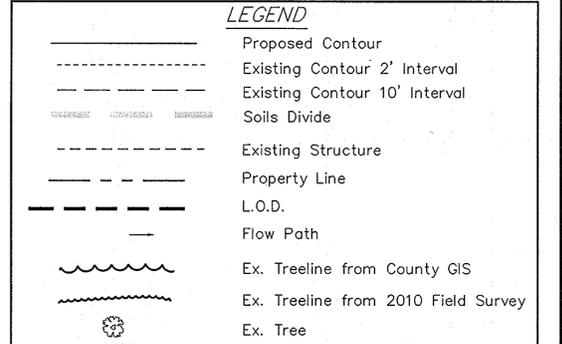
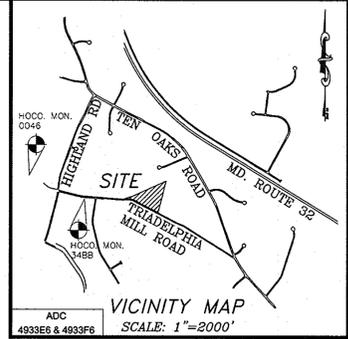


STORMWATER MANAGEMENT SUMMARY TABLE			
ESD _v	Required (cf)	Provided (cf)	Method
ESD _v	481 ^a	521	Micro-Bioretentation (M-6)
Re _v	167	168	Stored in aggregate voids below the Micro-Bioretentation underdrain
Cp _v	Provided with the ESD _v		
Treated Lot 2 Impervious Area	6,843 sf	7,340 sf	Note: More impervious area will be treated than that required.
SUMMARY OF PEAK BMP DISCHARGES (BMP Drainage Area Values: RCN = 75, tc = 0.1 hr, Area = 0.45 Acres; Impervious Area = 7,340 sf)			
Q ₂	0.7 cfs @ WSE 514.08; Weir Outfall Velocity = 0.8 fps		
Q ₁₀	1.7 cfs @ WSE 514.09; Weir Outfall Velocity = 1.1 fps		
Q ₁₀₀	2.8 cfs @ 514.11; Weir Outfall Velocity = 1.3 fps		

^aThis value is 75% of the calculated ESD.

STORMWATER MANAGEMENT (SWM) NOTES

- Stormwater management has been provided with ESD to the MEP. Specifically, a Micro-Bioretentation Facility and non-rooftop credits address the stormwater management for this site. Please refer to the SWM Report prepared by CIVIL DESIGN SERVICES, LC dated October 5 for more information.
- The Boundary and Topography shown on this plan were supplied by Shanabarger & Lane, Surveyors, Ellicott City. The topography was field-run in April, 2009.
- All construction shall meet the latest edition of the Howard County Standards and Specifications or as shown on these plans. The contractor shall consult the engineer should there be any discrepancies.
- The Micro-Bioretentation Facility shall not be constructed until all upstream areas have been stabilized (i.e., thick grass cover, or paved).
- The utility locations are approximate. Contractor shall test pit all known existing utilities to verify, size, shape, location, and type prior to performing construction. Utility relocations, whether shown or not, are the responsibility of the owner. Any utility damaged due to construction must be repaired immediately.
- Should the contractor discover discrepancies between the plans and field conditions, the engineer is to be notified immediately to resolve the situation. If the contractor makes field corrections or adjustments without notifying the engineer, then the contractor assumes all responsibility for those changes.
- Contractor shall notify Miss Utility 1-800-257-7777 and the Howard County Department of Inspection Licenses & Permits three (3) working days before beginning construction.
- CIVIL DESIGN SERVICES, LC is not responsible for the contractor's utilization of men, materials, equipment, or safety measures in the performance of any work for this project. The contractor assumes all responsibility for performing the work correctly and in conformance with code/specification requirements.
- The Stormwater Management Facility (i.e., bio-retention area) shown on this plan shall be privately owned and maintained.
- During the driveway widening paving, the contractor shall resurface/repair 120 LF± of the driveway to the limits shown on the plan. This segment of the driveway shall be resurfaced to have a 2% cross slope draining to the southwest (i.e., to the right facing driveway uphill). A driveway detail is shown on this sheet. The intent is to ensure that the driveway next to and up hill of the stormwater facility drains into the stormwater management facility.
- Site soil types: HSG B-Soils: Glenelg (GgB), (GgC); HSG C-Soils: Glenville, (GnB).



- GENERAL NOTES**
- Howard County approval of this ECP does not guarantee approval of subsequent plans (e.g., subdivision and/or site development plans).
 - Compliance with Howard County Subdivision and Land Development Regulations and Howard County Zoning Regulations shall occur at the subdivision and/or Site Development plan stages. The applicant and consultant may receive additional detailed comments including those that may alter overall site design at subsequent plan stages.
 - A Declaration of Covenants (DOC) will need to be prepared and submitted during the Final Plat approval process. This process includes the submission of an 8.5"x11" plans showing a vicinity map, title block, SWM Practice chart (indicates lot #, address, and SWM practice(s) and SWM credits).

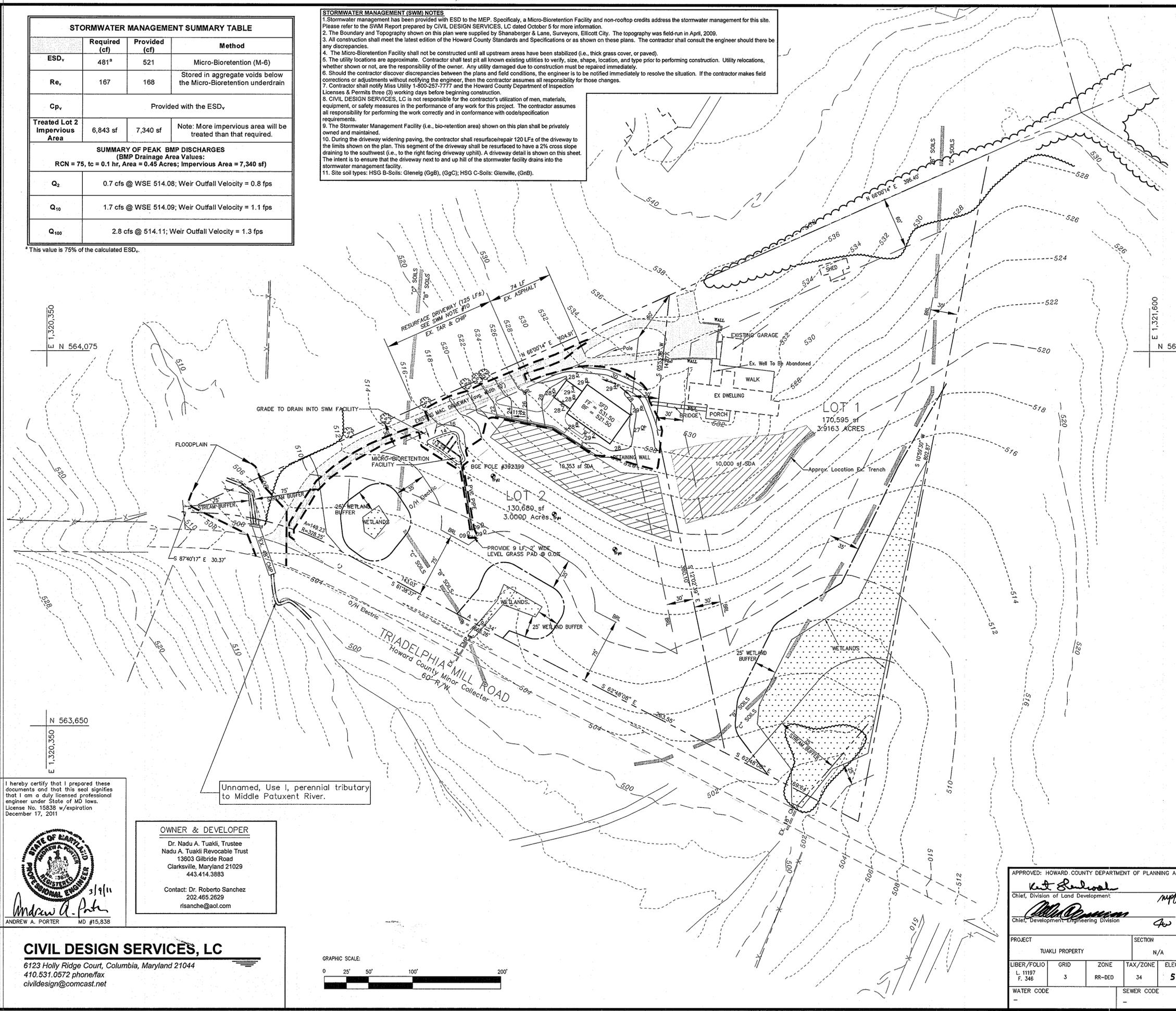
DESIGN NARRATIVE

The SWM concept was discussed with DED engineer on 9/28/2010. As a result, the BMP was pulled away from the C soils to improve ground water recharge. The BMP was placed to avoid wetland and floodplain buffers. Therefore natural resources are protected. Natural flow patterns were maintained as much as practical; sheet flow was incorporated into the BMP outfall design. The proposed driveway was designed to be as short as practical (minimizing imperviousness, PE = 1" (see submitted SWM Report, pg 16) in the professional engineer's opinion, the SWM for this site follows ESD to the MEP.

LOT 2 SITE DATA

Site Area (Lot 2 only): 3.0 acres
 Wetlands and Wetland Buffers: 0.28 acres
 Floodplain: 0.07 acres
 Forest: N/A (no forests on lot 2)
 Steep Slopes: N/A (no steep slopes)
 Erodeble Soils: N/A (no known erodeble soils)
 LOD: 22,306 sf
 Proposed Site Uses: House and Driveway; 0.12 acres
 File References: WP-10-075
 Green Open Area: N/A (no designated Open Space on lot 2)
 Environmental Waivers for Necessary Disturbance: N/A

- ECP CHECKLIST INFORMATION**
- SWM Concept Plan:** The proposed SWM facility is shown on this ECP.
 - Preliminary SWM Computations:** Attached. This detailed SWM Report will be submitted with the SWM Supplemental Plan and Final Plan.
 - Design Manual and Waiver Petition Requests:** On February 4, 2010, WP-10-075 was approved, waiving section 16.116(a),(3), section 16.120(b),(4),(ii),(b), section 16.120(b),(6),(vi), and section 16.120(c),(2) of the Land Development and Subdivision Regulations to allow environmental features on residential lots under 10 acres in size, to allow a driveway through lot 1 for the use of lot 2, to improve the existing driveway to 16 feet in width without disturbing wetland and stream buffers except as allowed by the development engineering division as necessary disturbance, and to not relocate parts of the existing driveway in order to allow a full 10-foot landscape edge along the western perimeter of the site.
 - Non-Tidal Wetlands Report:** Attached. This report was prepared by Exploration Research Inc. (Ellicott City, MD).
 - Preliminary Floodplain Report:** The 100-year floodplain is shown on the ECP and was determined by using detailed hydraulic computations. The peak Q's are slightly higher than previously DED-accepted floodplain study on the adjacent upstream property. The 100-yr WSEs were determined by an HY-8 culvert analysis. The floodplain approach was discussed with a DED Engineer. A detailed Floodplain Report has been prepared and will be submitted with the Final Plan.
 - Preliminary Sediment Control Report:** The LOD for this development is less than 30,000 sf. Per HSCD (Mr. Bob Robertson), this subdivision shall follow the Standard Plan and would not be required to be reviewed by HSCD.
 - Forest Stand Delineation and Report:** The development of this property is exempt from Forest Conservation requirements because it is a subdivision that creates one (1) additional lot and has no further subdivision potential. Please refer to Howard County Code Section 16.1202(b)(1)(viii).



I hereby certify that I prepared these documents and that this seal signifies that I am a duly licensed professional engineer under State of MD laws. License No. 15838 w/expiration December 17, 2011

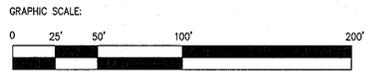
Andrew A. Porter
 ANDREW A. PORTER MD #15,838

OWNER & DEVELOPER

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 410.531.0572 phone/fax
 civildesign@comcast.net



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

<i>Andrew A. Porter</i> Chief, Division of Land Development	3/10/11 Date
<i>Roberto Sanchez</i> Chief, Development-Engineering Division	3/11/11 Date

PROJECT	TUAKLI PROPERTY	SECTION	N/A	PARCEL/LOT NO.s	8/1 & 2
LIBER/FOLIO	L. 11197 F. 346	GRID	3	TAX/ZONE	RR-DEO 34
ELEC. DIST.	5	CENSUS TR.	6051.01		
WATER CODE		SEWER CODE			

ENVIRONMENTAL CONCEPT PLAN

TUAKLI PROPERTY
 LOTS 1 & 2
 Clarksville, MD
 Tax Map 34 Parcel 8

SHEET 1 of 1

5th ELECTION DISTRICT, HOWARD COUNTY, MD
 SCALE: 1" = 50' DATE: MARCH 9, 2011

ECP-11-042