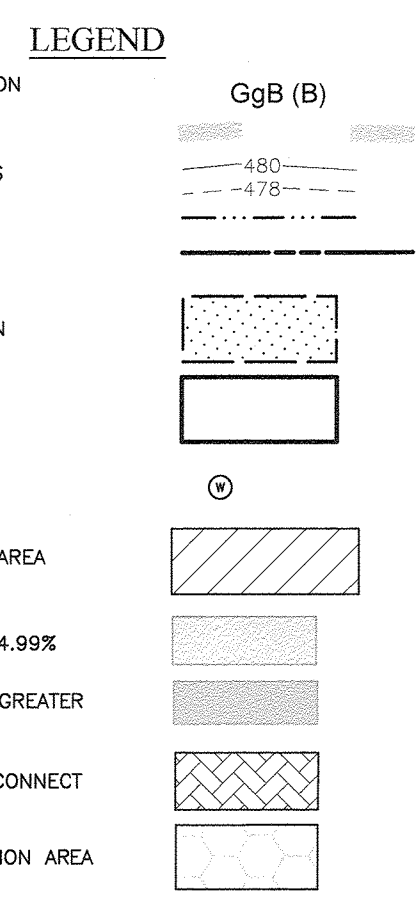
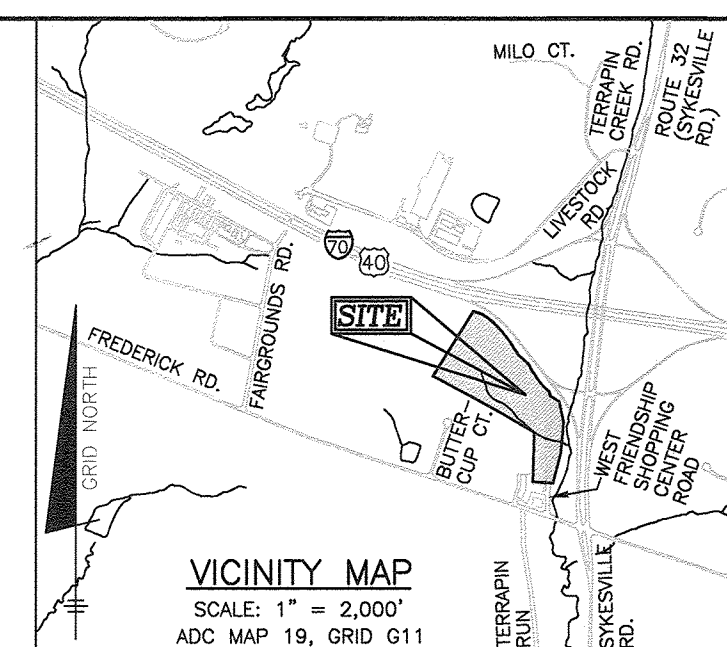


SHEET INDEX	
SHEET	TITLE
1	ENVIRONMENTAL CONCEPT PLAN COVER SHEET
2-4	ENVIRONMENTAL CONCEPT PLAN SITE LAYOUT AND GRADING PLAN
5-7	ENVIRONMENTAL CONCEPT PLAN SEDIMENT AND EROSION CONTROL PLAN AND DRAINAGE AREA MAP
8	ENVIRONMENTAL CONCEPT PLAN PERMANENT SWALE DRAINAGE AREA MAP



PROJECT:	Villas at WF	DATE:	06/16/22
Facility Summary			
Pe (LOIS):	1.45	inches	

Facility	Drainage Area	Impervious	I (%)	Rv	ESDv Req'd (cf)	Req'd Ponded Storage (75%)	Ponded Volume Provided (cf)	Req'd Stone Storage (cf)	Stone Storage Provided (cf)	Total ESDv	Pe Prov.	Rev (cf)	Notes
MBR-1 (M-6)	22,059	12,481	57%	0.56	1495	1121	1228.5	374	389	2027	1.97	389.2	
MBR-2 (M-6)	21,562	9,510	44%	0.45	1168	876	922	292	299	1528	1.90	298.5	
MBR-3 (M-6)	14,694	11,524	79%	0.76	1348	1010	1018.5	337	345	1700	1.84	344.5	
MBR-4 (M-6)	6,171	4,750	77%	0.74	556	417	485.5	139	141	793	2.08	140.8	
MBR-5 (M-6)	12,495	8,086	65%	0.63	958	718	740.5	239	246	1234	1.87	246.2	
MBR-6 (M-6)	7,552	3,494	46%	0.47	427	320	327.5	107	108	545	1.86	108.5	
MBR-7 (M-6)	7,283	3,920	54%	0.53	472	354	357.5	118	125	602	1.85	125.0	
MBR-8 (M-6)	14,212	8,820	62%	0.61	1048	786	842	282	301	1424	1.98	300.9	
MBR-9 (M-6)	20,413	2,995	15%	0.18	451	338	586	113	138	920	2.97	138.4	
MBR-10 (M-6)	16,233	10,752	66%	0.65	1271	963	1385.5	318	111	1958	2.24	0.0	Lined
MBR-11 (M-6)	12,228	7,168	58%	0.54	862	647	841.5	216	75	1330	2.24	0.0	Lined
MBR-12 (M-6)	9,762	7,168	73%	0.71	841	631	783	210	240	1284	2.22	240.0	
MBR-13 (M-6)	12,845	8,960	70%	0.68	1055	791	912	264	288	1504	2.07	288.0	
BR-1 (F-6)	44,676	15,403	34%	0.38	1951	1463	1540	488	516	2669	1.91	516	
BR-2 (F-6)	34,203	13,699	40%	0.410	1702	1276	1355	429	429	2208	1.89	429	
TOTALS	128,731				18603	13406	13406	3750	21625			3565	

Facility	Drainage Area	Impervious	I (%)	Rv	ESDv Req'd (cf)	Req'd Ponded Storage (75%)	Stone Storage Provided (cf)	Pe Prov.	Rev (cf)	Notes	
SGW-1 (M-2)	24,014	16,117	67%	0.65	1904	1428	1531	0	2942	1.56	598.8
SSF-1 (F-1)	69,507	54,107	78%	0.75	6324	4743	5108	1215	6324	1.45	224.0
TOTALS		70,224			8227	6640			8355		823

Facility	Impervious Area (SF)	Drainage Area (SF)	Volumetric Runoff	ESDv Required (CF)	Length (ft)	Width (ft)	Depth (ft)	Volume CF	Rev Provided (CF)	Full ESDv Provided?
DW-1 (M-5)	980	980	0.95	112.84	10.00	10.00	5.00	200	200.0	yes
DW-2 (M-5)	980	980	0.95	112.84	10.00	10.00	5.00	200	200.0	yes
DW-3 (M-5)	980	980	0.95	112.84	10.00	10.00	5.00	200	200.0	yes
DW-4 (M-5)	896	896	0.95	103.17	15.00	5.00	5.00	150	150.0	yes
DW-5 (M-5)	896	896	0.95	103.17	8.00	8.00	5.00	128	128.0	yes
DW-6 (M-5)	896	896	0.95	103.17	8.00	8.00	5.00	128	128.0	yes
DW-7 (M-5)	896	896	0.95	103.17	8.00	8.00	5.00	128	128.0	yes
DW-8 (M-5)	896	896	0.95	103.17	8.00	8.00	5.00	128	128.0	yes
DW-9 (M-5)	980	980	0.95	112.84	8.00	8.00	5.00	128	128.0	yes
DW-10 (M-5)	980	980	0.95	112.84	8.00	8.00	5.00	128	128.0	yes
DW-11 (M-5)	980	980	0.95	112.84	8.00	8.00	5.00	128	128.0	yes
DW-12 (M-5)	980	980	0.95	112.84	8.00	8.00	5.00	128	128.0	yes
DW-13 (M-5)	980	980	0.95	112.84	8.00	8.00	5.00	128	128.0	yes
DW-14 (M-5)	946	946	0.95	108.93	8.00	8.00	5.00	128	128.0	yes
TOTALS	13295							2030.0	2030.0	

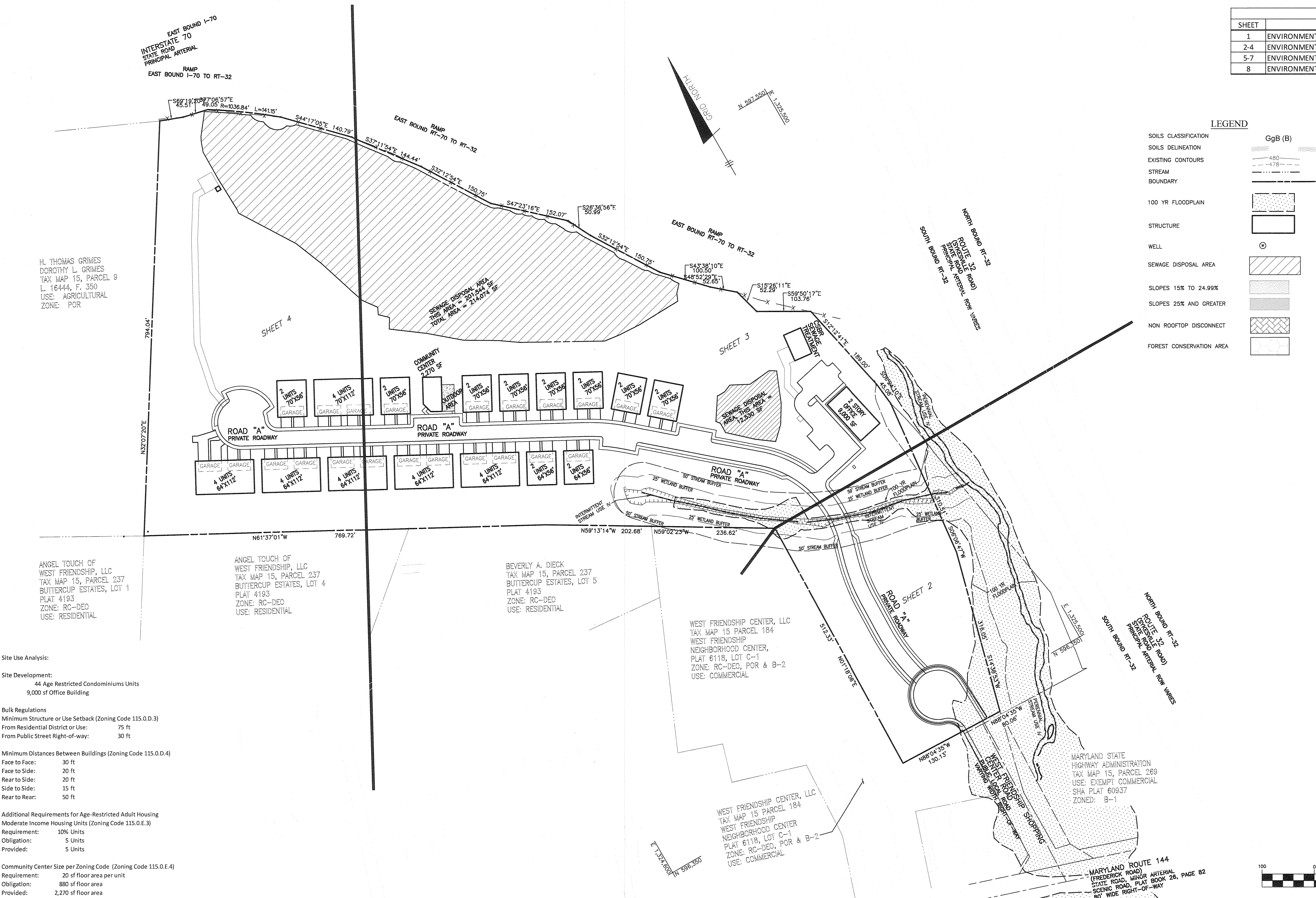
Facility	Impervious Area (SF)	Drainage Area (SF)	Volumetric Runoff	ESDv Required (CF)	Contrib. Per Length (ft)	Contrib. Imp. Length (ft)	Disconnection Length (ft)	Ratio	Pe Treated (inches)	Volume Provided (CF)
NR-1 (N-2)	1446	9785	0.18	217	63	21	21	0.3	0.6	90
TOTALS	1446			217						90

The total ESDv provided by this design is: 32110 CF  
 The total Rev provided by this design is: 6507 CF  
 Micro-Bioretention facilities within the 100' well radius must be provided with an impermeable liner.

\*The ESDv summary table portrays storage in excess of that required for Environmental Site Design requirements.

Use	Flow	Quantity	Discharge
Bedroom	150 per Bedroom/Day	100 bedrooms	15,000 GPD
Clubhouse	5 Occupant/Day	44 occupants	220 GPD
Office	0.09 per sf/Day	9,000 sf	810 GPD
<b>Total Obligation:</b>			<b>16,030 GPD or</b>
<b>Multi-use Area Obligation:</b>			<b>213,733.3 sf</b>
<b>Available Sewage Disposal Area:</b>	214,074 sf	Sufficient Area	
<b>Allowable Discharge per Discharge Permit 14-DP-3598:</b>	23,709 GPD		
<b>Proposed Discharge:</b>	16,030 GPD	Below Permit Limit	

Site Analysis Data Sheet	
<b>Gross Area</b>	<b>22.32 ac</b>
100yr Floodplain	0.61 ac
Slopes 15% to 24.99%	1.67 ac
Slopes 25% or greater	0.13 ac
Slopes 20% or greater	0.66 ac
Wetlands (outside of floodplain)	0.05 ac
Wetlands Buffer (outside of floodplain)	0.49 ac
Stream	565 ft
Stream Buffer (outside floodplain)	1.10 ac
Forested Area	0.00 ac
Erodible Soils	8.77 ac
Limit of Disturbance (inc. Rights-of-Way)	13.55 ac
Impervious Area	5.11 ac
Green Space (within LOD)	8.44 ac



**Site Use Analysis:**  
 44 Age Restricted Condominiums Units  
 9,000 sf Office Building

**Bulk Regulations**  
 Minimum Structure or Use Setback (Zoning Code 115.0.D.3)  
 From Residential District or Use: 75 ft  
 From Public Street Right-of-way: 30 ft

**Minimum Distances Between Buildings (Zoning Code 115.0.D.4)**  
 Face to Face: 30 ft  
 Rear to Side: 20 ft  
 Rear to Rear: 20 ft  
 Side to Side: 15 ft  
 Rear to Rear: 50 ft

**Additional Requirements for Age-Restricted Adult Housing**  
 Moderate Income Housing Units (Zoning Code 115.0.E.3)  
 Requirement: 10% Units  
 Obligation: 5 Units  
 Provided: 5 Units

**Community Center Size per Zoning Code (Zoning Code 115.0.E.4)**  
 Requirement: 20 sf floor area per unit  
 Obligation: 880 sf floor area  
 Provided: 2,270 sf floor area

**Open Space (Zoning Code 115.0.E.5)**  
 Requirement: 20% Gross Area  
 Site Area: 22.32 ac  
 Obligation: 4.46 ac  
 Provided: 5.00 ac

**Off-Street Parking and Loading Facilities**  
 ARAH Parking Requirement:  
 Requirement: 2 P.S./dwelling unit  
 Obligation: 88 P.S.  
 Provided: 176 P.S.  
 2 parking spaces/unit in garage  
 2 parking spaces/unit in driveway

**Overflow Parking:**  
 Requirement: 0.5 P.S./dwelling unit  
 Obligation: 22 P.S.  
 Provided: 31 P.S.  
 Handicap P.S. Provided: 2 P.S.

**Office Parking Requirement:**  
 Requirement: 3.3 P.S./1,000 sf  
 Obligation: 30 P.S.  
 Provided: 30 P.S.  
 Handicap P.S. Provided: 2 P.S.

**NOTES:**

- EXISTING ZONING: POR, DEED REFERENCE: 20123/ 0001
- SITE ANALYSIS DATA:
  - A. TOTAL AREA OF SITE: 22.32 ac.
  - B. EXISTING IMPERVIOUS AREA: 0.07 ac.
  - C. EXISTING GREEN AREA: 22.25 ac.
  - D. EXISTING FORESTED AREA: 0.00 ac.
  - E. EXISTING SITE USE: FIELD AND PAVEMENT
  - F. SLOPES: 15% TO 24.99% 1.67 ac.
  - G. 20% OR GREATER 0.66 ac.
  - H. 25% OR GREATER 0.13 ac.
  - I. HIGHLY ERODIBLE SOILS 8.77 ac.
  - J. AREA OF PLAN SUBMISSION: 22.32 ac.
  - K. LIMIT OF DISTURBANCE: 13.55 ac.
  - L. IMPERVIOUS AREA: 5.11 ac.
  - M. REVEGETATED AREA: 8.44 ac.
  - N. PROPOSED USE: 44 AGE RESTRICTED ADULT HOUSING ATTACHED DWELLING UNITS, ONE OFFICE BUILDING
  - O. PREVIOUS SUBMITTAL: ECP-20-008
  - P. THIS LOT WILL UTILIZE A CUSTOM SEDIMENT AND EROSION PLAN.
- STORMWATER MANAGEMENT FOR THIS PROPOSAL IS PROVIDED WITH THE APPROVAL OF THE ENVIRONMENTAL CONCEPT PLAN AND MAY BE REVISED WITH THE FINAL PLANS, SITE DEVELOPMENT PLANS, & BUILDING PERMIT.
- THERE ARE NO EXISTING DWELLINGS ON THIS SITE.
- TO THE BEST OF OUR KNOWLEDGE AND BELIEF THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES ON-SITE.
- THE FOREST CONSERVATION PLAN AND ASSOCIATED FOREST STAND DELINEATION WILL BE REVIEWED FOR COMPLIANCE WITH THE FOREST CONSERVATION ACT AT THE SUBDIVISION PLAN, SITE DEVELOPMENT PLAN OR GRADING PERMIT PLAN STAGES. FOREST CONSERVATION OBLIGATION FOR THIS LOT IS 3.3 ACRES OF AFFORESTATION.
- 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.
- IT IS ANTICIPATED THAT THIS DEVELOPMENT WILL NEED WAIVERS FOR THE PRIVATE ROAD CROSSING A 100-YEAR FLOODPLAIN. ADDITIONALLY, THE STREAM CROSSING WILL HAVE AN ESSENTIAL DISTURBANCE REQUEST PROCESSED. DESIGN MANUAL WAIVER MAY BE NECESSARY FOR CENTERLINE RADII FOR THE ROADWAY.
- IT IS ANTICIPATED THAT MES OR DPW WILL BE THE CONTROLLING AUTHORITY FOR THE SEWAGE DISPOSAL SYSTEM.

**STORMWATER MANAGEMENT DESIGN NARRATIVE:**

**SUMMARY**

ENVIRONMENTAL SITE DESIGN, ESD, IS PROVIDED BY FULFILLING THE REQUIREMENTS OF CHAPTER 501 OF THE 2008 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II, REVISED MAY, 2009, AND CHAPTER 5 OF VOLUME I OF THE HOWARD COUNTY DESIGN MANUAL.

THE DEVELOPMENT OF THIS SITE WILL INCLUDE SEVERAL STRATEGIES TO FULFILL THE DESIGN MANUALS. THESE PRACTICES INCLUDE:

**NATURAL RESOURCE PROTECTIONS:**

- USE OF EXISTING DISCHARGE LOCATIONS.
- TECHNIQUES FOR REDUCED IMPERVIOUS COVER.
- INTEGRATION OF SEDIMENT CONTROL INTO THE STORMWATER PLAN;
- USE OF ESD PRACTICES AND METHODS.

**NATURAL RESOURCES PROTECTIONS:**

- SPECIMEN TREES ARE PRESENT. SPECIMEN TREES WILL BE SHOWN ON THE PLAN AND THEIR CRITICAL ROOT ZONE WILL BE PROTECTED. SPECIMEN TREES WILL NOT BE CLEARED.
- FLOODPLAIN AREA IS PRESENT ON SITE AND WILL BE DELINEATED AND PLACED IN A PROTECTIVE EASEMENT. THE FLOODPLAIN WILL BE IMPACTED FOR THE ROADWAY CROSSING.
- WETLANDS AND WETLAND BUFFERS EXISTING ON SITE AND WILL BE DELINEATED FOR PROTECTION. THE WETLANDS ARE TO BE INCLUDED WITHIN THE FLOODPLAIN EASEMENT AREA. THE WETLAND AND THEIR BUFFERS WILL BE IMPACTED FOR THE ROADWAY CROSSING.
- INTERMITTENT STREAM AND A STREAM BUFFER EXIST ON SITE AND WILL BE DELINEATED FOR THEIR PROTECTION. THE STREAM AND STREAM BUFFER WILL BE IMPACTED FOR THE ROADWAY CROSSING OF THE INTERMITTENT STREAM.
- STEEP SLOPES EXISTING ON SITE AND WILL BE SHOWN ON THE PLANS. THE STEEP SLOPE AREA IS LESS THAN 10,000 SF AND WILL BE GRADED AND STABILIZED IN ACCORDANCE WITH THE MANUAL.
- THIS DEVELOPMENT CREATES AN AFFORESTATION OBLIGATION THAT WILL BE MET ON SITE. THE AREA OF AFFORESTATION IS PROVIDED IN THE STREAM BUFFER, WETLAND BUFFER, FLOODPLAIN, AREAS OF MODERATE SLOPES AND ADJACENT TO PRIORITY AREAS.

**USE OF EXISTING DISCHARGE LOCATIONS:**

EXISTING FLOW PATTERNS SHALL BE MAINTAINED UNDER ULTIMATE CONDITIONS. THREE DISCHARGE LOCATIONS HAVE BEEN IDENTIFIED: THE INTERMITTENT STREAM FLOWING ACROSS THE EASTERN BOUNDARY LINE, SHEET FLOW TO THE EASTERN BOUNDARY LINE AND

THE SOUTHERN BOUNDARY LINE AT WEST FRIENDSHIP SHOPPING CENTER ROAD. THESE THREE DISCHARGE LOCATIONS ARE RANKED IN THIS ORDER BY THE DRAINAGE AREA TO THE DISCHARGE LOCATION. THESE THREE DISCHARGE AREAS ARE USED FOR THE DEVELOPED CONDITIONS DRAINAGE AREAS.

THE HEAD OF THE INTERMITTENT STREAM RECEIVES FLOW FROM A LARGE OFF-SITE AREA AND SEVERAL BEST MANAGEMENT PRACTICES THAT DISCHARGE INTO A SWALE. SEVERAL BEST MANAGEMENT PRACTICES THAT TREAT THE PRIVATE ROADWAY ARE ACCUMULATED IN A STORM DRAIN SYSTEM THAT DISCHARGES JUST BELOW THE ROADWAY CROSSING AND INTO THE INTERMITTENT STREAM.

SEVERAL BEST MANAGEMENT PRACTICES AND A LARGE BY-PASS AREA DISCHARGE AT THE EASTERN BOUNDARY LINE NEAR THE INTERMITTENT STREAM DEPARTURE LOCATION. ONE BEST MANAGEMENT PRACTICE AND SHEET FLOW AREAS DEPART THE SITE ALONG THE EASTERN BOUNDARY.

THE PUBLIC CUL-DE-SAC, SOME OF THE PRIVATE ROADWAY DRAINAGE AND AN OFFSITE AREAS DISCHARGE INTO THE EXISTING STORM DRAIN WITHIN WEST FRIENDSHIP SHOPPING CENTER ROAD. THE EXISTING STORM DRAIN HAS A DISCHARGE POINT INTO THE EXISTING FLOODPLAIN THAT RUNS PARALLEL TO WEST FRIENDSHIP SHOPPING CENTER ROAD.

MOST DRAINAGE FLOW FROM PAVEMENT SURFACES SHALL EXIT THE PROPERTY AT THE SAME GENERAL LOCATION AS IT DOES UNDER EXISTING CONDITIONS. MOST IMPERVIOUS FLOW IS DIRECTED TO BEST MANAGEMENT PRACTICES PRIOR TO DISCHARGE FROM THE SITE. A PORTION OF THE CUL-DE-SAC TERMINATION OF WEST FRIENDSHIP SHOPPING CENTER ROAD CANNOT BE TREATED DUE TO THE LOCATION OF THE FLOODPLAIN AND LIMITATIONS ON THE OWNERSHIP WITHIN THAT AREA. THERE IS EXISTING IMPERVIOUS COVER WITHIN THE EFFECTIVE AREA THAT IS CURRENTLY THE TERMINATION OF WEST FRIENDSHIP SHOPPING CENTER ROAD.

TECHNIQUES FOR REDUCED IMPERVIOUS COVER:

DESIGN METHODS WERE UTILIZED TO CURTAIL THE PROPOSED IMPERVIOUS COVER. THE ROADWAY IS NO LONGER THAN NECESSARY. THE CONDOMINIUMS ARE LOCATED CLOSE TO THE ROADWAY ALLOWING PARKING WITHIN THE DRIVEWAY BUT LITTLE ADDITIONAL IMPERVIOUS AREA. NO SHARED DRIVEWAYS ARE UTILIZED, MAXIMIZING THE USE OF THE MAIN ROADWAY WITHOUT INCREASING THE LENGTH. PARKING SPACES ARE DESIGNED TO BE NEAR THE REQUIRED MINIMUM. A TWO-STORY OFFICE BUILDING IS UTILIZED INSTEAD OF A ONE-STORY BUILDING WITH TWICE THE IMPERVIOUS FOOTPRINT. A 12 DRIVEWAY IS PROVIDED TO THE SEWAGE DISPOSAL AREA HEADWORKS INSTEAD OF EXTENDING THE ROADWAY TO THAT LOCATION. THESE ARE ALL DESIGN CONSIDERATIONS THAT REDUCE THE

IMPERVIOUS AREAS.

INTEGRATION OF SEDIMENT CONTROL INTO THE STORMWATER PLAN:

SEDIMENT AND EROSION CONTROL SHALL BE PROVIDED BY A CUSTOM PLAN THAT WILL BE REVIEWED BY HOWARD SOIL CONSERVATION DISTRICT. A SCHEMATIC CONCEPT IS SHOWN WITHIN THIS PLAN SET. IT IS ANTICIPATED THAT IT WILL CONSIST MAINLY OF SILT FENCES, SUPER SILT FENCES, DIVERSION PRACTICES, TEMPORARY TRAPS AND BASINS. A STABILIZED CONSTRUCTION ENTRANCE AT THE PUBLIC ROADWAY ACCESS. EROSION CONTROL MATTING SHALL BE USED FOR SWALES IF NECESSARY. THE LOCATION OF THE BASINS AND TEMPORARY TRAPS ARE TO COINCIDE WITH LOCATION OF STORMWATER MANAGEMENT PRACTICES. THE DRAINAGE AREAS ARE DESIGNED TO DRAIN TO THESE LOCATIONS DURING SITE DISTURBANCE TO ALLOW FOR SETTLING OF SEDIMENT. THE DRAINAGE AREAS ARE DESIGNED TO FLOW TO THE MICRO-SCALE PRACTICES AFTER CONSTRUCTION TO ALLOW FOR STORMWATER TREATMENT. THE STORMWATER MANAGEMENT DESIGN AND SEDIMENT CONTROLS ARE DESIGNED TO UTILIZE THE SAME NATURAL DISCHARGE LOCATIONS AND THE SAME LOCATION.

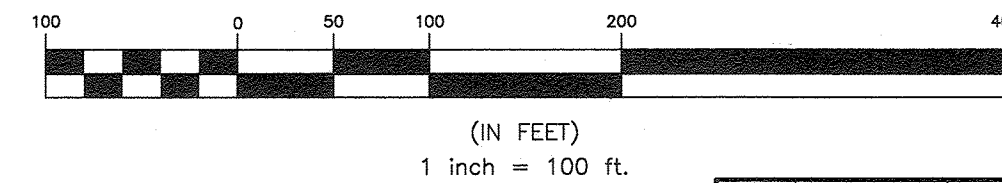
USE OF ESD PRACTICES AND METHODS:

THE TARGET PE IS 1.45%. THE TARGET ESDV IS 20.21 CF. THE PROVIDED ESDV BY BEST MANAGEMENT PRACTICES SHOWN ON THIS CONCEPT PLAN IS 32,110 CF.

THE REQUIRED REV VOLUME IS 2,322 CF. THE REV PROVIDED BY THIS DESIGN IS 6,507 CF. FULL GROUNDWATER RECHARGE IS PROVIDED.

THE LOCATION OF THE FOREST CONSERVATION EASEMENTS WILL INCLUDE AREAS OF PRIORITY AFFORESTATION. THE EASEMENTS WILL BE ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO NEW IMPERVIOUS WILL BE ALLOWED WITHIN THE EASEMENT AREAS. THE ROADWAY CROSSING IS DESIGNED TO BE A MINIMUM AREA OF IMPERVIOUS NESS WITHIN THE STREAM BUFFER. THE IMPERVIOUS COVER DRAINS TO MICROSCALE PRACTICES.

THE AREA OF THE PERMANENT TERMINATION OF WEST FRIENDSHIP SHOPPING CENTER ROAD IS NOT TREATED DUE TO THE LOCATION OF THE FLOODPLAIN. ADDITIONALLY, THE DEVELOPER DOES NOT CONTROL THE LAND THAT IS NOT FLOODPLAIN. FOR THE EFFECTIVE AREA THE AMOUNT OF IMPERVIOUS BEING TREATED IS 96%. THE 4% OF IMPERVIOUS NOT BEING TREATED IS COMPENSATED FOR BY MBR 1 AND MBR 2 PROVIDING AN ADDITIONAL 1,558 CF OF ESDV STORAGE ABOVE THE AMOUNT REQUIRED BY THEIR DRAINAGE AREAS. THEREFORE, THIS PROJECT CAN BE CONSIDERED TO BE TREATED TO THE MAXIMUM EXTENT PRACTICAL.



**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

CHIEF, DIVISION OF LAND DEVELOPMENT

DATE: 8/1/22

NO.	DATE	REVISION

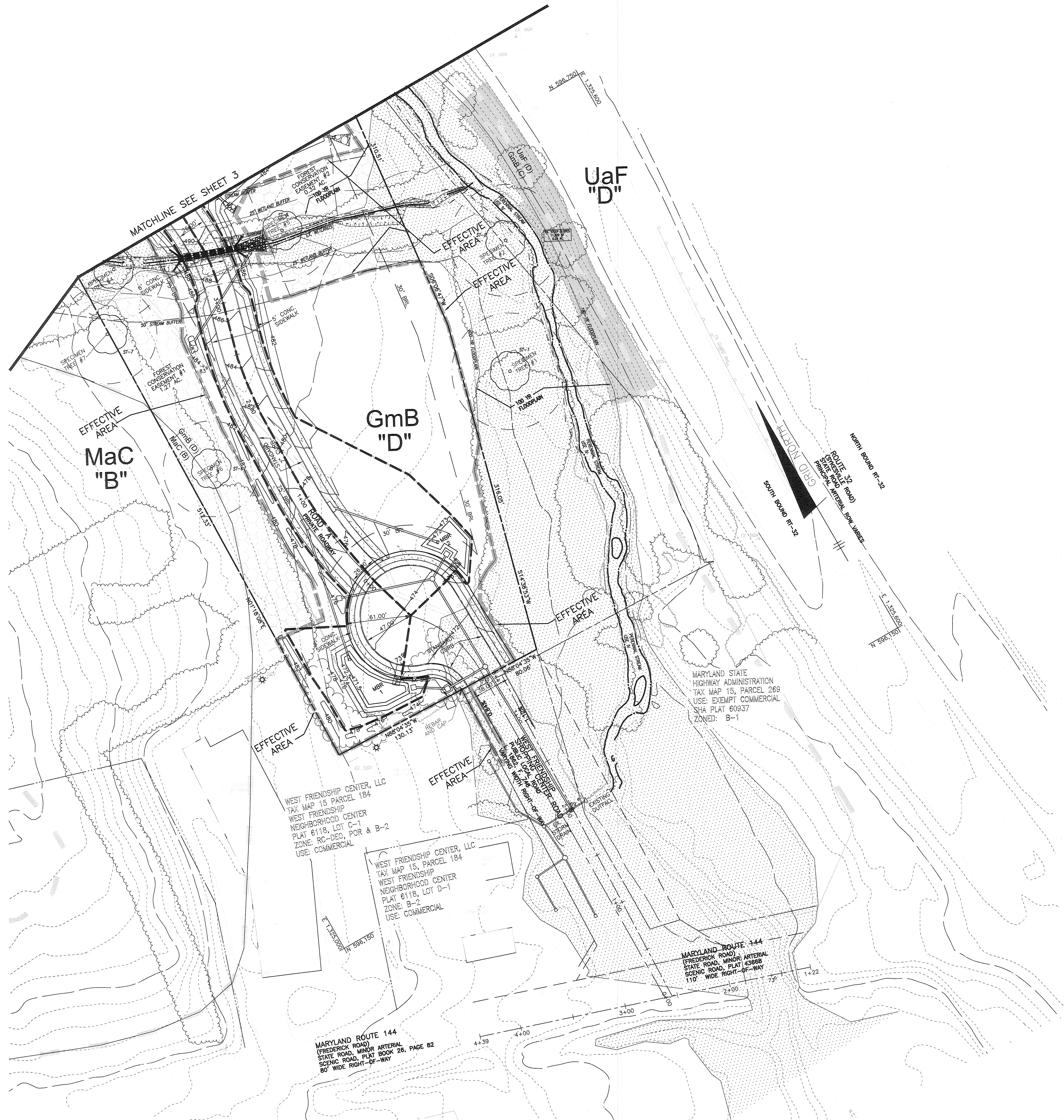
**BENCHMARK ENGINEERING, INC.**  
 ENGINEERS & SURVEYORS & PLANNERS  
 3300 NORTH ROUTE 404 SUITE 140 A ELLICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CIVILENGINEERING.COM

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. 45571, Expiration Date: 06-30-2024.

**7/22/22**

<b>OWNER:</b> WAH FAMILY HOLDINGS, LLC 1 W. PENNSYLVANIA AVENUE SUITE 900 TOWSON, MD 21204	<b>THE VILLAS AT WEST FRIENDSHIP</b> PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE TAX MAP 15, GRID: 11, PARCEL: 14 ZONED: POR THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
<b>DEVELOPER:</b> ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELKRDGE, MD 21075 410-579-2442	<b>ENVIRONMENTAL CONCEPT PLAN COVER SHEET</b> DATE: JULY, 2022 BEI PROJECT NO. 3053
<b>DESIGN:</b> JC <b>DRAFT:</b> JC	SCALE: AS SHOWN SHEET 1 OF 8





**LEGEND**

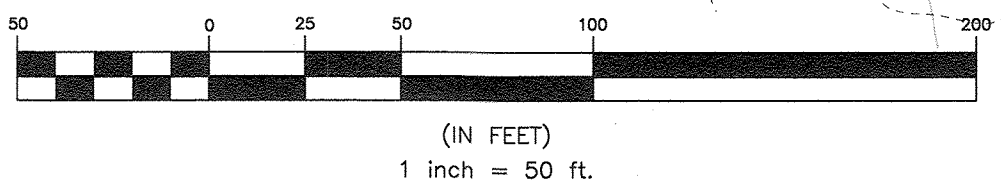
SOILS CLASSIFICATION	GgB (B)
SOILS DELINEATION	---
EXISTING CONTOURS	-480- -478-
STREAM	---
BOUNDARY	---
100 YR FLOODPLAIN	[Pattern]
STRUCTURE	[Outline]
WELL	⊙
SEWAGE DISPOSAL AREA	[Hatched]
SLOPES 15% TO 24.99%	[Pattern]
SLOPES 25% AND GREATER	[Pattern]
NON ROOFTOP DISCONNECT	[Pattern]
FOREST CONSERVATION AREA	[Pattern]

APPROVED: DEPARTMENT OF PLANNING AND ZONING

8/1/22  
DATE

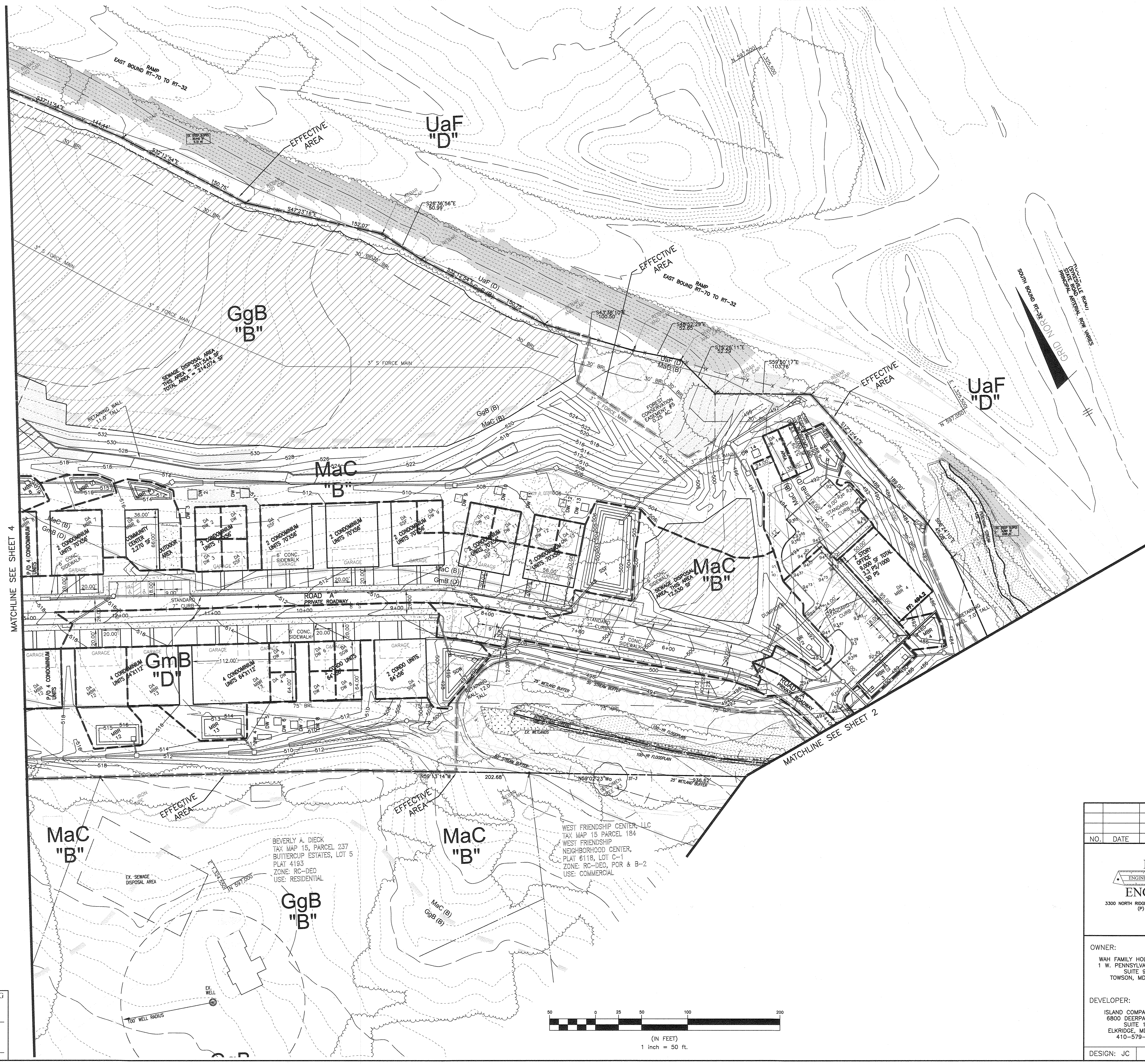
1/22  
DATE

1 inch = 50 ft.



NO.	DATE	REVISION
<p><b>BENCHMARK ENGINEERING, INC.</b> ENGINEERS &amp; LAND SURVEYORS &amp; PLANNERS 3300 NORTH RIDGE ROAD &amp; SUITE 140 A ELICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-8644 WWW.BEI-CIVILENGINEERING.COM</p>		<p>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. 45577, Expiration 12/31/2024.</p> <p><i>John M. Carlin</i> Professional Engineer</p>
OWNER:	<p><b>THE VILLAS AT WEST FRIENDSHIP</b> PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE</p>	
DEVELOPER:	<p>TAX MAP: 15, GRID: 11, PARCEL: 14 ZONED: POR THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	
ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELKBRIDGE, MD 21075 410-579-2442	<p><b>ENVIRONMENTAL CONCEPT PLAN</b> <b>SITE LAYOUT AND GRADING PLAN</b></p>	
DESIGN: JC	DRAFT: JC	<p>DATE: JULY, 2022 BEI PROJECT NO. 3053 SCALE: AS SHOWN SHEET 2 OF 8</p>





**LEGEND**

SOILS CLASSIFICATION	GgB (B)
SOILS DELINEATION	---
EXISTING CONTOURS	---450---
STREAM	---
BOUNDARY	---
100 YR FLOODPLAIN	---478---
STRUCTURE	---
WELL	⊙
SEWAGE DISPOSAL AREA	---
SLOPES 15% TO 24.99%	---
SLOPES 25% AND GREATER	---
NON ROOFTOP DISCONNECT	---
FOREST CONSERVATION AREA	---

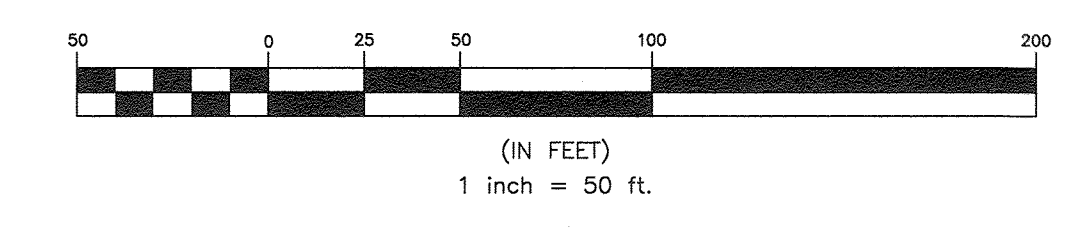
APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHEF, DIVISION OF LAND DEVELOPMENT

DATE: 01/22

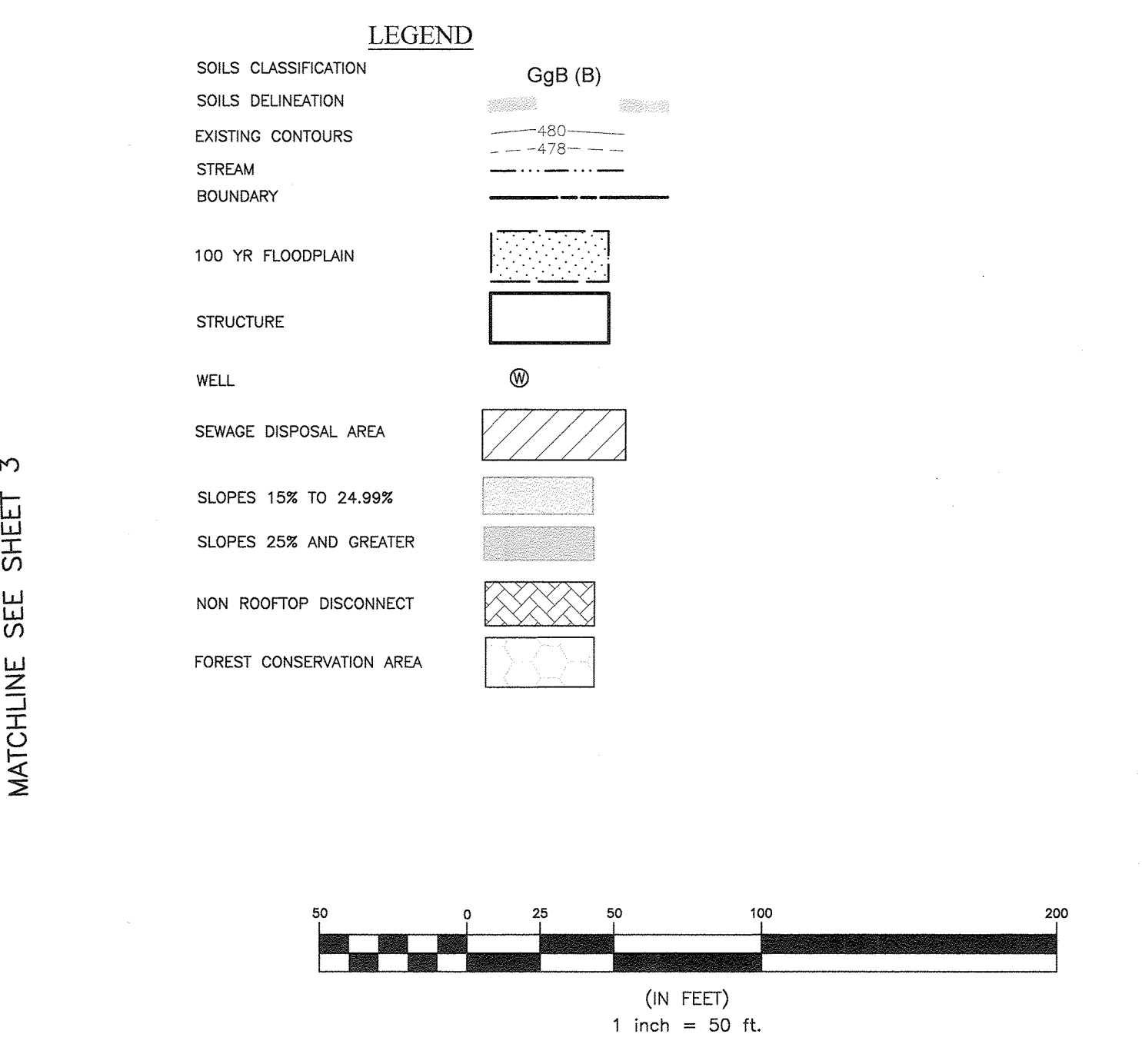
CHEF, DEVELOPMENT ENGINEERING DIVISION

DATE: 01/22



NO.	DATE	REVISION
<b>BENCHMARK ENGINEERING, INC.</b> ENGINEERS & LAND SURVEYORS & PLANNERS 3300 NORTH RIDGE ROAD SUITE 140 A ELICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM		
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. 43577, Expiration 12/31/2024.		
OWNER:	<b>THE VILLAS AT WEST FRIENDSHIP</b> PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE TAX MAP: 15, GRID: 11, PARCEL: 14 ZONED: POR THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
DEVELOPER:	ENVIRONMENTAL CONCEPT PLAN SITE LAYOUT AND GRADING PLAN	
DESIGN: JC	DRAFT: JC	DATE: JULY, 2022
SCALE: AS SHOWN	BEI PROJECT NO. 3053	SHEET 3 OF 8





NO.	DATE	REVISION
<b>BENCHMARK ENGINEERING, INC.</b> <small>3300 NORTH RIDGE ROAD &amp; SUITE 140 A ELICOTT CITY, MARYLAND 21043          (P) 410-465-6105 (F) 410-465-6644          WWW.BB-CIVILENGINEERING.COM</small>		
OWNER: WAH FAMILY HOLDINGS, LLC 1 W. PENNSYLVANIA AVENUE SUITE 300 TOWSON, MD 21204		<b>THE VILLAS AT WEST FRIENDSHIP</b> PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE TAX MAP: 15, GRID: 11, PARCEL: 14 ZONED: POR THRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DEVELOPER: ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELKRIDGE, MD 21075 410-579-2442		<b>ENVIRONMENTAL CONCEPT PLAN</b> <b>SITE LAYOUT AND GRADING PLAN</b>
DESIGN: JC	DRAFT: JC	DATE: JULY, 2022 SCALE: AS SHOWN BEI PROJECT NO. 3053 SHEET 4 OF 8

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 8/1/22

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 8/1/22



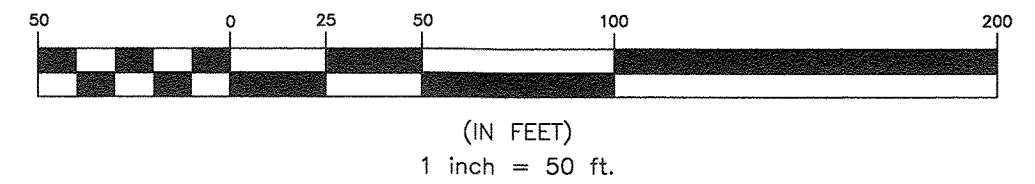
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND				
SYMBOL	HYDRIC	HYDROLOGIC GROUP		Kw
GgA		B	GLENELG LOAM, 0 TO 3 PERCENT SLOPES	0.37
GgB		B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.37
GmB*	YES	D	GLENEVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	0.55
MaC		B	MANOR LOAM, 8 TO 15 PERCENT SLOPES	0.32
UaF		D	UDORTHERTS, HIGHWAY, 0 TO 65 PERCENT	

\*\* HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.  
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

LEGEND	
SOILS CLASSIFICATION	GgB (B)
SOILS DELINEATION	---
EXISTING CONTOURS	-480- -478-
STREAM	---
BOUNDARY	---
100 YR FLOODPLAIN	---
STRUCTURE	---
WELL	⊕
SEWAGE DISPOSAL AREA	---
NON ROOFTOP DISCONNECT	---
FOREST CONSERVATION AREA	---
SLOPES 20% AND GREATER	---
LIMIT OF DISTURBANCE	---
EARTH DIKE	---
SUPER SILT FENCE	---
SILT FENCE	---
STABILIZATION MATTING	---
GABION OUTLET SEDIMENT TRAP	---
STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
GABION INFLOW PROTECTION	---
PERMANENT DRAINAGE AREA	---
TEMPORARY DRAINAGE AREA	---
MOUNTABLE BERM	---
PERIMETER DIKE/SWALE INLET PROTECTION	---



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 8/1/22



NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
 3300 NORTH RIDGE ROAD SUITE 140A ELICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CIVILENGINEERING.COM

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. 45777, Expiration Date: 08-08-2024.

*Signature*  
 7/22/22

OWNER: WAH FAMILY HOLDINGS, LLC 1 W. PENNSYLVANIA AVENUE SUITE 900 TOWSON, MD 21204	<b>THE VILLAS AT WEST FRIENDSHIP</b> PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE TAX MAP: 15, GRID: 11, PARCEL: 14 ZONED: POR THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DEVELOPER: ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELKBRIDGE, MD 21075 410-579-2442	<b>ENVIRONMENTAL CONCEPT PLAN          SEDIMENT AND EROSION CONTROL PLAN          AND DRAINAGE AREA MAP</b> DATE: JULY, 2022    BEI PROJECT NO. 3053 SCALE: AS SHOWN    SHEET 5 OF 8



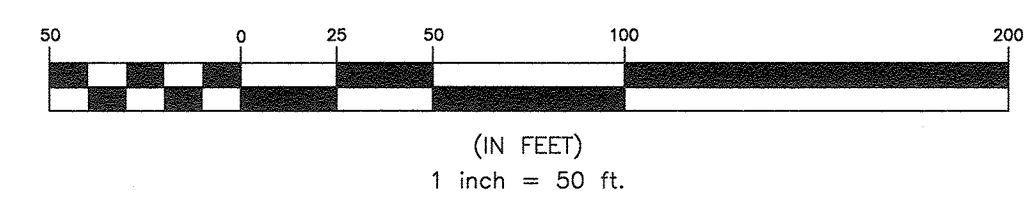
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND			
SYMBOL	HYDRIC	HYDROLOGIC GROUP	Kw
GgA		B	0.37
GgB		B	0.37
GmB*	YES	D	0.55
MaC		B	0.32
UaF		D	0.32

\*\* HIGHLY ERODIBLE, K<0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.  
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

LEGEND	
SOILS CLASSIFICATION	GgB (B)
SOILS DELINEATION	---
EXISTING CONTOURS	--- 480 --- --- 478 ---
STREAM	---
BOUNDARY	---
100 YR FLOODPLAIN	---
STRUCTURE	---
WELL	⊙
SEWAGE DISPOSAL AREA	---
NON ROOFTOP DISCONNECT	---
FOREST CONSERVATION AREA	---
SLOPES 20% AND GREATER	---
LIMIT OF DISTURBANCE	---
EARTH DIKE	---
SUPER SILT FENCE	SF
SILT FENCE	SF
STABILIZATION MATTING	---
GABION OUTLET SEDIMENT TRAP	---
STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
GABION INFLOW PROTECTION	---
PERMANENT DRAINAGE AREA	---
TEMPORARY DRAINAGE AREA	---
MOUNTABLE BERM	---
PERIMETER DIKE/SWALE	---
INLET PROTECTION	---



APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 8/1/22  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 8/1/22



NO. DATE REVISION	
<b>BENCHMARK ENGINEERING, INC.</b> <small>3300 NORTH RIDGE ROAD SUITE 140 &amp; ELLICOTT CITY, MARYLAND 21043        (P) 410-465-6105 (F) 410-465-8644        WWW.BEI-CIVILENGINEERING.COM</small>	
<small>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. 43577, Expiration Date 06/30/24.</small> 	
OWNER: WAH FAMILY HOLDINGS, LLC 1 W. PENNSYLVANIA AVENUE SUITE 900 TOWSON, MD 21204	<b>THE VILLAS AT WEST FRIENDSHIP</b> PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE TAX MAP: 15, GRID: 11, PARCEL: 14 ZONED: POR THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DEVELOPER: ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELK RIDGE, MD 21075 410-579-2442	<b>ENVIRONMENTAL CONCEPT PLAN          SEDIMENT AND EROSION CONTROL PLAN          AND DRAINAGE AREA MAP</b> DATE: JULY, 2022 BEI PROJECT NO. 3053 SCALE: AS SHOWN SHEET 6 OF 8
DESIGN: JC DRAFT: JC	SCALE: AS SHOWN SHEET 6 OF 8





SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND				
SYMBOL	HYDRIC	HYDROLOGIC GROUP		Kw
GgA		B	GLENELG LOAM, 0 TO 3 PERCENT SLOPES	0.37
GgB		B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	0.37
GmB*	YES	D	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	0.55
MaC		B	MAJOR LOAM, 8 TO 15 PERCENT SLOPES	0.32
UaF		D	UDORTMENTS, HIGHWAY, 0 TO 66 PERCENT	

\* HIGHLY ERODIBLE, K<0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.  
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

**LEGEND**

- SOILS CLASSIFICATION: GgB (B)
- SOILS DELINEATION: 480, 475
- EXISTING CONTOURS: 480, 475
- STREAM BOUNDARY: [Symbol]
- 100 YR FLOODPLAIN: [Symbol]
- STRUCTURE: [Symbol]
- WELL: [Symbol]
- SEWAGE DISPOSAL AREA: [Symbol]
- NON ROOFTOP DISCONNECT: [Symbol]
- FOREST CONSERVATION AREA: [Symbol]
- SLOPES 20% AND GREATER: [Symbol]
- LIMIT OF DISTURBANCE: [Symbol]
- EARTH DIKE: [Symbol]
- SUPER SILT FENCE: [Symbol]
- SILT FENCE: [Symbol]
- STABILIZATION MATING: [Symbol]
- GABION OUTLET SEDIMENT TRAP: [Symbol]
- STABILIZED CONSTRUCTION ENTRANCE WITH BERM: [Symbol]
- GABION INFLOW PROTECTION: [Symbol]
- PERMANENT DRAINAGE AREA: [Symbol]
- TEMPORARY DRAINAGE AREA: [Symbol]
- MOUNTABLE BERM: [Symbol]
- PERIMETER DIKE/SWALE INLET PROTECTION: [Symbol]

(IN FEET)  
1 inch = 50 ft.

MATCHLINE SEE SHEET 6

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 8/1/22

CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 8/1/22

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
3300 NORTH RIDGE ROAD SUITE 140 A ELLICOTT CITY, MARYLAND 21143  
(P) 410-465-6105 (F) 410-465-8644  
WWW.BEI-CIVILENGINEERING.COM

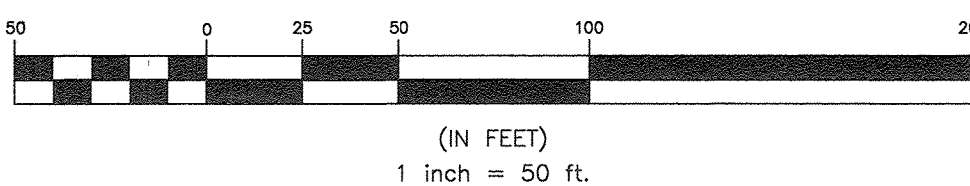
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expires 07/24/2024.

[Signature] 7/22/22

STATE OF MARYLAND PROFESSIONAL ENGINEER

OWNER: WAH FAMILY HOLDINGS, LLC 1 W. PENNSYLVANIA AVENUE SUITE 900 TOWSON, MD 21204	THE VILLAS AT WEST FRIENDSHIP PARCEL 'A' AGE RESTRICTED HOUSING AND OFFICE TAX MAP: 15, GRID: 11, PARCEL: 14 ZONED: POR THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DEVELOPER: ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELKRIDGE, MD 21075 410-579-2442	ENVIRONMENTAL CONCEPT PLAN SEDIMENT AND EROSION CONTROL PLAN AND DRAINAGE AREA MAP DATE: JULY, 2022 BEI PROJECT NO. 3053
DESIGN: JC DRAFT: JC	SCALE: AS SHOWN SHEET 7 OF 8





APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 8/1/22  
DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 8/1/22  
DATE

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
3300 NORTH RIDGE ROAD SUITE 140 A ELICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BE-CIVILENGINEERING.COM

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. 45371, Expiration 06-06-2024.

*[Signature]*  
7/22/22  
PROFESSIONAL ENGINEER

<p>OWNER: WAH FAMILY HOLDINGS, LLC 1 W. PENNSYLVANIA AVENUE SUITE 900 TOWSON, MD 21204</p>	<p><b>THE VILLAS AT WEST FRIENDSHIP</b>        PARCEL 'A'        AGE RESTRICTED HOUSING AND OFFICE</p>
<p>DEVELOPER: ISLAND COMPANIES, LLC 6800 DEERPATH ROAD SUITE 100 ELK RIDGE, MD 21075 410-579-2442</p>	<p>TAX MAP: 15, GRID: 11, PARCEL: 14        ZONED: POR        THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>
<p>DATE: JULY, 2022        SCALE: AS SHOWN</p>	<p>ENVIRONMENTAL CONCEPT PLAN        PERMANENT SWALE DRAINAGE AREA        MAP</p> <p>BEI PROJECT NO. 3053        SHEET 8 OF 8</p>