and TP treatment.

Standard #5 shall be met to the extent possible.

#6 Control of the two-year and ten-year frequency storm events is required if the local authority determines that additional stormwater management is necessary because historical flooding problems exist and downstream floodplain development and conveyance system design cannot be controlled. In addition, safe conveyance of the 100-year storm event through stormwater management practices shall be provided.

To the best of our knowledge and belief the areas immediately downstream of the subject property is not subject to flooding.

#7 To protect stream channels from degradation, C_{pv} shall be provided by 12 to 24 hours of extended detention storage for the one-year storm event.

Per the computations herein, the MDE Stormwater Manual, ESD practices meet the current requirements.

#8 Stormwater discharges to critical areas with sensitive resources.

ESD practices are provided for all proposed disturbed areas.

#9 All BMP's shall have an enforceable operation and maintenance agreement to ensure the system functions as designed.

The maintenance schedule and acceptable will be included in the Declaration of Covenants.

#10 All BMP's shall have an enforceable form of water quality pretreatment.

The BMP's address and treat WQV & Rev.

#11 Redevelopment
Not applicable.

#12 Industrial Sites
Not applicable.

#13 Helicopter development
Not applicable.

#14 Local government review & NPDES permit
The proposed facilities shall meet the requirements of the Howard County Design Manual and the "2000 Maryland Stormwater Design Manual". A Notice of Intent will be filed with the Maryland Department of the Environment.

ESD Calculation

Property Area = 1.62 ac or 70,567 square feet
Lot 5 (existing house) 49,858 square feet
Lot 6 (proposed house) 29,709 square feet
2,900 square feet or 9%
Let 6 Impervious 15,900 square feet
Percent Impervious Lot 6 L.O.D. 18%
Hydrologic Soil Group
From Table 5.3 P_c = 1.0"
R_w = 0.05 (0.05/0.000) = 0.21
ESD = (R_w * WQV) / (1 - 0.05) = (0.21 * 15,900) / (1 - 0.05) = 277 of 4"

(*Reference: Howard County ESD Bulletin #1, 2007 MDE Treatment Train Example, Step 4, the ESD practices can address the P_c for the site impervious area and no further treatment is required.)

FOREST CONSERVATION WORKSHEET

Version 1.0

Project: 5110 Talbot's Landing Road
Date: December 17, 2013

NET TRACT AREA	Acres
A. Total tract area	1.62
B. Area within 100 Year Floodplain	0
C. Area to remain in agricultural production	0
D. Net Tract Area	1.62

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)
ARA MDR IDA HDR MFD GIA

Land Use Category	Conservation Threshold (percentage)
A. Afforestation Threshold (percentage)	15
F. Conservation Threshold (percentage)	20

EXISTING FOREST COVER:

Category	Value
G. Existing forest cover (excluding floodplain)	0
H. Area of forest above afforestation threshold	0
I. Area of forest above conservation threshold	0

BREAK EVEN POINT: NA

J. Forest retention above threshold with no mitigation
Break-Even Point

K. Clearing permitted without mitigation

PROPOSED FOREST CLEARING

Category	Value
L. Total area of forest to be Cleared or Retained Outside FCE	0
M. Total area of forest to be Retained in FCE	0

PLANTING REQUIREMENTS

Category	Value
N. Reforestation for clearing above Conservation Threshold	0
O. Reforestation for clearing below Conservation Threshold	0
P. Credit for retention above conservation threshold	0
Q. Total reforestation required	0
R. Total afforestation required	0.2
T. Total reforestation and afforestation required	0.2

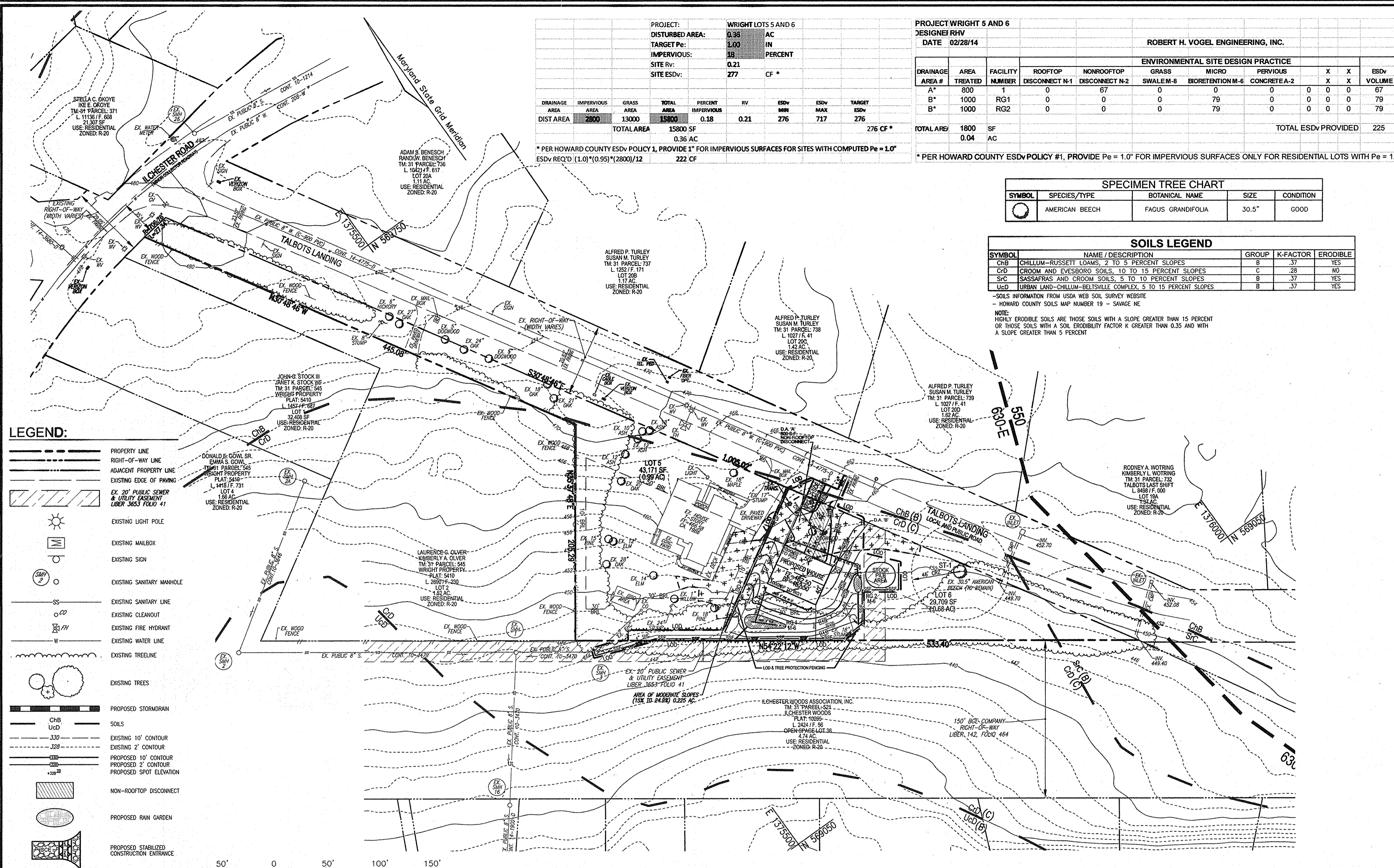
OWNER/DEVELOPER
ALGIRDAS J. BRASASKAS
ELIZABETH A. BRASASKAS
5110 TALBOT'S LANDING
ELICOTT CITY, MD 21043
240-876-4471

ENVIRONMENTAL CONCEPT PLAN
COVER SHEET, LAYOUT AND GRADING PLAN
WRIGHT PROPERTY LOTS 5 & 6
SINGLE FAMILY, DETACHED DWELLINGS
A RE-SUBDIVISION OF WRIGHT PROPERTY LOT 3, PLAT 5410
PARCEL 545 (L. 1254 / F. 173)
5110 TALBOT'S LANDING
ELICOTT CITY, MD 21043
ZONED: R-20
PARCEL: 545
HOWARD COUNTY, MARYLAND

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: JUNE 2014
SCALE: AS SHOWN
W.O. NO.: 12-27

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2014

1 SHEET OF 2



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EX. 20' PUBLIC SEWER & UTILITY FACILITY UNDER 3003 F.O.D. #1
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING TREES
- PROPOSED STORMDRAIN
- SOILS
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED SPOT ELEVATION
- NON-ROOFTOP DISCONNECT
- PROPOSED RAIN GARDEN
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED SUPER FENCE
- PROPOSED SILT FENCE
- PROPOSED LIMIT OF DISTURBANCE

PROJECT: WRIGHT LOTS 5 AND 6

DESIGNED BY: RHV

DATE: 02/28/14

ROBERT H. VOGEL ENGINEERING, INC.

DRAINAGE AREA #	TREATED AREA	FACILITY NUMBER	ROOFTOP DISCONNECT M-1	NONROOFTOP DISCONNECT M-2	GRASS SWALE M-8	MICRO BIORETENTION M-6	PREVIOUS CONCRETE A-2	X	X	ESDv VOLUME
A*	0	0	0	0	0	0	0	0	0	0
B*	1000	RG1	0	0	0	79	0	0	0	79
B*	1000	RG2	0	0	0	79	0	0	0	79
TOTAL AREA: 1800 SF										TOTAL ESDv PROVIDED: 225
0.04 AC										

ENVIRONMENTAL SITE DESIGN PRACTICE

DRAINAGE AREA #	TREATED AREA	FACILITY NUMBER	ROOFTOP DISCONNECT M-1	NONROOFTOP DISCONNECT M-2	GRASS SWALE M-8	MICRO BIORETENTION M-6	PREVIOUS CONCRETE A-2	X	X	ESDv VOLUME
A*	0	0	0	0	0	0	0	0	0	0
B*	1000	RG1	0	0	0	79	0	0	0	79
B*	1000	RG2	0	0	0	79	0	0	0	79
TOTAL AREA: 1800 SF										TOTAL ESDv PROVIDED: 225
0.04 AC										

SPECIMEN TREE CHART

SYMBOL	SPECIES/TYPE	BOTANICAL NAME	SIZE	CONDITION
○	AMERICAN BEECH	FAGUS GRANDIFOLIA	30.5"	GOOD

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
CHB	CHILLUM-RUSSETT LOAMS, 2 TO 5 PERCENT SLOPES	B	.37	YES
CD	CROOM AND EVESBORO SOILS, 10 TO 15 PERCENT SLOPES	C	.28	NO
SC	SASAPARAS AND CROOM SOILS, 5 TO 10 PERCENT SLOPES	B	.37	YES
UCD	URBAN LAND-CHILLUM-BELLSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B	.37	YES

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. MATERIAL SPECIFICATIONS
 THE ALLOWED MATERIALS TO BE USED IN THESE PRACTICES ARE DETAIL 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 BURIED WITHIN THE MICRO-BIORETENTION PRACTICE THAT WILL BE HARMFUL TO PLANT GROWTH OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COWAR 15.08.01.05.

3. COMPACTION
 IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE 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.

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.

6. UNDERDRAINS
 UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

- PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER.
- PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF RIGID PIPE).
- PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER RIGID PIPE SLIT.
- 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 FEA GRAVEL (1/2" 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".

THIS 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 1,000 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 LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)

- 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 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 OF 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.

OWNER/DEVELOPER
 ALGIRDAS J. BRASAUŠKAS
 ELIZABETH A. BRASAUŠKAS
 5110 TALBOTS LANDING
 ELLICOTT CITY, MD 21043
 240-876-4471

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

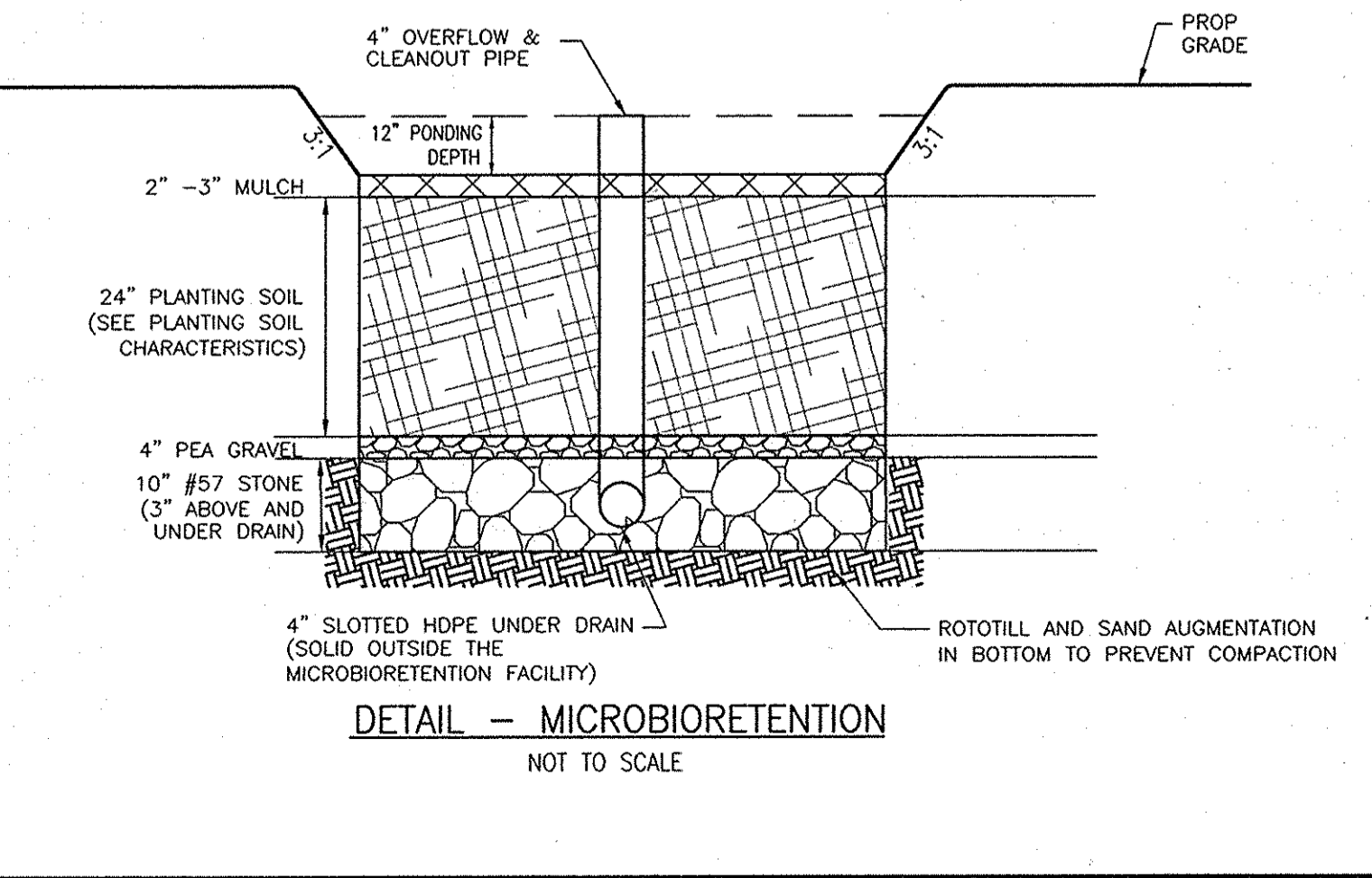
Chad Clark
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 6/25/14

Kathleen Decker
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 6/24/14

Appendix B.4. Construction Specifications for Environmental Site Design Practices

Table B.4.1 Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration

Material	Specifications	Notes
Planting soil	see Appendix A, Table A.4	plantings are site-specific
Filtering soil (2" to 4" deep)	heavy sand (60 - 65%) & compost (35 - 40%) or sandy loam (50%), coarse sand (30%) & compost (60%)	USDA soil types heavy sandy or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	aged 6 months, minimums no pine or wood chips
Mulch	shredded hardwood	
Post gravel diaphragm	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobble	PE Type 1 nonwoven
Geotextile	AASHTO M-41	
Gravel (underdrains and infiltration berms)	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	Slotted or perforated pipe, 3/4" per' @ 6" on center, 4 holes per row; minimum of 2" of gravel over pipe; no coarse underdrain pipes. Perforated pipe shall be wrapped with 1/4-inch architectural landscape cloth.
Poured in place concrete (if required)	MSHA Mix No. 3, F _c = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM A-615-60	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 previously approved data 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 308.2R/29: vertical loading (14.10 to 14.20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASHTO M-48 or ASTM C-33	Sand substitutes such as Duhon and Grouton (AASHTO #1) are not acceptable. No crushed or broken or dolomitic sand substitutes are acceptable. No "rock dust" can be used for sand.



NO. _____ REVISION _____ DATE _____

**ENVIRONMENTAL CONCEPT PLAN
 SEDIMENT CONTROL PLAN, FOREST STAND DELINEATION,
 SWM NOTES AND DETAILS
 WRIGHT PROPERTY LOTS 5 & 6
 SINGLE FAMILY, DETACHED DWELLINGS
 A RE-SUBDIVISION OF WRIGHT PROPERTY LOT 3, PLAT 5410
 PARCEL 545 (L. 1254 / F. 173)
 5110 TALBOTS LANDING
 ELLICOTT CITY, MD 21043
 ZONED: R-20
 PARCEL: 545
 TAX MAP: 31 GRID: 15
 1ST ELECTION DISTRICT**

ROBERT H. VOGEL ENGINEERING, INC.
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 FAX: 410.461.9961

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014.

DESIGN BY: _____ RHV
 DRAWN BY: _____ JMR
 CHECKED BY: _____ RHV
 DATE: _____ JANUARY 2014
 SCALE: _____ AS SHOWN
 W.O. NO.: _____ 12-27

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