

MPEA SITE IMPROVEMENTS

HOWARD COUNTY, MARYLAND

CAPITAL PROJECT NO. N-3965

ENVIRONMENTAL CONCEPT PLAN ECP-14-031

ENVIRONMENTAL SITE DESIGN/SWM NARRATIVE

THE SITE WAS EVALUATED FOR STORMWATER MANAGEMENT, AS REQUIRED BY THE STORMWATER MANAGEMENT ACT OF 2007 AND THE HOWARD COUNTY DESIGN MANUAL VOLUME I. THESE REGULATIONS REQUIRE THAT ENVIRONMENTAL SITE DESIGN (ESD) BE IMPLEMENTED TO THE MAXIMUM EXTENT POSSIBLE FOR EVERY NEW PROJECT. ENVIRONMENTAL SITE DESIGN IS A SITE DESIGN STRATEGY TO:

- OPTIMIZE CONSERVATION OF NATURAL FEATURES.
- MINIMIZE IMPERVIOUS SURFACES.
- SLOWING DOWN RUNOFF TO MAINTAIN DISCHARGE TIMING AND INCREASE INFILTRATION AND EVAPOTRANSPIRATION.
- USING OTHER NONSTRUCTURAL PRACTICES AND INNOVATIVE TECHNOLOGIES AS APPROVED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE).

BY IMPLEMENTING ESD, THE ULTIMATE GOAL IS TO MAINTAIN THE RUNOFF CHARACTERISTICS OF THE SITE TO MIMIC PREDEVELOPMENT WOODS IN GOOD CONDITIONS.

IN THIS PROJECT, THE OVERALL EXISTING DRAINAGE AREAS ARE MOSTLY MAINTAINED TO NATURAL DRAINAGE CONDITIONS. THE LIMIT OF DISTURBANCE IS MINIMIZED BY PLACING ESD PRACTICES INSIDE THE TURN-AROUND AREA AND ARE UTILIZED TO THE MAXIMUM EXTENT POSSIBLE. PAVEMENT WIDTHS ARE REDUCED WHERE POSSIBLE. ALTERNATIVE SURFACES ARE BEING USED FOR THE ROADWAY AND ARE SIZED TO HANDLE THE EXPECTED TRAFFIC LOADING OF THE SITE. NO STRUCTURAL STORMWATER MANAGEMENT FACILITIES ARE REQUIRED. HOWARD COUNTY DEPARTMENT OF PARKS AND RECREATION WILL MAINTAIN ALL OF THE PROPOSED ESD PRACTICES.

THE SITE HAS BEEN DESIGNED TO ALLOW SHEET FLOW TO MIMIC EXISTING CONDITIONS DRAINAGE PATTERNS. INLET 1-4 IS ADDED TO ENSURE THE A-2 PERVIOUS CONCRETE FACILITIES CAN BE PROPERLY SIZED BY BYPASSING EXISTING OFFSITE DRAINAGE FROM THE NORTH UNDER THE SITE AND OUTFALL TO THE SOUTH. ONCE WATER IS THROUGH THIS STORM DRAIN, IT WILL DISPERSE AND SHEET FLOW TO THE STREAM TO THE SOUTH TO MIMIC EXISTING CONDITIONS.

THE WET MEADOW HAS BEEN PROVIDED FOR EDUCATION PURPOSES AS WELL AS TO ENSURE WATER IS OUTFALLEN IN A NON-EROSIVE MANNER. TRADITIONAL RIP-RAP IS ALSO PROVIDED AT THE OUTFALL OF THE PROPOSED PIPE WITHIN THE WET MEADOW. ALTHOUGH THE WET MEADOW MAY HELP TO REDUCE THE ENVIRONMENTAL IMPACT ASSOCIATED WITH THE SITE DEVELOPMENT, NO ESD OR STORMWATER MANAGEMENT CREDIT OF ANY KIND HAS BEEN TAKEN INTO ACCOUNT FROM THE WET MEADOW WITHIN THE PROVIDED ESD/SWM CALCULATIONS.

THE ENTRANCE TO THE SITE MEETS ALL HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARDS. THE ENTRANCE AND ROADWAY ARE LOCATED TO MINIMIZE DISTURBANCE TO EXISTING NATURAL FEATURES SUCH AS FOREST AREAS, STREAM BUFFERS AND WETLAND AREAS. A STREAM BUFFER WAIVER WILL BE REQUIRED FOR THE IMPACTS TO THE STREAM BUFFER.

EROSION AND SEDIMENT CONTROLS ARE PROVIDED THROUGH A USE OF A STABILIZED CONSTRUCTION ENTRANCE, SUPER SILT FENCE, SILT FENCE, INLET PROTECTION, TREE PROTECTION FENCE, AND TEMPORARY STONE OUTLET STRUCTURES. THE AREA DISTURBED FOR EROSION AND SEDIMENT CONTROL IS INCORPORATED INTO THE STORMWATER MANAGEMENT DESIGN.

THE SITE WILL MAXIMIZE THE USE OF ESD PRACTICES BY INCORPORATING A M-6 MICRO-BIORETENTION AREA, A-2 PERVIOUS CONCRETE, AND M-1 RAINWATER HARVESTING (RAIN BARRELS) WHERE ALLOWABLE. NON-STRUCTURAL PRACTICES SUCH AS N-1 DISCONNECTION OF ROOFTOP RUNOFF WILL BE USED FOR IMPERVIOUS AREAS THAT AREN'T ABLE TO BE CAPTURED BY THE MICRO-SCALE ESD PRACTICES.

TO SIZE THE ESD PRACTICES, RCN VALUES ARE DETERMINED BASED ON A SITE AREA'S LAND USE OF WOODS IN GOOD CONDITION. PE TARGETS ARE THEN ESTABLISHED FROM THE VALUES SET IN TABLE 5.3 OF THE ENVIRONMENTAL SITE DESIGN CRITERIA. A TARGET ESD VOLUME IS THEN CALCULATED FOR THE DRAINAGE AREA BASED ON THE PE AND THE PROPOSED SITE IMPERVIOUS.

INDIVIDUAL ESD PRACTICES ARE THEN LOCATED WITHIN THE DRAINAGE AREA AND SIZED BASED ON THE DRAINAGE AREA AND IMPERVIOUS AREA FLOWING TO THE PRACTICE. THE TOTAL OF THE ESD VOLUMES CAPTURED BY EACH ESD PRACTICE WITHIN THE DRAINAGE AREA SHOULD MEET THE TARGET ESD VOLUME INITIALLY CALCULATED FOR THE ENTIRE DRAINAGE AREA.

BY MEETING ESD VOLUMES, WATER QUALITY VOLUME (WQV) AND RECHARGE VOLUME (REV) AND CHANNEL PROTECTION VOLUME (CPV) ARE SATISFIED.

FOR THIS PROJECT, A TOTAL OF 10 INDIVIDUAL ESD PRACTICES ARE PROPOSED: 1 M-6 MICRO-BIORETENTION FACILITY, 8 SEPARATE A-2 PERVIOUS CONCRETE AREAS, AND 1 N-1 DISCONNECTION OF ROOFTOP RUNOFF AREA.

STREAM BUFFER DISTURBANCES ARE NECESSARY DUE TO THE REQUIRED ROAD ALIGNMENTS. A WAIVER FOR THE DISTURBANCE IS REQUIRED. DISTURBANCES TO THE FOREST AREAS AND STEEP SLOPES ARE MINIMIZED WHERE POSSIBLE.

GENERAL NOTES

1. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN DOES NOT CONSTITUTE ANY APPROVAL OF SUBSEQUENT SUBDIVISION OR SITE DEVELOPMENT PLANS. ADDITIONAL PLAN COMMENTS MAY BE PROVIDED UPON THE REVIEW OF THE APPLICABLE DEVELOPMENT PLANS IN ACCORDANCE WITH THE LAND DEVELOPMENT AND ZONING REGULATIONS.
2. ALL FOREST CONSERVATION REQUIREMENTS SHALL BE MET BY FEE IN LIEU.

WAIVERS REQUIRED FOR DEVELOPMENT

1. STREAM BUFFER WAIVER PETITION (WP-14-052).

LEGEND

EXISTING	PROPOSED	DESCRIPTION
145	145	CONTOUR
X 145.50	145.50	SPOT ELEVATION
12"RCP	12"SD	STORM DRAIN
8" WATER	8" W	WATER
6" SAN	6" SAN	SANITARY SEWER
---	---	UNDERGROUND ELECTRIC
---	---	UNDERGROUND TELEPHONE
---	---	CONCRETE CURB AND GUTTER
---	---	FENCE
X	---	BUILDING
---	---	GRAVEL PAVEMENT
---	---	ASPHALT PAVEMENT
---	---	ROADWAY PERVIOUS CONCRETE
---	---	PARKING PERVIOUS CONCRETE
---	---	CONCRETE SIDEWALK
□	□	STORM DRAIN INLET
⊙	⊙	STORM DRAIN MANHOLE
△	△	STORM DRAIN END SECTION
---	---	STORM DRAIN ENDWALL
○	○	RAIN BARREL
---	---	EVERGREEN TREE
---	---	DECIDUOUS TREE
---	---	WOODSLINE/CLEARING LIMITS
---	---	RIPRAP
---	---	STREAM
---	---	100' STREAM BUFFER
---	---	SURVEY TRAVERSE MONUMENT
---	---	LIMIT OF DISTURBANCE
---	---	PROPERTY LINE
---	---	35' SCENIC ROADS BUFFER
---	---	EASEMENT LINE
⊙ SW-1	---	SOIL BORING LOCATION
---	---	REMOVE TREES
---	---	REMOVE GRAVEL ROADWAY
---	---	15-24.9% SLOPES
---	---	>25% SLOPES

SITE ANALYSIS DATA CHART*

TOTAL PROPERTY AREA: 502.57 AC
 AREA OF PLAN SUBMISSION: 2.34 AC
 LIMIT OF DISTURBED AREA: 2.34 AC
 PROPOSED IMPERVIOUS COVER: 0.72 AC

PRESENT ZONING DESIGNATION: NT & R-20, PER THE COMPREHENSIVE ZONING PLAN, EFFECTIVE OCTOBER 8, 2013

EXISTING/PROPOSED USES: TRAILHEAD - FOR INDIVIDUALS TO PARK AND GATHER PRIOR TO ENTERING THE PARK.

FLOOR SPACE:
 STORAGE BUILDING: 1520 SF;
 COMFORT STATION: 302 SF

PARKING SPACES PROVIDED: 36 SPACES,
 2 HANDICAP (38 TOTAL)

AREA OF RIGHT OF WAY: 0.00 AC
 AREA OF WETLANDS/BUFFER: N/A
 AREA OF FLOODPLAINS/BUFFER: N/A
 AREA OF STREAM BUFFER IMPACT: 0.80 AC
 AREA OF STEEP SLOPES >15%: 0.71 AC
 AREA OF ERODIBLE SOILS: 1.86 AC
 AREA OF GREEN OPEN SPACE: 1.62 AC

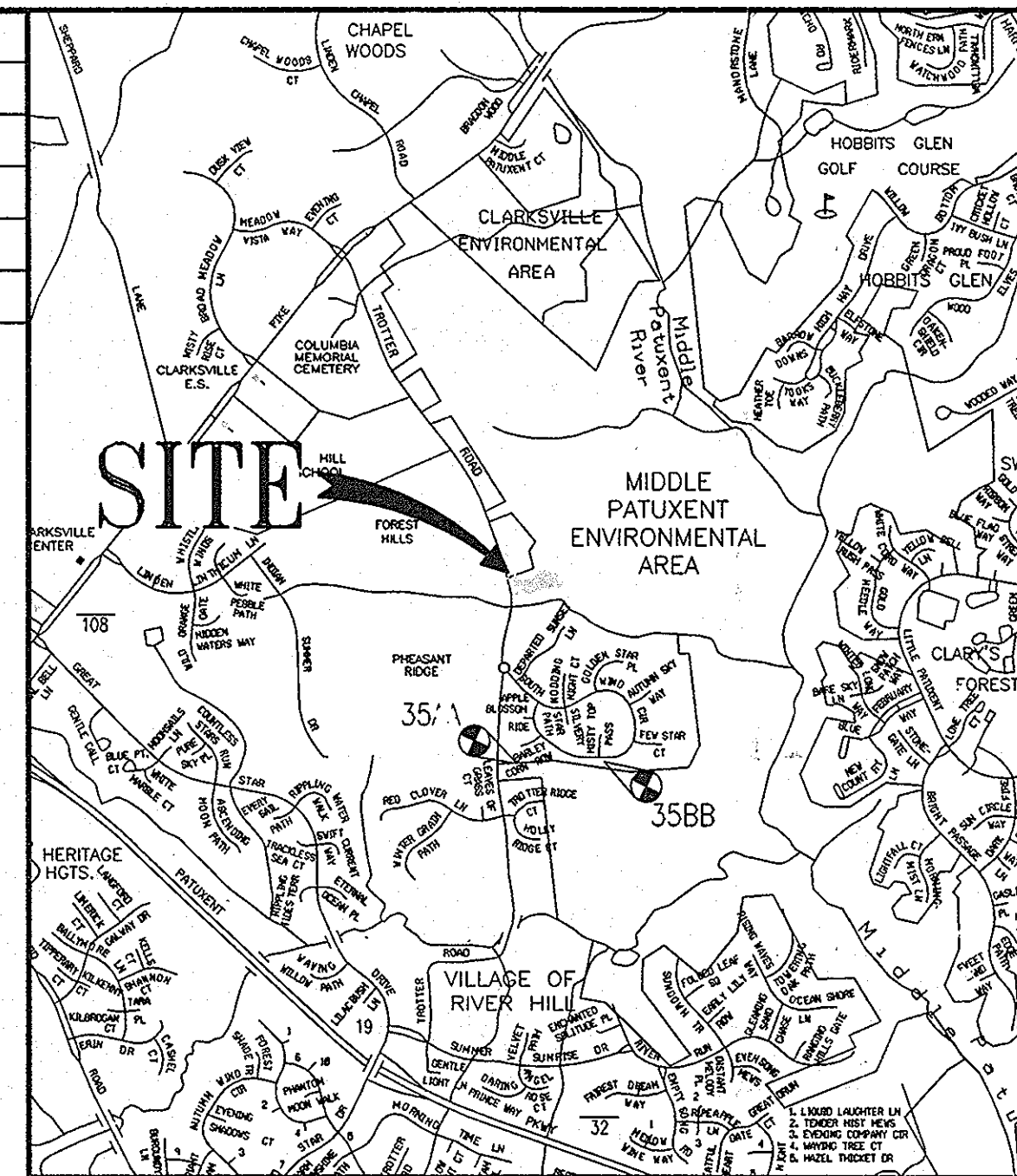
APPLICABLE DPZ FILE NUMBERS: WP-14-052, FDP PHASE 201-A
 MIDDLE PATUXENT ENVIRONMENTAL AREA (APPROVED 5/6/1999)

*NOTE: THIS PLAN AND ALL AREAS IN THIS SITE ANALYSIS DATA CHART ARE WITHIN THE 2.34 ACRES THAT THIS SUBMISSION COVERS, NOT THE ENTIRE 502.57 ACRE PROPERTY.

REVISIONS	

BENCHMARK DATA

35BB: N 560790.4269, E 1336537.22, ELEV. 394.26
 35AA: N 560767.698, E 1335483.835, ELEV. 430.96

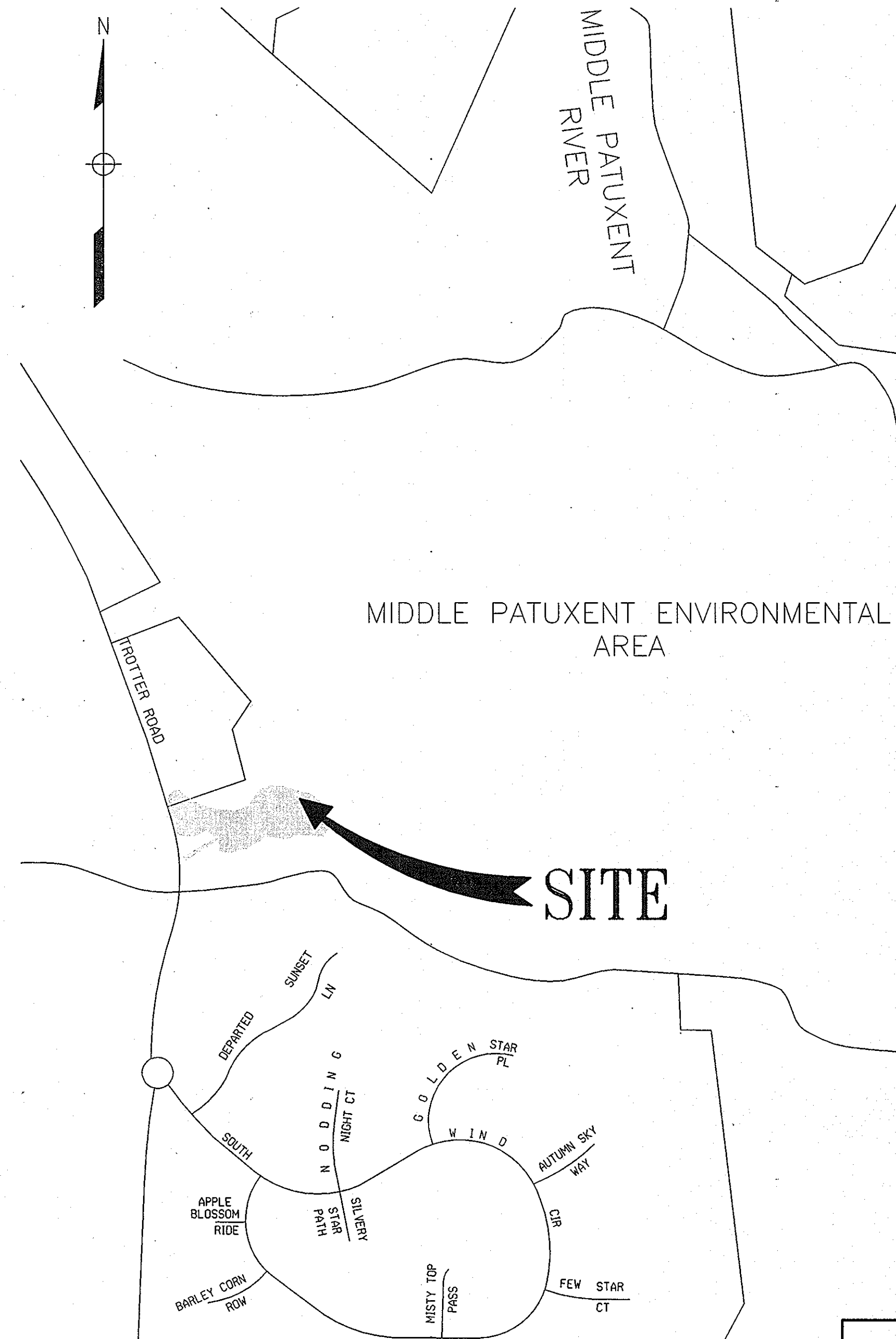


ADC MAP: 4934
 GRID: D8

VICINITY MAP
 1" = 2000'

LIST OF DRAWINGS

1. ESD0.1 COVER SHEET
2. ESD1.1 GRADING AND STORMWATER MANAGEMENT PLAN
3. ESD1.2 EROSION AND SEDIMENT CONTROL PLAN
4. ESD1.3 OVERALL DRAINAGE AREA MAP
5. ESD1.4 STORMWATER DRAINAGE AREA MAP



LOCATION MAP

1" = 400'

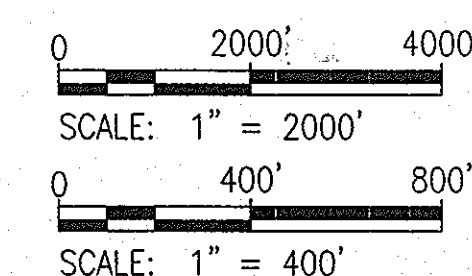
ADDRESS CHART	
PARCEL #	STREET ADDRESS
512/427	STORAGE BUILDING: 5795 TROTTER ROAD

OWNER:	DEVELOPER:	PERMIT INFORMATION CHART			
HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS 7120 OAKLAND MILLS ROAD COLUMBIA, MD 21046 ATTN: MR. RAUL DELERME VOICE 410-313-4689 FAX 410-313-4646	HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 9250 BENDIX ROAD COLUMBIA, MD 21045 ATTN: MR. TOM AUFEUNG VOICE 410-313-6142 FAX 410-313-6161	WATER CODE: PRIVATE	SEWER CODE: PRIVATE	BUILDING: N/A	PARCEL 512/427
PROJECT NAME: MPEA SITE IMPROVEMENTS		SECTION/AREA N/A	CENSUS TRACT 6055.01		
L/F 4718/06 4718/41	GRID #3.2	ZONING NT & R-20	TAX MAP BLOCK 35	ELEC. DIST. N/A	05

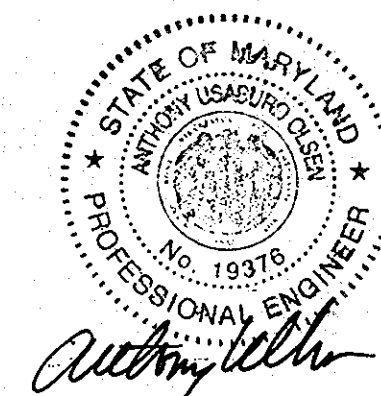


WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Carolina Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

GRAPHIC SCALES



SIGNATURE



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. 19376
 EXPIRATION DATE: 02/22/2015

MPEA SITE IMPROVEMENTS

COVER SHEET

Drawing No.

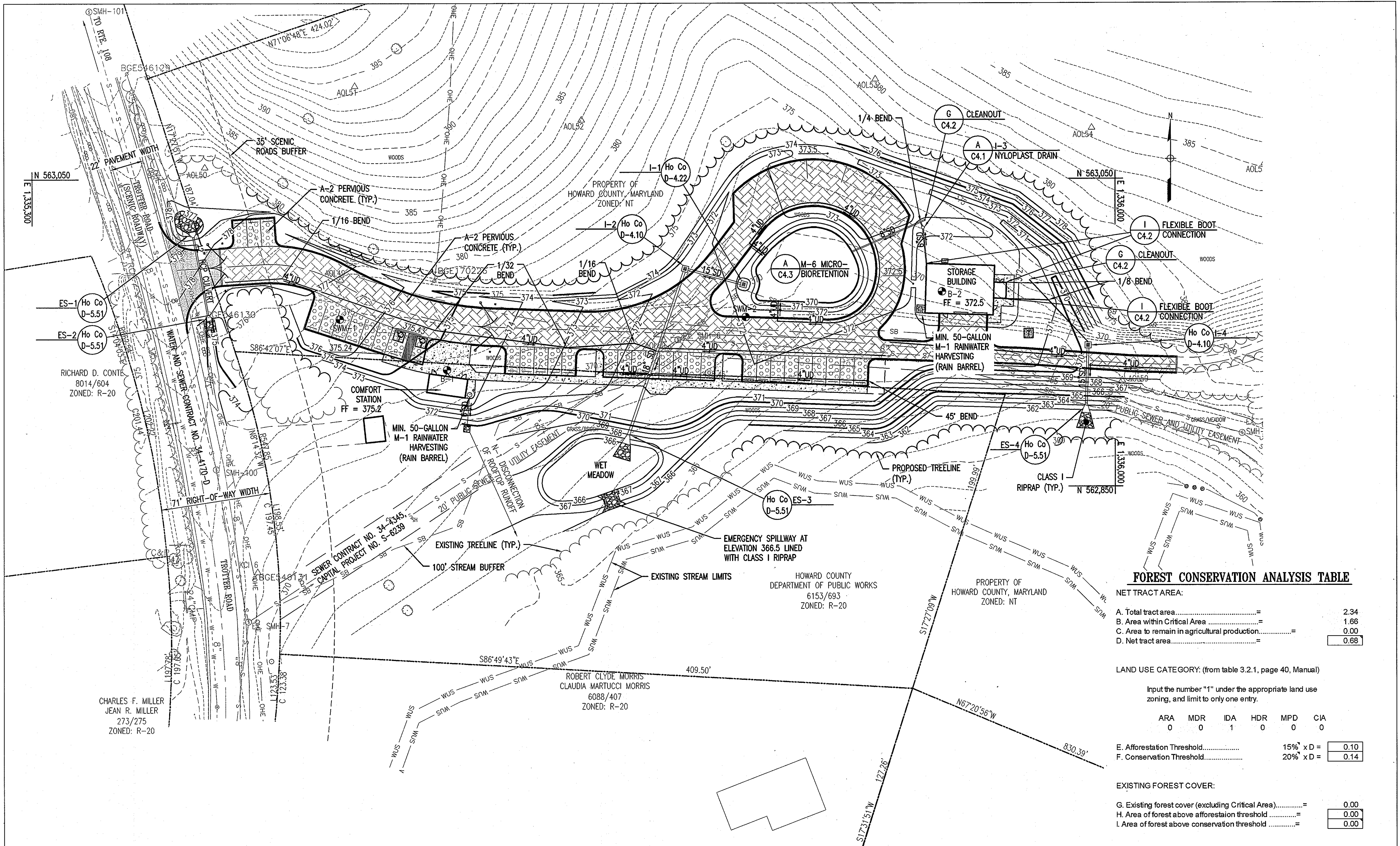
ESD0.1

Scale: AS SHOWN

Date: 11/20/2013 Sheet 1 of 5

Des: BWJ Drawn: SAD Check: AUO

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 Chief, Division of Land Development



REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

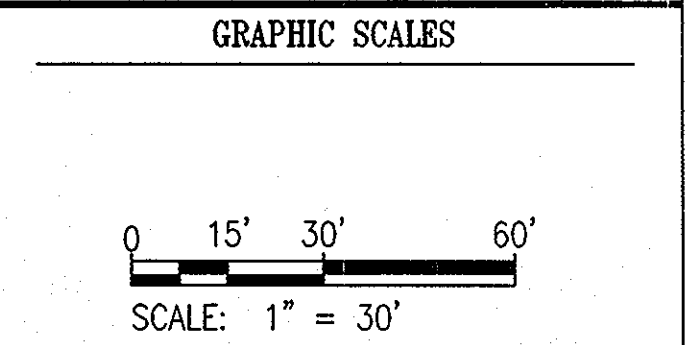
DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



FOREST CONSERVATION ANALYSIS TABLE

NET TRACT AREA:

A. Total tract area.....	=	2.34
B. Area within Critical Area.....	=	1.66
C. Area to remain in agricultural production.....	=	0.00
D. Net tract area.....	=	0.68

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CIA
0	0	1	0	0	0

E. Afforestation Threshold.....	15% x D =	0.10
F. Conservation Threshold.....	20% x D =	0.14

EXISTING FOREST COVER:

G. Existing forest cover (excluding Critical Area).....	=	0.00
H. Area of forest above afforestation threshold.....	=	0.00
I. Area of forest above conservation threshold.....	=	0.00

BREAK EVEN POINT:

J. Forest retention above threshold with no mitigation.....	=	0.00
K. Clearing permitted without mitigation.....	=	0.00

PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared.....	=	0.00
M. Total area of forest to be retained.....	=	0.00

PLANTING REQUIREMENTS:

N. Reforestation for clearing above conservation threshold...=	0.00
P. Reforestation for clearing below conservation threshold...=	0.00
Q. Credit for retention above conservation threshold.....=	0.00
R. Total reforestation required.....=	0.00
S. Total afforestation required.....=	0.10
T. Total reforestation and afforestation required.....=	0.10

FOREST STAND ANALYSIS TABLE

TREE #	SPECIES	SIZE (inches)	CONDITION
1	TULIP POPLAR (<i>LIRIODENDRON TULIPIFERA</i>)	30 dbh	GOOD
2	WHITE OAK (<i>QUERCUS ALBA</i>)	33 dbh	GOOD
3	SCARLET OAK (<i>QUERCUS COCCINEA</i>)	37 dbh	GOOD
4	SCARLET OAK (<i>QUERCUS COCCINEA</i>)	33 dbh	POOR

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief Engineer
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 1/8/14

Chief of Land Development
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1/23/14

SIGNATURE

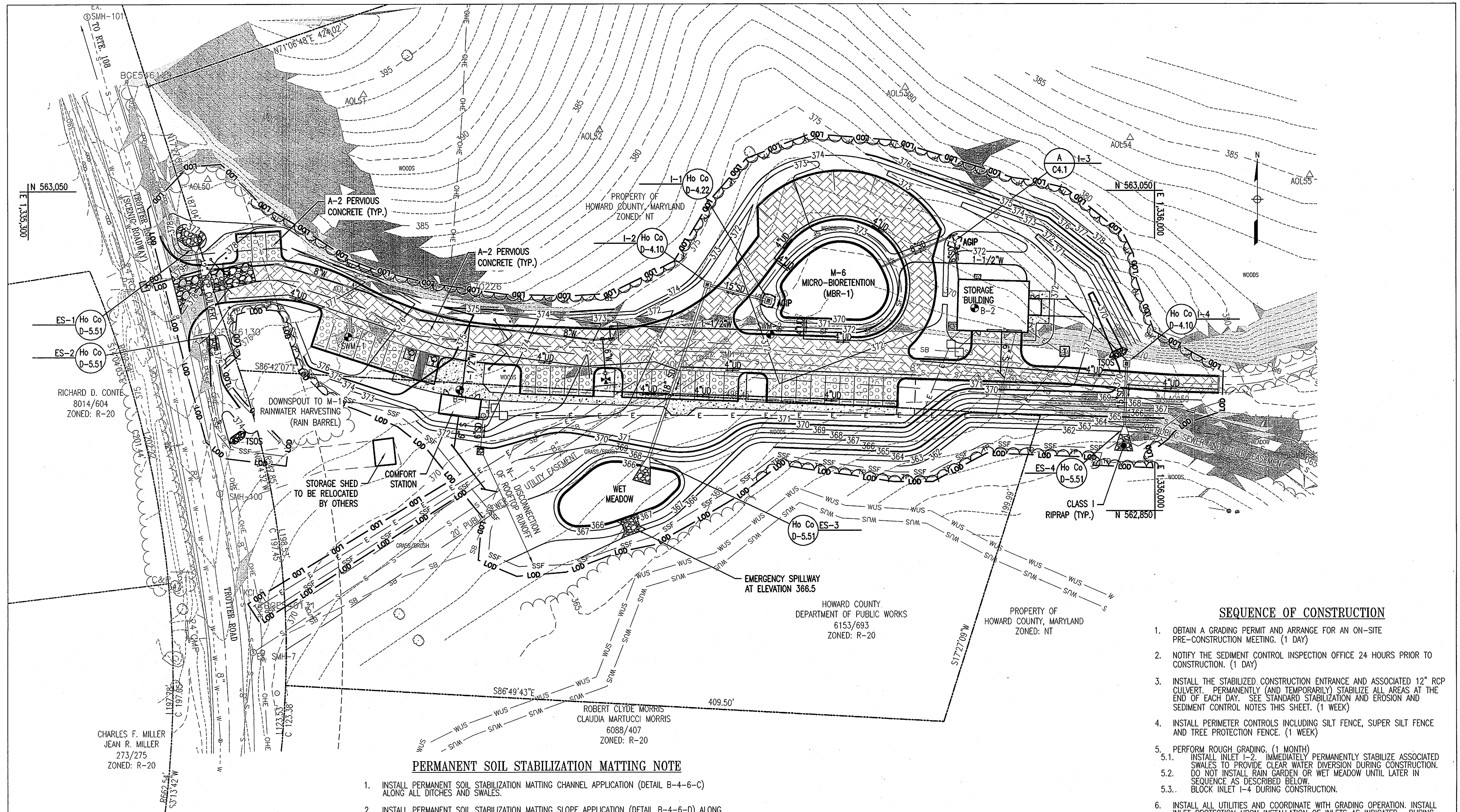
PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19376
 EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

GRADING AND STORMWATER MANAGEMENT PLAN

Drawing No.
ESD1.1

Scale: 1" = 30'
 Date: 11/20/2013 Sheet 2 of 5
 Des: BWJ/SAD Drawn: SAD Check: AUO
 ECP-14-031



REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

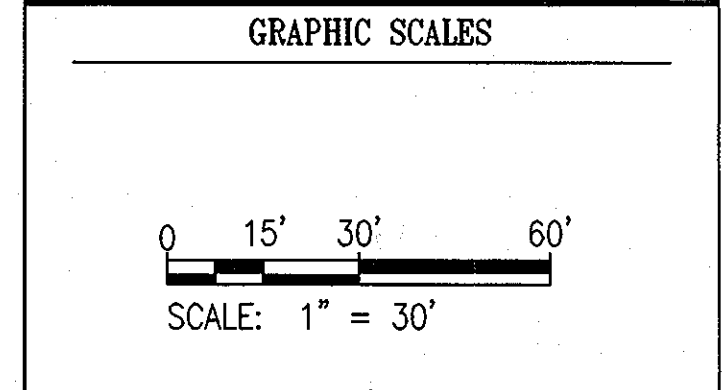
WR&A

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PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



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 EXPIRATION DATE: 09/22/2015

MPEA - SITE IMPROVEMENTS

EROSION AND SEDIMENT CONTROL PLAN

Drawing No.
ESD1.2

Scale: 1" = 30'
 Date: 11/20/2013 Sheet 3 of 5
 Des: BWJ/SAD Drawn: SAD Check: AUO

PERMANENT SOIL STABILIZATION MATTING NOTE

- INSTALL PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION (DETAIL B-4-6-C) ALONG ALL DITCHES AND SWALES.
- INSTALL PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION (DETAIL B-4-6-D) ALONG ALL SLOPES GREATER THAN 6:1, UNLESS PROVIDING CHANNEL APPLICATION AS NEEDED FOR DITCHES AND SWALES.

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

- THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKS, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
- SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

NOTE TO CONTRACTOR:

EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.

EROSION AND SEDIMENT CONTROL NOTE

- NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS RUNOFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE.
- CLEAR WATER DISCHARGE FROM DEWATERING DEVICES (PORTABLE SEDIMENT TANK) SHALL BE DISCHARGED TO A STABILIZED OUTFALL AT A NON-EROSIVE VELOCITY.

LEGEND

- LOD — LOD — LIMIT OF DISTURBANCE
- SF — SF — SILT FENCE
- SSF — SSF — SUPER SILT FENCE
- TP — TP — TREE PROTECTION FENCE
- AGIP — AT GRADE INLET PROTECTION
- TSOS — TEMPORARY STONE OUTLET STRUCTURE
- LIMITS OF WET MEADOW AND M-6 MICRO-BIORETENTION

- ***ALL ROOT PRUNING SHALL BE COMPLETED PRIOR TO ANY CONSTRUCTION ACTIVITIES
- ***NO CLEARING OR GRUBBING SHALL COMMENCE PRIOR TO THE INSTALLATION OF THE TREE PROTECTION FENCING AND SIGNAGE ADJACENT TO THE CLEARING/GRUBBING AREA WHERE APPLICABLE.
- ***TREE PROTECTION FENCING AND SIGNAGE SHOULD BE INSTALLED SIMULTANEOUSLY WITH SUPER SILT FENCE. (STEP 3)
- ***ALL TREE PROTECTION FENCING AND SIGNAGE AS INDICATED ON FOREST CONSERVATION PLAN SHEET F2.2 SHALL BE INSTALLED IN STEPS 1 THROUGH 3, BEFORE BEGINNING ROUGH GRADING OF THE ENTIRE SITE.
- ***TREE PROTECTION FENCING AND SPECIMEN TREE SIGNAGE SHALL BE REMOVED UPON PERMANENT STABILIZATION OF ALL DISTURBED AREAS. FOREST RETENTION SIGNAGE SHALL REMAIN. (STEP 11)

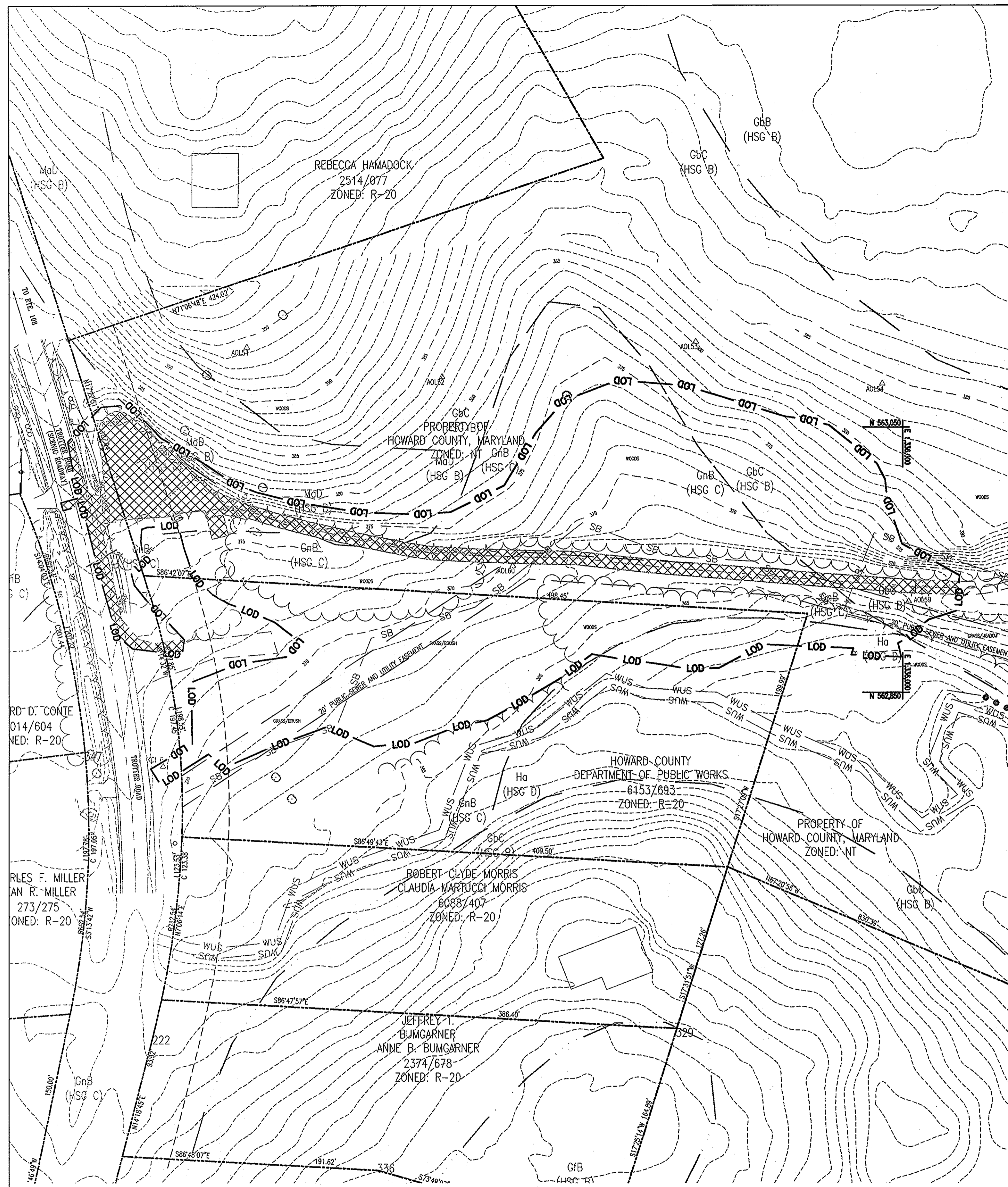
SEQUENCE OF CONSTRUCTION

- OBTAIN A GRADING PERMIT AND ARRANGE FOR AN ON-SITE PRE-CONSTRUCTION MEETING. (1 DAY)
- NOTIFY THE SEDIMENT CONTROL INSPECTION OFFICE 24 HOURS PRIOR TO CONSTRUCTION. (1 DAY)
- INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AND ASSOCIATED 12" RCP CULVERT. PERMANENTLY (AND TEMPORARILY) STABILIZE ALL AREAS AT THE END OF EACH DAY. SEE STANDARD STABILIZATION AND EROSION AND SEDIMENT CONTROL NOTES THIS SHEET. (1 WEEK)
- INSTALL PERIMETER CONTROLS INCLUDING SILT FENCE, SUPER SILT FENCE AND TREE PROTECTION FENCE. (1 WEEK)
- PERFORM ROUGH GRADING. (1 MONTH)
 - 5.1. INSTALL INLET I-2. IMMEDIATELY PERMANENTLY STABILIZE ASSOCIATED SWALES TO PROVIDE CLEAR WATER DIVERSION DURING CONSTRUCTION.
 - 5.2. DO NOT INSTALL RAIN GARDEN OR WET MEADOW UNTIL LATER IN SEQUENCE AS DESCRIBED BELOW.
 - 5.3. BLOCK INLET I-4 DURING CONSTRUCTION.
- INSTALL ALL UTILITIES AND COORDINATE WITH GRADING OPERATION. INSTALL INLET PROTECTION UPON INSTALLATION OF INLETS AS INDICATED. DURING INSTALLATION OF SANITARY AND WATER, ONLY EXCAVATE AMOUNT OF TRENCH TO ALLOW INSTALLATION OF PIPE AND BACKFILL WITHIN 1 WORK DAY. PLACE EXCAVATED MATERIAL ON UPHILL SIDED OF TRENCH AND IMMEDIATELY STABILIZE ALL DISTURBED AREA AROUND TRENCH AT THE END OF EACH WORK DAY. (1 MONTH)
- INSTALL ALL CURB AND SIDEWALKS. (1 MONTH)
- STABILIZE ALL OTHER AREAS WITH PERMANENT SEEDING, MULCH, AND LANDSCAPING. COMPLETE UTILITY, BUILDING AND REMAINING SITE CONSTRUCTION. (1 MONTH)
- UPON STABILIZATION OF ALL CONTRIBUTING AREAS, INSTALL RAIN GARDEN. (1 WEEK)
- UPON STABILIZATION OF ALL CONTRIBUTING DRAINAGE AREAS, INSTALL ALL PERVIOUS PAVEMENT AND ASPHALT PAVING OF PARKING LOT. INSTALLATION OF THE FINAL PAVEMENT COURSE MUST BE INSPECTED BY THE ON-SITE GEO-TECHNICAL ENGINEER. (1 MONTH)
- INSTALL WET MEADOW GRADING. (1 WEEK)
- FLUSH AND PUMP CLEAN THE STORM DRAIN SYSTEM. (1 DAY)
- INSTALL LANDSCAPING AS SHOWN ON LANDSCAPE PLAN. (2 WEEKS)
- UPON PERMANENT STABILIZATION OF ALL DISTURBED AREAS AND WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING SEDIMENT CONTROL DEVICES AND ALL NON-NATURAL ITEMS FROM FORESTS, FLOODPLAIN, STREAMS, WETLANDS AND THEIR BUFFERS.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

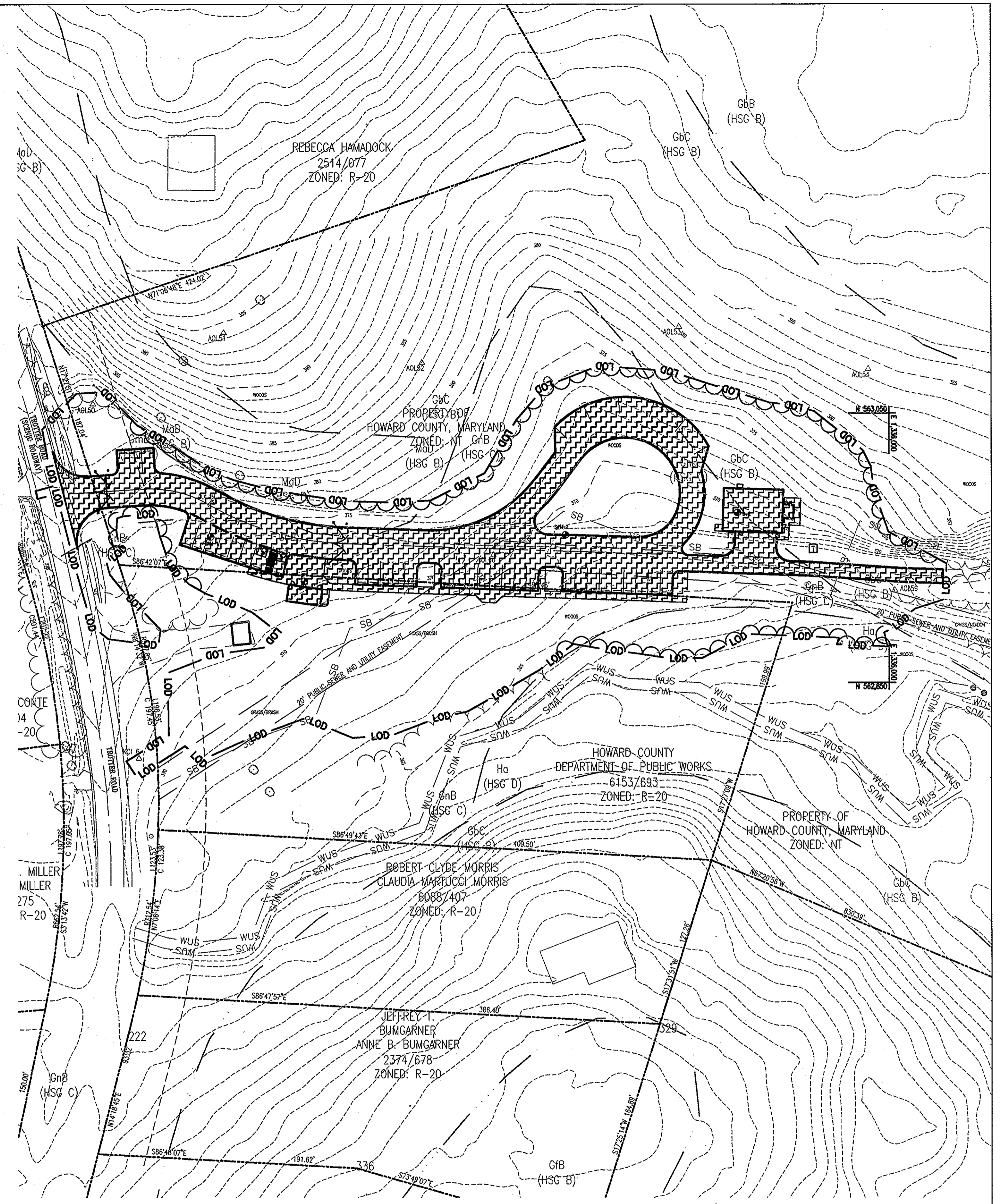
1.8.14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

1/22/14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



EXISTING DRAINAGE AREA

1" = 50'



PROPOSED DRAINAGE AREA

1" = 50'

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

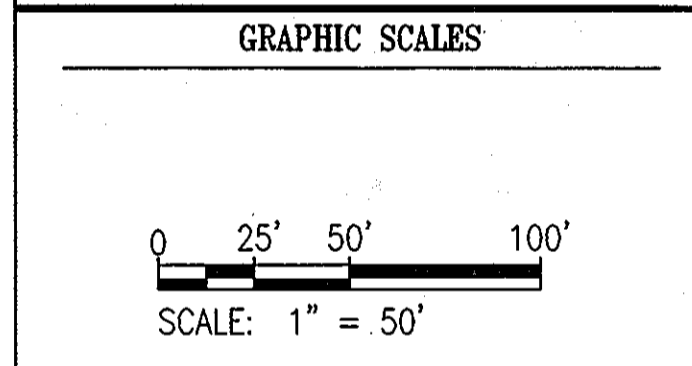
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 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



SIGNATURE

PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 13376, EXPIRATION DATE: 09/22/2015.

MPEA - SITE IMPROVEMENTS

OVERALL ESD DRAINAGE AREA MAP

Drawing No.
ESD1.3

Scale: 1" = 100'

Date: 11/20/2013 Sheet 4 of 5
 Des: BWJ/SAD Drawn: SAD Check: AUO

LEGEND

SOIL DVIDE
 EXISTING IMPERVIOUS AREA
 PROPOSED IMPERVIOUS AREA

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Chubb 1-8-14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

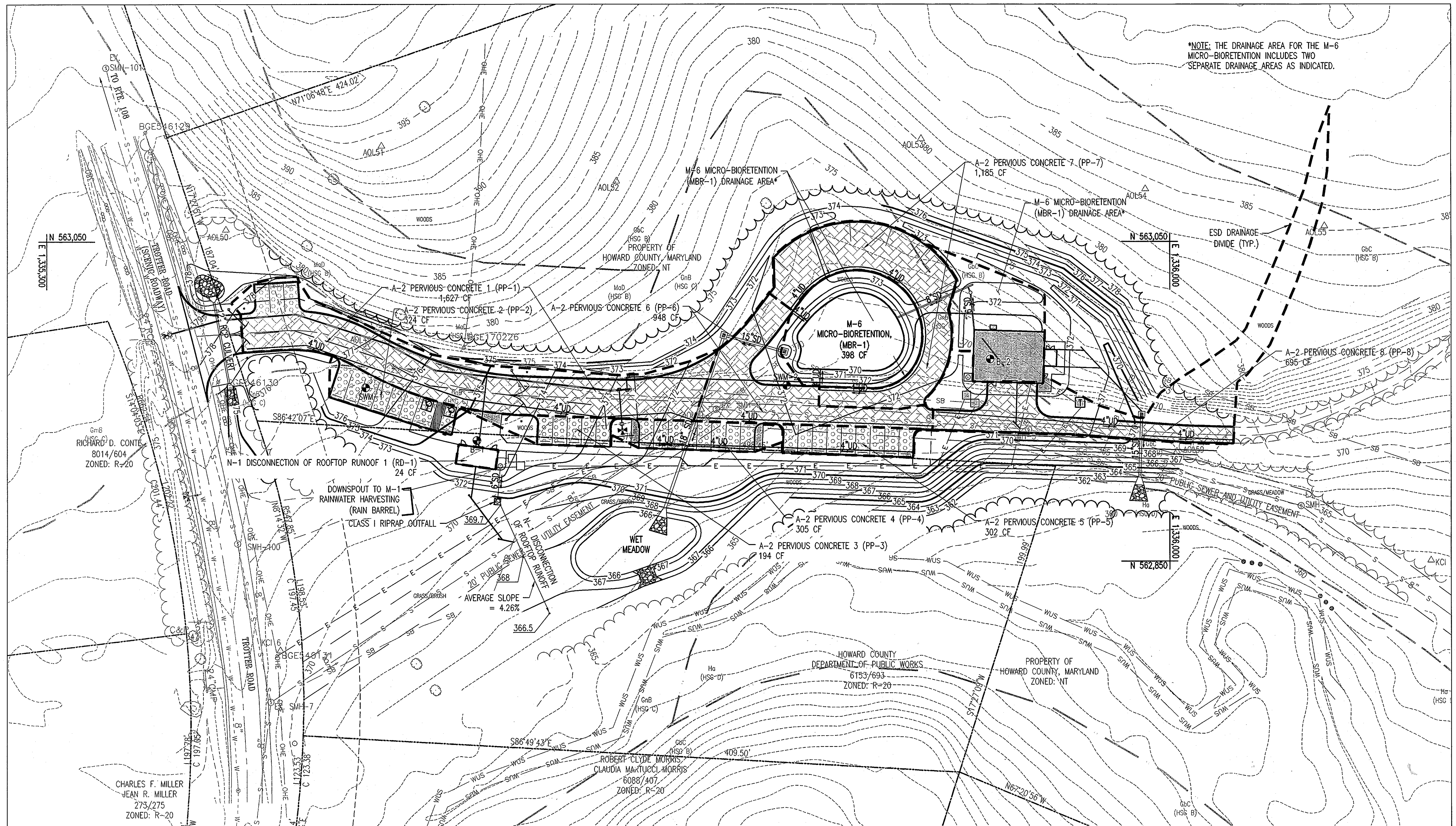
Walter D. Jones 1/6/14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

ESD Requirement		Existing		Proposed		Target		Requirement	
LOD (sf)	Target RCN	Imp. Area (sf)	Imp. Area (sf)	Pe	Rv	(Pe)(Rv)(DA)/1009 x %I	(Pe)(Rv)(DA)/12	Requirement (cf)	
102,132	67	12,529	31,179	1.6	0.325		4,422		

Facility ID	Facility Type	ESDv Provided (cf)	Rev Provided (cf)	Imp Area Treated (ae)	Pe Treated (in)
MBR-1	M-6 Micro-Bioretentation	375	0	0.03	2.6
PP-1	A-2 Pervious Concrete	1627	587	0.18	2.6
PP-2	A-2 Pervious Concrete	324	118	0.04	2.6
PP-3	A-2 Pervious Concrete	194	62	0.02	2.6
PP-4	A-2 Pervious Concrete	305	98	0.03	2.6
PP-5	A-2 Pervious Concrete	302	110	0.03	2.6
PP-6	A-2 Pervious Concrete	948	293	0.11	2.6
PP-7	A-2 Pervious Concrete	1185	432	0.13	2.6
PP-8	A-2 Pervious Concrete	695	197	0.07	2.6
RD-1	N-1 Disconnection of Rooftop Runoff	24	0	0.01	1.0
Sub Total =		5979	1897	0.65	

DRAWING NOTES

1. THE PROPOSED IMPERVIOUS SHOWN ON THIS MAP IS ONLY USED FOR CALCULATING ESD VOLUME REQUIREMENTS. ALTERNATIVE SURFACES HAVE BEEN INCLUDED AS PART OF THE IMPERVIOUS AREAS SHOWN FOR CALCULATING OVERALL ESD REQUIREMENTS ONLY. THE INDIVIDUAL DRAINAGE AREAS SHOWN FOR EACH ESD FEATURE SHALL INDICATE TRUE CHARACTERISTICS OF THE ALTERNATIVE SURFACES.



*NOTE: THE DRAINAGE AREA FOR THE M-6 MICRO-BIORETENTION INCLUDES TWO SEPARATE DRAINAGE AREAS AS INDICATED.

REVISIONS	

HOWARD COUNTY
 DEPARTMENT OF RECREATION AND PARKS
 7120 OAKLAND MILLS ROAD
 COLUMBIA, MD 21046

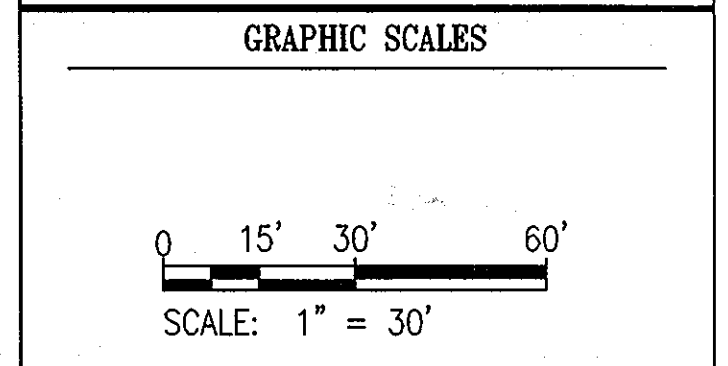
DEPARTMENT OF PUBLIC WORKS
 9250 BENDIX ROAD
 ELLICOTT CITY, MD 21043

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231
 Phone: 410-235-3450 Fax: 410-243-5716

PROPERTY

TAX MAP 35, GRID 3, PARCEL 512
 TAX MAP 35, GRID 2, PARCEL 427

ZONING: NEWTOWN & R-20
 ELECTION DISTRICT 05



SIGNATURE

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. 19376. EXPIRATION DATE: 09/22/2015.

MPEA - SITE IMPROVEMENTS

STORMWATER DRAINAGE AREA MAP

Drawing No.
ESD1.4

Scale: 1" = 30'
 Date: 11/20/2013 Sheet 5 of 5
 Des: BWJ/SAD Drawn: SAD Check: AUO

LEGEND

- SOIL DIVIDE
- ESD DRAINAGE DIVIDE
- IMPERVIOUS AREA
- PERVIOUS CONCRETE AREA

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edward 11/18/14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kate L. Dore 11/22/14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

ESD Requirement						
LOD (sf)	Target RCN	Existing Imp. Area (sf)	Proposed Imp. Area (sf)	Target Pe	Rv	ESD Requirement (cf)
102,132	67	12,529	31,179	1.6	0.325	4,422

Facility ID	Facility Type	ESDs Provided (cf)	Rev Provided (cf)	Imp Area Treated (ac)	Pe Treated (in)
MBR-1	M-6 Micro-Bioretenment	375	0	0.03	2.6
PP-1	A-2 Pervious Concrete	1627	587	0.18	2.6
PP-2	A-2 Pervious Concrete	324	118	0.04	2.6
PP-3	A-2 Pervious Concrete	194	62	0.02	2.6
PP-4	A-2 Pervious Concrete	305	98	0.03	2.6
PP-5	A-2 Pervious Concrete	302	110	0.03	2.6
PP-6	A-2 Pervious Concrete	948	293	0.11	2.6
PP-7	A-2 Pervious Concrete	1185	482	0.13	2.6
PP-8	A-2 Pervious Concrete	695	197	0.07	2.6
RD-1	N-1 Disconnection of Rooftop Runoff	24	0	0.01	1.0
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