

DESIGN NARRATIVE:

The Effective Site Area was analyzed as woods in good condition and a target RCN was determined. The onsite soils are classified as group 'B', 'C', & 'D'; predominately 'B'. The Effective Site Area is comprised of the total area of the site. A target rainfall depth treatment (Pe) was determined based on the measured impervious area and HSS types. The target Pe for this site is 1.6 inches. The target Pe was treated using Environmental Site Design practices as outlined in Chapter 5 of the 2000 Maryland Stormwater Design Manual, as amended by Maryland's Stormwater Management Act of 2007. The selected methods are dry wells (M-5), micro-bioretenment (M-6), grass swales (M-8), non-rooftop disconnection (N-2).

This site contains no streams, floodplains or wetlands. To protect natural resource areas, it is important to delay release of stormwater runoff from new impervious areas to avoid increasing peak runoff, and to adequately treat the stormwater to avoid damage to sensitive species. In addition it is necessary to maintain adequate runoff to wetland areas. The design incorporates minimum width driveways in order to create the least possible stormwater runoff, and provided runoff to the existing drainage point. The site does not contain any specimen trees.

Conceptual treatment has been designed based on preliminary grading, the site topography and the house and driveway locations. Driveway areas may be treated by disconnection or micro-bioretenment. Non-rooftop disconnection of driveways will provide treatment of 1.0" quality runoff. Additional ESD volume will be provided in the micro-bioretenment facilities. Generally rooftop runoff will be conveyed to the micro-bioretenment facility or piped to on-lot dry wells. The outfall provided generally releases runoff to the existing drainage pattern for the site.

Sediment and erosion controls have been designed based on the 2011 Maryland Specifications for Soil Erosion and Sediment Control. Erosion control matting, silt fence, and super silt fence will be used to prevent runoff containing unacceptable levels of TSS from leaving the site and entering the adjacent wetlands during the construction. It will be the obligation of the contractor to install, inspect and maintain these practices.

The target Pe for this site is 1.6 inches. All impervious areas are treated to at least 1.0" (water quality treatment) and additional volumes are provided in micro-bioretenment facilities, dry wells, and a grass swale. By using Environmental Site Design practices as outlined in Chapter 5 of the 2000 Maryland Stormwater Design Manual as amended by Maryland Stormwater Management Act of 2007, full treatment of the target Pe of 1.6 will be achieved for the areas across the site.

A waiver for the removal of the existing specimen tree will be required. It is anticipated that no additional waiver will be needed for the development of this site.

There are no forests, floodplain or wetlands located onsite. Forest conservation for this site will most likely be Fee-in-Lieu.

This site is not required to provide Qf for extreme flood protection.

ENVIRONMENTAL CONCEPT PLAN

KINGS ARMS, SECTION 6

LOTS 1 THRU 5 AND OPEN SPACE LOTS 6 & 7

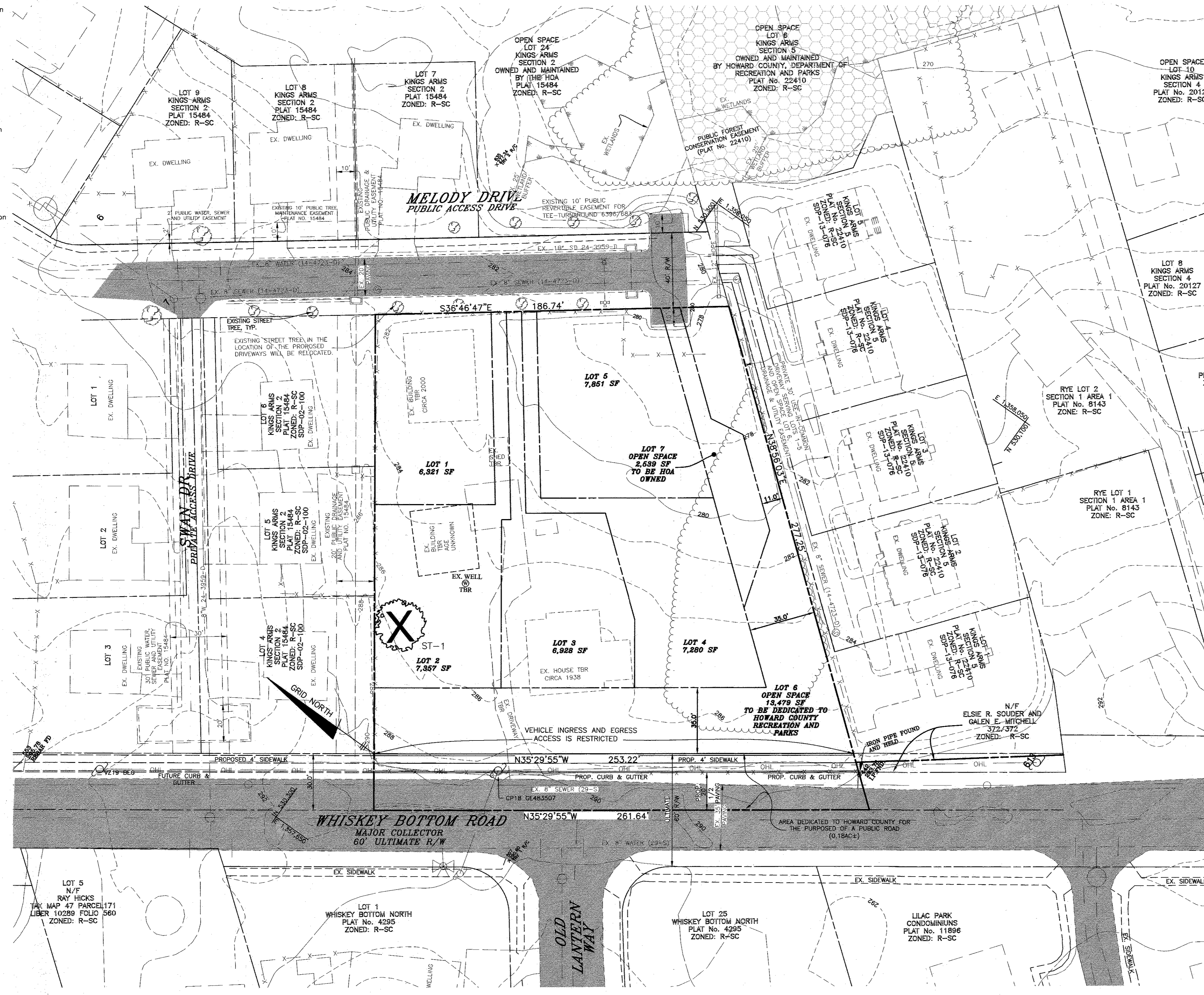
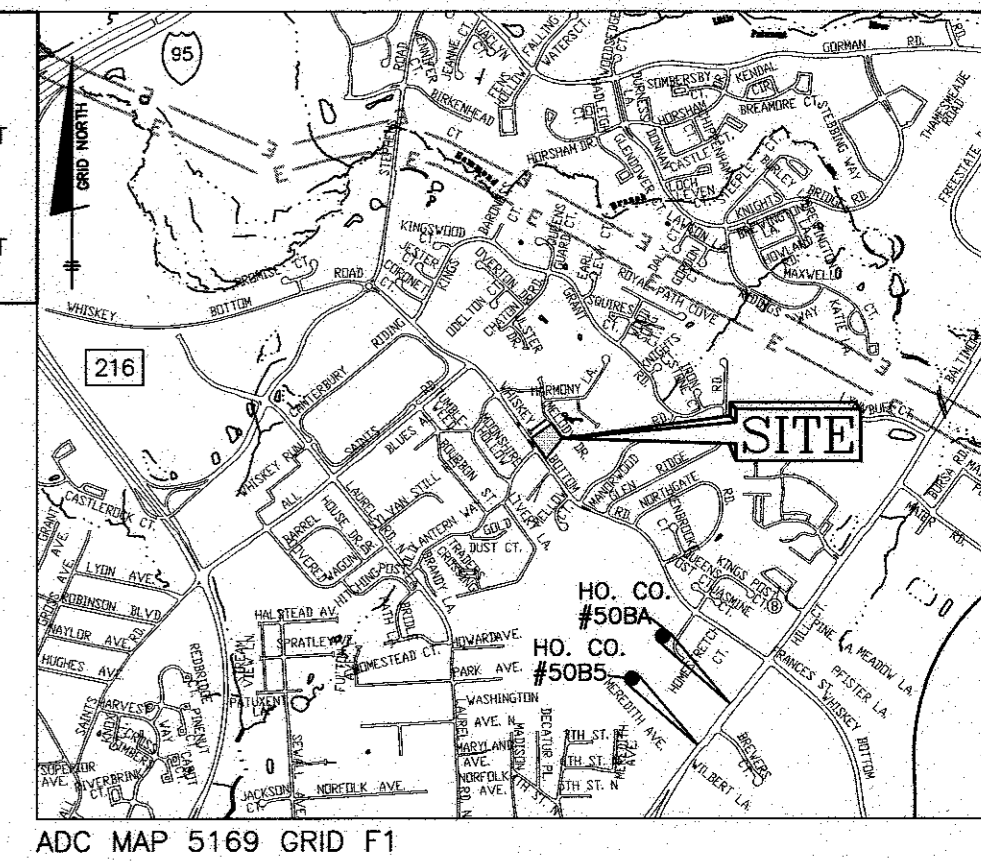
6TH ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SHEET INDEX	
NO.	DESCRIPTION
1	COVER AND EXISTING CONDITIONS PLAN
2	SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

BENCH MARKS--(NAD'83)

HO. CO. #508A	EL. N/A
STANDARD DISC ON CONC. MONUMENT	N 527561.6702 E 1359772.5936
HO. CO. #5085	EL. 178.242
STANDARD DISC ON CONC. MONUMENT	N 524999.3640 E 1357925.6751



LEGEND

SOILS CLASSIFICATION: UCD

SOILS DELINEATION: ---

EXISTING CONTOURS: ---

EXISTING WOODS LINE: ---

EXISTING STREET TREE: ---

PRIVATE USE--COMMON EASEMENT: ---

PUBLIC MAINTENANCE & UTILITY EASEMENT: ---

PUBLIC ACCESS PAVING (R/W): ---

SPECIMEN TREE TO BE REMOVED: X

EXISTING FENCELINE TO BE REMOVED: X

NOTE: 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 AND/OR SITE DEVELOPMENT PLAN STAGES. THEREFORE, THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS (INCLUDING THOSE THAT MAY ALTER OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF THE REQUIRED SUBSEQUENT SUBDIVISION PLAN.

PROJECT BACKGROUND INFORMATION
 PRESENT ZONING: R-SC
 LOCATION: TAX MAP 47 - GRID 22 - P/O PARCEL 174
 APPLICABLE DPZ FILE REFERENCES: PLAT-N/A
 DEED REFERENCES: L. 16044 / F. 00404

PROPOSED USE OF SITE: RESIDENTIAL (SFD)
 PROPOSED WATER AND SEWER SYSTEMS: PUBLIC WATER & SEWER

ECP Site Analysis Data Sheet

Gross Area	1.37 ac
100yr Floodplain	0.00 ac
Slopes 25% or Greater	0.00 ac
Slopes 15% or Greater	0.00 ac
Wetlands	0.00 ac
Wetlands Buffer	0.00 ac
Stream	0 If
Stream Buffer	0.00 ac
Forested Area	0.00 ac
Erodible Soils	0.00 ac
Limit of Disturbance	1.17 ac
Impervious Area	0.32 ac
Green Space	0.85 ac

*All areas are approximate.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development

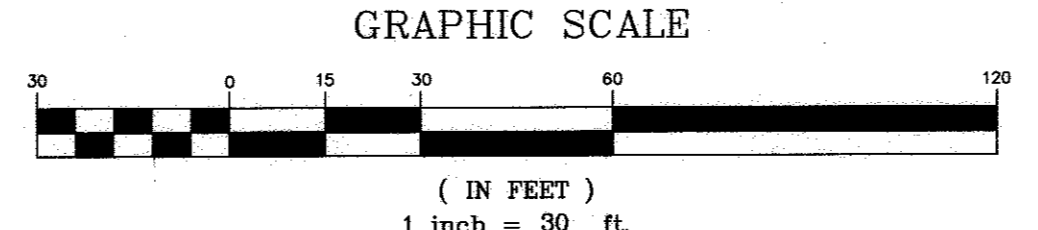
Chief, Development Engineering Division

DATE: 2-16-16

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	SOIL TYPE	K _f FACTOR
SaC	B	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	0.28
RaB	C	RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.28
UcB	D	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	0.43

THERE ARE NO HYDRIC SOILS ON-SITE.
 TAKEN FROM NRCS WEBSITE, MAP NO. 28



- GENERAL NOTES**
- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
 - SUBJECT PROPERTY ZONED R-SC PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
 - TOPOGRAPHY SHOWN IS BASED ON GIS FROM HOWARD COUNTY WITH 2' CONTOUR INTERVALS.
 - BOUNDARY IS BASED ON ADJACENT PROPERTY RECORD PLATS 15483 & 22409 AND HOWARD COUNTY GIS.
 - WATER IS PUBLIC. CONTRACT #14-4723-D. DRAINAGE AREA IS MIDDLE PATUXENT.
 - SEWER IS PUBLIC. CONTRACT #14-4723-D. DRAINAGE AREA IS MIDDLE PATUXENT.
 - EXISTING UTILITIES ARE BASED ON FIELD SURVEY LOCATIONS, CONTRACT DRAWINGS AND HOWARD COUNTY GIS FOR OFFSITE UTILITIES.
 - THE COORDINATES SHOWN HEREON BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NOS. 508A AND 5085 WERE USED FOR THIS PROJECT.
 - STORMWATER MANAGEMENT SHOWN IS AN APPROXIMATION OF THE SIZE, SHAPE AND LOCATION. IT IS UNDERSTOOD THAT THIS SYSTEM HAS NOT BEEN DESIGNED AND THE ACTUAL DESIGN MAY CHANGE, ALTERING THE NUMBER OF UNITS ALLOCATED FOR THIS DEVELOPMENT.
 - A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
 - TRAFFIC STUDY WAS PREPARED BY MARS GROUP IN AUGUST, 2015.
 - SPEED STUDY WAS PREPARED BY MARS GROUP IN AUGUST, 2015.
 - THE FOREST STAND DELINEATION AND WETLAND DETERMINATION WAS PERFORMED BY BENCHMARK ENGINEERING, INC. DATED AUGUST 2015.
 - THERE ARE NO WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100-YEAR FLOODPLAIN OR STEEP SLOPES LOCATED ON THIS SITE.
 - THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
 - ECP-16-021 WAS SUBMITTED SIMULTANEOUSLY WITH THIS SKETCH PLAN.
 - THE FOREST CONSERVATION REQUIREMENTS FOR THIS SUBDIVISION SHALL BE ADDRESSED PRIOR TO RECORDATION OF THE FINAL SUBDIVISION PLAT AND SHALL BE PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.1200 OF THE SUBDIVISION REGULATIONS AND FOREST CONSERVATION MANUAL.
 - THE ONSITE EXISTING WELL IS TO BE PROPERLY ABANDONED. ANY ONSITE SEPTIC SYSTEMS ARE TO BE PROPERLY ABANDONED. DOCUMENTATION TO BE SENT TO THE HEALTH DEPARTMENT.
 - THIS DEVELOPMENT IS DESIGNED TO BE IN ACCORDANCE WITH SECTION 16.127 - RESIDENTIAL INFILL DEVELOPMENT - OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. THE DEVELOPER OF THIS PROJECT SHALL CREATE COMPATIBILITY WITH THE EXISTING NEIGHBORHOOD THROUGH THE USE OF ENHANCED PERIMETER LANDSCAPING, BERMS, FENCES, SIMILAR HOUSING UNIT TYPES AND THE DIRECTIONAL ORIENTATION OF THE PROPOSED HOUSES.
 - OPEN SPACE LOT 6 IS TO BE OWNED AND MAINTAINED BY HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS. OPEN SPACE LOT 7 IS TO BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
 - THE EXISTING SPECIMEN TREE LOCATED ON THE PROPERTY IS TO BE REMOVED WITH THIS DEVELOPMENT.
 - IT HAS BEEN CONFIRMED BY THE DEPARTMENT OF PLANNING AND ZONING THAT THE EXISTING ONSITE HOUSE CIRCA 1938 WILL NOT NEED TO BE PRESENTED TO THE HISTORIC PRESERVATION COMMISSION.
 - AT LEAST 10% OF THE DWELLINGS IN THIS SUBDIVISION SHALL BE MODERATE INCOME HOUSING UNITS(MIHU). ALL ONSITE RESIDENTIAL UNITS IN THIS SUBDIVISION ARE SUBJECT TO THE MIHU FEE-IN-LIEU REQUIREMENTS THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT.
 - A WAIVER PETITION TO REMOVE THE SPECIMEN TREES ONSITE WILL BE SUBMITTED WITH THE NEXT PHASE OF THIS DEVELOPMENT.
 - AS A RESULT OF THE TRAFFIC STUDY IT WAS DETERMINED THAT THE INTERSECTION OF WHISKEY BOTTOM ROAD AND ROUTE 1 WILL REQUIRE THE ADDITION OF FOUR NEW TURN-LANES. THE DEVELOPER MAY ELECT TO PROVIDE FEE-IN-LIEU OF THE IMPACTS TO THE INTERSECTION.

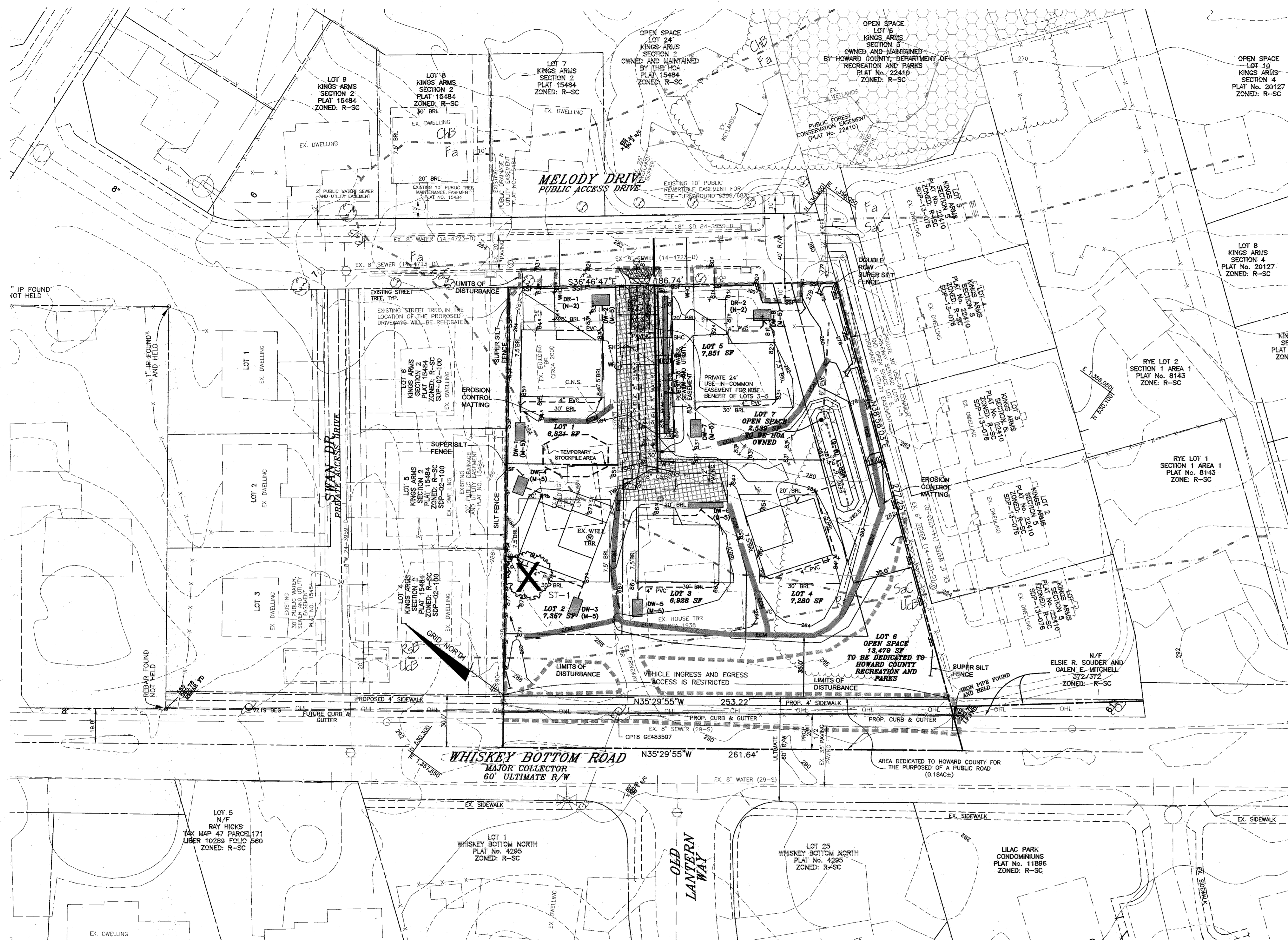
BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS

8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-8105 (F) 410-465-6644
 WWW.BE-ONLINEENGINEERING.COM

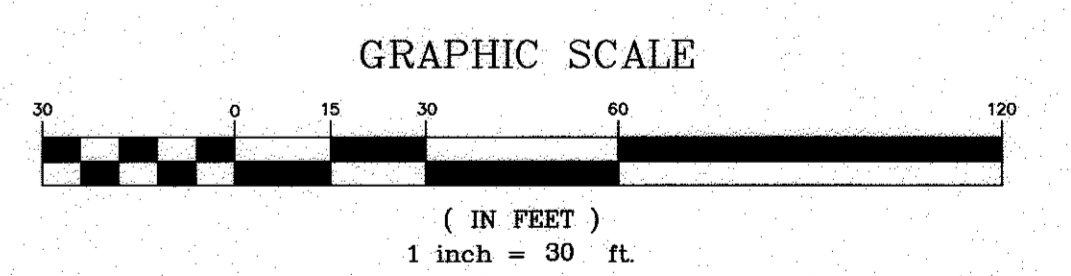
Professional Certification. I hereby certify that these documents were prepared or supervised by me or a duly licensed professional engineer or land surveyor in the State of Maryland. License No. 100601500-01-01-2017.

2-16-16

OWNER/DEVELOPER:		KINGS ARMS SECTION 6 LOTS 1-5 AND OPEN SPACE LOTS 6 & 7	
KINGS ARMS 6, LLC PO BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244		TAX MAP: 47, GRID: 22, PARCEL: 174 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND 9536 WHISKEY BOTTOM ROAD DESIGN ZONE: R-SC, DPZ FILE #: ECP-16-021, S-16-003	
ENVIRONMENTAL CONCEPT PLAN COVER AND EXISTING CONDITIONS PLAN			
DATE: FEBRUARY 2016	BEI PROJECT NO. 2714	DESIGN: JCO	DRAFT: EDD/NAF
SCALE: AS SHOWN	SHEET 1 OF 2	ECP-16-021	

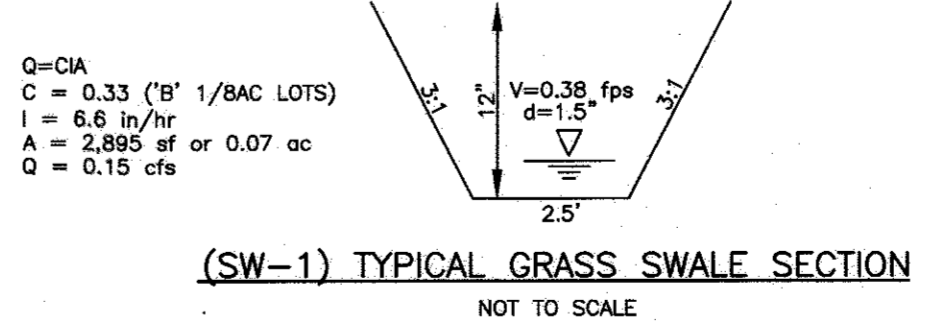


- LEGEND**
- SOILS CLASSIFICATION *UcD*
 - SOILS DELINEATION
 - EXISTING CONTOURS
 - EXISTING WOODS LINE
 - EXISTING STREET TREE
 - LIMITS OF DISTURBANCE
 - PROPOSED SLOPE
 - PROPOSED SANITARY MANHOLE
 - PROPOSED DRYWELL
 - PROPOSED GRASS SWALE
 - PROPOSED PUBLIC WATER, SEWER & UTILITY EASEMENT
 - PROPOSED MICRO BIO-RETENTION FACILITY
 - PROPOSED PRIVATE USE-IN-COMMON DRIVEWAY EASEMENT
 - SPECIMEN TREE TO BE REMOVED
 - EXISTING FENCELINE



SWM SUMMARY TABLE

D.A.	MDE Type	Pe= 1.6 inches		Qe	Af		ESDv		RV	Pe			
		Total DA	Impervious Area		Required	Provided	75% ESDv	75% ESDv					
MB 1 (M-6)		11,373	5,117	0.45	227	377	PASS	1.0	690	764	PASS	0.45	1.77
DW-1 (M-5)		752	752	1.52	NA	NA	NA	NA	95	99	NA	0.95	1.66
DW-2 (M-5)		860	860	1.52	NA	NA	NA	NA	109	117	NA	0.95	1.72
DW-3 (M-5)		752	752	1.52	NA	NA	NA	NA	95	99	NA	0.95	1.66
DW-4 (M-5)		860	860	1.52	NA	NA	NA	NA	109	117	NA	0.95	1.72
DW-5 (M-5)		752	752	1.52	NA	NA	NA	NA	95	99	NA	0.95	1.66
DW-6 (M-5)		860	860	1.52	NA	NA	NA	NA	109	117	NA	0.95	1.72
DW-7 (M-5)		752	752	1.52	NA	NA	NA	NA	95	99	NA	0.95	1.66
DW-8 (M-5)		860	860	1.52	NA	NA	NA	NA	109	117	NA	0.95	1.72
DR-1 (N-2)		506	205	0.68	205	301	NA	0.0	11	17	PASS	0.41	0.98
DR-2 (N-2)		786	331	0.70	331	435	NA	0.0	19	28	PASS	0.44	0.98
SW-1 (M-8)		2,895	1,122	0.64	58	160	PASS		154	154	PASS	0.40	1.60
Totals		19,093	13,223	1.08					1,537	1,673			
									2,091	2,230	TOTAL ESDv		



SOILS LEGEND

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ScC	B	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	0.37
RbB	C	RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES	0.24
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THERE ARE NO HYDRIC SOILS ON-SITE.
TAKEN FROM NRCS WEBSITE, MAP NO. 28

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Walter D. ...
 CHIEF, DIVISION OF LAND DEVELOPMENT
Chad ...
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DATE: 2-18-16
 DATE: 2-24-16

NOTE: Per MDE Manuals, Micro-Bioretenion, Grass Swales, Drywells and Disconnects all provide full Rev treatment when designed according to the manual. Revis fully provided in the facilities on this site.

BENCHMARK ENGINEERING, INC.
 8400 BALTIMORE NATIONAL PIKE & SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-ENGINEERING.COM

KINGS ARMS SECTION 6
 LOTS 1-5 AND OPEN SPACE LOTS 6 & 7

TAX MAP: 47, GRID: 22, PARCEL: 174
 ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND
 9536 WHISKEY BOTTOM ROAD
 DESIGN ZONE: R-SC, DPZ FILE #: ECP-16-021, S-16-003

ENVIRONMENTAL CONCEPT PLAN
 SEDIMENT & EROSION CONTROL AND STORMWATER MANAGEMENT PLAN

DEVELOPER: KINGS ARMS 6, LLC
 PO BOX 417
 ELLICOTT CITY, MARYLAND 21041
 410-465-4244

DATE: FEBRUARY 2016
 BEI PROJECT NO. 2714

DESIGN: JCO DRAFT: EDD/NAF SCALE: AS SHOWN SHEET 2 OF 2

Professional Certification: I hereby certify that these documents were prepared or supervised by me or under my direct supervision and that I am a duly licensed professional engineer in the State of Maryland, License No. 28975, expiring 09-01-2017.

2-2-16