

ENVIRONMENTAL CONCEPT PLAN

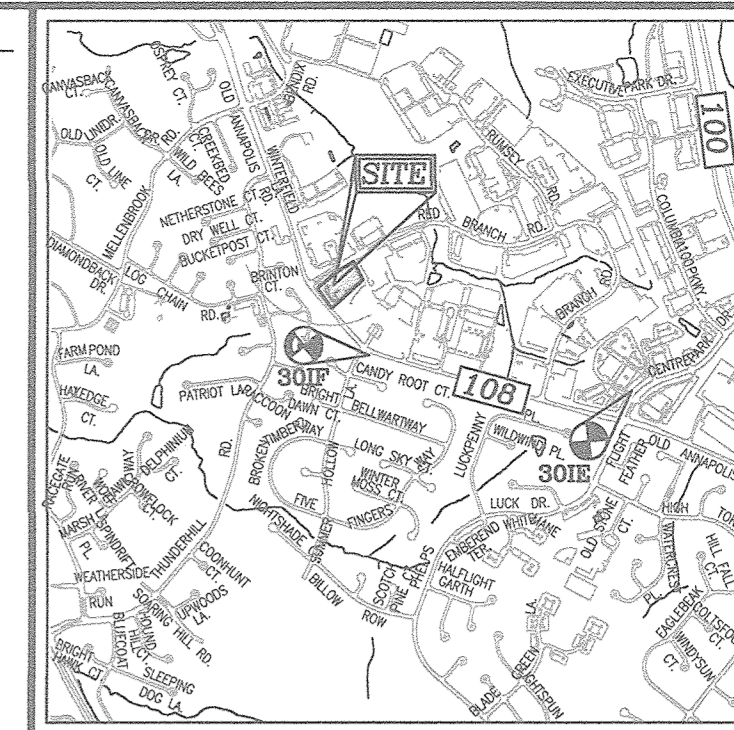
9199 RED BRANCH ROAD

(PB. 12-65) L.15428/F.351

COLUMBIA, OAKLAND RIDGE INDUSTRIAL PARK

SECTION 1, LOT 5

BENCHMARKS
 HOWARD COUNTY BENCHMARK 301E
 N 5685.36.34 E 136495.61 ELEV.: 504.10'
 HOWARD COUNTY BENCHMARK 301F
 N 5680.33.11 E 136393.26 ELEV.: 473.36'



VICINITY MAP
 SCALE: 1"=2000'
 ADC MAP COORDINATE: 27/D6

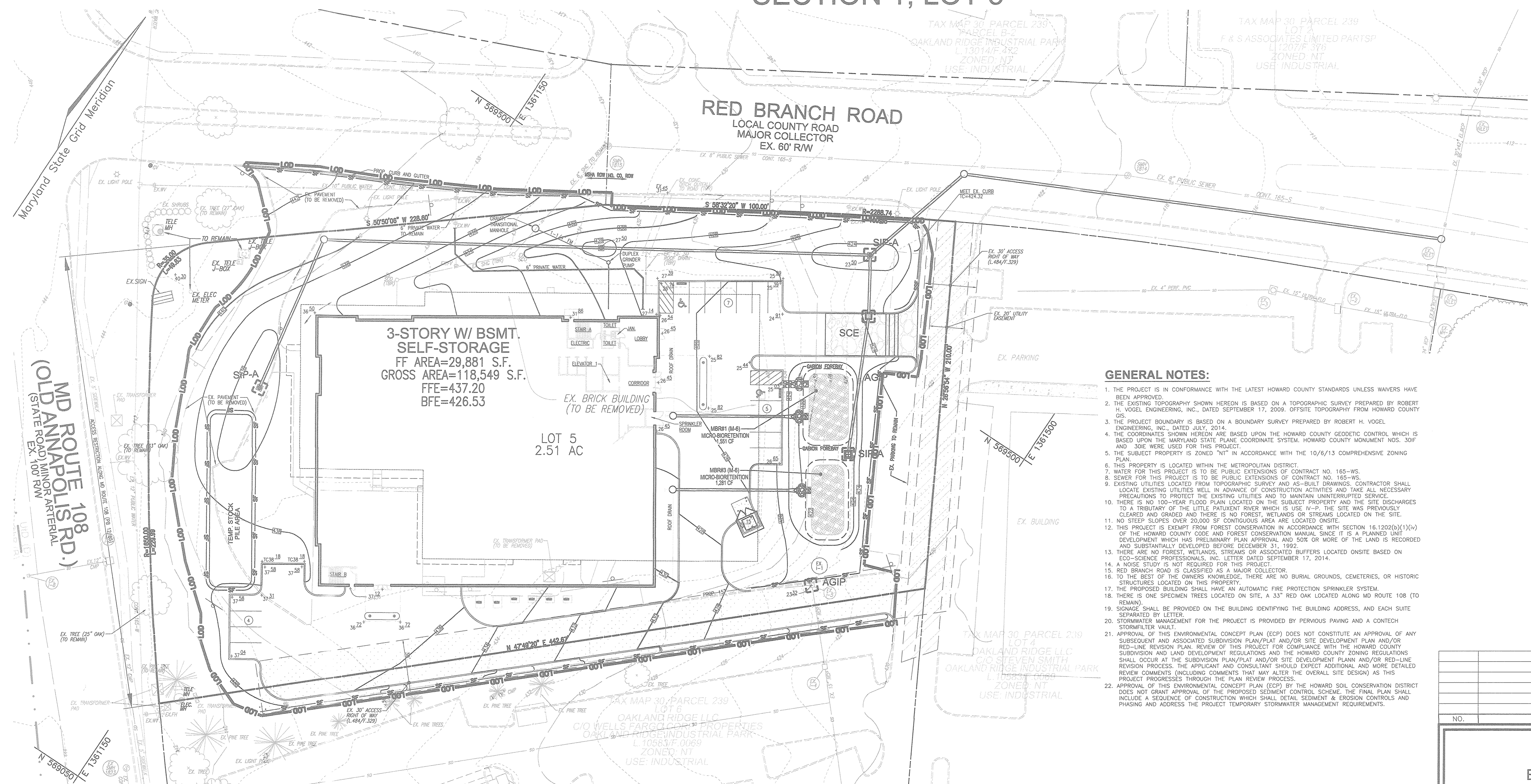
LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED SPOT ELEVATION
- PROPOSED CURB
- EXISTING 20' UTILITY EASEMENT
- EXISTING 30' RIGHT OF WAY EASEMENT (UBER 484 FOLIO 329)
- PROPOSED MICRO-BIORETENTION FACILITY (M-6)
- SOILS BOUNDARY
- LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- AT GRADE INLET PROTECTION
- AGIP
- SIP
- STANDARD INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE
- TEST PIT LOCATION

OWNER/DEVELOPER
 BRABHAM OIL COMPANY, INC.
 525 MIDWAY ST.
 BAMBERG, SC 29003
 C/O RYAN HYLER
 (804) 206-1438

GENERAL NOTES:

1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
2. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED SEPTEMBER 17, 2009, OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS.
3. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2014.
4. 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. 301F AND 301E WERE USED FOR THIS PROJECT.
5. THE SUBJECT PROPERTY IS ZONED "NI" IN ACCORDANCE WITH THE 10/6/13 COMPREHENSIVE ZONING PLAN.
6. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
7. WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 165-WS.
8. SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 165-WS.
9. EXISTING UTILITIES LOCATED FROM TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS. 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.
10. THERE IS NO 100-YEAR FLOOD PLAN LOCATED ON THE SUBJECT PROPERTY AND THE SITE DISCHARGES TO A TRIBUTARY OF THE LITTLE PATUXENT RIVER WHICH IS USE W-1. THE SITE WAS PREVIOUSLY CLEARED AND GRADED AND THERE IS NO FOREST, WETLANDS OR STREAMS LOCATED ON THE SITE.
11. NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS AREA ARE LOCATED ONSITE.
12. THIS PROJECT IS EXEMPT FROM FOREST CONSERVATION IN ACCORDANCE WITH SECTION 16.1202(b)(1)(iv) OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION MANUAL SINCE IT IS A PLANNED UNIT DEVELOPMENT WHICH HAS PRELIMINARY PLAN APPROVAL AND 50% OR MORE OF THE LAND IS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
13. THERE ARE NO FOREST, WETLANDS, STREAMS OR ASSOCIATED BUFFERS LOCATED ONSITE BASED ON ECO-SCIENCE PROFESSIONALS, INC. LETTER DATED SEPTEMBER 17, 2014.
14. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
15. RED BRANCH ROAD IS CLASSIFIED AS A MAJOR COLLECTOR.
16. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
17. THE PROPOSED BUILDING SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
18. THERE IS ONE SPECIMEN TREE LOCATED ON SITE, A 33' RED OAK LOCATED ALONG MD ROUTE 108 (TO REMAIN).
19. SIGNAGE SHALL BE PROVIDED ON THE BUILDING IDENTIFYING THE BUILDING ADDRESS, AND EACH SUITE SEPARATED BY LETTER.
20. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY PERVIOUS PAVING AND A CONTECH STORMFILTER WALL.
21. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (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 ZONING REGULATIONS AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN 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.
22. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.



PLAN VIEW
 SCALE: 1"=30'

PARKING TABULATION

REQUIRED	PROVIDED
SELF STORAGE BUILDING: 118,549 SF (ALL FLOORS)	3 SPACES
STORAGE: 4.0 SPACES/1000 SF OF OFFICE (540 SF)	16 SPACES*
TOTAL SPACES REQUIRED: 3 SPACES	19 SPACES*
TOTAL SPACES PROVIDED: 16 SPACES*	19 SPACES*

*INCLUDES 2 HANDICAP SPACE

ENVIRONMENTAL SITE DESIGN NARRATIVE

1. THE SITE'S NATURALLY SLOPES FROM WEST TO EAST. THE SITE HAS BEEN DESIGNED TO ALSO MAINTAIN THESE NATURAL FLOW PATTERNS.
2. THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT TO THE MAXIMUM EXTENT PRACTICABLE (MEP). THE ESD CONCEPT PROPOSES THE USE OF MICRO-BIORETENTION FACILITIES (M-6).
3. THE SITE IMPERVIOUS AREA IS 59.4%, WHICH IS GREATER THAN 40%. THEREFORE MEETS THE REDEVELOPMENT REQUIREMENTS. THE PROPOSED SITE PROVIDES LESS IMPERVIOUS AREA THEN THE EXISTING SITE. THEREFORE, THIS SITE DOES NOT REQUIRE FULL ENVIRONMENTAL SITE DESIGN (ESD) TO THE MEP. HOWEVER, 1" OF RAINFALL OVER 50% OF THE PROPOSED SITE IMPERVIOUS AREA WITHIN THE LOD WILL BE MANAGED THROUGH THE USE OF MICRO-BIORETENTION FACILITIES AND WILL DISCHARGE INTO THE STORM DRAIN SYSTEM WHICH OUTFALLS AT THE PROPOSED MANHOLE ALONG RED BRANCH ROAD.
4. SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF PERIMETER CONTROLS (SILT FENCE, SUPER SILT FENCE & EARTH DIKES) AND INLET PROTECTION. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH THE CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.
5. AS STATED IN #3 ABOVE, STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF MICRO-BIORETENTION FACILITIES (M-6).
6. NO WAIVERS ARE ANTICIPATED TO FULFILL THIS CONCEPT.
7. WITH THE EXCEPTION OF AN EXISTING 33 OAK AND A 25" OAK ALONG ROUTE 108, THERE ARE NO NATURAL RESOURCES SUCH AS WETLANDS, STREAMS, THEIR BUFFERS, FLOOD PLAIN, STEEP SLOPES, ON SITE THAT REQUIRED PROTECTION OR ENHANCEMENT.

SITE DATA

PARCEL AREA: 2.51 AC.
 WETLANDS ON SITE: 0.00 AC.
 WETLAND BUFFERS ON SITE: 0.00 AC.
 STREAMS AND THEIR BUFFERS ON SITE: 0.00 AC.
 AREA OF ON-SITE 100 YEAR FLOODPLAIN: 0.00 AC.
 AREA OF EXISTING FOREST ON SITE: 0.00 AC.
 AREA OF STEEP SLOPES (15% OR GREATER): 0.00 AC.
 AREA OF ERODIBLE SOILS: 0.00 AC.
 LIMIT OF DISTURBED AREA: 2.48 AC.
 IMPERVIOUS AREA: 1.23 AC.
 GREEN OPEN AREA: 1.28 AC.
 TOTAL BUILDING COVERAGE: 0.69 AC.
 PAVED PARKING LOT/AREA ON SITE: 0.55 AC.

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET, ESDV PLAN	1 OF 2
SWM DRAINAGE AREA MAP, SWM DETAILS	2 OF 2

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
LOT 5/PARCEL 239	9199 RED BRANCH ROAD

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL#
COLUMBIA, OAKLAND RIDGE INDUSTRIAL PARK	SECTION 1	LOT 5/PARCEL 239

PLAT OR L/F	GRID NO.	ZONING	TAX MAP NO.	ELECT. DIST.	CENSUS TR.
PB. 12-65	17	NT	30	2ND	602302

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 1/30/19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Chief, Division of Land Development 1/22/19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN

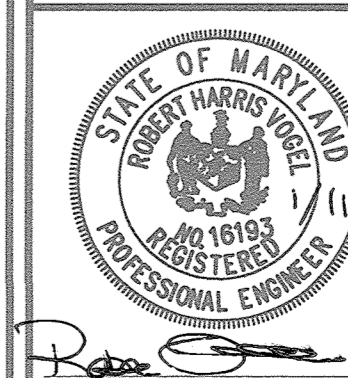
COVER SHEET AND ESDV CONCEPT PLAN

9199 RED BRANCH ROAD
 COLUMBIA, OAKLAND RIDGE INDUSTRIAL PARK
 SECTION 1, LOT 5
 SELF-STORAGE FACILITY
 (PB. 12-65) L.15428/F.351

TAX MAP: 30 BLOCK: 17
 2ND ELECTION DISTRICT

ZONED: NT
 PARCEL 239
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110, ELLIOTT CITY, MD 21043
 TEL: 410.461.7666 FAX: 410.461.8961

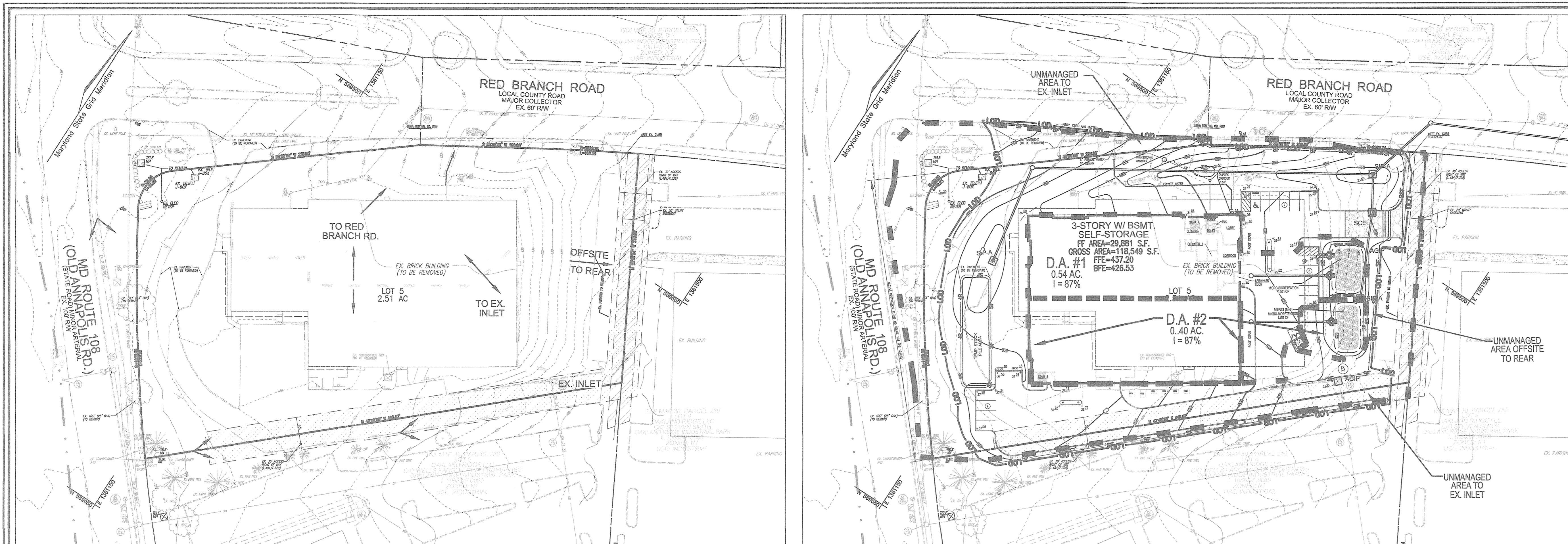


PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2020

DESIGN BY: LRC
 DRAWN BY: LRC
 CHECKED BY: RHV
 DATE: JAN 2019
 SCALE: AS SHOWN
 W.O. NO.: 11-43

1 SHEET OF 2



LEGEND:

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING CURB AND GUTTER
[Symbol]	EXISTING UTILITY POLE
[Symbol]	EXISTING LIGHT POLE
[Symbol]	EXISTING MAILBOX
[Symbol]	EXISTING SIGN
[Symbol]	EXISTING SANITARY MANHOLE
[Symbol]	EXISTING SANITARY LINE
[Symbol]	EXISTING CLEANDOUT
[Symbol]	EXISTING FIRE HYDRANT
[Symbol]	EXISTING WATER LINE
[Symbol]	EXISTING 10' CONTOUR
[Symbol]	EXISTING 2' CONTOUR
[Symbol]	PROPOSED STORMDRAIN
[Symbol]	PROPOSED STORMDRAIN INLET
[Symbol]	PROPOSED SIDEWALK
[Symbol]	PROPOSED 10' CONTOUR
[Symbol]	PROPOSED 2' CONTOUR
[Symbol]	PROPOSED SPOT ELEVATION
[Symbol]	PROPOSED CURB
[Symbol]	EXISTING 20' UTILITY EASEMENT
[Symbol]	EXISTING 30' RIGHT OF WAY EASEMENT (LIBER 484 FOLD 329)
[Symbol]	PROPOSED MICRO-BIORETENTION FACILITY (M-6)
[Symbol]	SOILS BOUNDARY
[Symbol]	SWM DRAINAGE DIVIDE

EXISTING SWM DRAINAGE AREA MAP SCALE: 1"=50'
 PROPOSED SWM DRAINAGE AREA MAP SCALE: 1"=50'



Total ESDv Required (Redevelopment) = 2,523 cf.
 Pe = 1.00
 ESDv = (PexRvxA)/12
 Rv = 0.05 + 0.009R
 V min = 1.0" rainfall (1.0xRvxA)/12
 V max = 1yr rainfall = 2.6" (2.6xRvxA)/12

DA	% IMPERV	Rv	DA	ESDv	MINIMUM REQ VOLUME	MAXIMUM VOLUME	TOTAL VOL PROVIDED	SWM PRACTICE	SURFACE AREA	DEPTH (FT)	STORAGE VOLUME	ESDv DEPTH BELOW	ADD. STONE	STONE	AREA SF	PERV AREA	IMP AREA
1	87	0.83	0.54	1,648	1,648	4,284	1,648	MICRO-BIORETENTION	949	1.0	1,648	0.00	0	0	23,707.00	3,055.00	20,652.00
2	87	0.83	0.40	1,204	1,204	3,130	1,204	MICRO-BIORETENTION	718	1.0	1,204	0.00	0	0	17,340.00	2,251.00	15,089.00
TOTAL ESDv BY SUBAREA				0.94	2,852		2,852						2,852	0	41,047	5306	35741

DRAINAGE AREA #	AREA TREATED	FACILITY NUMBER	ENVIRONMENTAL SITE DESIGN PRACTICE							ESDv	
			PERMEABLE PAVEMENT	STONE UNDER	LANDSCAPE INFILTRATION	PERVIOUS SIDEWALK	BIO SWALE	GRAVEL TRENCH	MICRO BIO RETENTION		ADD STONE UNDER MBR
1	23,707	MBR#1	0	0	0	0	0	0	1,648	0	1,648
		SUBTOTAL 1	0	0	0	0	0	0	1,648	0	1,648
2	17,340	MBR#2	0	0	0	0	0	0	1,204	0	1,204
		SUBTOTAL 1	0	0	0	0	0	0	1,204	0	1,204
TOTALS:			0	0	0	0	0	0	2,852	0	2,852

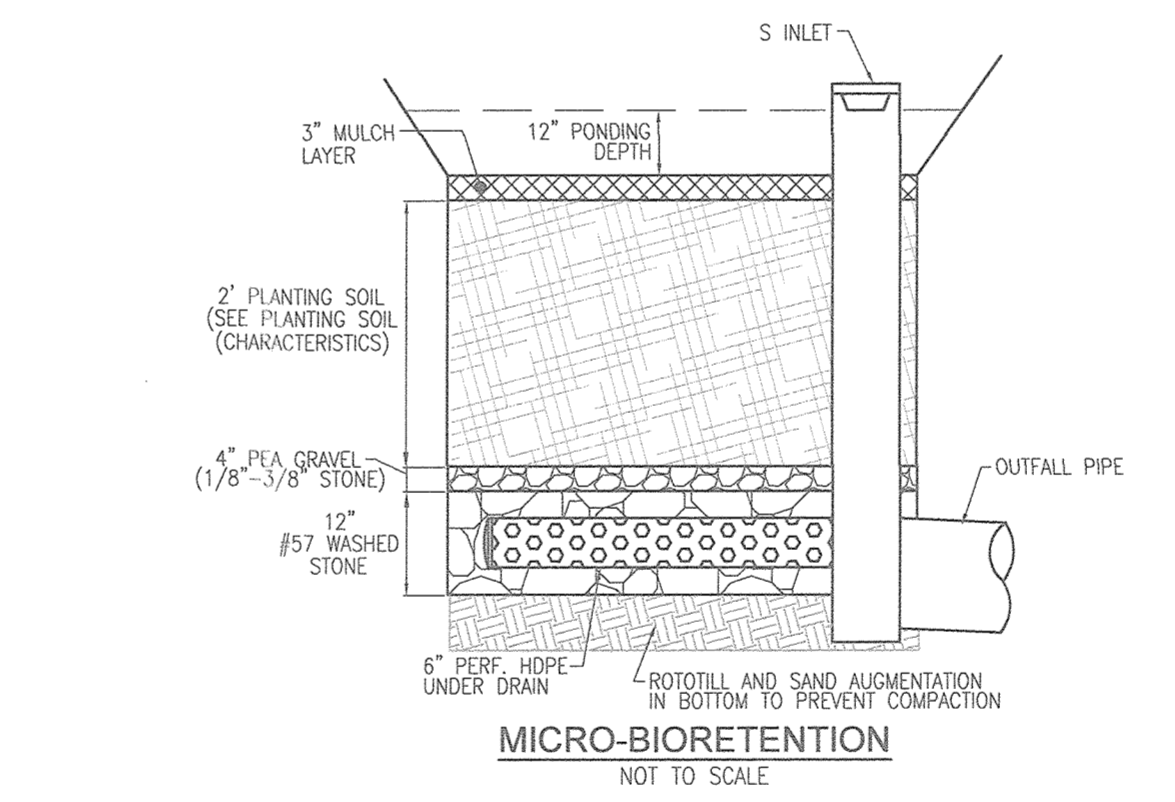
TOTAL AREA 41,047 SF
 0.94 AC
 TOTAL ESDv PROVIDED (cf) = 2,852
 TOTAL ESDv REQUIRED (cf) = 2,523

NOTES:
 1. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN DOES NOT CONSTITUTE ANY APPROVAL OF SUBSEQUENT SUBDIVISION OR SITE DEVELOPMENT PLANS. FURTHER COMMENTS WILL BE GENERATED UPON REVIEW OF THE APPLICABLE DEVELOPMENT PLANS IN ACCORDANCE WITH THE SUBDIVISION AND ZONING REGULATIONS.
 2. REVIEW OF THIS PLAN FOR COMPLIANCE WITH ZONING AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE SUBDIVISION, SITE DEVELOPMENT PLAN, AND/OR PERMIT STAGES; THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN IS PROCESSED THROUGH THESE STAGES.
 3. THERE ARE NO ENVIRONMENTAL FEATURES: FLOODPLAIN, WETLANDS, STREAMS OR FOREST THAT EXISTS ON THIS PROPERTY OR WITHIN THE DEVELOPED AREA.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 1/30/19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 1/22/19
 CHIEF, DIVISION OF LAND DEVELOPMENT

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

- MATERIAL SPECIFICATIONS**
 THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- 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 PROVIDE 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 IN TO 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 TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.
- 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 TIRE TREADS. 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. SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE. COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHESEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE 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.



MICRO-BIORETENTION NOT TO SCALE

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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" to 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 75S, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipes; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/2-inch galvanized hardware 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-615-60	n/a	28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State 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 350 R/9; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking. Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	

SOILS LEGEND
 HOWARD COUNTY SOILS MAP #18

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	ERODABLE	Kw
UD	URBAN LAND-UDORTHERM'S COMPLEX, 0 TO 15 PERCENT SLOPES	D	NO	NO	0.28

TAKEN FROM: USDA, SAS-WEB SOIL SURVEY, HOWARD COUNTY
 * BASED UPON ESTIMATED CUTS

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

OWNER/DEVELOPER
 BRABHAM OIL COMPANY, INC.
 525 MIDWAY ST.
 BANGOR, SC 29003
 C/O RYAN HYLER
 (804) 206-1438

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
SWM DRAINAGE AREA MAP
 NOTES AND DETAILS
 9199 RED BRANCH ROAD
 COLUMBIA, OAKLAND RIDGE INDUSTRIAL PARK
 SECTION 1, LOT 5
 SELF-STORAGE FACILITY
 (P.B. 12-65) L15428/F.351 HOWARD COUNTY, MARYLAND

TAX MAP: 30 BLOCK: 17
 2ND ELECTION DISTRICT

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: LRC
 DRAWN BY: LRC
 CHECKED BY: RHV
 DATE: JAN 2019
 SCALE: AS SHOWN
 W.O. NO.: 11-43

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. 11983 EXPIRATION DATE: 09-27-2020

2 SHEET OF 2