

# ENVIRONMENTAL CONCEPT PLAN

## FIVE HILLS FARM

### LOTS 1 THRU 4

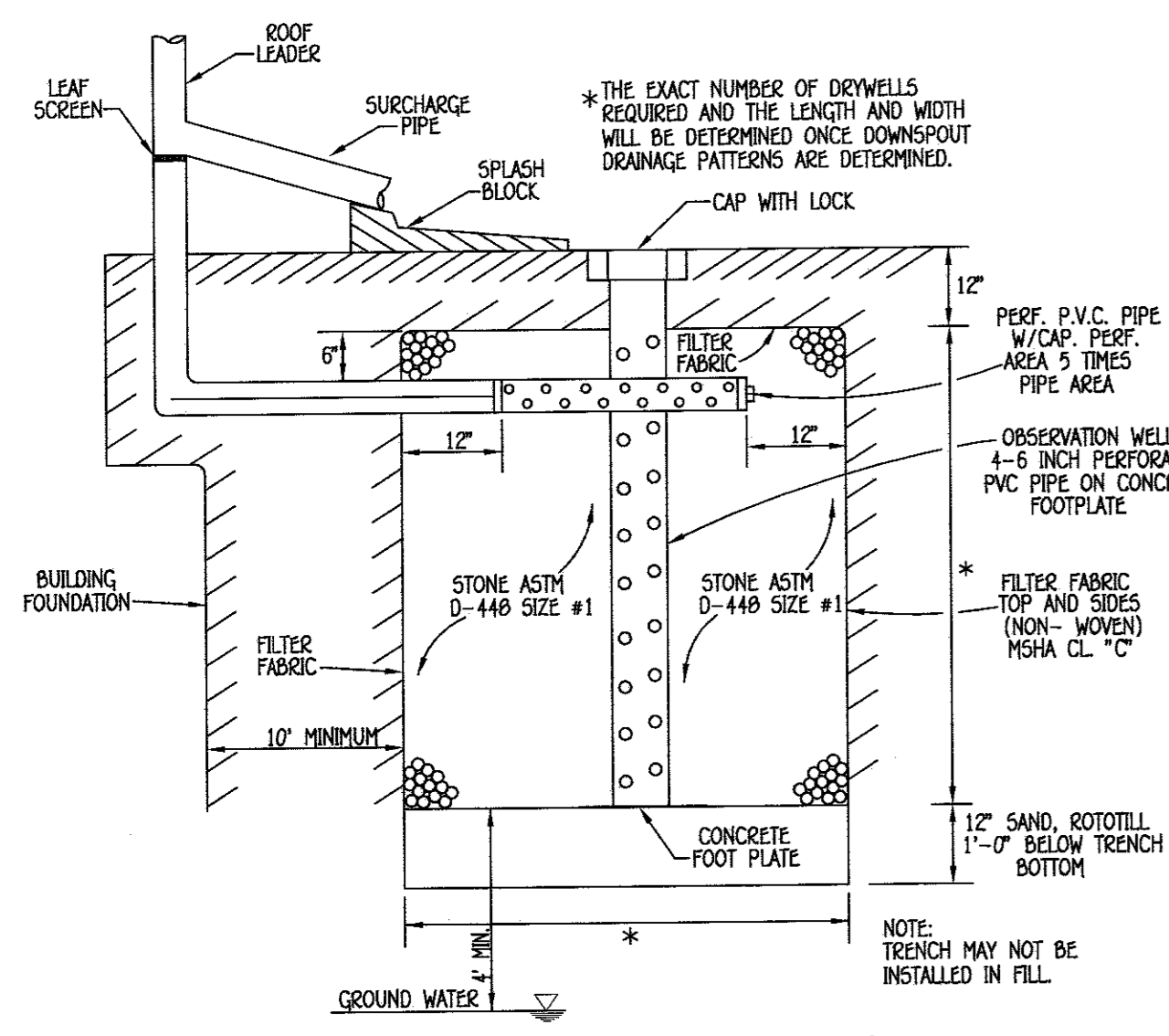
TAX MAP No. 9 GRID No. 7 PARCEL No. 117  
FOURTH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EXISTING 2' CONTOURS		PROPOSED CONTOUR
	EXISTING 10' CONTOURS		SPOT ELEVATION
	SOILS LINES AND TYPE		LIMITS OF DISTURBANCE
	EXISTING TREELINE		PROPOSED TREELINE
	15% TO 24.9% STEEP SLOPES (ERODIBLE SOILS)		EXISTING & PROPOSED PAVING
	25% AND GREATER STEEP SLOPES (ERODIBLE SOILS)		BORING (PERC) TEST HOLE
	100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT		SILT FENCE
	WETLAND AREA		EROSION CONTROL MATTING
	25' WETLAND BUFFER		SUPER SILT FENCE
	STREAM BANK BUFFER		STABILIZES CONSTRUCTION ENTRANCE
	100 YEAR FLOODPLAIN LINE		DRAINAGE AREA DIVIDE
	LIMIT OF EXISTING WETLANDS		TREE PROTECTION
	EXISTING CENTERLINE OF STREAM		SPECIMEN TREE
	FOREST CONSERVATION EASEMENT (RETENTION)		FOREST CONSERVATION EASEMENT (REFORESTATION)

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ENVIRONMENTAL CONCEPT PLAN
3	PRELIMINARY GRADING, SEDIMENT & EROSION CONTROL PLAN

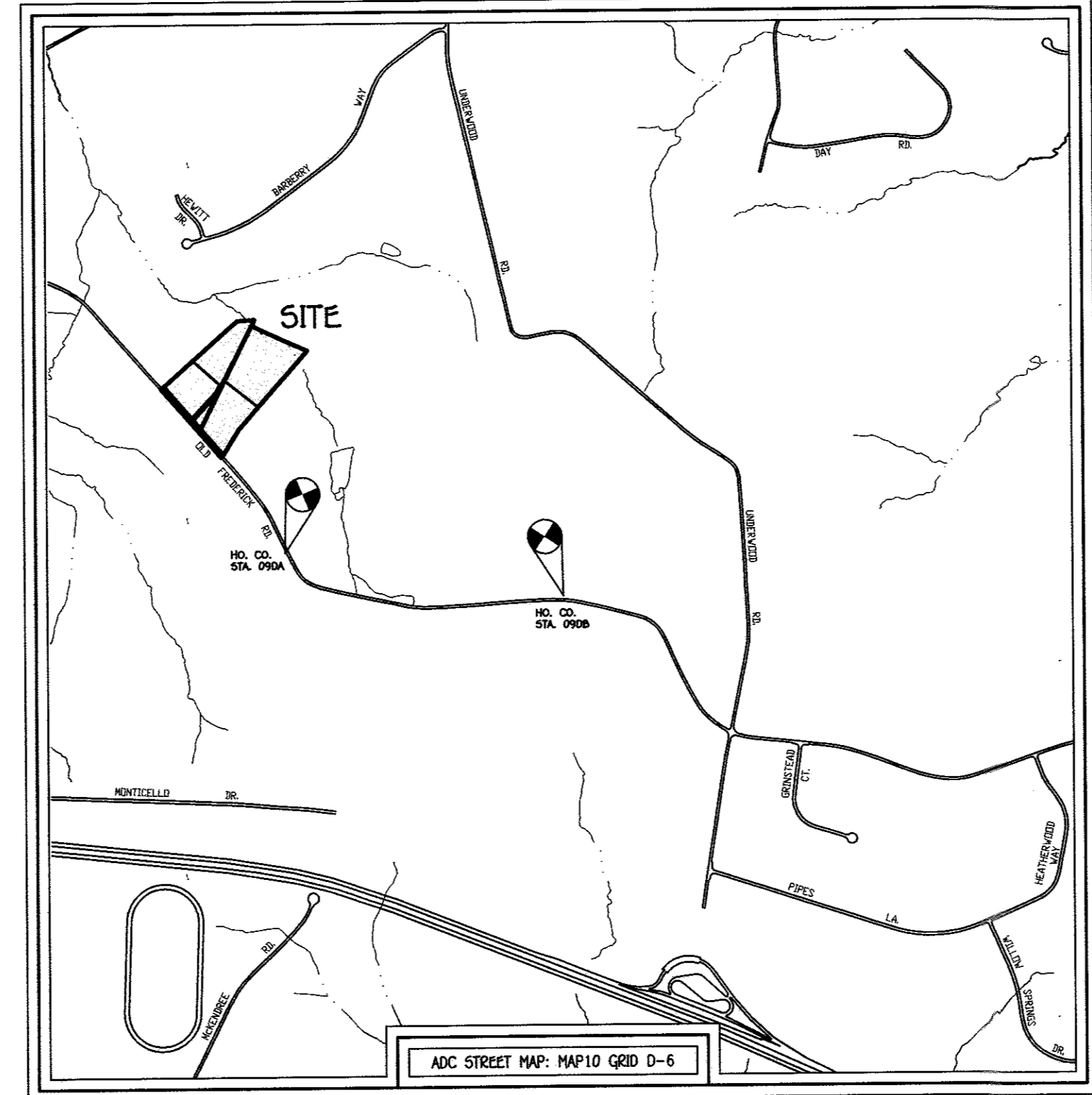
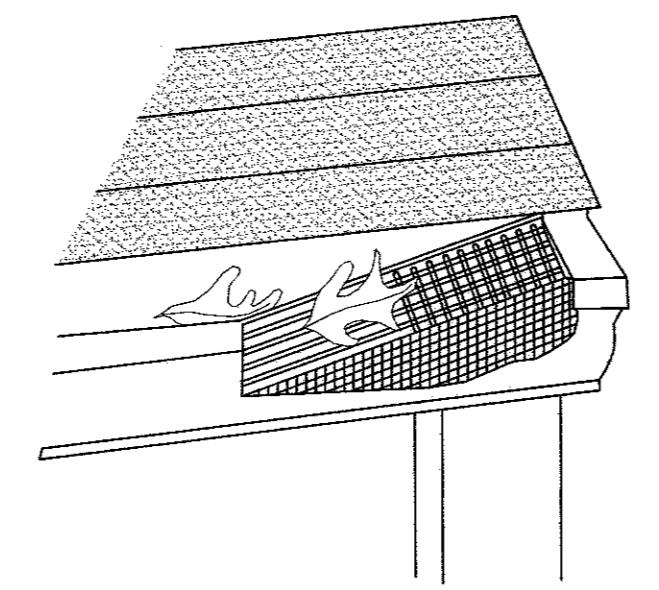
STORMWATER MANAGEMENT SUMMARY			
AREA ID.	ESDV REQUIRED CU.FT.	ESDV PROVIDED CU.FT.	REMARKS
SITE	3,876	3,970	DRYWELLS (M-5), MICRO-BIORETENTION (M-6), & NON-ROOFTOP DISCONNECTION (N-2)
TOTAL	3,876	3,970	

GROSS AREA = 17.16 ACRES  
SITE AREA / LOD = 4.05 ACRES  
RCN = 56.4  
TARGET Pe = 1.2"



DRY WELL CHART						
DRYWELL NO.	AREA OF ROOF PER DOWN SPOUT	VOLUME REQUIRED	VOLUME PROVIDED	AREA OF TREATMENT	L	W
LOT 1 (DW1)	872 SQ. FT.	83 C.F.	200 C.F.	100%*	10' x 10' x 5'	
LOT 1 (DW2)	619 SQ. FT.	59 C.F.	162 C.F.	100%*	9' x 9' x 5'	
LOT 1 (DW3)	619 SQ. FT.	59 C.F.	162 C.F.	100%*	9' x 9' x 5'	
LOT 1 (DW4)	366 SQ. FT.	35 C.F.	128 C.F.	100%*	8' x 8' x 5'	
LOT 2 (DW5)	872 SQ. FT.	83 C.F.	200 C.F.	100%*	10' x 10' x 5'	
LOT 2 (DW6)	619 SQ. FT.	59 C.F.	162 C.F.	100%*	9' x 9' x 5'	
LOT 2 (DW7)	619 SQ. FT.	59 C.F.	162 C.F.	100%*	9' x 9' x 5'	
LOT 2 (DW8)	366 SQ. FT.	35 C.F.	128 C.F.	100%*	8' x 8' x 5'	
LOT 4 (DW9)	872 SQ. FT.	83 C.F.	200 C.F.	100%*	10' x 10' x 5'	
LOT 4 (DW10)	619 SQ. FT.	59 C.F.	162 C.F.	100%*	9' x 9' x 5'	
LOT 4 (DW11)	895 SQ. FT.	94 C.F.	200 C.F.	100%*	10' x 10' x 5'	

\* AREA OF TREATMENT EXCEEDS THAT REQUIRED.



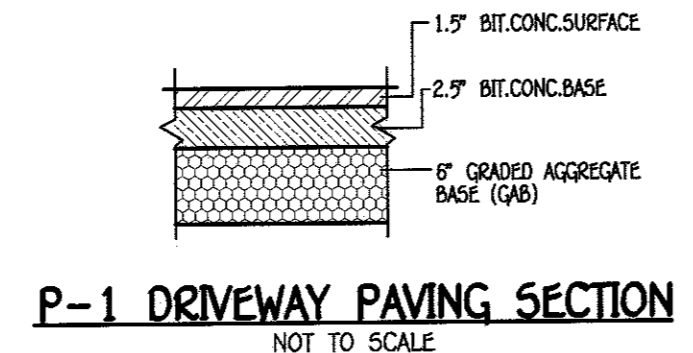
BENCHMARK INFORMATION	
B.M.# 09DA - HOWARD COUNTY CONTROL STATION #09AD - HORIZONTAL - (NAD '83)	N 605,464.895 E 1,314,516.990 ELEVATION = 570.832 - VERTICAL - (NAVD '88)
B.M.# 09DB - HOWARD COUNTY CONTROL STATION #09DB - HORIZONTAL - (NAD '83)	N 605,072.376 E 1,316,990.470 ELEVATION = 609.208 - VERTICAL - (NAVD '88)

### OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRY WELLS (M-5)

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

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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (12" to 4" deep)	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum
Pea gravel diaphragm	pea gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	ASTM M-43	No. 57 or No. Aggregate (3/4" to 3/4")	
Underdrain piping	# 758, Type PS 28 or AASHTO N-27D	4" to 6" rigid schedule 40 PVC or 50835	Stuffed or perforated pipe: 3/8" perf. @ 8" on center; 4 holes per row; minimum of 3" of gravel over pipes; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4" inch galvanized hardware cloth.
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using precast approved. Site 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 308.4R; vertical loading 1H-10 or H-201 allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.075" to 0.075"	Sand substitutions such as Diabase and Gneiss (ASTM) #10 are not acceptable. No calcium chlorinated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.



### STORMWATER MANAGEMENT NOTES

- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH CHAPTER 5, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
- MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 1,000 SQ. FT. OR LESS.
- DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5% THE SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET.
- FINAL GRADING IS SHOWN ON THIS SITE DEVELOPMENT PLAN.

### OPERATION & MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-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 B, 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 WIRCS.
- 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.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

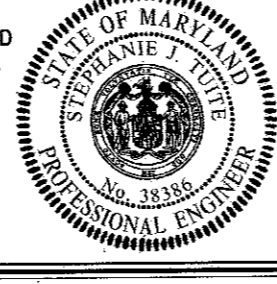
### SITE ANALYSIS DATA CHART

- TOTAL AREA OF THIS SUBMISSION = 17.16 AC.\*
- LIMIT OF DISTURBED AREA = 4.05 AC.\*
- PRESENT ZONING DESIGNATION = RC-DEO (PER 10/06/2013 COMPREHENSIVE ZONING PLAN)
- PROPOSED USE: RESIDENTIAL
- PREVIOUS HOWARD COUNTY FILES: WP-16-109.
- TOTAL AREA OF FLOODPLAIN LOCATED ON SITE = 0.37 AC.
- TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0.85 AC (0.78 AC 15% TO 25%, 0.07 AC 25% OR GREATER)
- TOTAL AREA OF WETLANDS (INCLUDING BUFFER, LOCATED OUTSIDE OF THE FLOODPLAIN) = 1.00 AC.\*
- TOTAL AREA OF STREAM (INCLUDING BUFFER, LOCATED OUTSIDE OF THE FLOODPLAIN) = 1.26 AC.\*
- TOTAL AREA OF EXISTING FOREST = 7.2 AC\* (EXCLUDES FLOODPLAIN)
- TOTAL AREA OF FOREST TO BE RETAINED = 3.70 AC.\*
- TOTAL GREEN OPEN AREA = 16.42 AC\*
- TOTAL IMPERVIOUS AREA = 0.74 AC\*
- TOTAL AREA OF ERODIBLE SOILS = 2.94 AC.\*

NO.	REVISION	DATE	X

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SERVICE OFFICE PARK - 10777 BALDWIN NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2895

**PROFESSIONAL CERTIFICATION**  
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. 36386, EXPIRATION DATE: 01/12/2016.  
*Myra Marie Jure* 8/9/16  
Signature of Professional Engineer DATE



**OWNER / DEVELOPER**  
JOE & JENNIFER HILL  
P.O. BOX 189  
WOODBINE MD 21797  
410-339-7583

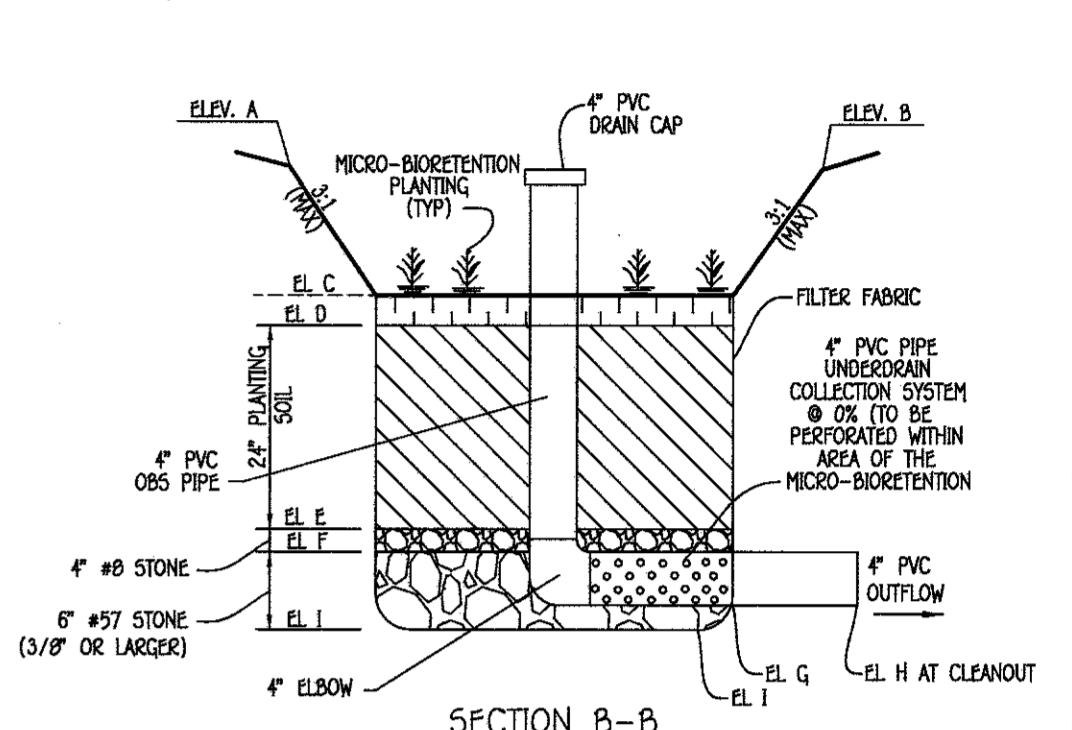
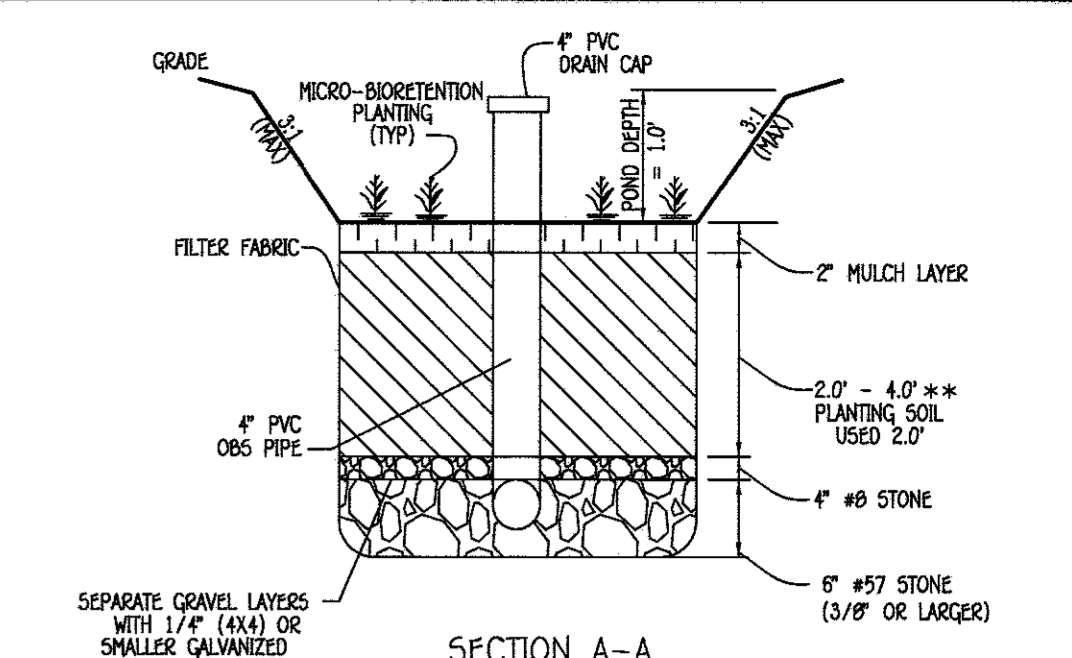
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING			
PROJECT	SECTION	PARCEL NO.	DEED
FIVE HILLS FARM	-	117	16264/319
BLOCK NO. 7	ZONE RC-DEO	TAX/ZONE 9	ELEC. DIST. 4
			CENSUS TR. 604002

**TITLE SHEET**

**FIVE HILLS FARM**  
LOTS 1 THRU 4

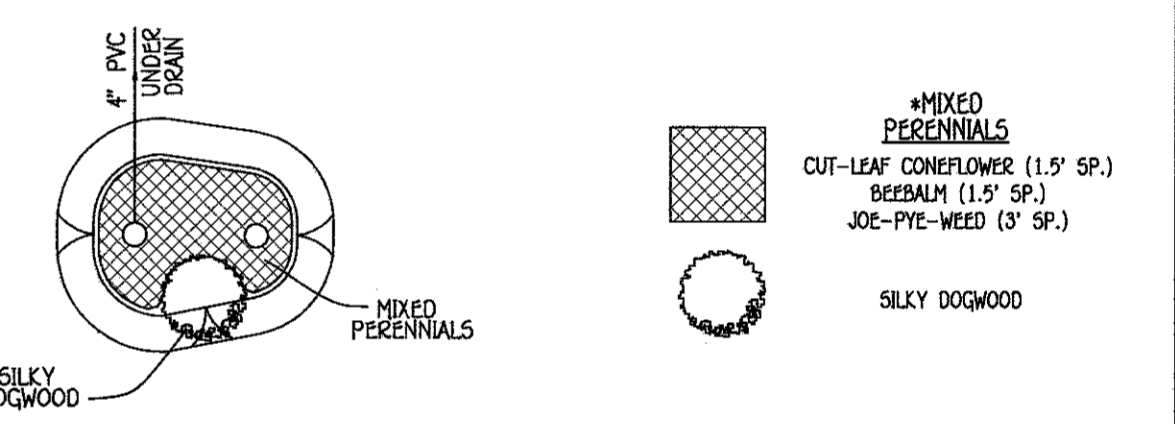
ZONED RC-DEO  
TAX MAP No. 9 GRID No. 7 PARCEL No. 117  
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: JUNE, 2016  
SHEET 1 OF 3

**ECP-16-023**



**MICRO-BIORETENTION DETAIL (M-6)**  
NOT TO SCALE

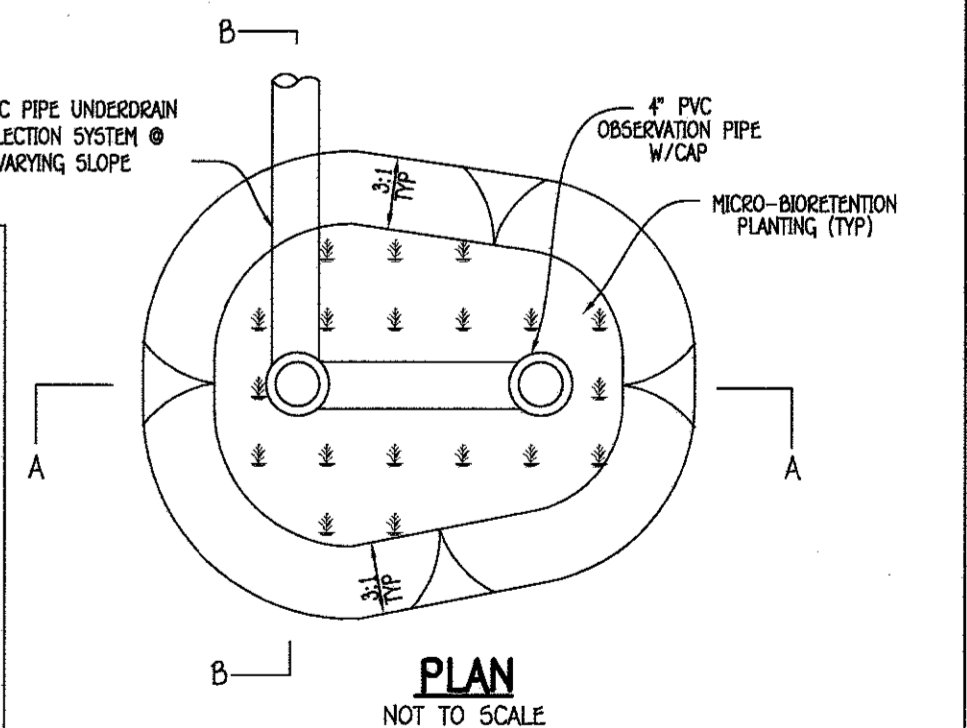
MICRO-BIORETENTION									
BIORETENTION FILTER	A	B	C	D	E	F	G	H	I
1 (LOT 3)	536.00	536.00	535.00	534.83	532.83	532.50	532.17	531.74	531.42



**MICRO-BIORETENTION PLANTING DETAIL**  
NOT TO SCALE

MICRO-BIORETENTION PLANT MATERIAL		
MICRO-BIO 1 QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	1.5 TO 3.0 FT.
1	SILKY DOGWOOD	PLANT AWAY FROM INFLOW LOCATION

SPECIMEN TREE TABLE				
KEY	SPECIES	SIZE (DBH)	CRZ (FT. RADIUS)	COMMENTS
1	WHITE OAK	34"	51	GOOD CONDITION
2	BLACK OAK	40.5"	60.75	GOOD CONDITION
3	BLACK OAK	41.5"	62.25	GOOD CONDITION
4	RED OAK	49"	73.5	FAIR CONDITION, SPLITS ABOVE BREAST HEIGHT, SOME LIMB DIEBACK
5	RED OAK	46"	69	POOR CONDITION, TRUNK ROT EVIDENT
6	BLACK OAK	36"	54	POOR CONDITION, TRUNK ROT EVIDENT
7	TULIP POPLAR	30"	45	
8	BLACK OAK	31.5"	47.25	FAIR CONDITION, LIMB DIEBACK NOTED



**PLAN**  
NOT TO SCALE

NO.	REVISION	DATE	X

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*Stephanie Lutz* 8/9/16  
Signature of Professional Engineer DATE

SCALE: 1" = 50'

**OWNER / DEVELOPER**  
JOE & JENNIFER HILL  
P.O. BOX 189  
WOODBINE, MD 21797  
410-339-7583

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Howard* 8-17-16  
Chief, Division of Land Development Date

*John* 8-17-16  
Chief, Development Engineering Division Date

PROJECT	SECTION	PARCEL NO.			
FIVE HILLS FARM	-	117			
DEED	BLOCK NO.	ZONE	TAX/ZONE	ELEC. DIST.	CENSUS TR.
16284/319	7	RC-DEO	9	FOURTH	604002

**ENVIRONMENTAL CONCEPT PLAN**

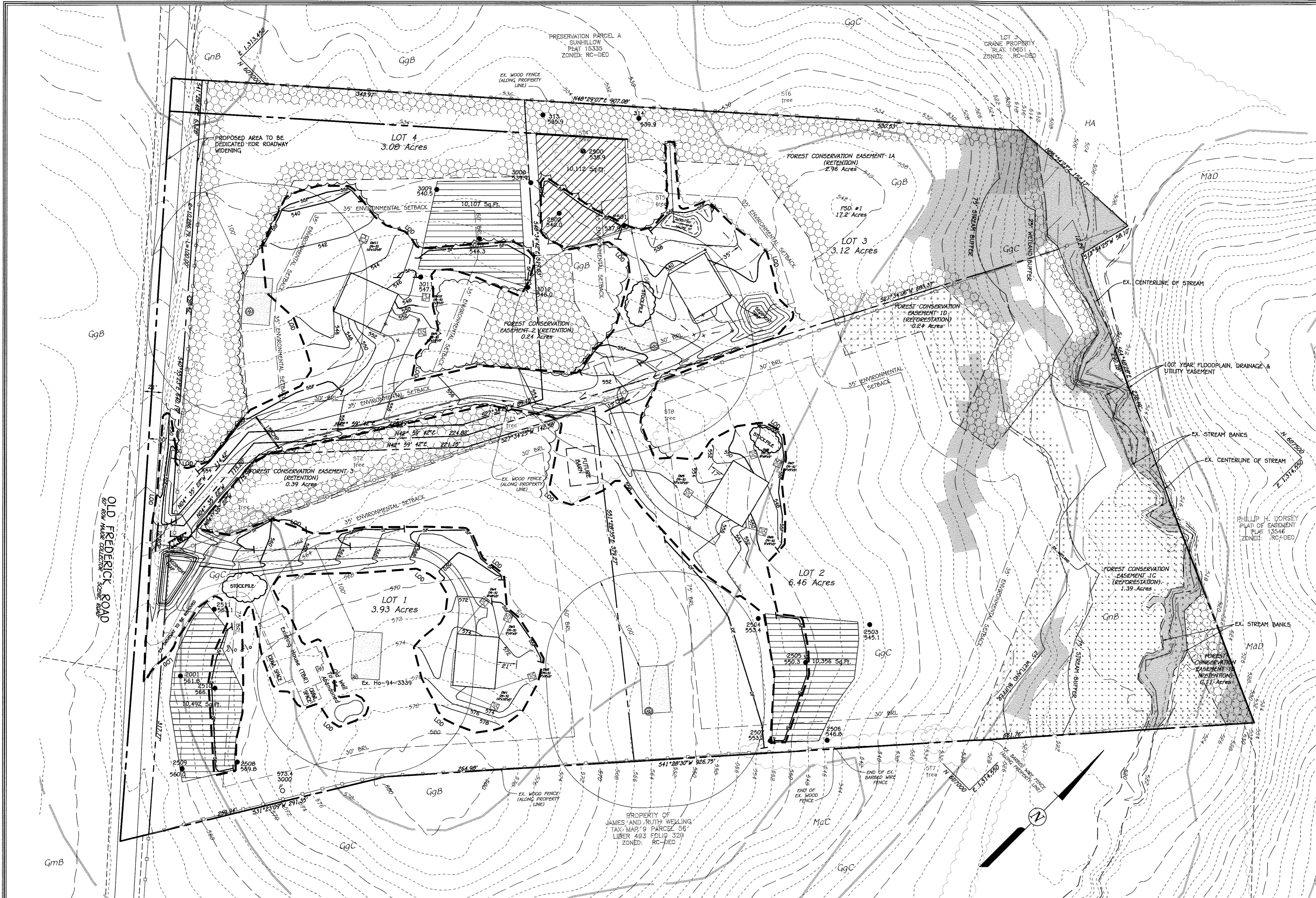
**FIVE HILLS FARM**  
LOTS 1 THRU 4

ZONED RC-DEO  
TAX MAP No. 9 GRID No. 7 PARCEL No. 117  
FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: JUNE, 2016  
SHEET 2 OF 3

**ECP-16-023**

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

SOILS LEGEND			
SOIL	NAME	CLASS	K FACTOR
GgB	Glenelg loam, 3 to 8 percent slopes	B	0.20
GgC	Glenelg loam, 8 to 15 percent slopes	B	0.20
GmB	Glenville silt loam, 3 to 8 percent slopes	C	0.37
GnB	Glenville-balle silt loams, 0 to 8 percent slopes	C	0.37
Ha	Hatboro-Codorus silt loams, 0 to 3 percent slopes	D	0.37
MaD	Manor loam, 15 to 25 percent slopes	B	0.24
McC	Manor-channery loam, 8 to 15 percent slopes	B	0.24



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 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 11072 SALTPORE NATIONAL PARK  
 ELLICOTT CITY, MARYLAND 21042  
 (410) 461-2895

NO.	REVISION	DATE	X

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*Andrew Smith* 8/16/16  
 Signature Of Professional Engineer DATE

SCALE: 1" = 50'  
**OWNER / DEVELOPER**  
 JOE & JENNIFER HILL  
 P.O. BOX 189  
 WOODBINE MD 21797  
 410-339-7583

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Kevin Sedore* 8-17-16  
 Chief, Division of Land Development Date  
*David Smith* 8-17-16  
 Chief, Development Engineering Division Date

PROJECT	SECTION	PARCEL NO.
FIVE HILLS FARM	-	117
DEED	BLOCK NO.	ZONE
16264/319	7	RC-DEO
TAX/ZONE	ELEC. DIST.	CENSUS TR.
9	FOURTH	604002

**PRELIMINARY GRADING, SEDIMENT & EROSION CONTROL PLAN**  
**FIVE HILLS FARM**  
 LOTS 1 THRU 4  
 ZONED RC-DEO  
 TAX MAP No. 9 GRID No. 7 PARCEL No. 117  
 FOURTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 SCALE: AS SHOWN DATE: JUNE, 2016  
 SHEET 3 OF 3  
**ECP-16-023**

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