		SHEET INDEX				
	SHEET	NO.	DESCRIPTION			
Ī	1		TITLE SHEET			
	2		ENVIRONMENTAL CONCEPT PLAN			

STORMWATER MANAGEMENT SUMMARY				
AREA 10.	ESDV REQUIRED CU.FT.	ESDV PROVIDED CU.FT.	REMARK5	
5ITE	1,443	650	DRY WELLS (M-5), GRASS SWALE (M-8), AND ROOFTOP DISCONNECTIONS (N-1)	
TOTAL	1,443	650		

NOTE: SITE CONTAINS AN EXISTING HOUSE WHICH WAS BUILT UNDER SDP-12-069. SINCE SOME OF THE STORMWATER MANAGEMENT HAS BEEN REVISED UNDER THIS PLAN, THE REVISED PORTIONS HAVE BEEN INCLUDED WITHIN THE REPORT. THIS REPORT DOES NOT INCLUDE PREVIOUS ROOFTOP AND NON-ROOFTOP DISCONNECTIONS THAT ARE REMAINING ON-SITE. ALL IMPERMIOUS SURFACES HAVE BEEN TREATED, THEREFORE NO ADDITIONAL TREATMENT IS REQUIRED.

GROSS AREA = 1.07 ACRES LOD = 0.49 ACRES RCN = 55 TARGET Pe = 1.8

DESIGN NARRATIVE

This report will demonstrate how the criteria set forth in the Maryland Stormwater Design Manual, Volumes I and II (effective October 2000, revised May 2009) will be satisfied on this project. The goal of creating hydrology similar to that of Woods in Good Condition will be accomplished through the use of the practices contained within Chapter 5 of said manual. The achievement of this goal will remove the requirement of providing Channel Protection Volume.

General Site Conditions: Criswood Manor, Section 4, resubdivision of Lot 4 is a single family lot subdivision of two lots. Property is zoned R-20 and located on Tax Map 29, Grid 20, Parcel No. 86, Lot No. 4 of the Howard County, Maryland Tax Map Database System. The property is a part of a 19 subdivision located along the northeast side of Trotter Road approximately 2,000 feet southeast of the intersection of Trotter Road with Maryland Route 108. Subdivision will utilize a public water and sewer. The property is located in the Clarksville area of Howard County draining to an unnamed tributary of Middle Patuxent River watershed (02131106). This property is rectangular in shape and runoff on-site is mainly from southwest to northeast to an off-site stream. Site is not forested and contains no wetlands, wetland buffers, stream, stream buffers, steep slopes, or 100 year floodplain. Per a field inspection conducted by Klebaskow Environmental, LLC dated October 24, 2011, no wetlands and stream are present on-site. The Web Soil Survey shows soils on the site consist of only Genely loam (GgB), Type "B" soils. The existing house was built under 50P-12-060 and utilized rooftop and non-rooftop disconnection and a micro-bioretention facility. The micro-bioretention facility is proposed to be removed and rooftop drainage directed into proposed dry wells. So, the runoff from the roof of the existing and proposed houses is to be directed overland or through roof leaders to two (2) drywells to be located on each lot and Lot 22 will utilize rooftop disconnections for a portion of the rear of the proposed house. The proposed driveway for Lot 22 will be treated by a flat bottom grass channel. The expanded driveway on Lot 21 will continue to utilize the non-rooftop disconnection previously

- Environmentally sensitive areas do not exist on-site (steep slopes, wetlands, wetland buffer, floodplain, stream, and stream buffer), therefore no effort to protect natural resources on-site is required.
- It is the intent of the proposed design to discharge runoff similar to the characteristics and direction of this site prior to any of
- III. Reduction of impervious areas through better site design, alternative surfaces and Nonstructural Practices The design of this project utilizes a common driveway and individual driveways for the two lots. Non-Structural practices as permitted in Chapter 5, four (4) Dry Wells (M-5), a Grass Swale (M-8), and Rooftop Disconnection (N-1) will be used to address
- N. Integration of Erosion and Sediment Controls into Stormwater Strategy:

 The majority of the site runoff sheet flows from southwest to northeast. Silt fence, super silt fence, and erosion control matting will be utilized for erosion & sediment control. There is no direct discharge of runoff directly to a stream or wetlands. All site runoff will discharge to the existing ground and eventually to the Middle Patuxent River. No drainage easements will be required It is anticipated that all cut will be utilized on-site for construction at time of Grading Plan.
- V. Implementation of ESD Planning Techniques and practices to the Maximum Extent Practicable (MEP) The full required ESD volume is being provided.
- VI. Request for a Design Manual Waiver:

FISHER, COLLINS & CARTER, INC. VIL ENGINEERING CONSULTANTS & LAND SURVEYORS

ELLICOTT CITY, MARYLAND 21042

No Waivers related to stormwater management are being requested in this project.

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

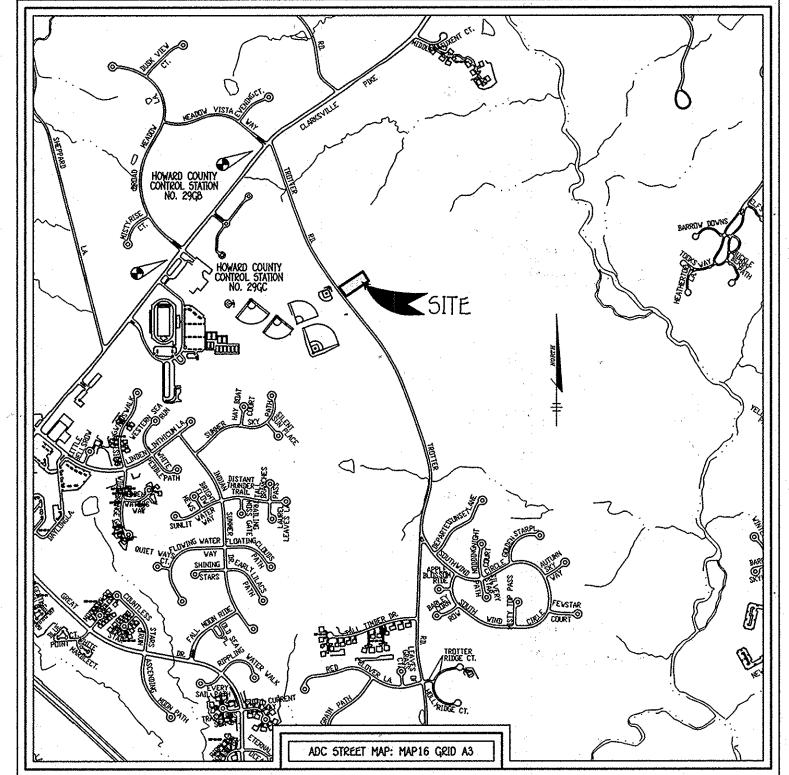
Material	Specification	Size	Notes
Plantings	see Appendix A; Table A.4	n/a	plantings are site-specific
Planting soil [2" to 4" deep]	ioamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%		USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum
Pea gravel diaphragm	ped gravel: ASTM-D-440	No. 0 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. Aggregate (3/8° to 3/4°)	
Underdrain piping	F 750, Type P5 20 or AASHTO M-270	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8° pert. © 6° on center, 4 holes per row; minimum of 3° of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 20 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n.ā	on-site testing of poured-in-place concrete required: 20 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 350.8/09; vertical loading LH-10 or H-201; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" †o 0.04"	5 and 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.

DATE



CRISWOOD MANOR, SECTION 4, LOTS 21 & 22

TAX MAP No. 29 GRID No. 20 PARCEL Nos. 88 FIFTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND



VICINITY MAP 5CALE: 1" = 1200'

ADC MAP COORDINATES: 4934, C-5 BENCHMARK INFORMATION B.M.# 29GB - HOWARD COUNTY CONTROL STATION #13CA - HORIZONTAL - NAD '83) N 566,826,1708 E 1,333,265.8543 ELEVATION = 455.965 - VERTICAL - (NAVD '88) B.M.# 29GC - HOWARD COUNTY CONTROL STATION #07IA - HORIZONTAL - (NAD '83) N 565,530.8138 E 1,332,248.7022 ELEVATION = 490.718 - VERTICAL - (NAVD '88)

	50ILS LEGEND		No.	
50IL	NAME.	:	CLA55	K FACTO
GgB	Glenelg loam, 3 to 8 percent slopes		В	0.20

OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED. DISCONNECTION OF ROOFTOP RUNOFF (N-1) MAINTENANCE OF AREAS RECEIVING DISCONNECTION RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

LEGEND				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	
`492	EXISTING 2' CONTOURS	402	PROPOSED CONTOUR	
- 490	EXISTING 10' CONTOURS	+362.5	SPOT ELEVATION	
GLB2 MLC2	SOILS LINES AND TYPE	LOD	LIMITS OF DISTURBANCE	
~~~~	EXISTING TREELINE	<b></b>	PROPOSED TREELINE	
	15% TO 24.9% STEEP SLOPES		EXISTING & PROPOSED PAVING	
	25% AND GREATER STEEP SLOPES	95033	BORING (PERC) TEST HOLE	
6 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT	5F	SILT FENCE	
* * *	WETLAND AREA	ECM	erosion control matting	
WB	25' WETLAND BUFFER	55F	SUPER SILT FENCE	
SB	STREAM BANK BUFFER		STABILIZES CONSTRUCTION ENTRANCE	
popular and the second to the	100 YEAR FLOODPLAIN LINE		DRAINAGE AREA DIVIDE	
ැ _ට 5T1	SPECIMEN TREE	—тр ——	TREE PROTECTION	

#### GENERAL NOTES

- 1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIMISION A 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.

  THE CONTRACTOR SHALL NOTIFY (MISS UTILITY) AT 1-800-257-7777 AT LEAST 40 HOURS PRIOR TO ANY EXCAVATION WORK BEING
- 3. BOUNDARY SHOWN HEREON IS BASED ON FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED BY RAZTEC ASSOCIATES, INC.
- DATED MAY, 2011. TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SUVERY PERFORMED BY RAZTEC ASSOCIATES, INC. DATED MAY, 2011. AND SUPPLEMENTED WITH HOWARD COUNTY GIS TOPOGRAPHY AT 5' CONTOUR INTERVAL INTERPOLATED FOR 2'
- STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 29G8 AND 29GC WERE USED FOR THIS PROJECT.
- PREVIOUS DPZ FILE NUMBERS: ECP-12-017; SDP-12-060. STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE M.D.E. STORM WATER DESIGN MANUAL, VOLUMES I & II, REVISED 2009.
- NON-STRUCTURAL PRACTICES IN ACCORDANCE WITH CHAPTER 5 ARE BEING UTILIZED.
  7. THIS PROPERTY IS LOCATED INSIDE THE METROPOLITAN DISTRICT. LOTS TO BE SERVED PUBLIC WATER AND PUBLIC SEWER.
- CONNECTIONS TO CONTRACT #34-4805-0 WILL BE PROVIDED BY ADO PRIOR TO BUILDING PERMIT.

  8. ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.

  9. THE SUBJECT PROPERTY IS ZONED R-20 (PER DATE 10/06/2013 COMPREHENSIVE ZONING PLAN.

  10. NO CEMETERIES OR HISTORIC STRUCTURES EXIST ON-SITE.
- 11. NO STEEP SLOPES, 100 YEAR FLOODPLAIN, STREAM(S), STREAM BUFFERS, WETLAND(S), WETLAND BUFFER(S), AND FOREST STANI
- 13. FOREST CONSERVATION REQUIREMENT WILL BE ADDRESSED AT FINAL PLAN STAGE. IT IS ASSUMED A FEE-IN-LIEU WILL BE
- 14. ONE SOIL BORING WILL BE REQUIRED FOR THIS PROJECT, PERCOLATION TESTS WERE CONDUCTED IN CLOSE PROXIMITY TO TWO OF THE PROPOSED DRY WELLS LOCATIONS. A SOIL BORING WILL BE EXCAVATED IN PROXIMITY TO THE PROPERTY LINE BETWEEN PROPOSED
- LOTS 21 AND 22 FOR THREE PROPOSED DRY WELLS. 15. 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 AND THE HOWARD COUNTY ZONING 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.

## SITE ANALYSIS DATA CHART

- A. TOTAL AREA OF THIS SUBMISSION = 1.07 AC. ±.
- LIMIT OF DISTURBED AREA = 0.49 Ac. * PRESENT ZONING DESIGNATION = R-20
- (PER 10/06/2013 COMPREHENSIVE ZONING PLAN) PROPOSED USE: RESIDENTIAL
- PREVIOUS HOWARD COUNTY FILES: N/A. TOTAL AREA OF FLOODPLAIN LOCATED ON SITE = 0.00 AC
- TOTAL AREA OF SLOPES IN EXCESS OF 15% = 0.00 AC TOTAL AREA OF WETLANDS (INCLUDING BUFFER, LOCATED OUTSIDE OF THE FLOODPLAIN) = 0.00 AC.
- TOTAL AREA OF STREAM (INCLUDING BUFFER, LOCATED OUTSIDE OF THE FLOODPLAIN) = 0.00 AC.
- TOTAL AREA OF EXISTING FOREST = 0.00 AC (EXCLUDES FLOODPLAIN)
- TOTAL AREA OF FOREST TO BE RETAINED = 0.00 AC TOTAL GREEN OPEN AREA = 0.85 AC*
- TOTAL IMPERVIOUS AREA = 0.22 AC± N. TOTAL AREA OF ERODIBLE SOILS = 0.00 AC.+

OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED OPEN CHANNEL SYSTEMS - GRASS SWALES, (M-B)

- THE OPEN CHANNEL SYSTEM SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS.
   INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS 2. THE OPEN CHANNEL SHALL BE MOWED A MINIMUM OF AS NEEDED DURING THE GROWING SEASON TO
- mantain a maximum grass height of less than 6 inches. Debris and litter shall be removed during regular mowing operations and as needed. Visible signs of erosion in the open channel system shall be repaired as soon as it is

REMOVE SILT IN THE OPEN CHANNEL SYSTEM WHEN IT EXCEEDS 25%% OF THE ORIGINAL WOV. INSPECT CHECK DAMS TWICE A YEAR FOR STRUCTURAL INTEGRITY. RESTORE CHECK DAMS TO ORIGINAL CONDITION AS APPLICABLE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 7-07-14 Chief, Development Engineering Division LOT NO. PROJECT SECTION PROFESSIONAL CERTIFICATION CRISWOOD MANOR HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED OWNER/DEVELOPER BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER TAX/ZONE ELEC. DIST. CENSUS TR. THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38386, EXPIRATION BLOCK NO. ZONE THOMAS V. SAMUEL & SISSY M. AMBILY 12539/403 0020 0029 R-20 5517 TROTTER ROAD CLARSKVILLE, MARYLAND 21029 301-552-0005

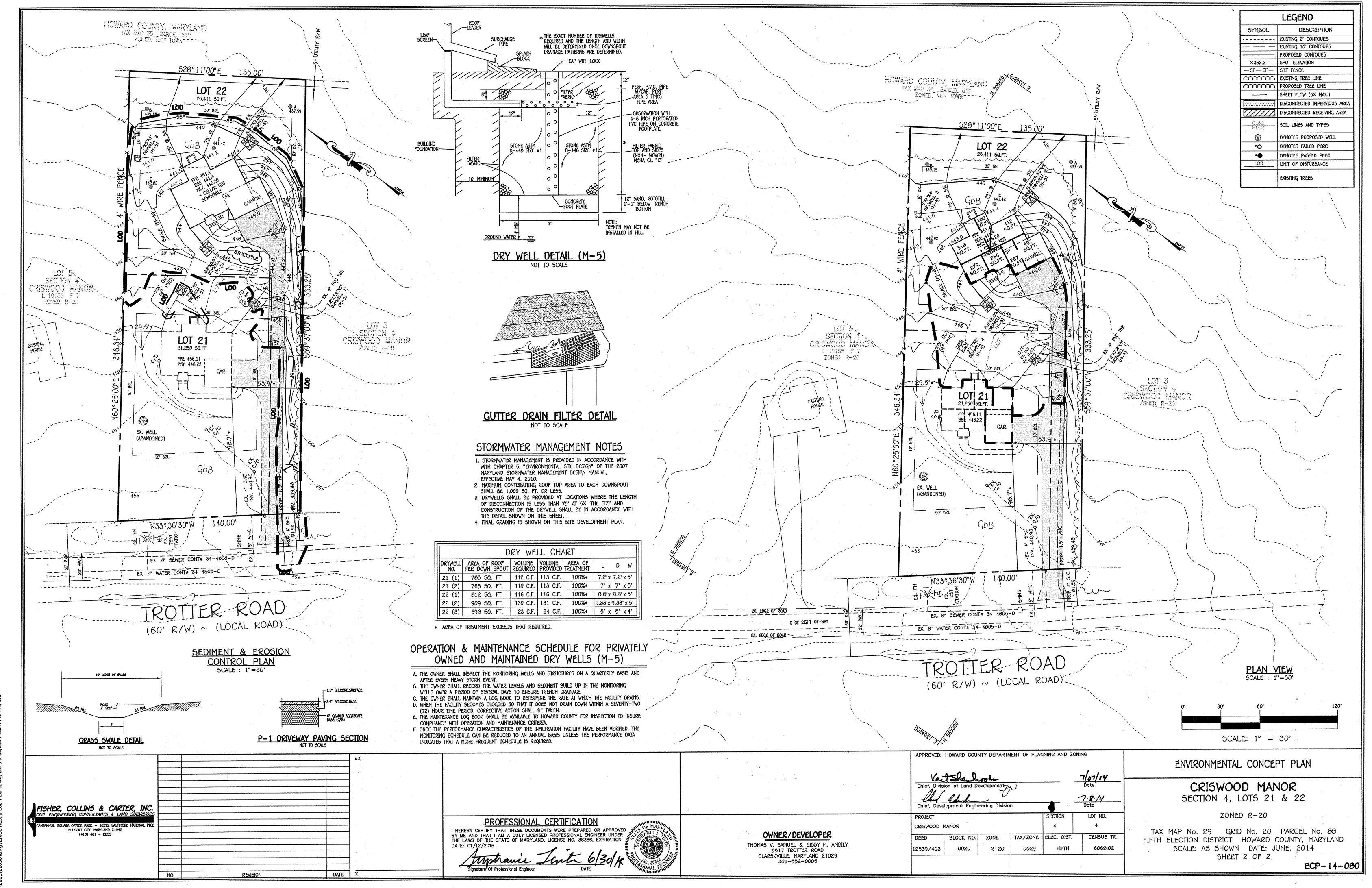
TITLE SHEET

CRISWOOD MANOR 5ECTION 4, LOTS 21 & 22

ZONED R-20

TAX MAP No. 29 GRID No. 20 PARCEL No. 88 FIFTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE: AS SHOWN DATE: JUNE, 2014 SHEET 1 OF 2

ECP-14-080



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