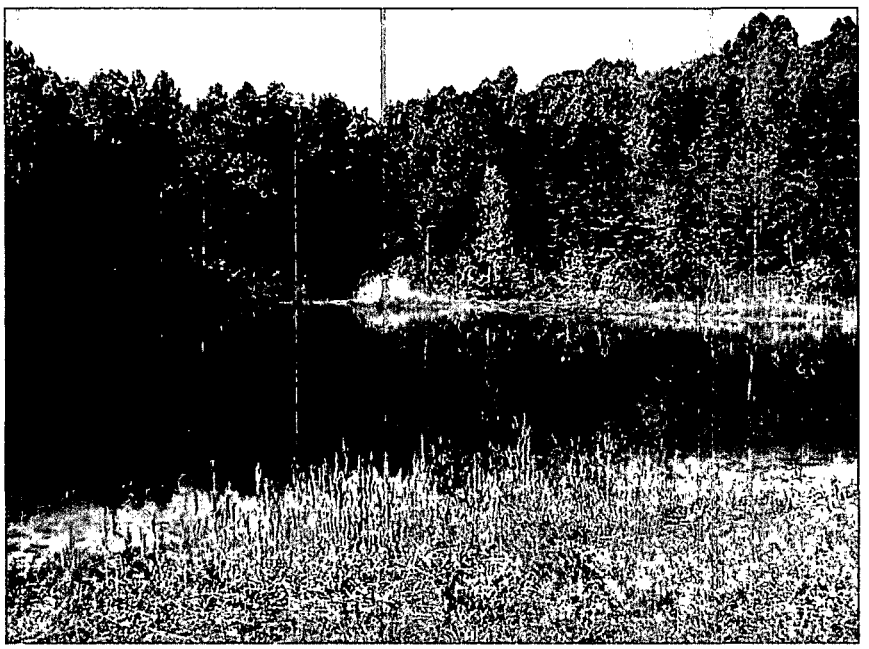
FINAL WETLAND DELINEATION REPORT

For

Proposed UniStar Nuclear Project Area
Calvert Cliffs Nuclear Power Plant Site
Calvert County, Maryland



Prepared by:
Tetra Tech NUS
20251 Century Blvd., Suite 200
Germantown, Maryland 20874

Principal Investigators: J. Peyton Doub, PWS, CEP and Rima Miley

Prepared for:
UniStar Nuclear Development, LLC

May 2007

TABLE OF CONTENTS

INTRODUCTION **1**

RELEVANT BACKGROUND INFORMATION **5**

WETLAND DELINEATION METHODOLOGY **10**

RESULTS AND DISCUSSION **14**
- Assessment Area I 14
- Assessment Area II 16
- Assessment Area III 19
- Assessment Area IV 20
- Assessment Area V 23
- Assessment Area VI 26
- Assessment Area VII 27
- Assessment Area VIII 30
- Assessment Area IX 31

FUNCTIONAL ASSESSMENT **34**

REFERENCES **41**

APPENDIX A WETLAND DELINEATION MAPS
APPENDIX B FIELD DATA SHEETS

LIST OF TABLES

Table 1 Definitions of Vegetation Strata Used in Wetland Delineation 13
Table 2 Definitions of Vegetation Plant Indicator Statuses Used in Wetland Delineation 13
Table 3 Common Functions and Values of Wetlands 39
Table 4 Summary of Functions and Values for Assessment Areas 40

LIST OF FIGURES

Figure 1 General Location Map 2
Figure 2 Regional Location Map 3
Figure 3 Wetland Delineation Project Area 4

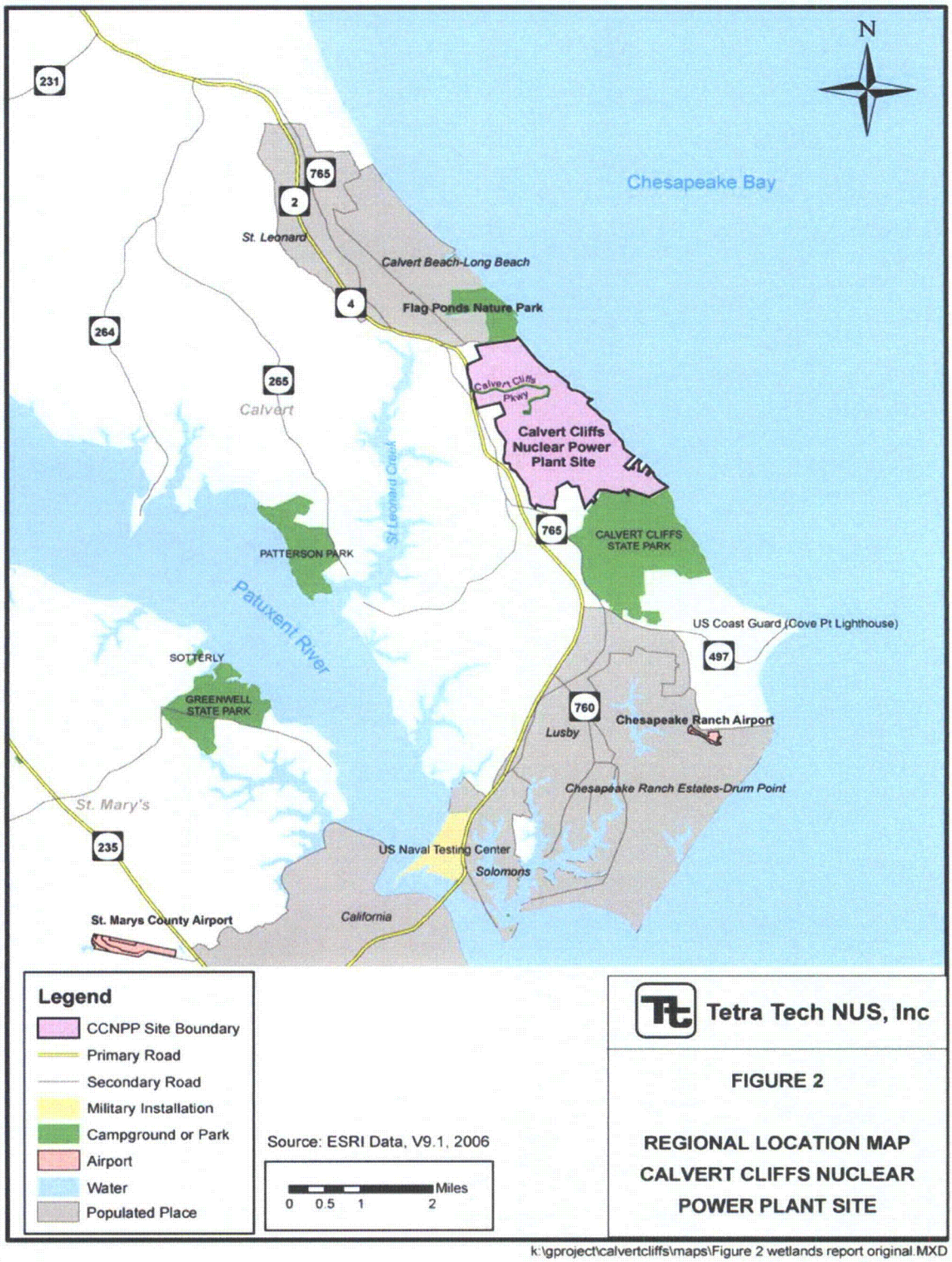
INTRODUCTION

Areas meeting the definition of wetlands and other waters of the United States under Section 404 of the Federal Clean Water Act (CWA; 33 USC 1344) and State of Maryland wetland protection regulations (Environmental Article §5-901 to §5-90, Annotated Code of Maryland) were delineated on a tract of land within Constellation Energy's (Constellation's) Calvert Cliffs Nuclear Power Plant (CCNPP) Site in Calvert County, Maryland, where UniStar Nuclear Development, LLC (UniStar Nuclear) is considering construction of a new nuclear power plant unit. Development of the new plant would require approval by the U.S. Nuclear Regulatory Commission (NRC) of a combined construction and operating license application (COLA), including an environmental report (ER) that documents the safety and environmental analyses for the facility. Plant development would also require approval by the Maryland Public Service Commission (PSC) of an application for a Certificate of Public Convenience and Necessity (CPCN). This report provides wetland information intended to support these applications.

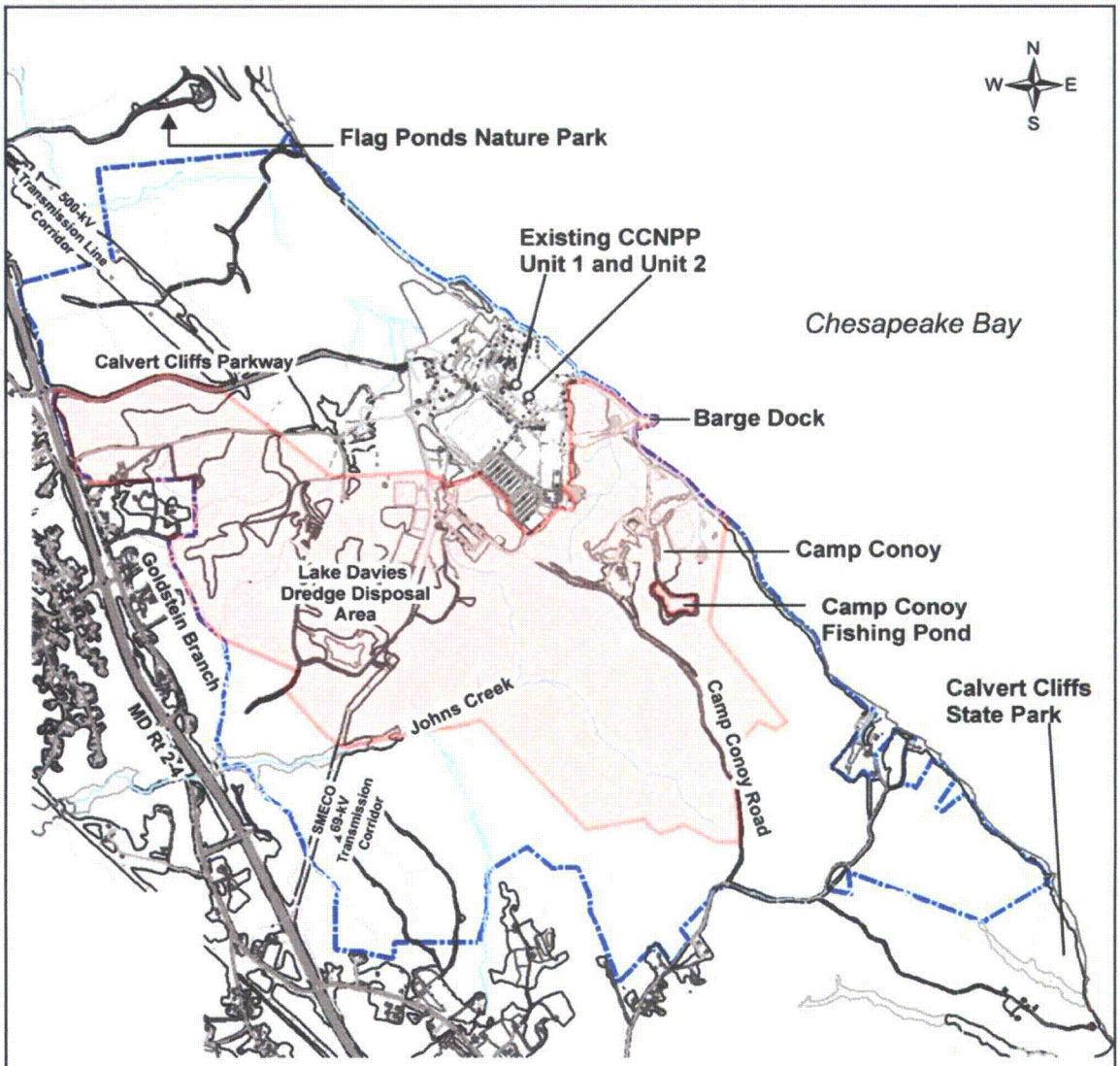
The CCNPP Site consists of 2,057 acres (832 hectares) on the western shore of the Chesapeake Bay in Calvert County (Figures 1 and 2). The two existing CCNPP units (Units 1 and 2) are located on in the east-central part of the CCNPP Site. The remainder of the CCNPP Site not associated with the existing power plant facilities is predominantly forest with some cleared land. The Chesapeake Bay shoreline (eastern perimeter) consists mostly of steep cliffs with little beach area. South of the existing units is a former recreational area known as Camp Conoy. Camp Conoy is accessed using a single-lane paved roadway (Camp Conoy Road) that runs north from the southern perimeter of the CCNPP Site. Camp Conoy contains various cabins, outbuildings, swimming pool, softball field, tennis courts, and fishing pond formerly used by Constellation employees and their families.

Under current plans, the new generating unit and associated facilities would be located within an area of the CCNPP Site south and west of the existing CCNPP Units 1 and 2, termed for convenience in this report the "Wetland Delineation Project Area" or "Project Area" (Figure 3). Within the Wetland Delineation Project Area, elevations range from sea level to nearly 150 feet (46 meters) above mean sea level (USGS, 1987). Topography is rolling, dissected by a dendritic pattern of stream valleys. Slopes on the sides of many of the stream valleys frequently exceed 15 to 25 percent. Slopes elsewhere are gentle. Most lands east of Camp Conoy Road drain east, directly into the Chesapeake Bay. Most lands west of Camp Conoy Road drain into a system of headwaters that coalesce to form the west-flowing Johns Creek. After exiting the western perimeter of the Wetland Delineation Project Area, Johns Creek flows west to St. Leonard Creek, a tidal tributary of the Patuxent River. Lands in the northern part of the Wetland Delineation Project Area drain to Goldstein Branch, a tributary of Johns Creek (USGS, 1987). Tidal water on the CCNPP Site is limited to the Chesapeake Bay shoreline; all streams on the Wetland Delineation Project Area are non-tidal (MDNR, 2005 and onsite observations in 2006).

k:\gproject\calvertcliffs\maps\Figure 1 Gen Loc Map A.mxd



k:\gproject\calvertcliffs\maps\Figure 2 wetlands report original.MXD



Tetra Tech NUS, Inc

Source: ESRI Data, V9.1, 2006

0 1,250 2,500 5,000 Feet

LEGEND

CCNPP Site Boundary

Project Area

FIGURE 3

CALVERT CLIFFS NUCLEAR POWER PLANT SITE WETLAND DELINEATION PROJECT AREA

k:\gproject\calvertcliffs\maps\base map_a.mxd

RELEVANT BACKGROUND INFORMATION

The Wetland Delineation Project Area consists primarily of forested areas south and southwest of the existing reactors (Figure 3). It includes Camp Conoy; the Camp Conoy Fishing Pond; Lake Davies, a disposal area for dredge spoils; and other forested and grassy areas that form part of a buffer of undeveloped lands surrounding the two existing reactors. The Wetland Delineation Project Area does not include the existing reactors, associated parking and appurtenant facilities, or the existing 500-kV transmission corridor. The following paragraphs provide background information on the site relevant to the wetland delineation.

Topography: Elevations on the Wetland Delineation Project Area range from sea level on the bay shore to nearly 150 feet (46 meters) above mean sea level. The bay shore consists of a narrow sandy beach abutted by sheer sandy cliffs that exceed 100 feet (30.5 meters) in height at some locations. The remainder of the site consists of a steeply rolling landscape dissected by a dendritic pattern of stream valleys with narrow floodplains adjoined by steep side slopes whose grade exceeds 25 percent in places (USGS, 1987; COA and JAH 2006). Large areas in the north-central part of the Wetland Delineation Project Area have been graded to accommodate existing facilities and the dredge spoil disposal area.

Hydrology: The eastern part of the Wetland Delineation Project Area, including most lands east of Camp Conoy Road, drains directly into the Chesapeake Bay. Runoff enters a series of unnamed intermittent and first-order perennial streams that flow generally eastward. The streams become increasingly incised as they approach the cliffs and then cascade over the cliffs and across the narrow beach into the bay. All stream reaches on the site are non-tidal; the cliffs prevent tidal influence from extending west of the beach (USGS, 1987, and onsite observations in 2006).

The western part of the Wetland Delineation Project Area, west of Camp Conoy Road, drains toward the Patuxent River. Lands west of Camp Conoy Road drain into headwaters of Johns Creek, which flows west under Maryland Route 2-4 to St. Leonard Creek and ultimately to the Patuxent River. Most lands in the northwestern part of the Wetland Delineation Project Area flow into the headwaters to Goldstein Branch. Goldstein Branch flows south, close to the western site perimeter, entering Johns Creek just east of Maryland Route 2-4. A small area in the northern part of the Wetland Delineation Project Area drains to the north and east into headwaters of Woodland Branch, which flows to St. Leonard Creek north and west of the existing reactors. Lake Davies, the dredge spoil disposal area that is now largely comprised of uplands that are vacant or used as material laydown for existing CCNPP operations, drains to old sediment basins that discharge to Johns Creek and Goldstein Branch.

Soils: Soils in the Wetland Delineation Project Area are mapped in the Sassafras-Matapeake soil association, which is characterized by gently sloping to steep, well-drained, moderately and severely eroded soils that have a predominantly sandy clay loam to silt loam subsoil (SCS, 1971). Uplands in the Wetland

Delineation Project Area are more specifically mapped in the Sassafras, Westphalia, Rumford, and Evesboro soil series. The Sassafras series consists of deep, well-drained upland soils with a brown loamy fine sand surface layer overlying a yellowish-brown heavy loamy fine sand or light fine sandy loam upper subsoil and a brown, strong brown, or dark brown sandy clay loam subsoil. The Westphalia series consists of deep, well-drained soils with a dark yellowish-brown fine sandy loam over a yellowish-brown fine sandy loam that contains a little more clay. The Rumford series consists of deep, somewhat excessively drained soils with a grayish brown and yellowish brown loamy sand surface layer over strong brown sandy loam subsoil. The Evesboro series consists of very deep, excessively drained soils with a dark grayish-brown loamy sand surface layer that grades from loamy sand to sand with increasing depth. Bottomlands in the Wetland Delineation Project Area occur as narrow strips of low land adjoining Johns Creek, Goldstein Branch, and their tributaries and are mapped as Mixed Alluvial Land. Soils in Mixed Alluvial Land lack a distinctive profile, and consist of soil materials washed from uplands and deposited on floodplains and along drainage ways. Mixed Alluvial land is identified as a hydric soil on the hydric soil list for Calvert County, Maryland (NRCS, 1992).

Vegetation: Results of a floral survey of the CCNPP site conducted by the Principal Investigator of this wetland delineation study are provided in a separate study report (Tetra Tech NUS, 2007a). That report describes the types of vegetation (plant community types) on the entire CCNPP Site, including the Wetland Delineation Project Area. The following information is summarized for the Wetland Delineation Project Area from that report, which includes a figure depicting the general distribution of plant community types over the entire CCNPP Site. According to the report, the Wetland Delineation Project Area can be broadly differentiated into the following plant community types:

Lawns and Developed Areas: Lawns and developed areas occur in the northeastern part of the Wetland Delineation Project Area (adjoining facilities associated with the two existing reactor units) and in Camp Conoy. Camp Conoy includes several athletic fields and other lawn areas surrounding recreational facilities. Other than scattered trees and shrubs planted as ornamental landscaping, the lawns on the Wetland Delineation Project Area consist only of a groundcover stratum. Most of the lawns consist of cool season grasses (grasses that typically seed during spring and fall) such as tall fescue (*Festuca arundinacea*), bluegrass (*Poa pratensis*), large crabgrass (*Digitaria sanguinalis*), and Bermuda grass (*Cynodon dactylon*). Common broadleaf weeds typical of lawns are also present, such as white clover (*Trifolium repens*), broadleaf plantain (*Plantago major*), dandelion (*Taraxicum officinale*), and yellow hawkweed (*Hieracium pretense*).

Old Field: Two main areas of old field vegetation occur on the Wetland Delineation Project Area. The largest is located on the overgrown dredge spoils that comprise Lake Davies. The dredge spoils extend west from the existing reactors across the north-central part of the Wetland Delineation Project Area. The dredge

spoils are covered by a dense stand of the grass phragmites (*Phragmites australis*). Phragmites is a tall, perennial grass that can grow to more than 10 feet (3 meters) tall and typically infests brackish and fresh tidal and non-tidal marshes. It does not typically occur in well-drained old fields but is common on well-drained dredge spoil piles in coastal areas. Its presence on dredge spoil piles such as those on the Wetland Delineation Project Area is likely a result of propagules (seeds and rhizome fragments) contained in the dredge spoils. Other plant species typical of old fields, such as common blackberry (*Rubus allegheniensis*) and tall fescue, are present but are not as prevalent as phragmites.

The other old field vegetation on the Wetland Delineation Project Area is located in scattered forest clearings around the perimeter of the dredge spoils and in other developed areas, as well as along roadsides. Many such areas were disturbed during the initial construction of the existing reactors and various support facilities. Vegetation in these areas is dominated by tall fescue, sericea lespendeza (*Lespedeza cuneata*), common blackberry, Canada goldenrod (*Solidago canadensis*), and asters (*Aster* sp.).

Mixed Deciduous Forest: Most uplands in the southern and western part of the Wetland Delineation Project Area support deciduous forest dominated by tulip poplar (*Liriodendron tulifera*); chestnut oak (*Quercus prinus*); white oak (*Quercus alba*); red oaks such as black oak (*Quercus velutina*), southern red oak (*Quercus falcata*), and scarlet oak (*Quercus coccinia*); American beech (*Fagus grandifolia*); and Virginia pine (*Pinus virginiana*). Other canopy trees include hickories such as pignut hickory (*Carya glabra*) and bitternut hickory (*Carya cordiformis*); red maple (*Acer rubrum*); sweet gum (*Liquidambar styraciflua*); swamp chestnut oak (*Quercus michauxii*), and black gum (*Nyssa sylvatica*). The forest understory consists of dense patches of mountain laurel (*Kalmia latifolia*), pawpaw (*Asimina trilobata*), and American holly (*Ilex opaca*); with scattered but frequent saplings of canopy species. Ground cover is sparse except where recently fallen trees have left gaps in the tree canopy. Scattered patches of the following species are present in the groundcover: partridgeberry (*Mitchella repens*), Christmas fern (*Polystichum acrostichoides*), common violet (*Viola papilionacea*), and large whorled pogonia (*Isotria verticillata*).

Mixed Deciduous Regeneration Forest: Several areas of relatively level highlands that formerly supported mixed deciduous forest (described above) have been subjected to timber harvest activities within the past 20 years. These areas presently support dense thickets of deciduous trees and Virginia pines. The deciduous trees consist of tulip polar, oaks, sweet gum, red maple, and Virginia pine. Virginia pine is generally more frequent in the regenerating forest than in adjoining areas of mature mixed deciduous forest. The regenerating forest lacks a distinct understory but does contain scattered mountain laurel and American holly. Little groundcover is present other than along fire roads or in other small openings.

Well-Drained Bottomland Deciduous Forest: Areas of well-drained soils in lowlands adjoining Johns Creek, Goldstein Branch, their headwaters, and other streams on the site support bottomland deciduous forest

dominated by tulip poplar, American beech, sweet gum, black gum, and red maple. This vegetation represents an ecotone (transition) between the mixed deciduous forest on the adjoining upland slopes and the bottomland hardwood forest in wetter areas closer to the stream channel. The understory is generally sparse, although some mountain laurel and American holly are present. While groundcover is sparse in many areas of well-drained bottomland deciduous forest, expansive dense patches of New York Fern (*Thelypteris noveboracensis*) occur, even in areas of dense canopy cover.

Poorly Drained Bottomland Deciduous Forest: Areas of poorly-drained, seasonally saturated soils in lowlands adjoining Johns Creek, Goldstein Branch, their headwaters, and other streams on the site support bottomland hardwood forest dominated by red maple, sweet gum, and black gum. The shrub layer is generally sparse. The groundcover is dense throughout, dominated by ferns such as New York Fern, sensitive fern (*Onoclea sensibilis*), and royal fern (*Osmunda regalis*); sedges and rushes such as tussock sedge (*Carex stricta*), eastern bur-reed (*Sporangium americanum*), and soft rush (*Juncus effusus*); and forbs such as lizard tail (*Saururus cernuus*) and skunk cabbage (*Symplocarpus foetida*).

Herbaceous Marsh Vegetation: Herbaceous marsh vegetation occurs throughout much of the broad bottomland areas adjoining Johns Creek in the western part of the Wetland Delineation Project Area as well as in localized gaps in the forest cover in the narrower bottomlands adjoining the headwaters of Johns Creek, Goldstein Branch, and other streams. This vegetation is dominated in many places by phragmites. Other areas of herbaceous marsh vegetation on the Wetland Delineation Project Area are dominated by sedges, rushes, and bulrushes; lizard tail, which forms localized dense patches; and various other wetland forbs such as dotted smartweed (*Polygonum punctatum*), Pennsylvania smartweed (*Polygonum pensylvanicum*), jewelweed (*Impatiens capensis*), and halberd-leaved tearthumb (*Polygonum arifolium*). These areas include a marshy fringe surrounding the shore of the Camp Conoy Fishing Pond, two smaller impoundments on the stream carrying the outflow from the pond to the Chesapeake Bay, a constructed wetland in the northwestern part of the Wetland Delineation Project Area, and a marshy fringe surrounding a stormwater pond immediately west of the existing CCNPP Barge Dock on the Chesapeake Bay.

Successional Forest Vegetation: Scattered areas on the CCNPP Site support forest cover dominated by fast-growing hardwoods such as black locust (*Robinia pseudoacacia*), black cherry (*Prunus serotina*), sweet gum, big-tooth aspen (*Populus grandidentata*) and pines such as Virginia pine and loblolly pine (*Pinus taeda*). All are native, fast-growing trees that rapidly form patches of forest cover in old fields, waste areas, roadsides, and fence rows in eastern and central Maryland. Other native tree species with scattered seedlings and saplings in old field vegetation include black cherry, eastern redcedar (*Juniperus virginiana*), and sweet gum. Non-native tree species present as scattered seedlings and saplings in successional forest vegetation on the Project Site include tree of heaven (*Ailanthus altissima*) and paulownia (*Paulownia tomentosa*). Although both

tree species are listed as invasive exotic plants by the Maryland Department of Natural Resources (MDNR) (MDNR, 1997), neither has formed dense patches on the Project Site.

Federal and State Wetland Maps. The U.S. Fish and Wildlife Service (FWS) has produced a National Wetland Inventory (NWI) map overlaying the Cove Point 7.5-minute topographic quadrangle (USGS, 1987), which includes the site (FWS, 2006). The NWI data, which were generated by remote sensing methods in 1981 and 1982 using aerial photography, are posted at www.fws.gov/nwi. The MDNR produced similar remote-sensing based wetland inventory mapping data for Calvert County between 1988 and 1995 (MDNR, 2005), which is posted at http://dnrweb.dnr.state.md.us/gis/data/data.asp. Both the NWI and MDNR mapping layers show narrow strips of non-tidal wetlands in the bottomlands adjacent to the channels of Johns Creek and Goldstein Branch as well at the Camp Conoy Fishing Pond, along the stream carrying outflow from the fishing pond east into the Chesapeake Bay, and in the southwestern part of the Lake Davies dredge materials disposal area.

WETLAND DELINEATION METHODOLOGY

J. Peyton Doub of Tetra Tech conducted fieldwork for the wetland delineations presented in this report. Ms. Rima Miley assisted Mr. Doub. Mr. Doub is a Professional Wetland Scientist (PWS), Number 358, certified by the Society of Wetland Scientists Professional Certification Program, who has conducted wetland delineations in Maryland since 1988. He was also certified by the U.S. Army Corps of Engineers, Baltimore District, in 1993 under the provisional (but since discontinued) Wetland Delineator Certification Program. He has performed over 100 wetland delineations in states including Maryland, Virginia, Pennsylvania, Florida, North Carolina, the New England states, and California, and has prepared numerous wetland mitigation plans, permit applications, and functional assessments. With exception of a small area near the existing CCNPP developed area that was delineated on January 8, 2007, field work for all wetland delineations presented in this report were conducted on an intermittent basis between May 9, 2006 and September 20, 2006.

For this study, all wetlands within the Wetland Delineation Project Area (Figure 3) were identified and delineated. Potential wetlands in this area were initially identified through consultation of relevant resource information, including available topographic maps (USGS 1987, COA and JAH 2006, wetland maps (FWS 2006, MDNR 2005), and soils maps (SCS 1971), and field reconnaissance.

The wetland delineation followed the routine onsite inspection methodology in Part IV, Section D, Subsection 2 of the *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory, 1987) and the U.S. Army Corps of Engineers (ACOE) memorandum on clarification and interpretation of that manual (ACOE, 1992). With a few exceptions referred to as problem areas, any area identified as a wetland according to the 1987 Manual must display positive evidence of each of three parameters indicative of wetland conditions:

- Hydrophytic Vegetation: defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory, 1987).

- Hydric Soil: defined as soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Environmental Laboratory, 1987). This definition was subsequently adjusted as follows: soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, July 13, 1994).

- Wetland Hydrology: defined as the condition of being periodically inundated or having soils saturated to the surface at some time during the growing season (Environmental Laboratory, 1987).

Representative data collection points were established on transects perpendicular to the hydrological boundary at the edge of potential wetland areas identified based on initial site reconnaissance and preliminary review of data such as topographic maps (USGS, 1987). Each transect included, at a minimum, one data collection point approximately 10 feet (3 meters) inside of the delineated wetland boundary and another data collection point approximately 10 feet (3 meters) outside of the delineated wetland boundary. Most wetland to upland transitions encountered in the Wetland Delineation Project Area were abrupt and could be adequately documented with only two data collection points per transect. A few wetland to upland transitions were relatively gradual and the corresponding transects had to include one or more intermediate points to document the basis for establishing the wetland boundary. The spacing between separate transects along a delineated wetland boundary was based on how frequently the vegetation, soils, and hydrology changed along the boundary. Some boundaries; such as those along Johns Creek, Goldstein Branch, and their tributaries were generally homogeneous over long distances with respect to vegetation, soils, and hydrology. The spacing between transects on such boundaries could therefore be greater than in other areas, such as those around the Camp Conoy Fishing Pond and its various tributaries.

Dominant plant species for each vegetative stratum (tree canopy, saplings, shrubs, herbs, and woody vines) were determined based on percent cover at each data collection point (Table 1). Wetland indicator statuses developed by the FWS (Reed, 1988) were assigned to each dominant species and used as the basis for determining whether the vegetation was hydrophytic (Table 2).

A soil pit was hand augured at each data point location to a minimum depth of 18 inches (46 centimeters) (or augur refusal due to rock) and the color, texture, and other descriptive data were recorded for each soil horizon (layer of distinct soil color and/or texture) encountered. The soil observations were used to determine whether field indicators of hydric soils, as listed in Part II, Sections 44 and 45 of the 1987 Manual and as expanded by the Natural Resources Conservation Service (NRCS, 1998), were present.

Surface and subsurface (in the soil pits) observations were made at each data point to determine whether field indicators of wetland hydrology were present. The primary (i.e., most reliable) field indicators are listed in Part II, Section 49 of the 1987 Manual. Examination for the primary indicators involved observing surface water depth (if any) and depth to soil saturation (if surface water was lacking) as well as looking for visual clues of recent surface water such as watermarks, drift lines, sediment deposits, and drainage patterns on the land surface. A number of secondary field indicators are also recognized for purposes of wetland

delineation (ACOE, 1992). Most secondary field indicators involve vegetation and soils characteristics indicative of seasonal soil saturation in wetlands that lack episodes of standing water. While only one primary field indicator is needed to document the presence of wetland hydrology, at least two secondary field indicators must be simultaneously present to document wetland hydrology in the absence of primary field indicators (ACOE, 1992).

Wetland delineation data sheets developed by the ACOE (ACOE, 1992) for each data point were completed. Each wetland boundary was marked in the field using fluorescent orange ribbons. Each flag was labeled "WET" followed by a letter and a number. The letter identified a specific linear sequence of wetland delineation flags, and the number identified the sequential position of the flag on the sequence. The coordinates of each wetland delineation flag were identified by a land surveyor and transferred to topographic base maps to generate wetland delineation maps. The flag locations were identified on the survey drawings using the designator "WLF", or in some places "WF". Each delineated wetland area was assigned a classification in the field using the wetland classification system developed by the United States Fish and Wildlife Service (Cowardin *et al.*, 1979).

Table 1
Definitions of Vegetation Strata Used in Wetland Delineation
Wetland Delineation Project Area
March 2006 – January 2007

Stratum	Symbol	Definition[1]	Plot Diameter (feet [meters])[2]
Canopy	C	Trees over 5 inches (13 centimeters) in diameter at breast height (DBH)	30 (9)
Saplings	SA	Woody plants over 20 feet (4 meters) in height but under 5 inches (13 centimeters) DBH	15 (4.6)
Shrubs	SH	Woody plants under 20 feet (4 meters) in height	15 (4.6)
Herbaceous Groundcover	H	Nonwoody plants and woody seedlings under 3 feet (1 meter) in height	5 (1.5)
Woody Vines	V	Woody vines attached to the trunks of trees or saplings	15 (4.6)

[1] Source: FICWD, 1989. Note: The U.S. Army Corps of Engineers guidance (ACOE, 1992) recognizes these definitions as usable in the context of wetland delineations performed using the 1987 Manual.

[2] Plot size used for visually estimating percent areal cover for plant species (circular plots). Plot shapes for strata other than herbaceous groundcover were adjusted as necessary to avoid crossing the delineated wetland boundary.

Table 2
Definitions of Wetland Plant Indicator Statuses Used in Wetland Delineation
Wetland Delineation Project Area
March 2006 – January 2007

Indicator Status[1,2]	Definition
Obligate Wetland (OBL)	Species recognized as occurring in wetlands greater than 99 percent of the time
Facultative Wetland (FACW)	Species recognized as occurring in wetlands 67 to 99 percent of the time
Facultative (FAC)	Species equally likely to occur in wetlands or uplands (non-wetlands)
Facultative Upland (FACU)	Species recognized as occurring in wetlands 1 to 33 percent of the time
Obligate Upland (UPL)	Species recognized as occurring in wetlands less than 1 percent of the time

[1] Source: Reed, 1988

[2] The indicator statuses assigned to some plant species are modified by the symbols "+" or "-". The "+" symbol indicates that the species is slightly more likely to grow in wetlands than indicated by the indicator status alone. The "-" symbol indicates that the species is slightly less likely to grow in wetlands than indicated by the indicator status alone.

RESULTS AND DISCUSSION

The wetland delineation is depicted on the maps in Appendix A. Field data sheets presenting vegetation, hydrology, and soil data for representative points in the delineated wetlands are in Appendix B. For purposes of characterization and discussion, the delineated wetlands have been broken into nine Assessment Areas. Wetland Assessment Areas are defined as contiguous wetland and aquatic areas with a high degree of hydrological interaction and biological similarity (Adamus *et al.,* 1991; DeSanto, R. S. and T. A. Flieger, 1995). Assessment Areas I, II, III correspond to small unnamed watersheds that drain directly to the Chesapeake Bay (Assessment Area III flows out of the Wetland Delineation Project Area before reaching the Chesapeake Bay). Assessment Areas IV, V, and VI form the Johns Creek watershed (upstream of Goldstein Branch). Assessment Area IV constitutes the up-gradient headwaters to Johns Creek and their adjoining wetlands, while Assessment Area V constitutes the main channel and adjoining wetlands. Assessment Area VI comprises a sequence of man-made basins carrying stormwater runoff from the Lake Davies dredged material disposal area to Johns Creek. Assessment Area VII constitutes the headwaters, main channel, and associated wetlands of Goldstein Branch. Assessment Area VIII consists of a small cluster of seepages and headwaters that flow north past the northern perimeter of the Wetland Delineation Project Area and ultimately contribute to Woodland Branch and St. Leonard Creek. Assessment Area IX comprises a series of seepages and headwaters that drain into a storm drain system under the existing developed portion of the CCNPP Site.

Assessment Area I
Wetland Area: Approximately 1.8 Acres (0.7 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 7,500 Linear Feet (2,286 Meters)

Assessment Area I consists of a system of streams and narrow strips of adjoining wetlands draining lands north of Camp Conoy and south of the existing reactors. One stream originates in a swale close to the northwest corner of Camp Conoy and flows to the north and east. A second stream originates as the outflow from an existing stormwater basin south of the existing reactors. The two streams join in a forested valley north of Camp Conoy and flow east into the Chesapeake Bay just south of the existing CCNPP Barge Dock. The streams appear to carry perennial flow. A third stream originates at a small seepage north of the central part of Camp Conoy and flows north to the main stream. Its flow regime appears to be intermittent.

Most areas under Clean Water Act jurisdiction in Assessment Area I are limited to the stream channels, which are defined by steep embankments. The stream channels are deeply incised and lack adjacent vegetated wetlands at most points. Where they occur, strips of adjoining emergent vegetation are generally under 2 or 3 feet (0.6 or 0.9 meters) in width. The jurisdictional boundaries of the stream originating near Camp Conoy are flagged by WET I-1 to I-76. The jurisdictional boundaries of the stream originating at the stormwater basin southwest of CCNPP Units 1 and 2 are flagged by WET K-1 to K-22 (the basin itself did not

display evidence of holding water or saturated surface soils long enough to meet the criteria for delineation as a wetland). The jurisdictional boundaries of the stream carrying the combined outflow are flagged by WET L-1 to L-68. Approximately 0.05 acre (0.02 hectare) of forested wetlands was delineated around the seepage for the intermittent stream (the third stream noted in the paragraph above). The jurisdictional boundary of the forested wetlands along this intermittent stream is flagged with WET J-1 to J-6 and WET J-27 to J-30, and the jurisdictional boundary for the intermittent stream channel is flagged with WET J-6 to J-27.

Assessment Area I also includes another man-made stormwater basin close to the CCNPP Barge Dock. Unlike the dry basin southwest of CCNPP Units 1 and 2, the basin near the barge dock appears to consist of permanent open water surrounded by a narrow fringe of emergent wetland vegetation. The edges of the basin (outer edge of the emergent vegetation fringe) are marked by WET O-1 through O-14. No other wetlands are present in the vicinity of the barge dock. The Chesapeake Bay shoreline is riprap in this area.

Wetland Delineation Field Data Sheets: Appendix B, Transect I-EAST-1, Plot 1 (Wetland) and Plot 2 (Upland).

Vegetation: The stream channels are shaded by deciduous trees, primarily tulip poplar, growing near the tops of the banks in uplands (mixed deciduous forest). Vegetation in the channels is therefore sparse to absent at most locations. Very narrow patches of sedges and rushes (herbaceous marsh vegetation), less than 1 – 2 feet (0.3 – 0.6 meters) in width, border the running water within the stream banks in a few places. Vegetation in the wetlands at the head of the intermittent stream consists of forest dominated by sweet gum with scattered highbush blueberry (*Vaccinium corymbosum*), pawpaw, and shadbush (*Amalanchier canadensis*) shrubs (poorly drained bottomland deciduous forest). The groundcover consists predominantly of deertongue grass (*Dichanthelium clandestinum*), tussock sedge, soft rush, fimbrystalis (*Fimbrystalis* sp.), poison ivy (*Toxicodendron radicans*), and common greenbrier (*Smilax rotundifolia*).

Hydrology: Assessment Area I displays hydrology typical of the upper part of a dendritic stream system in a humid climate. The streams are fed by groundwater discharges, and flow increases downstream. The head of the main stream, located in the woods just northwest of Camp Conoy, is a distinct springhead that releases perennial flow to a sharply defined channel. The intermittent stream, in contrast, originates with a more diffuse groundwater discharge area. Based on a visual estimate, flow in the perennial streams appeared to be less than 5 cubic feet (0.14 cubic meter) per second at the time of the wetland delineation. The water was generally between 1 and 2 inches (2.5 and 5.1 centimeters) in depth, although occasional small pools of deeper water were observed. The stream bottom consists of heavily scoured soil and lacks substantial cobbles. The forested wetlands at the head of the intermittent stream appeared to be seasonally saturated. Those wetlands were saturated when initially inspected in early June but dry when revisited in late July.

Soils: Soils adjoining the lower reach of the main stream channel forming Assessment Area I are mapped as Mixed Alluvial Land, described as consisting of soil materials washed from uplands and deposited on flood plains and along drainage ways (SCS, 1971). This appears to be an adequate description of the soils within the ordinary high water marks of the streams. The width shown on the maps is approximate and somewhat exaggerated. The maps do not resolve the narrow strips of mixed alluvial soil along the other stream reaches. Soils elsewhere in the vicinity of Assessment Area I are mapped as Sassafras and Westphalia soils, steep (SCS, 1971).

Delineation Notes: Most of the delineated wetland boundaries in Assessment Area I correspond to the ordinary high water elevation of perennial and intermittent streams. The boundary of the forested wetlands at the head of the intermittent stream (bounded by WET J-1 to J-6 and J-27 to J-30) correspond to a transition from forest vegetation dominated by sweet gum with a groundcover of sedges, rushes, and deertongue grass (poorly drained bottomland deciduous forest) to vegetation dominated by tulip poplar with a dense understory of pawpaw and only sparse groundcover (mixed deciduous forest).

Classification: Portions of Assessment Area I within the banks of the perennial streams (bounded by WET I-1 to I-76, WET K-1 to K-22, and WET L-1 to L-68) are classified Riverine Upper Perennial Streambed (R3SB). Portions within the banks of the intermittent stream (bounded by WET J-6 to J-27) would are classified Riverine Intermittent Streambed (R4SB). Narrow strips of vegetation along the channels are classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). The forested wetlands at the head of the intermittent stream (bounded by WET J-1 to J-6 and J-27 to J-30) are also classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). The stormwater basin near the barge dock is classified as a Palustrine Open Water.

Assessment Area II
Wetland Area: Approximately 6.2 Acres (2.5 Hectares)
(Including Stream Channels and Camp Conoy Fishing Pond)
Wetland Delineation Boundary: Approximately 9,900 Linear Feet (3,018 Meters)

Assessment Area II consists of the Camp Conoy Fishing Pond, constructed by excavation and stream channel impoundment, and associated wetlands and stream channels. It includes 1) three stream channels, seepages, and bordering wetlands that originate up-gradient (west and southwest) of the pond; 2) three small, isolated wetlands on forested slopes up-gradient (west and southwest) of the pond; 3) the pond basin and wetland fringe; and 4) the outlet stream channel (with two small impoundments termed Pond 1 and Pond 2 in an aquatic field study completed for the CCNPP Site in 2006 [EA, 2006]), and bordering wetlands that carry the outflow from the pond northeast to the Chesapeake Bay.

The stream channels up-gradient of the Camp Conoy Fishing Pond (WET B-1 to B-19, WET E-1 to E-29, and WET F-1 to F-41) begin at distinct seepages and become adjoined by narrow strips of forested wetlands as

they flow downhill. These strips vary in width from a few feet to more than 100 feet (30.5 meters). The three isolated wetlands on the slopes up-gradient of the pond (WET C-1 to C-9, WET D-1 to D-4, and G-1 to G-8) consist of groundwater seepages that percolate back underground. Most of the pond consists of open water no greater than 3 or 4 feet (0.9 or 1.2 meters) in depth. The pond is fringed by a zone of emergent wetlands generally between 10 and 30 feet (3 and 9 meters) in width (WET A-1 to A-51).

The stream channel carrying the outflow from the pond (WET H-1 to H-49 and WET L-1 to L-56) is fringed by forested wetlands, except where two small impoundments (Pond 1 and Pond 2) occur. Water depth is shallow (generally less than 2 feet [0.6 meter]) throughout both impoundments, thus both consist primarily of emergent wetlands rather than open waters. The first (Pond 1), bounded to the south by WET L-1 to L-10 and bounded to the north by WET L-44 to L-56, contains approximately 0.75 acre (0.30 hectare) of emergent wetlands. The second (Pond 2), bounded to the south by WET L-17 to L-28 and bounded to the north by WET L-29 to L-38, contains approximately 0.25 acre (0.10 hectare) of emergent wetlands. Just down-gradient (northeast) of the eastern of the two impoundments (Pond 2), flow from the stream channel falls over a low cliff onto a narrow sandy beach at the Chesapeake Bay. The cliffs block tidal influence from Assessment Area II.

Wetland Delineation Field Data Sheets: Appendix B, Transects and Plots noted below.

Transect	Perpendicular To	Wetland	Upland
B-EAST-1	WET B-18	Plot 1	Plot 2
C-EAST-1	WET C-4	Plot 1	Plot 2
E-EAST-1	WET E-3	Plot 1	Plot 2
F-EAST-1	WET F-27	Plot 1	Plot 2
H-EAST-1	WET H-42	Plot 1	Plot 2
L-EAST-1	WET L-1	Plots 1 and 2	Plot 2

Vegetation: The uppermost reaches of the stream channels up-gradient of the Camp Conoy Fishing Pond are shaded by deciduous trees, primarily tulip poplar and upland oaks (mixed deciduous forest), growing on the tops of the banks and in the adjoining uplands. Vegetation in the channels is therefore sparse to absent. The streams become adjoined by progressively broader zones of vegetated wetlands as they approach the pond. The wetlands support forest vegetation dominated by sweet gum undergrown by sweet gum and red maple saplings and highbush blueberry shrubs (poorly drained bottomland deciduous forest). Groundcover in the drier fringes of the wetlands consists predominantly of ferns such as New York fern, sensitive fern, cinnamon fern (*Osmunda cinnamomea*), and royal fern. Groundcover in the wetter part of the vegetated wetlands consists predominantly of lizard tail and some ferns. One wetland area immediately northwest of the pond supports herbaceous marsh vegetation dominated by phragmites.

Vegetation fringing the Camp Conoy Fishing Pond and in the two smaller down-gradient impoundments is herbaceous marsh vegetation dominated by sedges, rushes, grasses, and forbs typical of freshwater

marshes. Examples of frequently occurring plants include lurid sedge (*Carex lurida*), soft rush, deertongue grass, and false nettle (*Boehmeria cylindrica*). Seedlings and saplings of sweet gum and red maple occur at certain locations on the drier edge of the wetland fringe. Segments of the stream down-gradient from pond and outside of the impoundments are bordered by poorly drained bottomland deciduous forest as described above.

Hydrology: Assessment Area II displays hydrology typical of the upper part of a dendritic stream system in a humid climate. The streams flowing into the Camp Conoy Fishing Pond are fed by groundwater discharges, and flow increases downstream. Flow in the streams was visually estimated to be less than 2 or 3 cubic feet (0.06 or 0.08 cubic meter) per second at the time of the wetland delineation (May 10-11, 2006). The water was generally between 1 and 3 inches (2.5 and 7.6 centimeters) in depth at most points at that time. The channels become progressively less distinct as it approaches the pond, with flow spreading out into the adjacent wetlands.

The Camp Conoy Fishing Pond is a man-made impoundment with an earthen dam on the northeast side. Water depth increases slowly away from the shoreline, with a depth of less than 1 foot (0.3 meter) over most of the pond and with a depth that may exceed 3 feet (0.9 meter) near the center. An outflow pipe carries water from the pond to a single stream channel flowing northeast to the Chesapeake Bay. Water depths in the two smaller impoundments on that stream channel (Pond 1 and Pond 2) appeared to not exceed 1-2 feet 0.3-0.6 meter) at most locations at the time of the wetland delineation.

Soils: The aerial photographs used in the soil survey (SCS, 1971) were taken prior to construction of the Camp Conoy Fishing Pond and the smaller impoundments, which are therefore not depicted on the survey maps. The maps do not differentiate the soils in the wetlands up-gradient of the present location of the pond from the surrounding uplands, which are mapped as Sassafras and Westphalia soils, steep. Soils along the stream down-gradient of the pond are mapped as Mixed Alluvial Land, described as consisting of soil materials washed from uplands and deposited on flood plains and along drainage ways. The width shown on the maps is approximate and appears to be substantially wider than actual conditions.

Delineation Notes: Most of the delineated wetland boundaries in Assessment Area II correspond to the transition between forest vegetation dominated by sweet gum and red maple (poorly drained bottomland deciduous forest) and forest vegetation dominated by tulip poplar and oaks (mixed deciduous forest). The groundcover consists of dense fern cover, especially New York fern and cinnamon fern, at most locations inside the delineated wetland boundaries and sparse cover by deciduous tree seedlings outside the delineated wetland boundaries. The outer limit of low-chroma soils generally corresponds to the vegetation transitions noted above.

The landward boundary of the wetlands fringing the Camp Conoy Fishing Pond (WET A-1 to A-51) generally corresponds to a transition from vegetation dominated by rushes and sedges (herbaceous marsh vegetation) and upland old field vegetation. This boundary also represents the landward limit of low-chroma soils.

Classification: Most wetlands in Assessment Area II are classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). The open water of the Camp Conoy Fishing Pond is classified Palustrine Open Water (POW). The wetland fringe surrounding the pond, as well as the entirety of the two smaller impoundments, are classified Palustrine Emergent, Persistent (PEM1).

Assessment Area III
Wetland Area: Approximately 0.8 Acres (0.3 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 4,100 Linear Feet (1250 Meters)

Assessment Area III consists of a stream and bordering wetlands near the southeastern corner of the Wetland Delineation Project Area. The wetland boundary surrounding Assessment Area III is flagged WET M-1 to M-140. The stream originates at four separate seepage points (near WET M-73, WET M-82, M-92, M-106) that merge and then flow southeast to the Wetland Delineation Project Area southern boundary, and thence to the Chesapeake Bay The channels are generally not sharply defined by distinct banks. An intermittent stream channel (bounded by WET M-12 to M-60) originates near Camp Conoy Road and flows east into the main stream system. This intermittent stream channel, which carries surface runoff from land near Camp Conoy Road, is deeply incised and lacks adjoining wetlands.

Wetland Delineation Field Data Sheets: Appendix B, Transect M-EAST-1, Plot 1 (Wetland) and Plot 2 (Upland).

Vegetation: Close to the seepages, the stream channels forming Assessment Area III are shaded by deciduous trees, primarily tulip poplar and upland oaks (mixed deciduous forest), growing on the tops of the banks and in the adjoining uplands. Below where the two streams merge, the bordering wetlands become progressively wider, increasing to more than 50 feet (15 meters) wide. The wetlands support forest vegetation dominated by sweet gum undergrown by occasional sweet gum and red maple saplings and highbush blueberry shrubs (poorly drained bottomland deciduous forest). Groundcover in the drier fringes of the wetlands consists predominantly of ferns such as New York fern, sensitive fern, cinnamon fern, and royal fern. Groundcover in the wetter part of the vegetated wetlands consists predominantly of lizard tail and some ferns. No phragmites was observed in Assessment Area III.

Hydrology: Assessment Area III displays hydrology typical of the upper part of a dendritic stream system in a humid climate. The stream system appears to be fed primarily by groundwater discharges that emanate from small seepages near the toe of forested slopes. Flow in the stream system did not appear to exceed 5 cubic

feet (0.14 cubic meters) per second at the time of the wetland delineation (June 8-9, 2006). The water was generally between 1 and 2 inches (2.5 and 5.1 centimeters) in depth. A substantial portion of the flow in the stream system appears to percolate back underground close to the southern perimeter of the Wetland Delineation Project Area. The stream and adjoining wetlands become constricted (less than 5 feet [1.5 meters] in width) at the point where flow exits the Wetland Delineation Project Area (at WET M-1 and M-140).

The intermittent stream (bounded by WET M-12 to M-60) does not appear to originate at natural seepages. Although it may carry some groundwater discharge, it likely carries mostly surface runoff from uplands near Camp Conoy Road. Flow did not appear to exceed 2 cubic feet (0.06 cubic meters) per second at the time of the wetland delineation (June 8-9, 2006).

Soils: The maps do not differentiate the soils in the wetlands in Assessment Area III from the surrounding uplands, which are mapped as Sassafras and Westphalia soils, steep (SCS, 1971). The soils in the delineated wetlands displayed a histic epipedon (deep organic survey layer) and low chroma mineral soils, which are field indicators of hydric soil.

Delineation Notes: The delineated wetland boundaries in Assessment Area III generally correspond to the transition between forest vegetation dominated by sweet gum and red maple (poorly drained bottomland deciduous forest) and forest vegetation dominated by tulip poplar and oaks (mixed deciduous forest). The groundcover consists of dense fern cover, especially New York fern and cinnamon fern, at most locations inside the delineated wetland boundaries and sparse cover by deciduous tree seedlings outside the delineated wetland boundaries. The outer limit of low-chroma soils generally corresponds to the vegetation transitions noted above. The landward boundary for the intermittent stream (WET M-12 to M-60) corresponds to the ordinary high water elevation on the toe of the steep slopes adjoining the deeply incised channel.

Classification: Most wetlands in Assessment Area III are classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). A small area in the southern part of Assessment Area III lacks tree canopy and is classified Palustrine Emergent, Persistent, Seasonally Saturated (PEM1E). The intermittent stream channel (WET M-12 to M-60) is classified Riverine Intermittent Streambed (R4SB).

Assessment Area IV
Wetland Area: Approximately 12.9 Acres (5.2 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 38,600 Linear Feet (11,765 Meters)

Assessment Area IV consists of a system of headwater streams and bordering wetlands forming the upper part of Johns Creek. One headwater stream subsystem and associated wetlands originates at a cluster of

seepages to the north, near existing CCNPP plant facilities. It flows generally to the southwest. It is bounded by the following wetland delineation flag locations:

WET A-1 to A-12	WET D-1 to D-8	WET GA-1 to GA-29	WET S-1 to S-42
WET B-1 to B-21	WET E-1 to E-8	WET GB-1 to GB-34	
WET C-1 to C-31	WET F-1 to F-11	WET H-1 to H-78	
WET CA-1 to CA-34	WET G-1 to G-34	WET Q-1 to Q-14	

The other headwater stream subsystem and associated wetlands originates at seepages south on privately owned forested land south of the CCNPP Site. It flows generally to the northwest. It is bounded by the following wetland delineation flag locations:

WET AA-1 to AA-112	WET IA-1 to IA-30	WET L-1 to L-18	WET O-1 to O-93
WET BB-1 to BB-39	WET J-1 to J-114	WET M-1 to M-10	WET P-1 to P-96
WET I-1 to I-249	WET K-1 to K-42	WET N-1 to N-139	

The two stream subsystems merge at a point approximately 1,800 feet (549 meters) west of Camp Conoy. The ridge separating lands that flow west to Assessment Area IV and east to Assessment Areas I, II, and III roughly corresponds to Camp Conoy Road.

Wetland Delineation Field Data Sheets: Appendix B, Transects and Plots noted below.

Transect	Perpendicular To	Wetland	Upland
AA-WEST-1	WET AA-115	Plot 1	Plot 2
AA-WEST-2	WET AA-76	Plot 1	Plot 2
GA-WEST-1	WET GA-22	Plot 1	Plot 2
GB-WEST-1	WET GB-3	Plot 1	Plot 2
I-WEST-1	WET I-210	Plot 1	Plot 2
J-WEST-1	WET J-52	Plot 1	Plot 2
N-WEST-1	WET N-46B & 47	Plots 1 and 3	Plots 2 and 4

Vegetation: The upper reaches of channels in both stream subsystems are incised and shaded by deciduous trees, primarily tulip poplar and upland oaks (mixed deciduous forest), growing on the tops of the banks and in the adjoining uplands. A level floodplain area adjoins the channels down-gradient, becoming progressively wider and reaching a width of approximately 100 feet (30.5 meters) at the point where the two subsystems merge. Drier lands at the outer edge of the floodplain support well-drained bottomland deciduous forest dominated by American beech, tulip poplar, black gum, and sweet gum. Wetter floodplain lands support poorly drained bottomland deciduous forest dominated by red maple, black gum, and sweet gum. Dense patches of New York fern occur in both the well-drained and poorly drained forest lands.

Patches of other ferns such as sensitive fern, cinnamon fern, and royal fern occur only in the poorly drained forest lands.

Small areas along both channels lack closed tree canopy and support herbaceous marsh vegetation consisting of dense stands of phragmites. The transition between forest cover and phragmites cover is generally gradual and irregular. Generally, the phragmites infestations extend to areas where beavers have killed bottomland trees or where water backed up by beaver dams has killed trees.

Hydrology: Assessment Area IV displays hydrology typical of the upper part of a dendritic stream system in a humid climate. The headwater streams in both subsystems are fed by groundwater discharges at distinct seepage areas, and flow increases downstream. Flow appeared to be less than 5 cubic feet (0.14 cubic meters) per second during the period in which the wetland delineation was performed (various dates from late June to mid August). The water was generally between 1 and 2 inches (2.5 and 5.1 centimeters) in depth at most points. Channels become progressively less distinct downstream from the seepages, with flow spreading out into the adjacent wetlands.

Most uplands in the watersheds contributing surface runoff to both stream subsystems support natural forest cover and thus generate minor quantities of runoff in association with rainfall events. Two deeply incised stream reaches located immediately south and down-gradient from existing plant facilities (bounded by WET A-1 to A-12 and WET B-1 to B-21) appear to receive runoff from developed lands. That runoff has resulted in significant channel bed scour. Such scour is not evident elsewhere in Assessment Area IV.

Soils: Soils adjoining Johns Creek and its wider headwaters are mapped as Mixed Alluvial Land, described as consisting of soil materials washed from uplands and deposited on flood plains and along drainage ways (SCS, 1971). This appears to be an accurate description of the soils throughout the floodplain, including the areas of well-drained bottomland deciduous forest. The width shown on the maps is only approximate. The maps do not resolve the narrow strip of mixed alluvial soil along the upper reaches of the stream systems. Soils elsewhere in the vicinity of Assessment Area IV are mapped as Sassafras and Westphalia soils, steep (SCS, 1971).

Delineation Notes: Most of the delineated wetland boundaries in Assessment Area IV correspond to the transition between forest vegetation dominated by sweet gum and red maple (poorly drained bottomland deciduous forest) and forest vegetation dominated by tulip poplar and oaks (mixed deciduous forest). The groundcover consists of dense fern cover, especially New York fern and cinnamon fern, at most locations inside the delineated wetland boundaries and sparse cover by deciduous tree seedlings outside the delineated wetland boundaries. The outer limit of low-chroma soils generally corresponds to the vegetation transitions noted above.

Closer to where the stream systems merge to form the main channel of Johns Creek, where the floodplain becomes wider, some segments of the delineated wetland boundary correspond to a transition from poorly drained bottomland deciduous forest to well-drained bottomland deciduous forest. While the former comprises a tree canopy consisting almost exclusively of red maple, sweet gum, and other species tolerant of prolonged soil saturation, the latter also includes substantial numbers of American beech, white oak, tulip poplar and other trees that prefer rich upland soils. The outer limit of low-chroma soils also corresponds to the outer limit of the poorly drained bottomland deciduous forest; the well-drained bottomland deciduous forest displays soils with chromas greater than 2.

The delineated wetland boundaries for Assessment Area IV do not everywhere correlate to topography. Many seepage features in Assessment Area IV originate on steep slopes, some exceeding 15 percent in grade. The wetland boundary thus extends partway up side slopes at several locations. A noteworthy example is an area of nearly an acre of contiguous seepage wetlands extending up a slope between WET CA-22 and CA-34 and WET GA-1 and GA-13.

Classification: Most wetlands in Assessment Area IV are classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). Some areas in the center of wider wetlands, including the areas of phragmites infestation lack tree canopy and are classified Palustrine Emergent, Persistent, Seasonally Saturated (PEM1E). The uppermost reaches of the stream channels themselves are classified Riverine Intermittent Streambeds (R4SB), while the lower reaches are classified Riverine Upper Perennial Streambed (R3SB).

Assessment Area V
Wetland Area: Approximately 7.9 Acres (3.2 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 12,500 Linear Feet (3,810 Meters)

Assessment Area V consists of the main channel of Johns Creek and bordering wetlands. Johns Creek flows west, exiting the western perimeter of the Wetland Delineation Project Area near the confluence with Goldstein Branch and exiting the CCNPP site just east of Maryland Route 2-4. The upstream limit of tidal influence on Johns Creek lies substantially west of Maryland Route 2-4, close to St. Leonard Creek. Hence, none of the wetlands in Assessment Area V are under tidal influence.

The landward boundary of wetlands north of Johns Creek is bounded by WET X-1 to X-60. The boundary continues west from WET X-60 for approximately 1,000 additional feet (305 meters). The steepness of the slope directly north of that segment of boundary and softness of the mucky soil directly south prevented physical access to place wetland delineation flags. However, this segment of wetland boundary is visibly

obvious based on topography. There are no slope-side seepages along this stretch of wetland boundary. The landward boundary of wetlands south of Johns Creek is delineated using WET XA-1 to XA-34.

Assessment Areas IV and V are hydrologically connected, and their division is arbitrary. As a general distinction, Assessment Area IV comprises the headwaters of Johns Creek, while Assessment Area V comprises the main channel. The width of the stream channel and associated floodplain ranges from 100 to more than 200 feet (30.5 to more than 61 meters) in Assessment Area V, wider than anywhere in Assessment Area IV. A few seepages that form intermittent tributaries on the slope north of the Johns Creek main channel are included in Assessment Area V, even though they are headwaters. These areas are bounded by the following wetland delineation flag locations:

- WET DD-1 to DD-61;
- WET SA-1 to SA-21;
- WET Y-1 to Y-55; and
- WET Z-1 to Z-108.

The southern Wetland Delineation Project Area perimeter roughly follows the south shore of Johns Creek, and tributaries entering Johns Creek from the slope to the south are therefore not included as part of Assessment Area V.

Wetland Delineation Field Data Sheets: Appendix B, Transects and Plots noted below.

Transect	Perpendicular To	Wetland	Upland
SA-WEST-1	WET SA-21	Plots 1 and 2	Plot 3
X-WEST-1	WET X-42	Plot 1	Plot 2

Vegetation: Vegetation in Assessment Area V follows the same general pattern of hydrological zonation described for the floodplain in Assessment Area IV. Drier lands at the outer edge of the floodplain support well-drained bottomland deciduous forest dominated by American beech, tulip poplar, black gum, and sweet gum. Wetter floodplain lands support poorly drained bottomland deciduous forest dominated by red maple, black gum, and sweet gum. Dense patches of New York fern occur in both the well-drained and poorly drained forest lands. Patches of other ferns such as sensitive fern, cinnamon fern, and royal fern occur only in the poorly drained forest lands. The wettest areas of the floodplain lack closed tree canopy and support herbaceous marsh vegetation. The transition between these vegetative zones is generally gradual and irregular.

The lower reach of Assessment Area V comprises a broad area of herbaceous marsh vegetation dominated by phragmites. As for the phragmites patches described in Assessment Area IV, the phragmites coverage in Assessment Area V occurs in areas where beaver activity has killed the canopy trees.

Hydrology: Assessment Area V displays hydrology typical of the middle part of a dendritic stream system in a humid climate. Johns Creek is fed by headwater streams comprising Assessment Area IV, as well as by additional headwaters originating on the slopes to the north and south. The channel of Johns Creek is well defined in the northern (upstream) part of Assessment Area V, but the channel becomes less defined and flow becomes more diffuse downstream in the broad phragmites marsh.

The tributaries and associated wetlands bounded by WET DD-1 to DD-61, WET SA-1 to SA-21, WET Y-1 to Y-55, and WET Z-1 to Z-108 each originate at seepages on the slopes north or south of Johns Creek and flow north or south through swales to Johns Creek. Groundwater discharge appears to be the principal contributor of flow to each of the tributaries. Upland watersheds to each tributary are predominantly forested and undeveloped, without substantial areas of impervious surface or artificially compacted surface soils; hence, surface runoff is likely to be only a minor contributor to flow.

The tributary and associated wetlands bounded by WET SA-1 to SA-21 are unique in Assessment Area V in that normal surface flow does not reach all the way to Johns Creek. Instead, groundwater discharge from the upper end of the feature (at WET SA-9) gradually leaches back underground, until all indications of normal surface saturation disappear at WET SA-21. The remainder of the swale contains well-drained bottomland deciduous forest that does not meet the definition of a wetland. Although spatially disconnected from the remainder of Assessment Area V, the subject wetlands are likely connected hydrologically by subsurface flow.

Soils: Soils adjoining Johns Creek and its wider headwaters are mapped as Mixed Alluvial Land, described as consisting of soil materials washed from uplands and deposited on flood plains and along drainage ways (SCS, 1971). This appears to be an accurate description of the soils throughout the floodplain, including the areas of well-drained bottomland deciduous forest. The width shown on the maps is only approximate. The maps do not resolved the narrow strip of mixed alluvial soil along the upper reaches of the stream systems originating on the slopes north and south of Johns Creek. Soils on those slopes and other sloping uplands adjoining Assessment Area V are mapped as Sassafras and Westphalia soils, steep (SCS, 1971).

Delineation Notes: Most of the delineated outer boundaries for wetlands adjoining the main channel of Johns Creek correspond to the toe of the steep slopes to the north and south. The bottomland deciduous forest and herbaceous marsh vegetation in the level floodplain abruptly shifts to mixed deciduous forest vegetation on the sloping uplands. A small amount of well-drained bottomland deciduous forest (non-

wetland) is present in the Johns Creek floodplain in the eastern (up-gradient) part of Assessment Area V. Farther west (down-gradient), the wetland vegetation (poorly drained bottomland deciduous forest and phragmites-dominated herbaceous marsh vegetation) extends throughout the floodplain. Soils shift abruptly from mucks and low-chroma loams in the floodplain to high chroma loams in the areas of well-drained bottomland deciduous forest on the slopes.

Classification: Most wetlands in Assessment Area IV are classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E) or Palustrine Emergent, Persistent, Seasonally Saturated (PEM1E). The main channel of Johns Creek is classified Riverine Upper Perennial Streambed (R3SB). Tributaries entering Johns Creek from the northern slope are classified Riverine Intermittent Streambed (R4SB).

Assessment Area VI
Wetland Area: Approximately 14.0 Acres (5.7 Heactares)
(Including Stream Channels and Unvegetated Water Area)
Wetland Delineation Boundary: Approximately 6,400 Linear Feet (1,951 Meters)

Assessment Area VI consists of the old Lake Davies sediment basins, a series of man-made basins south of the existing Lake Davies dredged spoils disposal area in the central part of the Wetland Delineation Project Area. These sequentially connected basins carry storm water runoff from the dredge spoils area to Johns Creek and Goldstein Branch. The uppermost (easternmost) and largest of the basins comprises open water fringed by wetlands whose landward boundary is marked by WET II-1 to II-41 and IIA-1 to IIA-40. The landward boundary of wetlands in the middle basin is bounded by WET KK-1 to KK-28 and WET KKA-1 to KKA-13. The landward boundary of wetlands in the lower (western) of the three basins is bounded by WET LL-1 to LL-18 and LLA-1 to LLA-19. Assessment Area VI is hydrologically connected to Johns Creek. But unlike the natural tributaries contributing flow to Johns Creek in Assessment Areas IV and V, Assessment Area VI consists of wetlands within man-made basins that are the result of extensive grading and dredge spoil placement.

Representative Wetland Delineation Field Data Sheets: Appendix B, Transects and Plots noted below.

Transect	Perpendicular To	Wetland	Upland
II-WEST-1	WET II-22	Plot 1	Plot 2
KK-WEST-1	WET KK-2	Plot 1	Plot 2
KK-WEST-2	WET KK-15	Plot 1	Plot 2

Vegetation: The shoreline of the upper (eastern) basin consists of a broad zone of dense phragmites stands. The phragmites-dominated vegetation does not stop at the wetland boundary but instead extends into the adjoining well-drained dredge spoil soils. Dense stands of phragmites cover most of the dredge spoils, even

where well drained, and may have originated from phragmites propagules contained in the dredge spoils. Vegetation throughout the middle and lower basins is also dominated by dense stands of phragmites.

Hydrology: Water levels in the basins appear to be heavily influenced by surface runoff from the dredge spoils. The upper basin also appears to have been excavated to a depth below the water table, hence the deep open water in its center.

Soils: The aerial photographs used in the soil survey (SCS, 1971) were taken prior to construction of the existing reactors and establishment of the dredge spoil disposal area. They depict a mixture of Sassafras and Westphalia soils and Mixed Alluvial Land that likely correspond to conditions at this location prior to development of the existing reactors. A new soil survey would likely depict the area as "made land", udorthents, or some other indication of soils that are a result of human disturbance.

Delineation Notes: The landward boundary of the phragmites-dominated wetlands surrounding the upper basin generally corresponds to the outer extent of saturated surface soils at the time of the wetland delineation field work in this area (September 2006). For most of the boundary, dense stands of phragmites are prevalent on both the wetland and upland sides. Occasional wetland plants such as sedges and rushes occur amid the phragmites on the wetland side, while occasional upland plants such as tall fescue, eastern redcedar (*Juniperus virginiana*), black locust (*Robinia pseudoacacia*), and Allegheny blackberry (*Rubus allegheniensis*) occur amid the phragmites on the upland side. Because of the history of recent soil disturbance, soil characteristics did not play a significant role in determining the wetland boundary. The landward boundaries of the lower basins generally correspond to the toe of adjoining slopes, where soil saturation abruptly ended as of September 2006.

Classification: The wetland fringe surrounding the open water in the upper basin, as well as the entirety of the middle and lower basins comprising Assessment Area VI is classified as Palustrine Emergent, Persistent (PEM1). The open water in the upper basin is classified Palustrine Open Water (POW).

Assessment Area VII
Wetland Area: Approximately 12.4 Acres (5.0 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 27,220 Linear Feet (8,297 Meters)

Assessment Area VII consists of Goldstein Branch, its headwaters, associated headwater stream channels and seepages, and narrow strips of adjacent wetlands. Several seepage areas and associated headwaters contribute flow to Goldstein Branch. The northernmost reach of a headwater to Goldstein Branch is located in a forested swale near the northwestern corner of the Wetland Delineation Project Area (WET R-1 to R-32, WET R-75 to R-79, and WET RA-1 to RA-36). Another headwater originates from multiple seepages in sloping forest land south of an open field and wooden barn in the northwestern quadrant of the Wetland

Delineation Project Area (WET T-1 to T-194). WET U-1 to U-61 and WET EE-32 to EE-63 mark the landward edge of wetlands east of Goldstein Branch itself; the landward edge of wetlands west of this reach of Goldstein Branch are located off of the CCNPP Site. The line labeled WET VA-1 to VA-5 surrounds a small isolated wetland of less than 0.1 acre (0.04 hectare) in a level area adjoining Goldstein Branch.

Several other unnamed headwaters to Goldstein Branch and narrow strips of adjoining wetlands are included in Assessment Area VII. The lines labeled by WET FF-1 to FF-113, WET GG-1 TO GG-95, and WET MM-1 to MM-337 mark the edge of a system of headwaters that originate as seepages on sloping lands west of the Lake Davies dredge spoil area and generally flow south and west into Goldstein Branch. The line labeled by WET NN-1 to NN-32 marks the edge of an isolated depression on the Lake Davies dredge spoil that appears to be hydrologically connected via the water table to this headwater system. The lines labeled by WET EE-1 to EE-31, WET EEA-1 to EEA-13, WET EEB-1 to EEB-33, and WET EEC-1 to EEC-12 mark a tributary carrying flow from the main Lake Davies storm water basin west into Goldstein Branch. The line marked by WET JJ-1 to JJ-26 surrounds a wetland mitigation project previously completed by Constellation to offset wetland impacts from a prior construction project on the CCNPP Site.

Goldstein Branch is itself tributary to Johns Creek. Assessment Area VII is therefore hydrologically connected to other Assessment Areas associated with Johns Creek (Assessment Areas IV, V and V), and the division is arbitrary. Most surface runoff entering Johns Creek up-gradient (east) of Goldstein Branch originates in a predominantly forested landscape, and most surface runoff entering Assessment Area VI originates on dredge spoils. In contrast, most surface runoff entering Goldstein Branch originates in a mixed landscape of forest, crop, and offsite rural residential land uses. Goldstein Branch can therefore be characterized as a distinct stream system from the upper reaches of Johns Creek.

Representative Wetland Delineation Field Data Sheets: Appendix B, Transects and Plots noted below.

Transect	Perpendicular To	Wetland	Upland
EE-WEST-1	WET EE-18	Plot 1	Plot 2
FF-WEST-1	WET FF-90A15	Plot 1	Plot 2
FF-WEST-2	WET FF-4	Plot 1	Plot 2
T-WEST-1	WET T-177	Plot 1	Plot 2

Vegetation: Close to the seepages, the stream channels forming Assessment Area VII are shaded by deciduous trees, primarily tulip poplar and upland oaks (mixed deciduous forest), growing on the tops of the banks and in the adjoining uplands. A level floodplain area adjoining the channel becomes progressively wider, reaching a width of approximately 150 feet (46 meters) at some points. Most lands in the floodplain support poorly drained bottomland deciduous forest dominated by red maple, black gum, and sweet gum. Dense patches of New York fern occur in both the well-drained and poorly drained forest lands. Patches of other ferns such as sensitive fern, cinnamon fern, and royal fern occur only in the poorly drained forest lands.

Unlike the floodplain associated with the upper reaches of Johns Creek, there is little well-drained forest land that can be described as Well-Drained Bottomland Deciduous Forest.

As is true for the upper reaches of Johns Creek and its headwaters (Assessment Areas IV and V), small areas along the headwaters of Goldstein Branch lack closed tree canopy and support herbaceous marsh vegetation consisting of dense phragmites. The transition between forest cover and phragmites cover is generally gradual and irregular. Generally, the phragmites infestation extends to areas where beavers have killed bottomland trees or where water backed up by beaver dams have killed trees.

Hydrology: Assessment Area VII displays hydrology typical of the upper part of a dendritic stream system in a humid climate. The streams are fed by groundwater discharges at distinct seepage areas, and flow increases downstream. Flow appears to be less than 5 cubic feet (0.14 cubic meters) per second. The water is generally between 1 and 2 inches (2.5 and 5.1 centimeters) in depth at most points. Channels become progressively less distinct downstream from the seepages, with flow spreading out into the adjacent wetlands.

Surface flow in the main channel of Goldstein Branch appears to diminish in places and reemerge downstream. The channel alternates between wider and narrower reaches as it flows south.

Soils: Soils adjoining Goldstein Branch and its wider headwaters are mapped as Mixed Alluvial Land, described as consisting of soil materials washed from uplands and deposited on flood plains and along drainage ways (SCS, 1971). The width shown on the maps is only approximate. The maps do not resolve the narrow strip of mixed alluvial soil along the upper reaches of the stream systems. Soils elsewhere in the vicinity of Assessment Area IV are mapped as Sassafras and Westphalia soils, steep (SCS, 1971).

Delineation Notes: As for Assessment Areas IV and V, most of the delineated wetland boundaries in Assessment Area VII correspond to the transition between forest vegetation dominated by sweet gum and red maple (poorly drained bottomland deciduous forest) and forest vegetation dominated by tulip poplar and oaks (mixed deciduous forest). The groundcover consists of dense fern cover, especially New York fern and cinnamon fern, at most locations inside the delineated wetland boundaries and sparse cover by deciduous tree seedlings outside the delineated wetland boundaries. The outer limit of low-chroma soils generally corresponds to the vegetation transitions noted above.

Closer to where the stream systems merge to form the main channel of Johns Creek, where the floodplain becomes wider, some segments of the delineated wetland boundary correspond to a transition from poorly drained bottomland deciduous forest to well-drained bottomland deciduous forest. While the former comprises a tree canopy consisting almost exclusively of red maple, sweet gum, and other species tolerant of

prolonged soil saturation, the latter also includes substantial numbers of American beech, white oak, tulip poplar and other trees that prefer rich upland soils. The outer limit of low-chroma soils also corresponds to the outer limit of the poorly drained bottomland deciduous forest; the well-drained bottomland deciduous forest displays soils with chromas greater than 2.

As for Assessment Areas IV and V, the delineated wetland boundaries for Assessment Area VII do not always correlate to topography. Many seepage areas in Assessment Area VII originate on steep slopes, some exceeding 15 percent in grade. The wetland boundary thus extends partway up side slopes at several locations.

Classification: Most wetlands within Assessment Area VII are classified Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). A few small clearings within the forested wetlands are classified Palustrine Emergent, Persistent (PEM1). The stream channels are classified Riverine Intermittent Streambed (R4SB) or Upper Perennial Streambed. (R3SB). The existing Constellation wetland mitigation project (WET JJ-1 to JJ-26) is classified Palustrine Emergent, Persistent (PEM1).

Assessment Area VIII
Wetland Area: Approximately 0.4 Acres (0.2 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 3,000 Linear Feet (914 Meters)

Assessment Area VIII consists of headwaters and adjoining wetlands that originate at seepages on a forested slope immediately south of Calvert Cliffs Parkway in the northern part of the Wetland Delineation Project Area. The landward boundary of wetlands in Assessment Area VIII is delineated using WET HH-1 to HH-139. Separate seepages originate near WET HH-1, WET HH-40, WET HH-58, WET HH-77, WET HH-104, and WET HH-122 and form narrow headwaters. The headwaters merge to form a single main stream channel, adjoined by forested wetlands, at a point approximately 150 feet (46 meters) south of Calvert Cliffs Parkway. Another broad seepage area near WET HH-27 and WET HH-30 contributes flow from the east. The stream flows north under Calvert Cliffs Parkway and ultimately to Woodland Branch, which flows north and west into St. Leonard Creek.

Representative Wetland Delineation Field Data Sheets: Appendix B, Transects and Plots noted below.

Transect	Perpendicular To	Wetland	Upland
HH-WEST-1	WET HH-139	Plot 1	Plot 2
HH-WEST-2	WET HH-4	Plot 1	Plot 2

Vegetation: The upper reaches of the headwaters on the slope are shaded by deciduous trees, primarily tulip poplar and upland oaks (mixed deciduous forest), growing on the tops of the banks and in the adjoining uplands. The forested wetlands in the narrow floodplain adjoining the main stream channel close to Calvert

Cliffs Parkway contain poorly drained bottomland deciduous forest dominated by red maple, black gum, and sweet gum.

Hydrology: Assessment Area VIII displays hydrology typical of the upper part of a dendritic stream system in a humid climate. The streams are fed by groundwater discharges that merge, forming progressively greater flow downstream. Channels become progressively less distinct downstream, with flow spreading out into the adjoining wetlands. Flow in the main stream, just south of Calvert Cliffs Parkway, appeared to be less than 1-2 cubic feet (0.03-0.06 cubic meters) per second when the wetland delineation field work was conducted in this area in late August 2006. The water was generally between 1 and 2 inches (2.5 and 5.1 centimeters) in depth at most points.

Soils: Soils in the narrow floodplain adjoining the main stream channel south of Calvert Cliffs Parkway are mapped as Mixed Alluvial Land, described as consisting of soil materials washed from uplands and deposited on flood plains and along drainage ways (SCS, 1971). The width shown on the maps is only approximate. The maps do not resolve the narrower strips of mixed alluvial soil along the upper reaches of the stream systems. Soils elsewhere in the vicinity of Assessment Area VIII are mapped as Sassafras and Westphalia soils, steep (SCS, 1971).

Delineation Notes: Up-gradient stream channel reaches immediately downstream from the seepages are bounded directly by uplands and the delineated wetland boundary corresponds to the ordinary high water mark. Closer to Calvert Cliffs Parkway, the delineated wetland boundary generally corresponds to an abrupt transition from forest vegetation dominated by sweet gum and red maple (poorly drained bottomland deciduous forest) to forest vegetation dominated by tulip poplar and oaks (mixed deciduous forest). This transition is generally coincident with the outer limit of low-chroma soils and with the toe of upland slopes adjoining the floodplain.

Classification: Wetlands within Assessment Area VIII are classified as Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). The stream channels are classified Riverine Intermittent Streambed (R4SB) or Upper Perennial Streambed (R3SB).

Assessment Area IX
Wetland Area: Approximately 1.1 Acres (0.4 Hectares) (Including Stream Channels)
Wetland Delineation Boundary: Approximately 3,000 Linear Feet (914 Meters)

Assessment Area IX consists of seepages, headwaters, and adjoining wetlands within a patch of undeveloped forest land directly west of an existing CCNPP parking lot. The forest land slopes generally east. The headwaters originate at seepages low on the slope and flow generally eastward. The landward boundary of the wetland and water features forming Assessment Area IX was delineated using WET Q-1 to

Q-72. Separate headwaters originate at seepages near WET Q-15 and WET Q-60. Storm drains collecting runoff from around the existing transmission switchyard feed a ditch beginning at WET Q-42 that contributes additional flow to the wetlands.

Assessment Area IX is the only remnant of a stream system that formerly flowed east to the Chesapeake Bay. Most of that stream system was filled to construct the existing power generation units and associated developed areas. Flow from Assessment Area IX enters a storm drain near WET Q-33 and is piped under the developed area to the east. Flow from the storm drain system is ultimately discharged at a stormwater basin feeding into Assessment Area I.

Wetland Delineation Field Data Sheets: Appendix B, Transect Q-EAST-1, Plot 1 (Wetland) and Plot 2 (Upland).

Vegetation: The upper (western) reaches of the two headwaters originating at natural seepages on the slope are shaded by deciduous trees, primarily tulip poplar and upland oaks (mixed deciduous forest), growing on the tops of the banks and in the adjoining uplands. The broader wetlands occurring at the bottom of the slope support a dense stand of the perennial grass phragmites with only occasional widely spaced deciduous trees, saplings, and shrubs. Phragmites is an invasive plant of poor value as wildlife food and cover that readily invades disturbed wetlands. The predominance of phragmites in the wetlands is likely a result of a history of tree cutting and ground disturbance along the eastern edge of the forest patch. The runoff ditch flowing south into the wetlands is also vegetated by dense stands of phragmites.

Hydrology: Like the upslope portions of other stream systems in the Wetland Delineation Project Area (Assessment Areas I, II, III, IV, VII, and VIII), Assessment Area VIII displays hydrology typical of the upper part of a dendritic stream system in a humid climate. Unlike those systems, Assessment Area IX constitutes only a small remnant of a stream system that has been almost completely covered by existing development. The two headwaters that originate on the slope are fed by groundwater discharges that merge, forming progressively greater flow downstream. The channels become progressively less distinct downstream, with flow spreading out into the adjoining wetlands. Flow in the headwaters appeared to be less than 1-2 cubic feet (0.03-0.06 cubic meters) per second when the wetland delineation field work was conducted in this area in early January 2007. The water was generally between 1 and 2 inches (2.5 and 5.1 centimeters) in depth at most points.

The wetlands are also fed by stormwater runoff entering the ditch at WET Q-42. Much of this runoff appears to originate from the existing electric switchyard. Flow in the ditch appeared to be small, less than 2 cubic feet (0.06 cubic meters) per second, at the time of the wetland delineation. However, substantially greater

flow likely occurs during heavy rain events, scouring the bottom of the ditch and introducing sediment into the wetland.

Soils: Soil survey maps do not resolve the narrow strips of mixed alluvial soil that occur in the wetlands comprising Assessment Area IX. Soils elsewhere in the vicinity of Assessment Area IX are mapped as Sassafras and Westphalia soils, steep (SCS, 1971). This appears to be an accurate characterization of undisturbed upland soils adjoining Assessment Area IX. Soils along much of the eastern edge of the forest patch, including much of the wetlands, appear to have been physically disturbed by previous grading activity.

Delineation Notes: Upslope reaches of the two headwaters originating at natural seepages, as well as the south-flowing runoff ditch beginning at WET Q-42 are bounded directly by uplands, and the delineated wetland boundary generally corresponds to the ordinary high water mark. The western boundary to the downslope wetland area corresponds to an abrupt transition from phragmites to forest vegetation dominated by tulip poplar and oaks (mixed deciduous forest). The eastern boundary generally corresponds to a soil fill line where phragmites abruptly transitions to upland fill soil.

Classification: The wetland areas within Assessment Area IX are classified Palustrine Emergent, Persistent (PEM1). The headwaters flowing down the slope are classified Riverine Upper Perennial Streambed (R3SB) adjoined by Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated (PFO1E). The ditch flowing from WET Q-42 is classified Riverine Upper Perennial Streambed (R3SB).

FUNCTIONAL ASSESSMENT

Wetland functions are physical, chemical, and biological processes or attributes of wetlands that are vital to the integrity of a wetland system, independent of how those benefits are perceived by society. Wetland values are attributes that are not necessarily important to the integrity of a wetland system but which are perceived as valuable to society (Adamus *et al.*, 1991). Table 3 lists several commonly recognized functions and values provided by wetlands (DeSanto and Flieger, 1995). The following discussion of the functions and values of the delineated Assessment Areas is subjective, based on the descriptive approach for wetland functional assessment developed as part of the *Highway Methodology* by the New England District of the ACOE (DeSanto and Flieger, 1995). More rigorous quantitative and semi-quantitative models are available for assessing the functions and values of wetlands but are rarely necessary to support most permitting and planning decisions. Another wetland value listed by DeSanto and Flieger (1995), which is Endangered Species Habitat, is not addressed here. Separate reports have been prepared to address rare, threatened, and endangered species on the CCNPP site.

Functions and values present in each of the nine Assessment Areas delineated on the Wetland Delineation Project Area are summarized in Table 4 and discussed below. Table 4 also identifies "principal" functions and values for the Assessment Areas. Functions and values are considered principal if they are an important physical component of an ecosystem or of special value to society from a local, regional, or national perspective. In general, Assessment Areas IV and V display the most principal wetland functions and values (DeSanto and Flieger, 1995).

Groundwater Recharge/Discharge: Assessment Areas I, II, III, IV, V, VII, and VIII originate at up-gradient spring and seepages where groundwater contributes base flow to down-gradient natural streams. Groundwater discharge is therefore identified as a function for each of those Assessment Areas. Assessment Area VI originates as a series of man-made stormwater basins and thus does not appear to serve a groundwater discharge function. Assessment Area IX is fed by two natural seepages but appears to receive more flow from the runoff ditch to the northeast. It also drains into a man-made storm drain system rather than feeding base flow into natural streams. Hence, groundwater discharge is not identified as a function for Assessment Area IX. None of the Assessment Areas are fed by large watersheds; hence groundwater recharge is not identified as a function for any of the Assessment Areas. Neither groundwater discharge nor recharge is generally of great concern in central Maryland, where natural rainfall is abundant. Hence, neither is identified as a principal function for any of the Assessment Areas.

Floodflow Alteration: The CCNPP Site, and hence each of the Assessment Areas, is situated close to tidal waters. Streams originating within Assessment Areas I, II, and III each flow for less than 2 miles

(3 kilometers) before entering the Chesapeake Bay. Assessment Areas IV, V, VI, and VII all drain into Johns Creek, which flows less than 5 miles (8 kilometers) to the west before entering St. Leonard Creek, a tidal tributary to the Patuxent River. Assessment Area VIII contributes flow that travels only a few miles to the northwest before reaching tidal water in St. Leonard Creek. Assessment Area IX flows into a man-made storm drain system. The watersheds contributing runoff to each of the Assessment Areas are small, each less than 1 square mile (2.6 square kilometers). None of the Assessment Areas occur in the upper reaches of a long stream system that receives runoff from a large watershed (measured in square miles) capable of contributing substantial flood flows to down-gradient streams and rivers following heavy precipitation. It is therefore likely that none of the Assessment Areas play an important individual or cumulative role in preventing downstream flood events. Floodflow alternation is therefore not identified as a function (or principal function) for any Assessment Area.

Fish and Shellfish Habitat: Only Assessment Areas II, V, VI, and VII contain deep enough water under normal conditions to provide fish or shellfish habitat. In Assessment Area II, only the Camp Conoy Fishing Pond provides deep enough water. The basins forming Assessment Area VI are so clogged with phragmites as to be, at best, poor fish or shellfish habitat. An aquatic survey conducted for the CCNPP Site in 2006 identified only one fish species in the largest basin in Assessment Area VI (which it designates as "Lake Davies"). The survey attributes the low fish diversity to depressed dissolved oxygen levels caused by algae and duckweed decomposition (EA, 2006). Therefore, fish and shellfish habitat is identified as a function only for Assessment Areas II, V, and VII. Fish and Shellfish Habitat has been identified as a principal function for Assessment Area V, which contain broad areas of permanently inundated wetlands (over 100 feet [30.5 meters] wide at many locations) and a shallow, gentle stream channel in a generally undisturbed natural setting that likely provides quality habitat for freshwater fish typical of non-tidal streams in central Maryland. The aquatic survey noted that the greatest diversity of fish in streams on the CCNPP Site was in the downstream station on Johns Creek (west of Assessment Area V) (EA, 2006).

Sediment/Toxicant Retention: Sediment/toxicant retention is identified as a function for Assessment Areas II, III, IV, V, VI, VII, and VIII. All contain areas of densely vegetated emergent wetlands that can slow flow velocities and thereby trap suspended sediments or filter dissolved toxicants. These wetlands serve as the last line of defense separating the Chesapeake Bay and downstream reaches of Johns Creek and St. Leonard Creek from sediment or chemical substances on the ground in the existing developed areas on the CCNPP Site. Sediment/toxicant retention was not identified as a function for Assessment Area I, which consists mostly of deeply incised stream channels with little emergent vegetation, or Assessment Area IX, which flows into storm sewers lacking vegetation to trap sediment or toxicants. Sediment/toxicant retention is identified as a primary function for Assessment Area V, which

consists of broad, sinuous, poorly defined stream channels that traverse broad areas of dense, emergent wetland vegetation.

Nutrient Removal: Nutrient removal is identified as a function for Assessment Areas II, III, IV, V, VI, VII, and VIII. All contain areas of densely vegetated emergent wetlands that can slow flow velocities and thereby trap dissolved nutrients such as nitrates and phosphates. Nutrient removal was not identified as a function for Assessment Area I, which consists mostly of deeply incised stream channels with little emergent vegetation, or Assessment Area IX, which flows into storm sewers. Nutrient removal is identified as a primary function for Assessment Area V, which contains exceptionally broad areas of dense emergent vegetation, and Assessment Area VII, which contains emergent vegetation in places and receives runoff from lawns on private property close to Route 2-4.

Production Export: Production export is identified as a function for Assessment Areas II, III, IV, V, VI, VII, and VIII. All contain areas of densely vegetated emergent wetlands that likely contribute substantial quantities of allochthonous biomass to down-gradient aquatic food chains in Johns Creek and near-shore waters of the Chesapeake Bay. Production export was not identified as a function for Assessment Area I, which consists mostly of deeply incised stream channels with little emergent vegetation, or Assessment Area IX, which flows into storm sewers. Production export is identified as a primary function for Assessment Area V, which consists of broad, sinuous, poorly defined stream channels that traverse broad areas of dense, emergent wetland vegetation.

Sediment/Shoreline Stabilization: Sediment/shoreline stabilization is identified as a function for Assessment Areas II, V, and VI. None of the other Assessment Areas contain broad areas of open water capable of causing shoreline erosion. Assessment Areas II and VI contain man-made lakes of a few acres each, and Assessment Area V contains broadly inundated areas formed by beaver dams. The emergent wetlands fringing the lakes and providing cover throughout the areas flooded by the beaver dams help protect the shoreline against water erosion. However, none of the water areas are large enough to justify identifying sediment/shoreline stabilization as a principal function.

Wildlife Habitat: Wildlife habitat is identified as a function for all of the Assessment Areas. As detailed in the faunal survey prepared in 2006 for the Wetland Delineation Project Area (Tetra Tech, 2007b), the undeveloped lands on the CCNPP Site provide a diversity of large areas of different types of upland and wetland wildlife habitat. Assessment Areas II, III, IV, V, VI, and VII are largely intact natural systems of stream channels, wetlands, and uplands in settings largely free of urban or agricultural development; hence, wildlife habitat is identified as a principal function for those Assessment Areas. Wildlife habitat is not identified as a principal function for Assessment Area I, where the deeply incised channel is not readily accessible as a drinking water source for wildlife; Assessment Area VI, where the wetlands are

dominated by the non-native invasive plant phragmites, which provides poor food and cover to wildlife; and Assessment Area IX, which is surrounded by developed areas.

Recreation: Recreation is identified as a value for Assessment Areas II, III, IV, V, VII, and VIII, primarily because they contribute to the natural experience that could potentially be enjoyed by hikers, if Constellation were to open undeveloped CCNPP lands to hikers in the future. The value is minimized, however, by the fact that CCNPP lands are presently not open to the public for hiking. The Camp Conoy Fishing Pond (part of Assessment Area II) has a long history of enjoyment by Constellation employees and their families, though is no longer used for this purpose; recreation is therefore identified as a principal function for Assessment Area II.

Educational/ Scientific Value: Assessment Areas III, IV, V, and VIII could be of value for purposes of education or scientific research because of they are largely free of human disturbance and their watersheds are mostly undeveloped and forested. They could be of interest to students and researchers interested in the pre-settlement conditions of wetlands in Calvert County. Their educational potential is reduced by the fact that the public does not have access, but that fact could be beneficial to researchers wanting to conduct ecological experiments. Education and scientific research are not identified as principal values for any of the Assessment Areas.

Uniqueness/Heritage: As southern Calvert County becomes increasingly urbanized, the undeveloped forested lands on the CCNPP Site become increasingly valuable as remnants of the County's natural heritage. Uniqueness/heritage is therefore identified as a value for Assessment Areas II, III, IV, V, and VIII, which all occur in predominantly wooded, natural settings. Assessment Area I consists mostly of stream channels that have become artificially incised by runoff and thus not reflective of the region's natural heritage. Assessment Area VI consists of man-made basins adjoining dredged spoils. Assessment Area VII adjoins areas of private development to the west and therefore does not constitute a stream valley uniquely free from development. Uniqueness/heritage has been identified as a principal value for Assessment Areas IV and V, which together form one of the largest stream systems in southern Calvert County that still remains largely free of adjoining development.

Visual Quality/Aesthetics: Visual quality/aesthetics has been assigned as a value for Assessment Areas II, VIII, and IX. Although not visible to the public and no longer used for recreation, the Camp Conoy Fishing Pond in Assessment Area II was long enjoyed as a scenic spot for Constellation employees to fish and picnic. Assessment Area VIII is part of the forest lands adjoining the Calvert Cliffs Parkway, a scenic entryway for employees and visitors to the Calvert Cliffs facilities. Assessment Area IX is readily visible from a road regularly traversed by Constellation employees and adjoins a walkway used

by employees and guests walking the grounds of the existing facilities. The other Assessment Areas are not generally visible from roads used either by the public or Constellation employees and visitors.

Summary: Considered holistically, the greatest overall functions and values are provided by Assessment Area V, which consists of the main channel of Johns Creek and its adjoining wetlands. Within the CCNPP Site, Johns Creek remains largely free of human disturbance. It flows through a stream valley bounded throughout on both sides by mature deciduous forest cover free of agricultural or urban development. The channel is generally diffuse and poorly defined, spreading its flow through dense wetland vegetation that is more than 100 feet (30.5 meters) in width at many locations. The vegetation is capable of attenuating flow velocity, filtering out dissolved nutrients or contaminants in the water and causing suspended sediment to settle out before flowing downstream to the tidal waters of St. Leonard Creek.

Many of the same functions and values are provided by Assessment Area IV, which consists of the seepages, springs, and headwaters that flow into the upper end of Johns Creek. The reach of Johns Creek east of Route 2-4 constitutes one of the largest remaining systems of headwaters and stream whose watershed is still largely forested.

The Assessment Areas with the least overall apparent function and value are Assessment Areas I, VI, and IX. Assessment Area I consists mostly of deeply incised stream channels that have been scoured by runoff from areas of existing development. There is very little vegetated wetland adjoining the channels. The channel is therefore not capable of substantially attenuating flow and thereby helping to reduce downstream movement of sediment, nutrients, and toxicants. Assessment Area VI consists of man-made basins overrun by Phragmites, an invasive grass that is of poor value as food or cover for wildlife. Assessment Area IX consists of wetlands in a small fragment of forest surrounded by existing development. The wetlands flow into a storm drain system under the existing Calvert Cliffs facilities.

Table 3
Common Functions and Values of Wetlands

Functions	
Groundwater Recharge	Some wetlands function to catch and detain surface runoff, allowing at least some of the detained water to leach down into underlying aquifers. Wetlands capable of best performing this function tend to receive runoff from a large watershed, support dense vegetation, and have a narrow (constricted) outlet (or no outlet).
Groundwater Discharge	Some wetlands function as areas where groundwater is discharged to the surface. Such wetlands are commonly referred to as seeps or springs and represent a means by which wildlife inhabiting the surface can access water reserves held in the ground.
Floodflow Alteration	Some wetlands function to slow the overland runoff of floodwaters, thereby reducing peak flow levels following heavy precipitation events. Wetlands capable of best performing this function tend to be located in the upper parts of the watershed to stream systems.
Sediment/ Shoreline Stabilization	Vegetation in wetlands bordering streams and other waterbodies can stabilize banks and shorelines against erosion caused by currents and waves.
Sediment/ Toxicant Retention	Some wetlands serve to detain surface flow (surface runoff or channel flow) allowing some suspended sediments, toxicants, and/or pathogens to settle out into the wetland soil, thereby preventing their migration into downstream waters. Wetlands capable of best performing this function tend to support dense vegetation, have constricted (or no) outlets, and be located near disturbed soils or toxicant sources.
Nutrient Removal/ Transformation	Some wetlands serve to detain surface flow (surface runoff or channel flow) allowing nutrients such as nitrogen and phosphorus to settle out into the wetland soil, thereby preventing their migration into downstream waters. High nutrient levels in water bodies cause eutrophication, a condition where undesirable algal growths deplete dissolved oxygen and interfere with other aquatic biota. Wetlands capable of best performing this function tend to support dense vegetation, have constricted (or no) outlets, and be located near areas of heavy fertilizer use.
Production Export	Some wetlands serve as sources of biomass, nutrients, and food sources supporting aquatic ecosystems in down-gradient water bodies. Wetlands capable of best performing this function tend to have dense, diverse vegetation and be connected to areas of open water.
Aquatic Diversity/ Abundance	Wetlands adjoining or forming a part of streams, lakes, and other areas of open water tend to provide specialized habitat for many species of fish and other aquatic biota, thereby enhancing the diversity of aquatic ecosystems.
Wildlife Diversity/ Abundance	Wetlands provide favored habitat for many amphibian, reptile, bird, and mammal species. The exact species of wildlife attracted by a wetland depends largely on the wetland's vegetation composition.
Values	
Recreation	Many wetlands provide opportunities for recreational activities such as hiking, canoeing, boating, fishing, and hunting. The recreational value of a wetland depends not only on its physical characteristics but also on its public accessibility and proximity to population centers.
Uniqueness/ Heritage	Many wetlands are inherently "special" places that reflect or contribute to the history and/or culture of the surrounding region.
Educational/ Scientific Value	Many wetlands, especially wetlands that have experienced little human alteration or disturbance, are of value for scientific research and/or for public outdoor education. The location of a wetland on public land and/or in close proximity to schools enhances this value.
Visual Quality/ Aesthetics	Especially in urban/suburban settings, many wetlands are visually pleasing natural areas that can buffer, screen, or offset the visual impacts of developed areas.

Source: DeSanto and Flieger, 1995

Table 4
Summary of Functions and Values for Assessment Areas

Function or Value	**Assessment Area**								
	I	II	III	IV	V	VI	VII	VIII	IX
Functions									
Groundwater Recharge/ Discharge	X	X	X	X	X		X	X	
Floodflow Alteration									
Fish and Shellfish Habitat		X			**X**		X		
Sediment/ Toxicant Retention		X	X	X	**X**	X	X	X	
Nutrient Removal		X	X	X	**X**	X	**X**	X	
Production Export		X	X	X	**X**	X	X	X	
Sediment/ Shoreline Stabilization		X			X	X			
Wildlife Habitat	X	**X**	**X**	**X**	**X**	X	**X**	**X**	X
Values									
Recreation		**X**	X	X	X		X	X	
Educational/ Scientific Value			X	X	X			X	
Uniqueness/ Heritage		X	X	**X**	**X**			X	
Visual Quality/ Aesthetics		X						X	X

Legend:

X: Function or Value Present

X: Function or Value Principal

REFERENCES

ACOE (U.S. Army Corps of Engineers). 1992. Memorandum dated March 6, 1992 from A.E. Williams, Major General, USA, Directorate of Civil Works, concerning clarification and interpretation of the 1987 Manual.

Adamus, P. R., L. T. Stockwell, E. J. Clairain, Jr., M. E. Morrow, L. P. Rozas, and R. D. Smith, 1991. Wetland Evaluation Technique (WET); Volume I: Literature Review and Evaluation Rationale, Technical Report WRP-DE-2, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

COA and JAH (COA, Inc. and John A. Hofmann, P.C.). 2006. Calvert Cliffs Nuclear Power Plant Overall Topographical Map - Compilation Based on 1992 and 2003 Calvert County Topographic Data.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* US Fish and Wildlife Service, Office of Biological Services. FWS/OBS-79/31.

DeSanto, R. S. and T. A. Flieger, 1995. Wetland Functions and Values: Descriptive Approach to Visualizing and Assessing Wetland Systems, Transportation Research Record 1475, Transportation Research Board, National Research Council, Washington, DC.

EA (EA Engineering, Science, and Technology). 2006. *Aquatic Field Studies for UniStar Calvert Cliffs Expansion Project, Fall 2006 Interim Report.*

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1. US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Federal Register. July 13, 1994. *Changes in Hydric Soils of the United States,*. Washington, D.C.

FICWD (Federal Interagency Committee for Wetland Delineation). 1989. *Federal Manual for Identifying and Delineating Jurisdictional Wetlands.* US Army Corps of Engineers, US Environmental Protection Agency, US Fish and Wildlife Service, and USDA Soil Conservation Service. Cooperative technical publication. 76 pp. plus appendices.

FWS (U.S. Fish and Wildlife Service). 2006. NWIDBA.CONUS_wet_poly: Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31., U.S. Fish and Wildlife Service, Branch of Habitat Assessment, Washington, D.C.

MDNR (Maryland Department of Natural Resources). 1997. *State Forest Conservation Technical Manual.* Third Edition, Ginger Page Howell and Tod Ericson, Editors.

MDNR (Maryland Department of Natural Resources). 2005. MDNR wetland data (DNR_Wetlands) for Calvert County. Maryland Department of Natural Resources - Geographic Information Services Division. Posted November 29, 2005 at www.msgic.state.md.us/techtool.

NRCS (Natural Resources Conservation Service). 1992. *Hydric Soils List without Acreages for Calvert County, Maryland.* May 13, 1992.

NRCS (Natural Resources Conservation Service). 1998. *Field Indicators of Hydric Soils in the United States.* Version 4.0, March 1998.

Reed, P. B., Jr., 1988. *National List of Plant Species that Occur in Wetlands: National Summary.* US Fish and Wildlife Service Biol. Rep. 88(24). 244 pp.

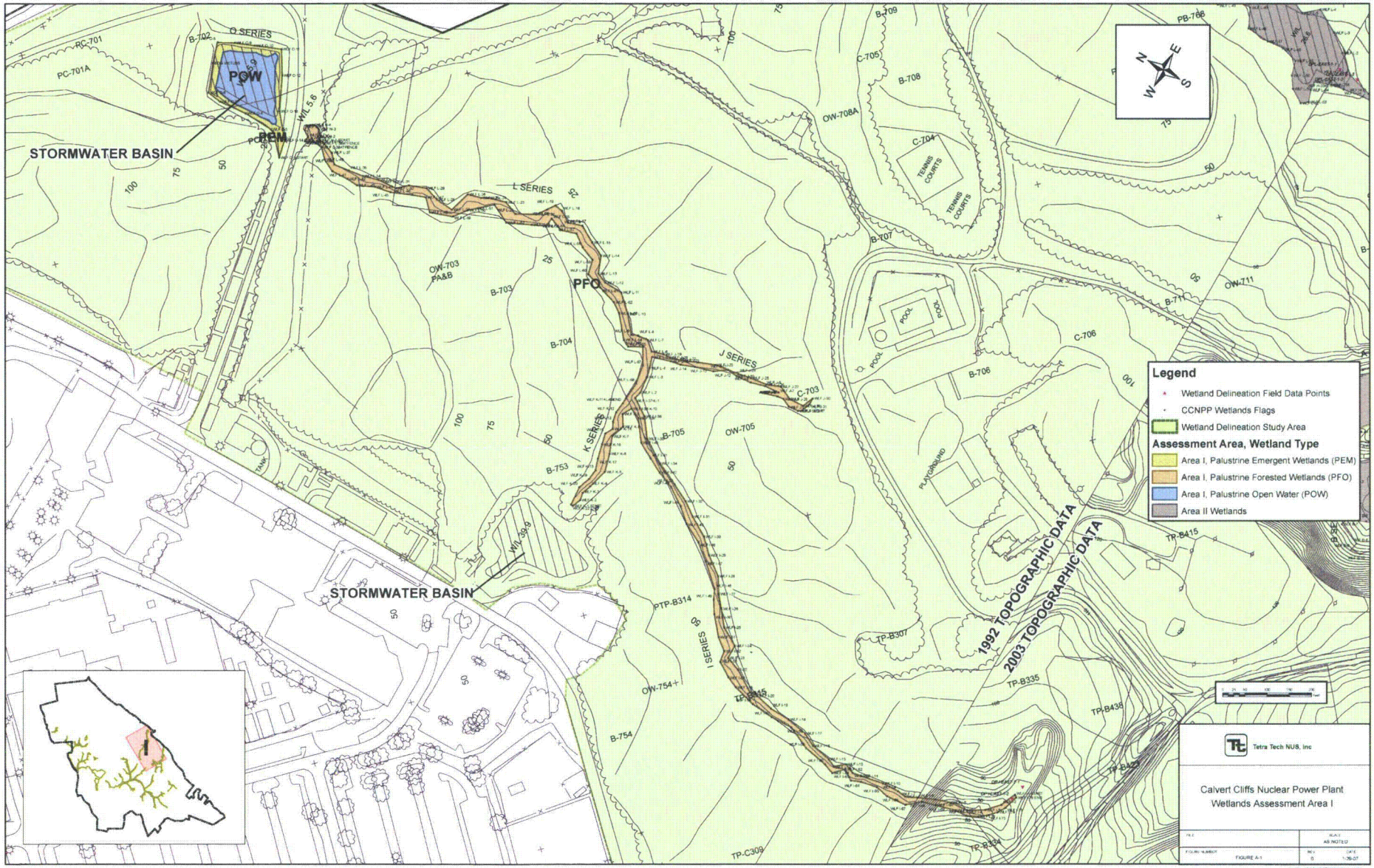
SCS (U.S. Soil Conservation Service). 1971. *Soil Survey of Calvert County, Maryland.* U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the Maryland Agricultural Experiment Station. 76 pp. plus maps.

Tetra Tech NUS. 2007a. *Final Flora Survey Report for Proposed UniStar Nuclear Project Area*, Calvert Cliffs Nuclear Power Plant Site, Calvert County, Maryland. May 2007.

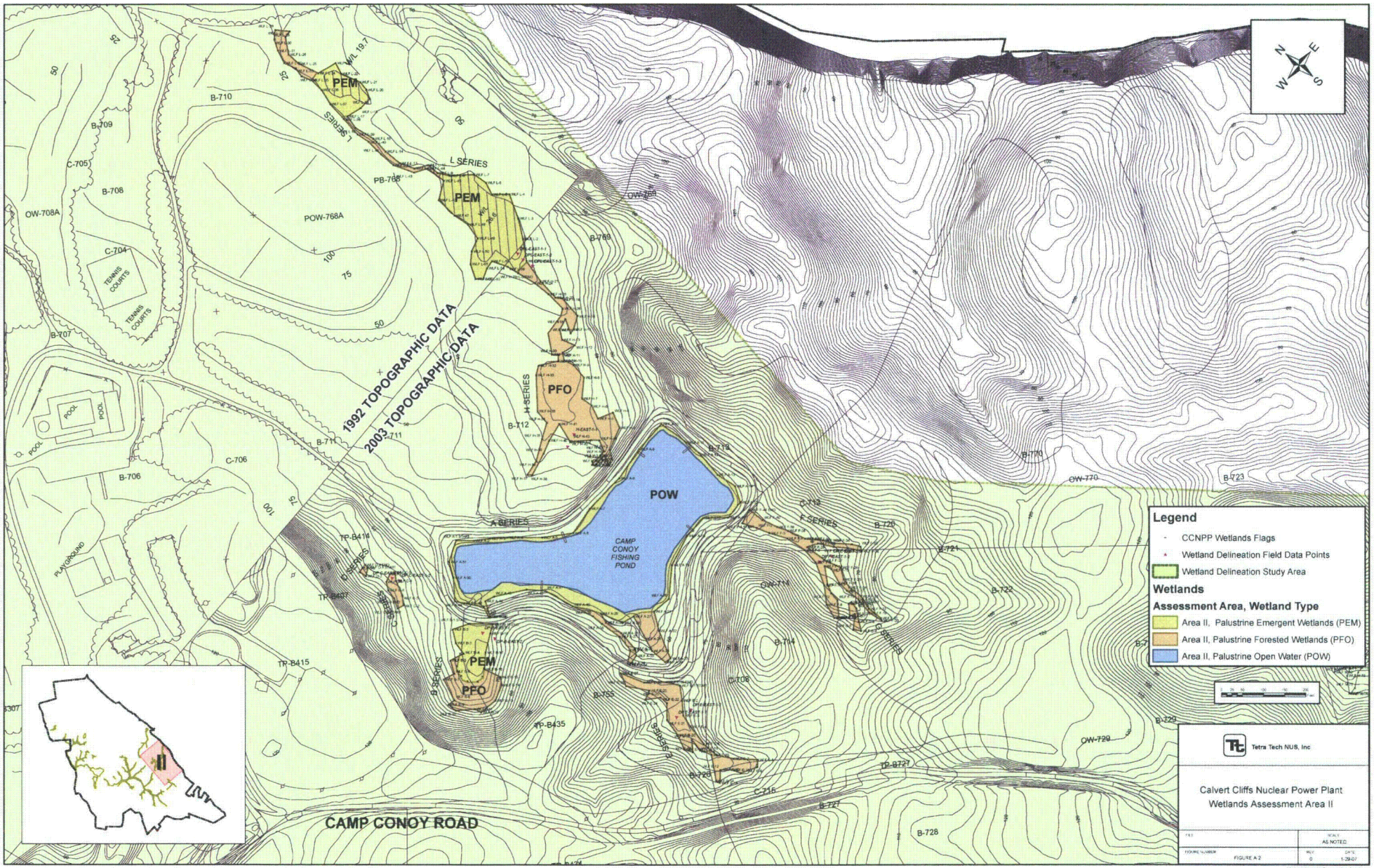
Tetra Tech NUS. 2007b. *Final Faunal Survey Report for Proposed UniStar Nuclear Project Area,* Calvert Cliffs Nuclear Power Plant Site, Calvert County, Maryland. May 2007.

USGS (United States Geological Survey), 1987. *Cove Point, Maryland 7.5-minute Topographic Quadrangle Map.*

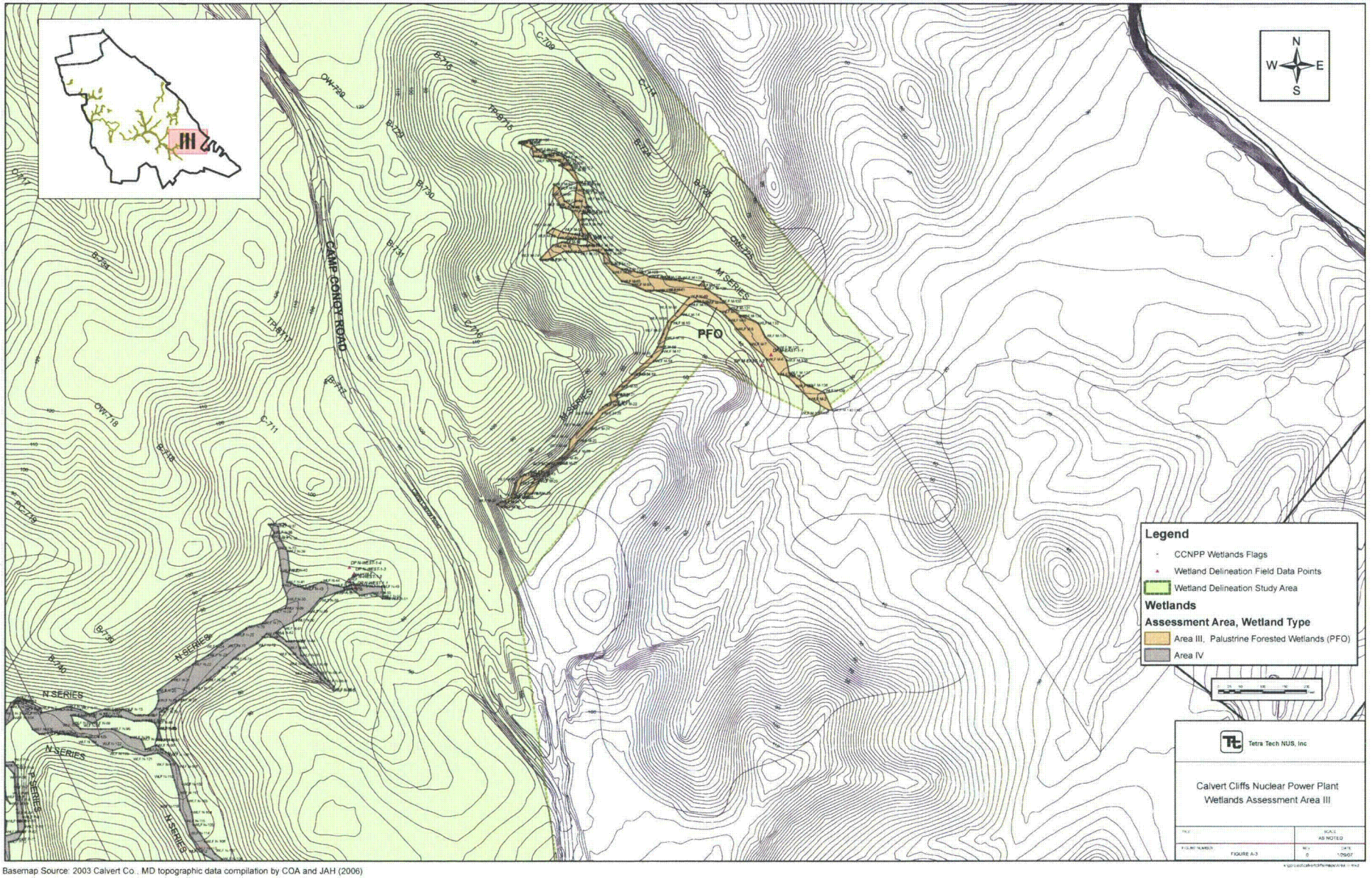
APPENDIX A
WETLAND DELINEATION MAPS



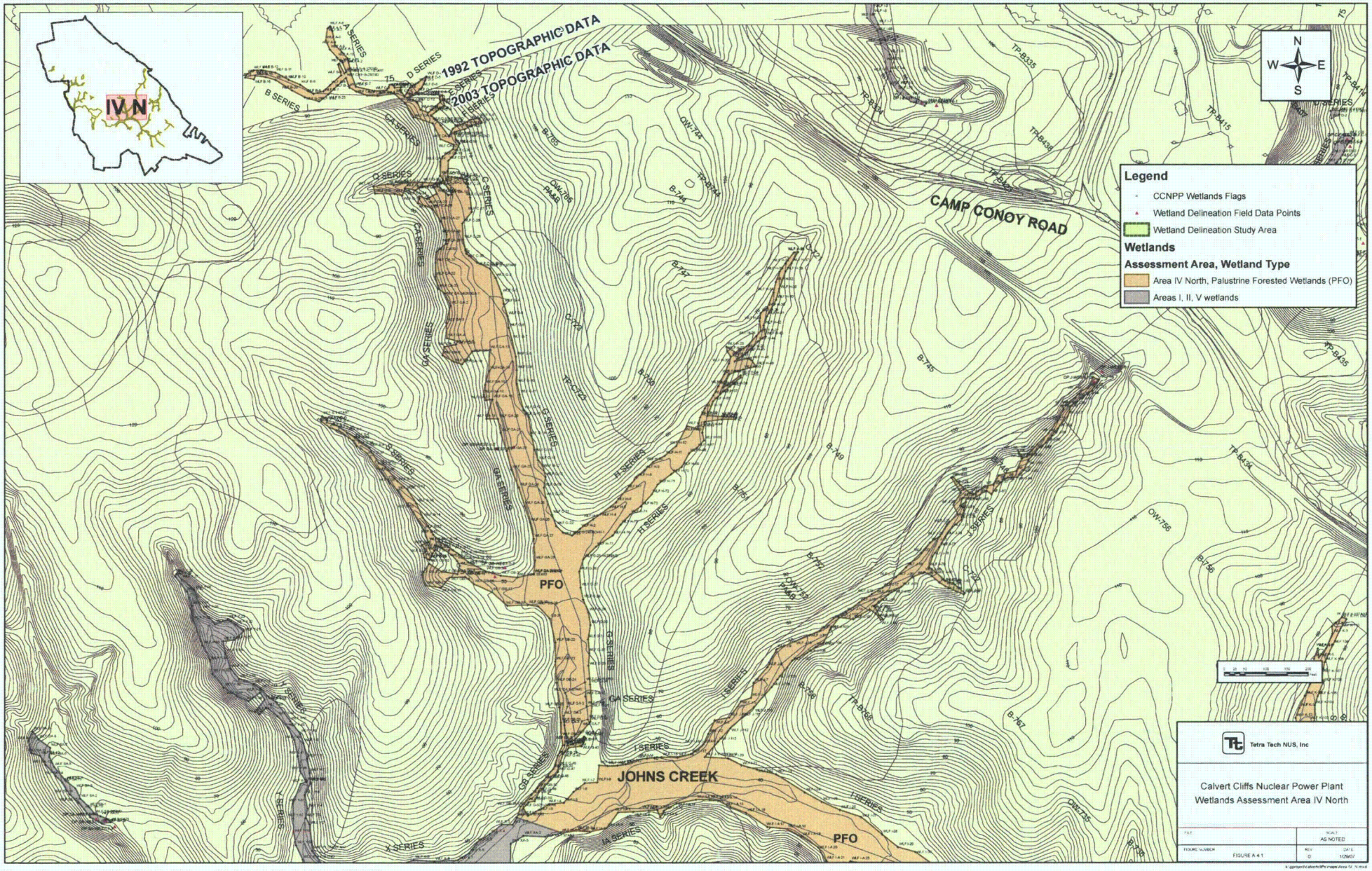
Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



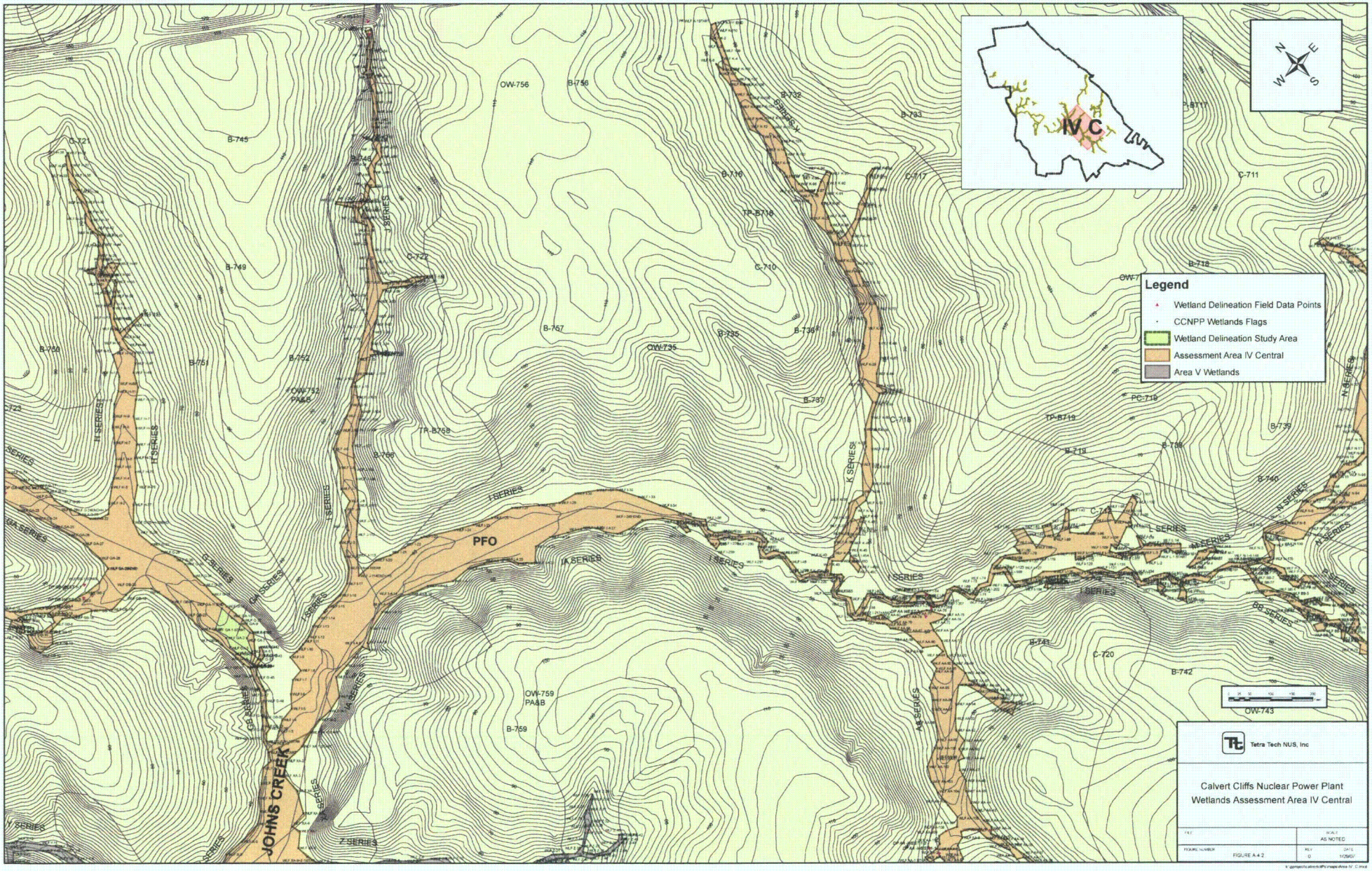
Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



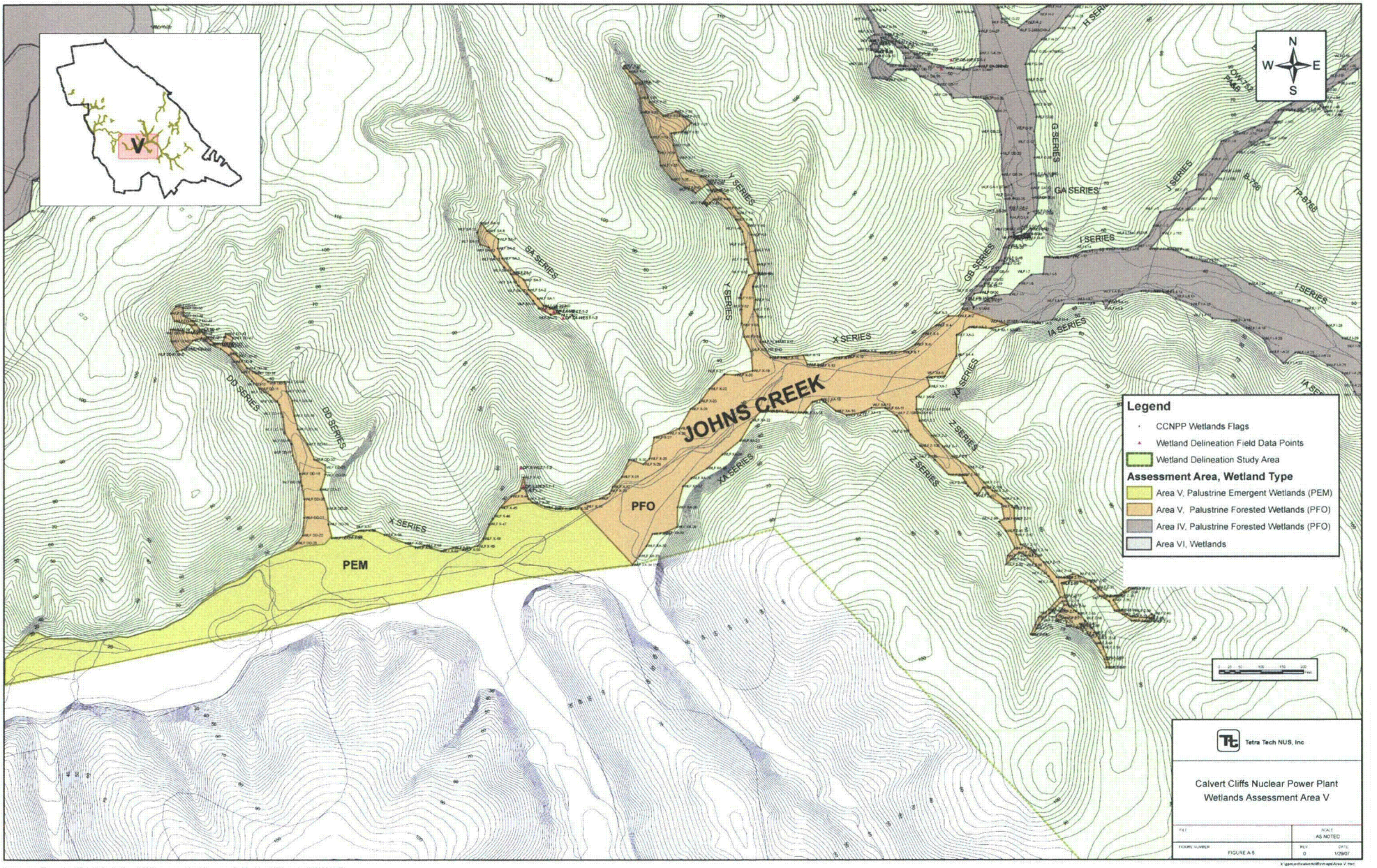
Tetra Tech NUS, Inc

Calvert Cliffs Nuclear Power Plant
Wetlands Assessment Area IV Central

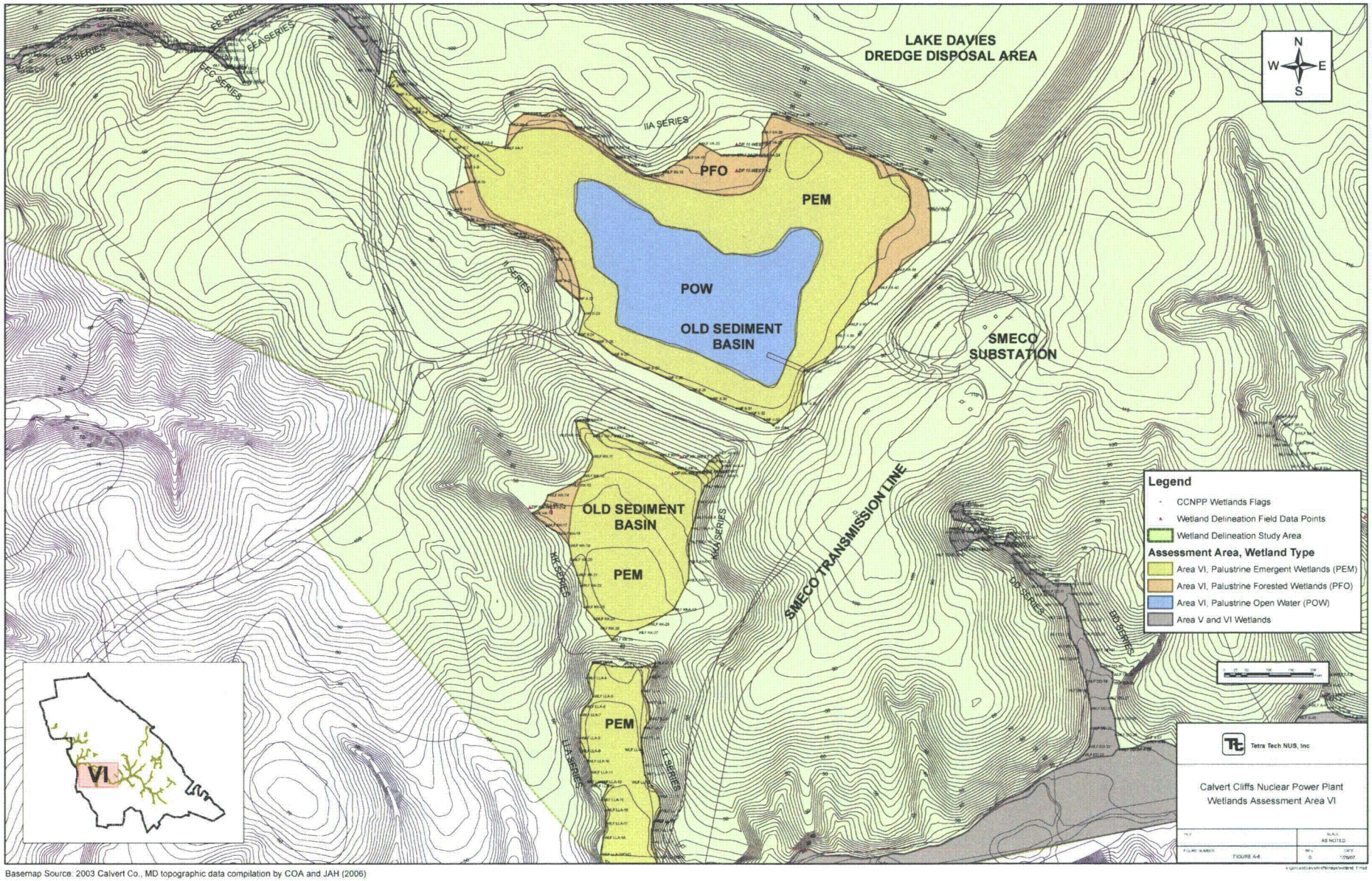
FILE	SCALE
	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE A-4-2	0 / 1/29/07

Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)

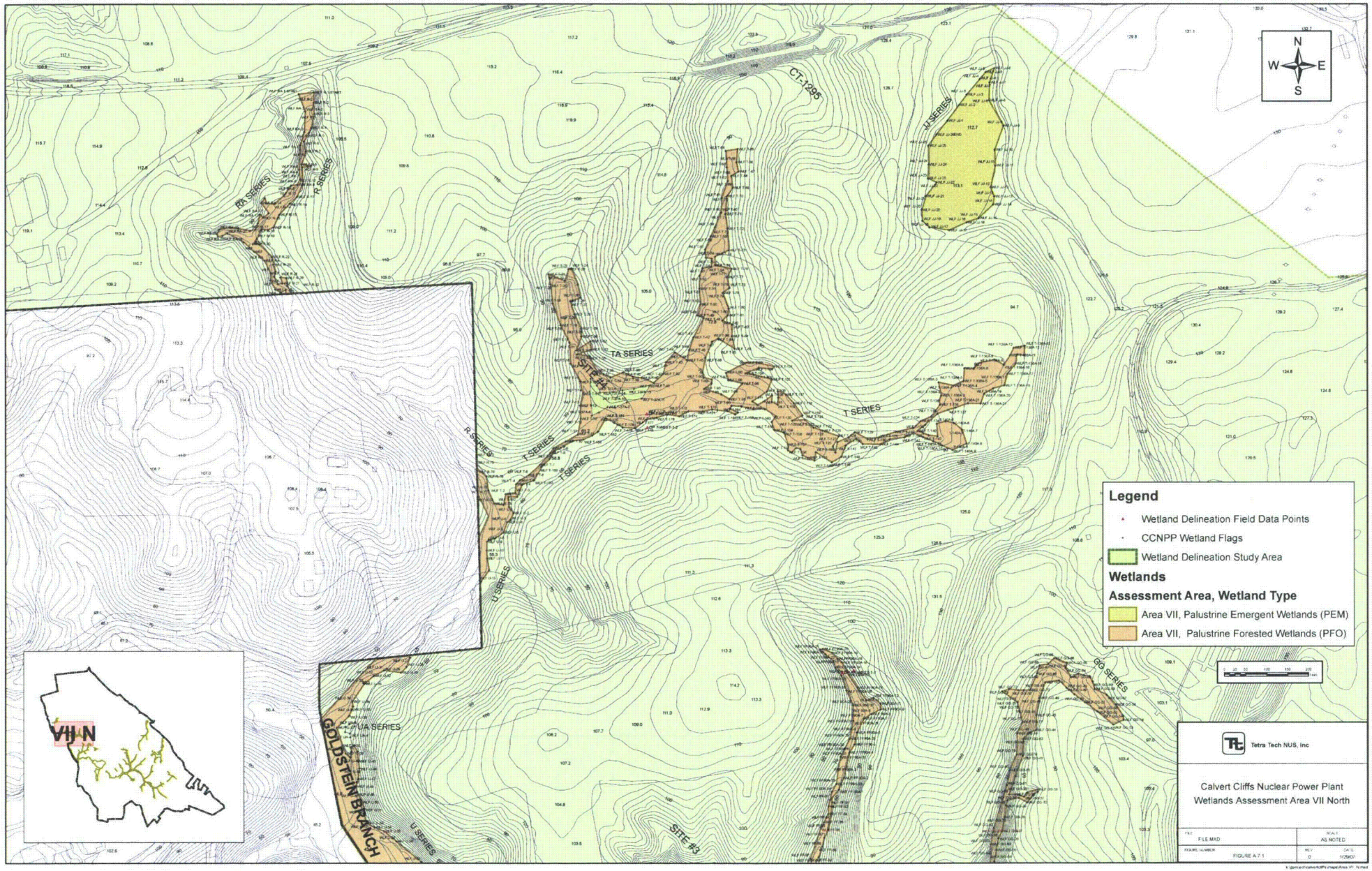
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



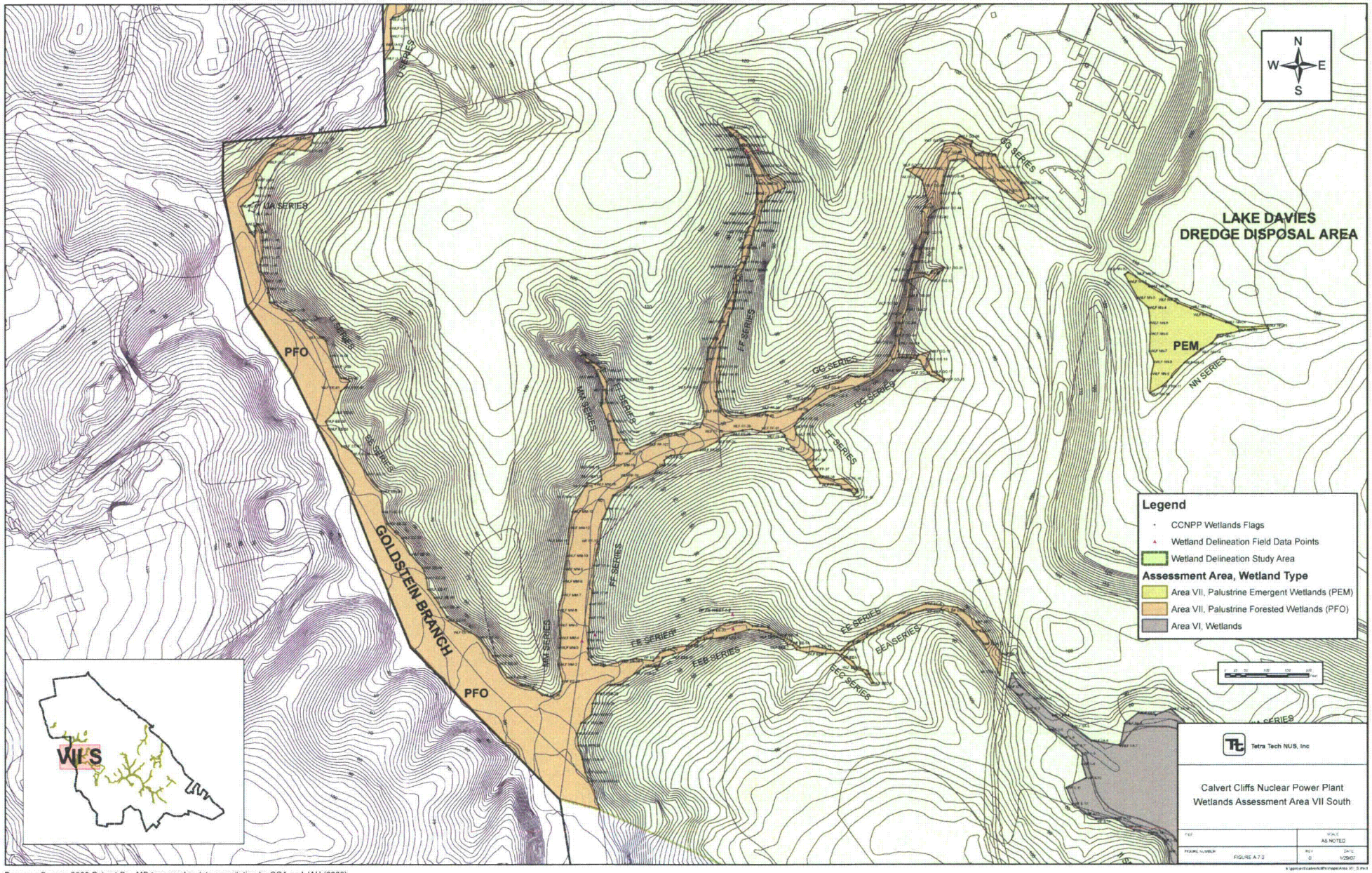
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



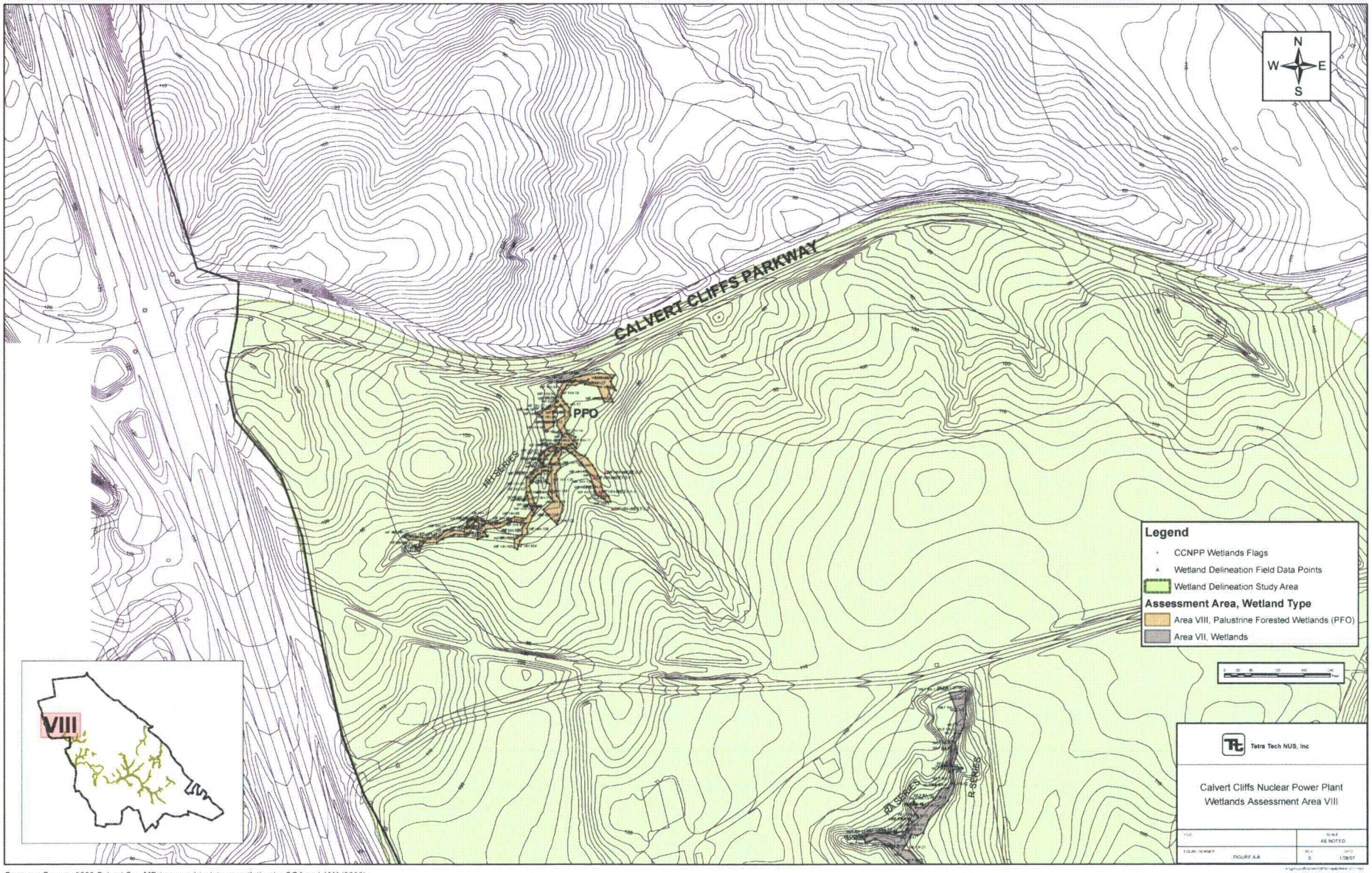
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



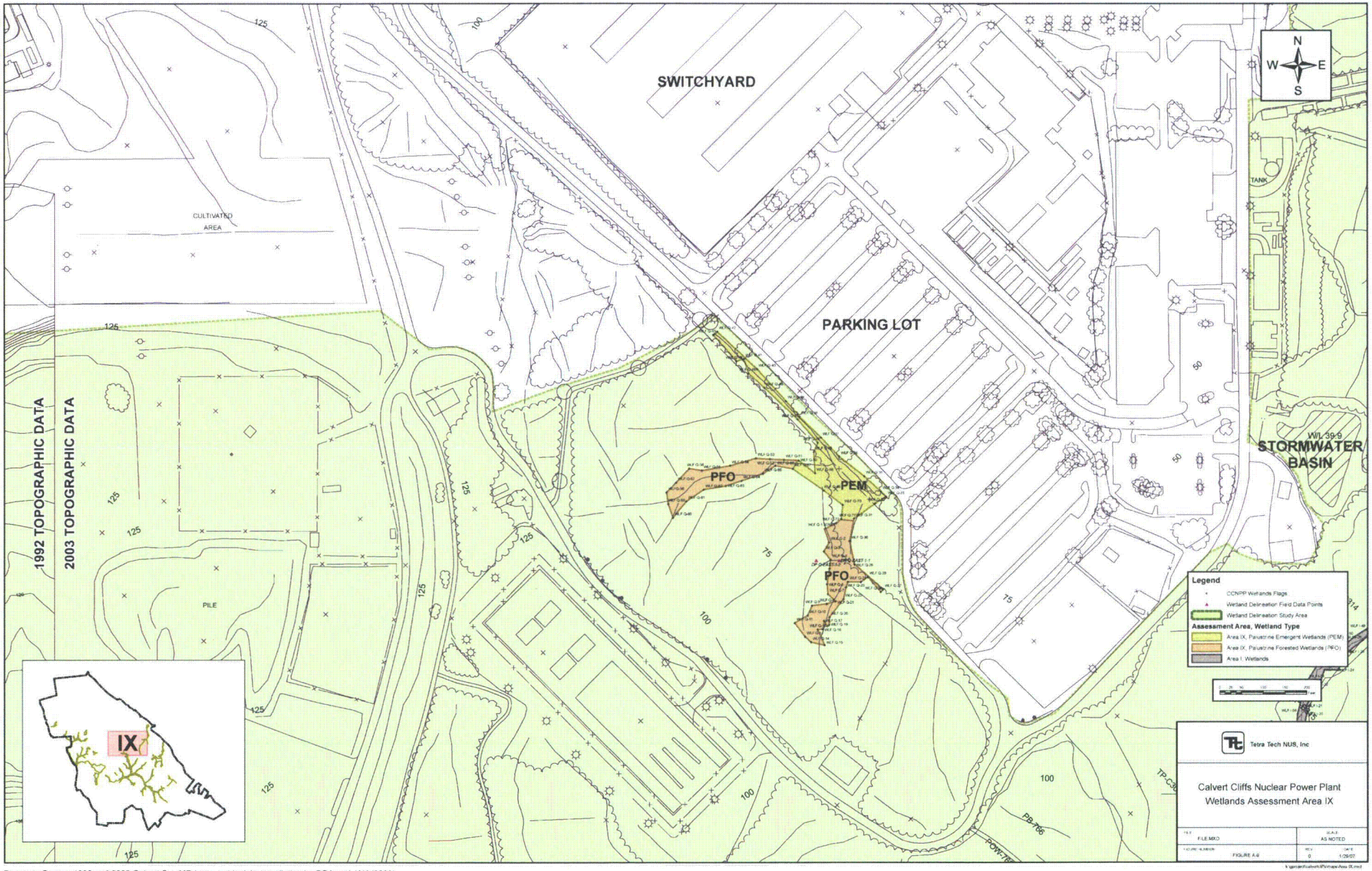
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)

APPENDIX B
FIELD DATA SHEETS

KEY TO ABBREVIATIONS USED ON THE FIELD DATA SHEETS

Plant Communities ("Community ID")

HMV:	Herbaceous Marsh Vegetation
MDF:	Mixed Deciduous Forest
PDBDF:	Poorly Drained Bottomland Deciduous Forest
OF:	Old Field
WDBDF:	Well Drained Bottomland Deciduous Forest

Vegetative Strata ("Stratum")

C:	Tree Canopy
SA:	Sapling
SH:	Shrub
H:	Herb
V:	Woody Vine
B:	Bryophyte

Plant Indicator Statuses ("Indicator")

OBL:	Obligate Wetland
FACW:	Facultative Wetland
FAC:	Facultative
FACU:	Facultative Upland
UPL:	Obligate Upland

FIELD DATA SHEET TRANSECTS

Assessment Area	Transect	Perpendicular to	Wetland Plots	Upland Plots
Assessment Area I	I-EAST-1	WET I-1	Plot 1	Plot 2
Assessment Area II	B-EAST-1	WET B-18	Plot 1	Plot 2
	C-EAST-1	WET C-4	Plot 1	Plot 2
	E-EAST-1	WET E-3	Plot 1	Plot 2
	F-EAST-1	WET F-27	Plot 1	Plot 2
	H-EAST-1	WET H-42	Plot 1	Plot 2
	L-EAST-1	WET L-1	Plots 1 and 2	Plot 2
Assessment Area III	M-EAST-1	WET M-6	Plot 1	Plot 2
Assessment Area IV	AA-WEST-1	WET AA-115	Plot 1	Plot 2
	AA-WEST-2	WET AA-76	Plot 1	Plot 2
	GA-WEST-1	WET GA-22	Plot 1	Plot 2
	GB-WEST-1	WET GB-3	Plot 1	Plot 2
	I-WEST-1	WET I-210	Plot 1	Plot 2
	J-WEST-1	WET J-52	Plot 1	Plot 2
	N-WEST-1	WET N-46B & 47	Plots 1 and 3	Plots 2 and 4
Assessment Area V	SA-WEST-1	WET SA-21	Plots 1 and 2	Plot 3
	X-WEST-1	WET X-42	Plot 1	Plot 2
Assessment Area VI	II-WEST-1	WET II-22	Plot 1	Plot 2
	KK-WEST-1	WET KK-2	Plot 1	Plot 2
	KK-WEST-2	WET KK-15	Plot 1	Plot 2
Assessment Area VII	EE-WEST-1	WET EE-18	Plot 1	Plot 2
	FF-WEST-1	WET FF-90A15	Plot 1	Plot 2
	FF-WEST-2	WET FF-4	Plot 1	Plot 2
	T-WEST-1	WET T-177	Plot 1	Plot 2
Assessment Area VIII	HH-WEST-1	WET HH-139	Plot 1	Plot 2
	HH-WEST-2	WET HH-4	Plot 1	Plot 2
Assessment Area IX	Q-EAST-1	WET Q-5	Plot 1	Plot 2

ASSESSMENT AREA I
FIELD DATA SHEETS

DATA POINT I-EAST-1-1
APPROXIMATELY 15 FEET NORTHWEST OF (INSIDE) FLAG WET I-1
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	WATER
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	I-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). N/A

Remarks: HYDROPHYTIC VEGETATION ASSUMED. CHANNEL SEGMENT IS SHADED BY DENSE CANOPY FROM TREES GROWING ON BANKS AND IN ADJOINING UPLANDS. CANOPY TREES INCLUDE SWEET GUM, RED MAPLE, AND WHITE OAK. SOME HIGHBUSH BLUEBERRY ON BANKS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: 0-0.5 (in.)
- Depth to Free Water in Pit: 3 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. INSIDE ORDINAL HIGH WATER MARK OF STREAM CHANNEL.

DATA POINT I-EAST-1-1
APPROXIMATELY 15 FEET NORTHWEST OF (INSIDE) FLAG WET I-1
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS LOAMY FINE SAND 5-10% SLOPES	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6	N/A	10YR 6/2	10YR 4/2	20%, BRIGHT	LOAMY FINE SAND
6-18+	N/A	2.5Y 6/2	2.5Y 4/2	30%, BRIGHT	LOAMY FINE SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	X	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. APPEARS TO BE MIXED ALLUVIAL SOILS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: R3SB

DATA POINT I-EAST-1-2
APPROXIMATELY 15 FEET SOUTHEAST OF (OUTSIDE) FLAG WET I-1
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	I-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
ACER RUBRUM	C (30)	FAC	LIQUIDAMBAR STYRACIFLUA	SH (5)	FAC
LIRIODENDRON TULIPIFERA	C (25)	FACU	VIOLA SP.	H (30)	FACW
LIQUIDAMBAR STYRACIFLUA	C (25)	FAC	ATHYRIUM FILIX-FEMINA	H (20)	FAC
ASIMINA TRILOBA	SA (5)	FACU	MITCHELLA REPENS	H (10)	FACU
ILEX OPACA	SA (10)	FACU+	Other Plant Species		
CORNUS FLORIDA	SA (5)	FACU-	CAREX CRINITA	H (5)	OBL
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC	CAREX STRICTA	H (5)	OBL
ASIMINA TRILOBA	SH (10)	FACU	IMPATIENS CAPENSIS	H (5)	FACW
CORNUS FLORIDA	SH (5)	FACU-	ASIMINA TRILOBA	H (5)	FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 46

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY. NOTE: SATURATION ENCOUNTERED AT ABOUT 30-INCH DEPTH.

DATA POINT I-EAST-1-2
APPROXIMATELY 15 FEET SOUTHEAST OF (OUTSIDE) FLAG WET I-1
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS LOAMY FINE SAND 5-10% SLOPES	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 4/2	NONE	N/A	TOPSOIL
2-8	B	10YR 5/6	NONE	N/A	LOAMY FINE SAND
8-12	B	10YR 5/3	10YR 5/8	50:50	LOAMY FINE SAND
12-24	B	10YR 5/4	7.5YR 5/6	50:50	LOAMY FINE SAND
12-30	B	10YR 6/4	10YR 6/6	50:50	LOAMY FINE SAND
30+	B	10YR 6/2	10YR 6/6	5-10%	LOAMY FINE SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL. ALTHOUGH TYPICAL SOIL PROFILE DEPTH FOR A WETLAND DELINEATION IS 18 INCHES, THIS PROFILE WAS EXTENDED DEEPER TO DETERMINE WHERE WATER TABLE LAY. THIS UPLAND AREA STILL LIES AT THE BOTTOM OF A STREAM VALLEY AND MAY HAVE ONCE BEEN STREAM THAT BECAME FILLED BY ERODED SOIL THROUGH NATURAL EROSIVE PROCESSES.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

ASSESSMENT AREA II
FIELD DATA SHEETS

DATA POINT B-EAST-1-1
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET B-18
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	HMV
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	B-EAST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
ALNUS SERRULATA	SH (10)	OBL			
PHRAGMITES AUSTRALIS	H (100)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-2	(in.)
Depth to Free Water in Pit:	SURFACE	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT B-EAST-1-1
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET B-18
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-18+	A	10YR 6/1	10YR 6/4	FEW, 2-5%, BRIGHT	MUCK

Hydric Soil Indicators:

- X Histosol
- ___ Histic Epipedon
- X Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PEM1

DATA POINT B-EAST-1-2
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET B-18
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	**No**	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	B-EAST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
QUERCUS PRINUS	C (60)	UPL	PINUS VIRGINIANA	C (10)	NI
PINUS VIRGINIANA	SA (40)	NI	CASTANEA DENTATA	SA (5)	NI
KALMIA LATIFOLIA	SH (30)	FACU	ILEX OPACA	SH (5)	FACU+
GAYLUSSACIA BACCATA	SH (20)	FACU	VACCIUM CORYMBOSUM	SH (5)	FACW-
ASIMINA TRILOBA	H (5)	FACU+			
LIQUIDAMBAR STYRACIFLUA	H (5)	FAC			
GAYLUSSACIA BACCATA	H (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 14

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT B-EAST-1-2
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET B-18
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-1	A	10YR 4/2	NONE	N/A	TOPSOIL
1-18+	B	2.5Y 6/6	NONE	N/A	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT C-EAST-1-1
INSIDE WETLAND C, ROUGHLY 15 FEET FROM FLAGS WET C-4, C-6, AND C-7
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	C-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
ACER RUBRUM	C (5)	FAC	ASIMINA TRILOBA	SH (<1)	FACU+
LIRIODENDRON TULIPIFERA	C (5)	FACU	CAREX STRICTA	H (<1)	OBL
ACER RUBRUM	SA (10)	FAC	SMILAX GLAUCA	H (<1)	FACU
ASIMINA TRILOBA	H (5)	FACU+	RUBUS OCCIDENTALIS	H (<1)	NI
			TOXICODENDRON RADICANS	H (<1)	FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-1	(in.)
Depth to Free Water in Pit:	6	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT C-EAST-1-1
INSIDE WETLAND C, ROUGHLY 15 FEET FROM FLAGS WET C-4, C-6, AND C-7
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-1	A	10YR 3/1	NONE	N/A	TOPSOIL
1-18+	B	10YR 6/4	NONE	N/A	SILTY CLAY LOAM

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
X	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. ABSENCE OF LOW CHROMA COLORS MAY REFLECT RECENT CHANGES IN LOCALIZED HYDROLOGICAL CONDITIONS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: PFO1

DATA POINT C-EAST-1-2
APPROXIMATELY 15 FEET OUTSIDE OF FLAG WET C-4
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	C-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (30)	FACU	PINUS TAEDA	C (5)	FAC-
LIQUIDAMBAR STYRACIFLUA	C (10)	FAC	PINUS VIRGINIANA	C (5)	NI
ACER RUBRUM	SA (5)	FAC	PARTHENOCISSUS QUINQUEFOLIA	H (<1)	FACU
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC			
LIRIODENDRON TULIPIFERA	SA (5)	FACU			
ASIMINA TRILOBA	SH (5)	FACU+			
ASIMINA TRILOBA	H (5)	FACU+			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 43

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT C-EAST-1-2
APPROXIMATELY 15 FEET OUTSIDE OF FLAG WET C-4
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	10YR 4/2	NONE	N/A	TOPSOIL
4-18+	B	10YR 5/6	NONE	N/A	SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT E-EAST-1-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET E-3
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	E-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (10)	FACU	THELYPTERIS NOVEBORACENSIS	H (10)	FAC
ACER RUBRUM	C (5)	FAC	ONOCLEA SENSIBILIS	H (5)	FACW
LIQUIDAMBAR STYRACIFLUA	SA (10)	FAC	POLYGONUM ARIFOLIUM	H (<1)	OBL
ACER RUBRUM	SA (5)	FAC			
LIRIODENDRON TULIPIFERA	SA (5)	FACU			
VACCINIUM CORYMBOSUM	SH (5)	FACW-			
LIQUIDAMBAR STYRACIFLUA	SH (5)	FAC			
SAURURUS CERNUUS	H (80)	OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-1	(in.)
Depth to Free Water in Pit:	3	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT E-EAST-1-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET E-3
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-10	A	10YR 4/2	NONE	N/A	MUCK
10-18+	B	2.5Y 5/2	10YR 6/6	VERY FAINT, FEW	SANDY LOAM

Hydric Soil Indicators:

___	Histosol	___	Concretions
X	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
X	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT E-EAST-1-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET M-6
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	E-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
QUERCUS PRINUS	C (50)	UPL			
ACER RUBRUM	C (10)	FAC			
SASSAFRAS ALBIDUM	SA (10)	FACU-			
LIQUIDAMBAR STYRACIFLUA	SA (10)	FAC			
LIRIODENDRON TULIPIFERA	SA (10)	FACU			
KALMIA LATIFOLIA	SH (60)	FACU			
ILEX OPACA	H (5)	FACU+			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 29

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT E-EAST-1-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET E-3
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	**Yes** No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 4/1	NONE	N/A	TOPSOIL
2-18+	B	2.5Y 6/4	NONE	N/A	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**			

Remarks:

Classification: UPLAND (U)

DATA POINT F-EAST-1-1
INSIDE WETLAND F, ROUGHLY MIDWAY BETWEEN FLAGS WET F-6 AND F-27
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	F-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (30)	FACU	BOEHMERIA CYLINDRICA	H (5)	FACW+
QUERCUS ALBA	C (10)	FACU-	POLYTRICHUM SP.	B (20)	OBL
NYSSA SYLVATICA	C (10)	FAC			
ILEX OPACA	SA (5)	FACU+			
QUERCUS MICHAUXII	SA (5)	FAC+			
KALMIA LATIFOLIA	SH (30)	FACU			
MICROSTEGIUM VIMINEUM	H (5)	FAC			
SAURURUS CERNUUS	H (5)	OBL			
CAREX SP.	H (5)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 63

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

	Stream, Lake, or Tide Gauge
X	Aerial Photographs
	Other
	No Recorded Data Available

Field Observations:

Depth of Surface Water:	1	(in.)
Depth to Free Water in Pit:	4	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

X	Inundated
X	Saturated in Upper 12 inches
	Water Marks
	Drift Lines
	Sediment Deposits
X	Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

	Oxidized Root Channels in Upper 12 inches
	Water-Stained Leaves
	Local Soil Survey Data
	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT F-EAST-1-1
INSIDE WETLAND F, ROUGHLY MIDWAY BETWEEN FLAGS WET F-6 AND F-27
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6	A	10YR 3/2	NONE	N/A	MUCK
6-18+	B	10YR 5/1	NONE	N/A	SANDY LOAM

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
X	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT F-EAST-1-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET F-27
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	F-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	**No**	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (20)	FACU	LIQUIDAMBAR STYRACIFLUA	C (5)	FAC
QUERCUS ALBA	C (10)	FACU-	ILEX OPACA	C (5)	FACU+
ACER RUBRUM	C (10)	FAC	THELYPTERIS NOVEBORACENSIS	H (<1)	FAC
ILEX OPACA	SA (5)	FACU+			
ACER RUBRUM	SA (5)	FAC			
KALMIA LATIFOLIA	SH (25)	FACU			
ASIMINA TRILOBA	H (5)	FACU+			
THELYPTERIS SIMULATA	H (5)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 38

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE TO 18"+ (in.)
- Depth to Saturated Soil: NONE TO 18"+ (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT F-EAST-1-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET F-27
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A	10YR 3/1	NONE	N/A	TOPSOIL
3-15	B	10YR 5/1	NONE	N/A	SILT LOAM
15-18+	B	10YR 7/1	10YR 6/6	FEW, FAINT	SANDY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: DISPLAYS COLORS TYPICAL OF HYDRIC SOIL. MAY REFLECT PREVIOUS RATHER THAN CURRENT HYDROLOGICAL CONDITIONS

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: HYDRIC SOIL COLORS MAY REFLECT A HISTORY OF HYDROLOGICAL CHANGE WITH RESPECT TO FLOW PATTERNS IN THE ADJOINING WETLANDS.

Classification: UPLAND (U)

DATA POINT H-EAST-1-1
APPROXIMATELY 15 FEET NORTHEAST OF (INSIDE) FLAG WET H-42
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	H-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (40)	FAC	SMILAX GLAUCA	H (20)	FACU
ACER RUBRUM	C (10)	FAC	ONOCLEA SENSIBILIS	H (10)	FACW
LIRIODENDRON TULIPIFERA	SA (10)	FACU	CAREX CRINITA	H (10)	OBL
ILEX OPACA	SA (5)	FACU+	SMILAX GLAUCA	V (5)	FACU
QUERCUS SHUMARDII	SA (5)	FAC+			
VACCINIUM CORYMBOSUM	SH (10)	FACW-	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	SH (5)	FAC	LIRIODENDRON TULIPIFERA	C (5)	FACU
ASIMINA TRILOBA	SH (5)	FACU+	THELYPTERIS NOVEBORACENSIS	H (5)	FAC
NYSSA SYLVATICA	SH (5)	FAC	ATHYRIUM FILIX-FEMINA	H (5)	FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 57

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	6	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- X Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT H-EAST-1-1
APPROXIMATELY 15 FEET NORTHEAST OF (INSIDE) FLAG WET H-42
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL LAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-10	A	10YR 3/1	NONE	N/A	MUCK
10-18+	B	10YR 5/1	NONE	N/A	SILT LOAM

Hydric Soil Indicators:

	Histosol		Concretions
X	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soil
X	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: PFO1

DATA POINT H-EAST-1-2
APPROXIMATELY 15 FEET SOUTHWEST OF (OUTSIDE) FLAG WET H-42
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	5/31/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	H-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (60)	FAC	ACER RUBRUM	C (10)	FAC
QUERCUS MICHAUXII	SA (15)	FACW	QUERCUS ALBA	SA (5)	FACU-
LIRIODENDRON TULIPIFERA	SA (10)	FACU-	ILEX OPACA	H (5)	FACU+
VACCINIUM CORYMBOSUM	SH (20)	FACW-	CAREX SP.	H (5)	FACW
MITCHELLA REPENS	H (40)	FACU			
SMILAX GLAUCA	V (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE TO 18"+ (in.)
- Depth to Saturated Soil: NONE TO 18"+ (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT H-EAST-1-2
APPROXIMATELY 15 FEET SOUTHWEST OF (OUTSIDE) FLAG WET H-42
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 3/3	NONE	N/A	TOPSOIL
2-18+	B	10YR 6/6	NONE	N/A	SILTY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT L-EAST-1-1
APPROXIMATELY 30 FEET NORTH OF (INSIDE) FLAG WET L-1
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	HMV
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	L-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LEERZIA ORYZOIDES	H (50)	OBL	EUPATORIUM DUBIUS	H (10)	FACW
SPORANGIUM AMERICANUM	H (20)	OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 2 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT L-EAST-1-1
APPROXIMATELY 30 FEET NORTH OF (INSIDE) FLAG WET L-1
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL SOILS	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6	A	7.5YR 5/1	NONE	N/A	MUCK
6-18+	B	7.5YR 6/2	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

	Histosol		Concretions
X	Histic Epipedon	X	High Organic Content in Surface Layer in Sandy Soil
X	Sulfidic Odor		Organic Streaking in Sandy Soils
X	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: PEM1

DATA POINT L-EAST-1-2
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET L-1
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	HMV
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	L-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC			
LIQUIDAMBAR STYRACIFLUA	SH (20)	FAC			
DICHANTHELIUM CLANDESTINUM	H (50)	FAC+			
EUPATORIUM DUBIUS	H (20)	FACW			
THELYPTERIS NOVEBORACENSIS	H (10)	FAC			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 2 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT L-EAST-1-2
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET L-1
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL SOILS	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-18+	A	10YR 4/1	NONE	N/A	MUCK

Hydric Soil Indicators:

- X Histosol
- ___ Histic Epipedon
- X Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: PEM1

DATA POINT L-EAST-1-3
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET L-1
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	L-EAST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (60)	FACU			
LIQUIDAMBAR STYRACIFLUA	C (30)	FAC			
LIRIODENDRON TULIPIFERA	SA (10)	FACU			
LIQUIDAMBAR STYRACIFLUA	SA (10)	FAC			
CORNUS FLORIDA	SH (10)	FACU-			
ASIMINA TRILOBA	SH (5)	FACU+			
ILEX OPACA	H (5)	FACU+			
DICHANTHELIUM CLANDESTINUM	H (5)	FAC+			
SPHAGNUM SP.	B (5)	FAC			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 44

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT L-EAST-1-3
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET L-1
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	7.5YR 3/2	NONE	N/A	TOPSOIL
2-18+	B	7.5YR 5/4	NONE	N/A	FINE SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

ASSESSMENT AREA III
FIELD DATA SHEETS

DATA POINT M-EAST-1-1
APPROXIMATELY 15 FEET NORTHEAST OF (INSIDE) FLAG WET M-6
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/12/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	M-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
NYSSA SYLVATICA	C (5)	FAC	THELYPTERIS NOVEBORACENSIS	H (10)	FAC
ACER RUBRUM	C (5)	FAC	LIQUIDAMBAR STYRACIFLUA	H (5)	FAC
LIQUIDAMBAR STYRACIFLUA	SA (25)	FAC	ILEX OPACA	H (5)	FACU
ACER RUBRUM	SA (10)	FAC	POLYGONUM ARIFOLIUM	H (5)	OBL
LIQUIDAMBAR STYRACIFLUA	SH (5)	FAC	EUPATORIADELPHUS MACULATUS	H (5)	FACW
CAREX STRICTA	H (30)	OBL	VIOLA SP.	H (5)	N/A
MICROSTEGIUM VIMINEUM	H (20)	FAC			
POLYTRICHUM SPP.	B (30)	OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	6	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT M-EAST-1-1
APPROXIMATELY 15 FEET NORTHEAST OF (INSIDE) FLAG WET M-6
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A	10YR 3/1	NONE	N/A	MUCK
3-8	B	10YR 5/2	10YR 4/2	<10%, AS STREAKS	FINE LOAMY SAND
8-18+	B	10YR 5/1	NONE	N/A	FINE LOAMY SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	X	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT M-EAST-1-2
APPROXIMATELY 15 FEET SOUTHWEST OF (OUTSIDE) FLAG WET M-6
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/12/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	M-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
FAGUS GRANDIFOLIA	C (30)	FACU	ACER RUBRUM	C (5)	FAC
QUERCUS PRINUS	C (20)	UPL	NYSSA SYLVATICA	C (5)	FAC
ILEX OPACA	SA (15)	FACU			
ACER RUBRUM	SA (5)	FAC			
KALMIA LATIFOLIA	SH (60)	FACU			
ILEX OPACA	SH (15)	FACU+			
KALMIA LATIFOLIA	H (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 14

Remarks: NOT HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY

DATA POINT M-EAST-1-2
APPROXIMATELY 15 FEET SOUTHWEST OF (OUTSIDE) FLAG WET M-6
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 3/2	NONE	N/A	TOPSOIL
2-18+	B	2.5Y 6/4	NONE	N/A	LOAMY FINE SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NOT HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

ASSESSMENT AREA IV
FIELD DATA SHEETS

DATA POINT AA-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET AA-115
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/23/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	AA-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species (Cont.)	Stratum	Indicator
NYSSA SYLVATICA	C (30)	FAC	POLYTRICHUM SPP.	B (30)	OBL
LIRIODENDRON TULIPIFERA	C (20)	FACU			
ACER RUBRUM	C (20)	FAC	**Other Plant Species**	**Stratum**	**Indicator**
CARPINUS CAROLINIANA	SA (25)	FAC	LIQUIDAMBAR STYRACIFLUA	C (10)	FAC
KALMIA LATIFOLIA	SH (20)	FACU	NYSSA SYLVATICA	H (5)	FAC
RHODODENDRON VISCOSUM	SH (5)	OBL	LIQUIDAMBAR STYRACIFLUA	H (5)	FAC
CAREX STRICTA	H (50)	OBL	VIOLA BLANDA	H (5)	FACW
MICROSTEGIUM VIMINEUM	H (25)	FAC			
SAURURUS CERNUUS	H (10)	OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 80

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-1"	(in.)
Depth to Free Water in Pit:	SURFACE	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- X Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT AA-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET AA-115
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6+	A	10YR 6/1	10YR 4/1	50%, AS STREAKS	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- X Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. UNABLE TO EXTRACT DEEPER SOIL IN AUGUR BECAUSE OF SATURATION.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT AA-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET AA-115
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/23/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	AA-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species (Cont.)	Stratum	Indicator
FAGUS GRANDIFOLIA	C (30)	FACU	ILEX OPACA	H (5)	FACU+
QUERCUS ALBA	C (20)	FACU-			
CARPINUS CAROLINIANA	SA (10)	FAC			
ACER RUBRUM	SA (5)	FAC			
QUERCUS ALBA	SA (5)	FACU-			
KALMIA LATIFOLIA	SH (25)	FACU			
ILEX OPACA	SH (15)	FACU+			
SMILAX GLAUCA	H (10)	FACU			
KALMIA LATIFOLIA	H (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 20

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT AA-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET AA-115
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 4/2	NONE	N/A	LOAMY SAND
2-18+	B	10YR 6/4	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

		(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT AA-WEST-2-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET AA-76
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/23/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	AA-WEST-2
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species (Cont.)	Stratum	Indicator
FAGUS GRANDIFOLIA	C (70)	FACU	KALMIA LATIFOLIA	H (5)	FACU
LIRIODENDRON TULIPIFERA	C (20)	FACU	CAREX SP.	H (5)	FACW
MAGNOLIA VIRGINIANA	SA (10)	FACW+	UNIDENTIFIABLE GRASS	H (5)	NA
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC	UNIDENTIFIABLE FORB	H (5)	NA
ILEX OPACA	SA (5)	FACU			
KALMIA LATIFOLIA	SH (10)	FACU			
ILEX OPACA	SH (5)	FACU	Other Plant Species	Stratum	Indicator
THELYPTERIS NOVEBORACENSIS	H (15)	FAC	QUERCUS MICHAUXII	C (5)	FACW
ONOCLEA SENSIBILIS	H (5)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 36

Remarks: HYDROPHYTIC VEGETATION. ALTHOUGH LESS THAN 50 PERCENT OF DOMINANT SPECIES ARE OBL, FACW, OR FAC, MANY OF THE FACU TREES AND SHRUBS ARE SITUATED ON SMALL ELEVATED HUMMOCKS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 8 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT AA-WEST-2-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET AA-76
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6	A	10YR 3/1	NONE	N/A	LOAMY SAND
6-18+	B	10YR 5/3	10YR 6/1	50:50, AS STREAKS	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- X Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT AA-WEST-2-2
APPROXIMATELY 15 FEET EAST (OUTSIDE) FLAG WET AA-76
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/23/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS; CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	AA-WEST-2
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
FAGUS GRANDIFOLIA	C (50)	FACU	QUERCUS ALBA	C (10)	FACU-
NYSSA SYLVATICA	SA (5)	FAC	QUERCUS PALUSTRIS	C (10)	FACW
ILEX OPACA	SA (5)	FACU	LIQUIDAMBAR STYRACIFLUA	C (10)	FAC
KALMIA LATIFOLIA	SH (10)	FACU			
ILEX OPACA	SH (10)	FACU			
ILEX OPACA	H (5)	FACU			
KALMIA LATIFOLIA	H (5)	FACU			
ASIMINA TRILOBA	H (5)	FACU+			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 12.5

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT AA-WEST-2-2
APPROXIMATELY 15 FEET EAST (OUTSIDE) FLAG WET AA-76
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	10YR 3/2	NONE	N/A	SILT LOAM
4-12	B	10YR 5/4	NONE	N/A	SILT LOAM
12-18+	B	10YR 5/2	10YR 5/6	20%/DISTINCT	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present?	Yes	No		

Remarks:

Classification: UPLAND (U)

DATA POINT GA-WEST-1-1
APPROXIMATELY 15 FEET EAST OF (INSIDE) FLAG WET GA-22
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/15/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	GA-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (10)	FAC	SAURURUS CERNUUS	H (5)	OBL
PHRAGMITES AUSTRALIS	H (100)	FACW	ONOCLEA SENSIBILIS	H (5)	FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION. THIS AREA IS ALSO SHADED BY CANOPIES OF CHESTNUT OAK (QUERCUS PRINUS) TREES GROWING ON THE ADJOINING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	1	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT GA-WEST-1-1
APPROXIMATELY 15 FEET EAST OF (INSIDE) FLAG WET GA-22
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL LAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	10YR 3/1	NONE	N/A	MUCKY FINE SAND
4-18+	B	10YR 4/2	NONE	N/A	COARSE LOAMY SAND

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon	X	High Organic Content in Surface Layer in Sandy Soil
	Sulfidic Odor		Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: PFO1

DATA POINT GA-WEST-1-2
APPROXIMATELY 15 FEET WEST OF (OUTSIDE) FLAG WET GA-22
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/15/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	GA-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
QUERCUS PRINUS	C (50)	UPL	ACER RUBRUM	H (TRACE)	UPL
QUERCUS ALBA	C (10)	FACU-	KALMIA LATIFOLIA	H (TRACE)	FACU
NYSSA SYLVATICA	SA (5)	FAC	AMELANCHIER CANADENSIS	H (TRACE)	FAC
CARPINUS CAROLINIANA	SA (5)	FAC			
ACER RUBRUM	SA (5)	FAC			
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC			
KALMIA LATIFOLIA	SH (25)	FACU			
ILEX OPACA	SH (15)	FACU			
ILEX OPACA	H (15)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 44

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT GA-WEST-1-2
APPROXIMATELY 15 FEET WEST OF (OUTSIDE) FLAG WET GA-22
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-1	A	10YR 3/2	NONE	N/A	TOPSOIL
1-5	B	10YR 6/4	NONE	N/A	SILT LOAM
5-18+	B	7.5YR 6/8	NONE	N/A	SILTY CLAY

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT GB-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET GB-2
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/15/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	GB-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (10)	FAC	VIOLA BLANDA	H (10)	FACW
ILEX OPACA	SA (10)	FACU	CAREX STRICTA	H (50)	OBL
PHRAGMITES AUSTRALIS	H (100)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 67

Remarks: HYDROPHYTIC VEGETATION. THIS AREA IS ALSO SHADED BY CANOPIES OF WHITE OAK (QUERCUS ALBA) AND AMERICAN BEECH (FAGUS GRANDIFOLIA) TREES GROWING ON THE ADJOINING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	0-0.5"	(in.)
Depth to Free Water in Pit:	SURFACE	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- X Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT GB-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET GB-2
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL LAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-12+	A	10YR 4/1	NONE	N/A	MUCK

Hydric Soil Indicators:

- X Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- X Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. UNABLE TO EXTRACT DEEPER SOIL IN AUGUR BECAUSE OF SATURATION.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: PFO1

DATA POINT GB-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET GB-2
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/15/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND
Do Normal Circumstances exist on the site?:	Yes No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes No	Transect ID:	GB-WEST-1
Is the area a potential Problem Area?:	Yes No	Plot ID:	2
(If needed, explain on reverse)			

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
QUERCUS ALBA	C (30)	FACU-	QUERCUS PRINUS	C (5)	UPL
FAGUS GRANDIFOLIA	C (20)	FACU	KALMIA LATIFOLIA	H (TRACE)	FACU
ILEX OPACA	SA (15)	FACU	LIQUIDAMBAR STYRACIFLUA	H (TRACE)	FAC
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC			
QUERCUS MICHAUXII	SA (5)	FACW			
KALMIA LATIFOLIA	SH (50)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT GB-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET GB-2
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 4/2	NONE	N/A	TOPSOIL
2-18+	B	10YR 6/4	10YR 5/6	<5%, THIN FAINT LINES	FINE SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT I-WEST-1-1
APPROXIMATELY 5 FEET NORTHEAST OF (INSIDE) FLAG WET I-210
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/23/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	WATER
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	I-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species (Cont.)	Stratum	Indicator

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). N/A

Remarks: AQUATIC SITE - NO TERRESTRIAL OR EMERGENT VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	1-6"+	(in.)
Depth to Free Water in Pit:	N/A	(in.)
Depth to Saturated Soil:	N/A	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- X Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: AQUATIC HYDROLOGY. STREAM BED WITH APPROXIMATELY 1-2" WATER IN RIFFLES AND APPROXIMATELY 3-5" WATER IN POOLS.

DATA POINT I-WEST-1-1
APPROXIMATELY 5 FEET NORTHEAST OF (INSIDE) FLAG WET I-210
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL LAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: SOFT SEDIMENT AT BOTTOM OF STREAM CHANNEL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: LOCATION IS WITHIN A STREAM CHANNEL THAT IS A WATER OF THE UNITED STATES.

Classification: RIVERINE UPPER PERENNIAL STREAMBED (R3SB)

DATA POINT I-WEST-1-2
APPROXIMATELY 15 FEET SOUTHWEST OF (OUTSIDE) FLAG WET I-210
APPROXIMATELY 15 FEET NORTHEAST (OUTSIDE) FLAG WET AA-76
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/23/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	WDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	I-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
FAGUS GRANDIFOLIA	C (50)	FACU	QUERCUS ALBA	C (10)	FACU-
NYSSA SYLVATICA	SA (5)	FAC	QUERCUS PALUSTRIS	C (10)	FACW
ILEX OPACA	SA (5)	FACU	LIQUIDAMBAR STYRACIFLUA	C (10)	FAC
KALMIA LATIFOLIA	SH (10)	FACU			
ILEX OPACA	SH (10)	FACU			
ILEX OPACA	H (5)	FACU			
KALMIA LATIFOLIA	H (5)	FACU			
ASIMINA TRILOBA	H (5)	FACU+			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 12.5

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- X Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT ENOUGH INDICATORS OF WETLAND HYDROLOGY

DATA POINT I-WEST-1-2
APPROXIMATELY 15 FEET SOUTHWEST OF (OUTSIDE) FLAG WET I-210
APPROXIMATELY 15 FEET NORTHEAST (OUTSIDE) FLAG WET AA-76
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL LAND	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	10YR 3/2	NONE	N/A	SILT LOAM
4-12	B	10YR 5/4	NONE	N/A	SILT LOAM
12-18+	B	10YR 5/2	10YR 5/6	20%, DIST. SOFT MASSES	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- X Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: APPEARS TO BE DRIER OF MIXED ALLUVIAL SOILS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT J-WEST-1-1
APPROXIMATELY 15 FEET SOUTHWEST OF (INSIDE) FLAG WET J-52
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	10/12/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	J-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
ACER RUBRUM	SA (5)	FAC			
CARPINUS CAROLINIANA	SA (5)	FAC			
VACCINIUM CORYMBOSUM	SH (5)	FACW-			
ILEX OPACA	SH (5)	FACU+			
CAREX SPP.	H (5)	FACW			
SMILAX GLAUCA	H (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 67

Remarks: HYDROPHYTIC VEGETATION. AREA SHADED BY LARGE SWEET GUMS AND WHITE OAKS GROWING ON ADJOINING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 12 (in.)
- Depth to Saturated Soil: 6 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. LOCATION OBSERVED AS SATURATED IN JUNE 2006.

DATA POINT J-WEST-1-1
APPROXIMATELY 15 FEET SOUTHWEST OF (INSIDE) FLAG WET J-52
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	WOODSTOWN FINE SANDY LOAM 0-2% SLOPES	Drainage Class:	MODERATELY WELL DRAINED
Taxonomy (subgroup):	AQUIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 3/1	NONE	N/A	TOPSOIL
2-18+	B	10YR 7/3	10YR 3/1	STREAKS	FINE SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- X Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT J-WEST-1-2
APPROXIMATELY 15 FEET NORTHEAST OF (OUTSIDE) FLAG WET J-52
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	10/12/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	J-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (30)	FAC	ILEX OPACA	SH (+)	FACU+
LIRIODENDRON TULIPIFERA	C (20)	FACU	QUERCUS ALBA	SH (+)	FACU-
ILEX OPACA	SA (30)	FACU+			
ASIMINA TRILOBA	SH (20)	FACU+			
ASIMINA TRILOBA	H (5)	FACU+			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 20

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	15	(in.)
Depth to Saturated Soil:	10	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT J-WEST-1-2
APPROXIMATELY 15 FEET NORTHEAST OF (OUTSIDE) FLAG WET J-52
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	WOODSTOWN FINE SANDY LOAM 0-2% SLOPES	Drainage Class:	MODERATELY WELL DRAINED
Taxonomy (subgroup):	AQUIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 3/2	NONE	N/A	TOPSOIL
2-10	B	10YR 6/4	NONE	N/A	FINE SANDY LOAM
10-18+	B	10YR 6/2	NONE	N/A	FINE SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT N-WEST-1-1
APPROXIMATELY 3 FEET SOUTH OF (INSIDE) FLAG WET N-47
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	N-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	SA (5)	FACU			
LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION ASSUMED. NARROW WETLAND SHADED BY TALLER CANOPY TREES (PRIMARILY TULIP POPLAR AND SWEET GUM) IN ADJOINING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 6 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY. ALMOST CHANNEL-LIKE.

DATA POINT N-WEST-1-1
APPROXIMATELY 3 FEET SOUTH OF (INSIDE) FLAG WET N-47
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE FINE SANDY LOAM 2-5% SLOPES, MODERATELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	N/A	10YR 3/2	NONE	N/A	FINE SANDY LOAM
3-18+	N/A	7.5YR 5/1	7.5YR 5/6	10%, BRIGHT	FINE SANDY LOAM

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. APPEARS TO BE WETTER VERSION OF MATAPEAKE SOILS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT N-WEST-1-2
APPROXIMATELY 5 FEET NORTH OF (OUTSIDE) FLAG WET N-47
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	N-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (50)	FACU	LIQUIDAMBAR STYRACIFLUA	H (5)	FAC
LIQUIDAMBAR STYRACIFLUA	C (20)	FAC			
CARPINUS CAROLINIANA	SA (10)	FAC			
CARPINUS CAROLINIANA	SH (5)	FAC			
THELYPTERIS NOVEBORACENSIS	H (50)	FAC			
CAREX STRICTA	H (25)	OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 83

Remarks: HYDROPHYTIC VEGETATION, HOWEVER PREDOMINANCE OF TULIP POPLAR (FACU) AND FAC SPECIES SUGGESTS THAT THIS VEGETATION IS AT MOST WEAKLY HYDROPHYTIC.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY.

DATA POINT N-WEST-1-2
APPROXIMATELY 5 FEET NORTH OF (OUTSIDE) FLAG WET N-47
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE FINE SANDY LOAM 2-5% SLOPES, MODERATELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	7.5YR 3/2	NONE	N/A	TOPSOIL
2-4	B	7.5YR 5/2	7.5YR 5/6	<5%, DISTINCT	FINE SANDY LOAM
4-10	B	7.5YR 6/2	7.5YR 6/6	50:50	FINE SANDY LOAM
10-18+	B	7.5YR 6/2	7.5YR 5/6	10-15%	FINE SANDY LOAM

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: WEAK INDICATION OF HYDRIC SOIL.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Classification: UPLAND (U)

DATA POINT N-WEST-1-3
APPROXIMATELY 5 FEET SOUTH OF (OUTSIDE) FLAG WET N-46B
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	N-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	3
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (50)	FACU	ILEX OPACA	H (5)	FACU+
LIQUIDAMBAR STYRACIFLUA	C (20)	FAC			
CARPINUS CAROLINIANA	SA (10)	FAC			
CARPINUS CAROLINIANA	SH (5)	FAC			
THELYPTERIS NOVEBORACENSIS	H (30)	FAC			
CAREX STRICTA	H (15)	OBL			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 83

Remarks: HYDROPHYTIC VEGETATION, HOWEVER PREDOMINANCE OF TULIP POPLAR (FACU) AND FAC SPECIES SUGGESTS THAT THIS VEGETATION IS AT MOST WEAKLY HYDROPHYTIC.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	12	(in.)
Depth to Saturated Soil:	6	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WEAK INDICATION OF WETLAND HYDROLOGY.

DATA POINT N-WEST-1-3
APPROXIMATELY 5 FEET SOUTH OF (OUTSIDE) FLAG WET N-46B
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE FINE SANDY LOAM 2-5% SLOPES, MODERATELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 3/2	NONE	N/A	TOPSOIL
2-18+	B	10YR 5/1	7.5YR 4/6	10-20%, DISTINCT	FINE SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PFO1

DATA POINT N-WEST-1-4
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET N-46B
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	6/13/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	N-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	4

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (30)	FACU	PRUNUS SEROTINA	C (10)	FACU
LIQUIDAMBAR STYRACIFLUA	C (30)	FAC	LIQUIDAMBAR STYRACIFLUA	SA (5)	FAC
ILEX OPACA	SA (30)	FACU+	THELYPTERIS NOVEBORACENSIS	H (+)	FAC
KALMIA LATIFOLIA	SH (5)	FACU	ASIMINA TRILOBATA	H (+)	FACU
ILEX OPACA	SH (5)	FACU+			
SMILAX GLAUCA	H (5)	FACU			
CAREX SPP.	H (5)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 29

Remarks: NOT HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE TO 18"+	(in.)
Depth to Saturated Soil:	NONE TO 18"+	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY.

DATA POINT N-WEST-1-4
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET N-46B
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE FINE SANDY LOAM 2-5% SLOPES, MODERATELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	7.5YR 4/2	NONE	N/A	TOPSOIL
2-12	B	7.5YR 5/4	NONE	N/A	FINE SANDY LOAM
12-18+	B	7.5YR 6/2	7.5YR 5/6	FAINT, <5%	FINE SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NOT HYDRIC SOIL

WETLAND DETERMINATION

		(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	**No**	Is this Sampling Point Within a Wetland?	Yes	**No**
Wetland Hydrology Present?	Yes	**No**			
Hydric Soils Present?	Yes	**No**			

Remarks:

Classification: UPLAND (U)

ASSESSMENT AREA V
FIELD DATA SHEETS

DATA POINT SA-WEST-1-1
APPROXIMATELY 30 FEET NORTHWEST OF (INSIDE) FLAG WET SA-21
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/18/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	SA-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
KALMIA LATIFOLIA	SH (5)	FACU	PARTHENOCISSUS QUINQUEFOLIA	H (+)	FACU
VIOLA BLANDA	H (30)	FACW	ACER RUBRUM	H (+)	FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: HYDROPHYTIC VEGETATION ASSUMED, BASED ON SPARSE VEGETATION AND DEFINITE PRESENCE OF WETLAND HYDROLOGY. BECAUSE OF DENSE OVERHANGING TREE CANOPY FORMED BY LARGE TREES ON THE ADJOINING UPLANDS, FEW PLANTS GROW IN THIS WETLAND AREA.

HYDROLOGY

Recorded Data (Described in Remarks):

- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE	(in.)
Depth to Saturated Soil:	SURFACE (PERCHED)	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ___ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- X Other (Explain in Remarks) PUDDLE EROSION

Remarks: WETLAND HYDROLOGY

DATA POINT SA-WEST-1-1
APPROXIMATELY 30 FEET NORTHWEST OF (INSIDE) FLAG WET SA-21
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	ERODED LAND, STEEP	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	7.5YR 2.5/2	NONE	N/A	LOAMY SAND
4-18+	B	7.5YR 5/6	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- X High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: ISOLATED SEEPAGE WETLAND. WATER EMERGES FROM SPRINGS AT UPPER (NORTHERN) TIP OF THIS WETLAND AND PROGRESSIVELY INFILTRATES INTO GROUNDWATER UNDER SANDY SOIL AS IT FLOWS DOWN-GRADIENT (SOUTH). WETLANDS DO NOT RECUR DOWN-GRADIENT IN THIS TOPOGRAPHIC SWALE UNTIL IT JOINS WETLANDS ALONG JOHNS CREEK.

Classification: PFO1

DATA POINT SA-WEST-1-2
APPROXIMATELY 15 FEET NORTHWEST OF (INSIDE) FLAG WET SA-21
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/18/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	SA-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
KALMIA LATIFOLIA	SH (10)	FACU	ACER RUBRUM	H (+)	FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0

Remarks: HYDROPHYTIC VEGETATION ASSUMED, BASED ON SPARSE VEGETATION AND DEFINITE PRESENCE OF WETLAND HYDROLOGY. BECAUSE OF DENSE OVERHANGING TREE CANOPY FORMED BY LARGE TREES ON THE ADJOINING UPLANDS, FEW PLANTS GROW IN THIS WETLAND AREA.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches EVIDENCE OF RECENT
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- X Other (Explain in Remarks) PUDDLE EROSION

Remarks: WETLAND HYDROLOGY

DATA POINT SA-WEST-1-2
APPROXIMATELY 15 FEET NORTHWEST OF (INSIDE) FLAG WET SA-21
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	ERODED LAND, STEEP	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-8	A	10YR 3/2	NONE	N/A	LOAMY SAND
8-18+	B	10YR 5/8	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- X High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: ISOLATED SEEPAGE WETLAND. WATER EMERGES FROM SPRINGS AT UPPER (NORTHERN) TIP OF THIS WETLAND AND PROGRESSIVELY INFILTRATES INTO GROUNDWATER UNDER SANDY SOIL AS IT FLOWS DOWN-GRADIENT (SOUTH). WETLANDS DO NOT RECUR DOWN-GRADIENT IN THIS TOPOGRAPHIC SWALE UNTIL IT JOINS WETLANDS ALONG JOHNS CREEK.

Classification: PFO1

DATA POINT SA-WEST-1-3
APPROXIMATELY 15 FEET SOUTHEAST OF (OUTSIDE) FLAG WET SA-21
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/18/06
Applicant:	UNISTAR, INC..	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	SA-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	3
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
KALMIA LATIFOLIA	SH (30)	FACU			
ACER RUBRUM	H (5)	FAC			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: NOT HYDROPHYTIC VEGETATION. HYDROPHYTIC VEGETATION NOT ASSUMED, AS FOR PLOTS 1 AND 2, BECAUSE VEGETATION IS LESS SPARSE AND OBVIOUS EVIDENCE OF RECENT SURFACE SATURATION IS NOT PRESENT.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE	(in.)
Depth to Saturated Soil:	NONE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY

DATA POINT SA-WEST-1-3
APPROXIMATELY 15 FEET SOUTHEAST OF (OUTSIDE) FLAG WET SA-21
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	ERODED LAND, STEEP	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6	A	10YR 3/2	NONE	N/A	TOPSOIL
6-18+	B	10YR 5/8	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NOT HYDRIC SOIL. CONTRARY TO THE SOIL SURVEY DATA, SOIL ON THESE SLOPES DOES NOT APPEAR TO BE ERODED. SOILS IN THIS AREA APPEAR TO BE NATURAL SASSAFRAS AND/OR WESTPHALIA SERIES SOILS.

WETLAND DETERMINATION

		(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: THIS POINT LIES JUST DOWN-GRADIENT OF AN ISOLATED SEEPAGE WETLAND. WATER EMERGES FROM SPRINGS AT UPPER (NORTHERN) TIP OF THIS WETLAND AND PROGRESSIVELY INFILTRATES INTO GROUNDWATER UNDER SANDY SOIL AS IT FLOWS DOWN-GRADIENT (SOUTH). WETLANDS DO NOT RECUR DOWN-GRADIENT IN THIS TOPOGRAPHIC SWALE UNTIL IT JOINS WETLANDS ALONG JOHNS CREEK.

Classification: UPLAND (U)

DATA POINT X-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET X-42
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/17/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	X-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	SH (10)	FAC	THELYPTERIS NOVEBORACENSIS	H (5)	FAC
CAREX STRICTA	H (30)	OBL	POLYGONUM ARIFOLIUM	H (5)	OBL
SAURURUS CERNUUS	H (30)	OBL	ACER RUBRUM	H (5)	FAC
			FAGUS GRANDIFOLIA	H (5)	FACU
			SPARANGIUM	H (5)	OBL
			ATHYRIUM FILIX-FEMINA	H (5)	FAC
			VIOLA SP.	H (5)	OBL

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION. DATA POINT SHADED BY CANOPIES OF TULIP POPLAR (LIRIODENDRON TULIPIFERA) (FACU) TREES AND AMERICAN BEECH (FAGUS GRANDIFOLIA) SAPLINGS GROWING ON THE ADJOINING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 6 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT X-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET X-42
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	ERODED LAND, STEEP	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	2.5Y 3/2	NONE	N/A	MUCK
2-5	B	2.5Y 4/1	2.5Y 4/4	<5%, FAINT	MUCK/LOAMY SAND
5-18+	B	2.5Y 7/1	2.5Y 6/6	<5%, INDISTINCT	FINE LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- X Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. LIKELY A MIXED ALLUVIAL SOIL.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: THIS POINT IS TYPICAL OF SEVERAL COVE-LIKE AREAS OF FORESTED WETLANDS ADJOINING THE MAIN CHANNEL OF JOHNS CREEK IN CENTRAL PART OF SITE. THE CENTRAL AREA OF WETLANDS ADJOINING JOHNS CREEK CONSISTS OF PALUSTRINE EMERGENT WETLANDS DOMINATED BY COMMON REED (PHRAGMITES AUSTRALIS) (FACW) WITH LESSER AMOUNTS OF SPARANGIUM (SPARANGIUM SP.) AND LIZARD TAIL (SAURURUS CERNUUS) (OBL). THERE ARE SEVERAL CLUSTERS OF RED MAPLE (ACER RUBRUM) AND BLACK GUM (NYSSA SYLVATICA) SAPLINGS IN THE MAIN AREA OF WETLANDS, ALTHOUGH BEAVERS HAVE CUT DOWN MANY OF THESE TREES.

THIS TRANSECT LOCATION WAS CHOSEN BECAUSE IT ILLUSTRATES THE RELATIVELY GRADUAL TRANSITION FROM WETLANDS TO DRY SWALES ALONG THIS SEGMENT OF JOHNS CREEK. IN OTHER LOCATIONS, THE WETLAND/UPLAND BOUNDARY IS SHARPLY DEFINED AS THE TOE OF STEEP SLOPES.

Classification: PFO1

DATA POINT X-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET X-42
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/17/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	WDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	X-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
FAGUS GRANDIFOLIA	C (30)	FACU	QUERCUS FALCATA	C (10)	FACU-
LIRIODENDRON TULIPIFERA	C (20)	FACU	QUERCUS ALBA	C (5)	FACU-
FAGUS GRANDIFOLIA	SA (5)	FACU	CARYA GLABRA	C (5)	FACU-
KALMIA LATIFOLIA	SH (15)	FACU	LIRIODENDRON TULIPIFERA	H (+)	FACU
FAGUS GRANDIFOLIA	SH (10)	FACU	FAGUS GRANDIFOLIA	H (+)	FACU
MITCHELLA REPENS	H (5)	FACU			
KALMIA LATIFOLIA	H (2)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0

Remarks: NOT HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 20 (in.)
- Depth to Saturated Soil: 15 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY

DATA POINT X-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET X-42
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	ERODED LAND, STEEP	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	2.5Y 4/2	NONE	N/A	TOPSOIL
2-10	B	2.5Y 6/6	NONE	N/A	SILT LOAM
5-18+	B	2.5Y 6/3	2.5Y 6/6	<5%, INDISTINCT	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NOT HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: THIS POINT IS TYPICAL OF UPLANDS ADJOINING THE WETLANDS ASSOCIATED WITH THE MAIN CHANNEL OF JOHNS CREEK IN CENTRAL PART OF SITE. THIS TRANSECT LOCATION WAS CHOSEN BECAUSE IT ILLUSTRATES THE RELATIVELY GRADUAL TRANSITION FROM WETLANDS TO DRY SWALES ALONG THIS SEGMENT OF JOHNS CREEK. IN OTHER LOCATIONS, THE WETLAND/UPLAND BOUNDARY IS SHARPLY DEFINED AS THE TOE OF STEEP SLOPES.

Classification: UPLAND (U)

ASSESSMENT AREA VI
FIELD DATA SHEETS

DATA POINT II-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET II-22
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	OF (PHRAGMITES)
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	II-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
PHRAGMITES AUSTRALIS	H (100)	FACW	BOEHMERIA CYLINDRICA	H (5)	FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):
- ___ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ___ Other
- ___ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	3	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT II-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) FLAG WET II-22
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	A	10YR 2/1	NONE	N/A	MUCK
3-18+	B	10YR 5/1	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	X	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	X	Organic Streaking in Sandy Soils
___	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
___	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. IRREGULAR BOUNDARY BETWEEN SURFACE MUCK LAYER AND UNDERLYING LOAMY SAND.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND. THIS POINT LOCATED IN DETENTION POND THAT RECEIVES RUNOFF FROM DREDGE SPOIL DISPOSAL AREA.

Classification: PEM

DATA POINT II-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET II-22
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	OF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	II-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
PINUS TAEDA	C (25)	FAC-	LIQUIDAMBAR STYRACIFLUA	C (5)	FACW
PRUNUS SEROTINA	SA (5)	FACU	LIQUIDAMBAR STYRACIFLUA	SH (+)	FACW
CYPERUS ESCULENTUS	H (25)	FACW			
DICHANTHELIUM CLANDESTINUM	H (10)	FAC+			
JUNIPERUS VIRGINIANA	H (10)	FACU			
FESTUCA ARUNDINACEA	H (10)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT II-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF (OUTSIDE) FLAG WET II-22
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-18+	B	10YR 6/8	10YR 6/2	APPROX. 80:20	SANDY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOILS

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND

Classification: UPLAND (U)

DATA POINT KK-WEST-1-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET KK-2
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/15/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	OF (PHRAGMITES)
Is the site significantly disturbed (Atypical Situation)?: MAN-MADE EARTHEN DAM	Yes	No	Transect ID:	KK-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
PINUS TAEDA	SA (5)	FAC-			
LIQUIDAMBAR STYRACIFLUA	SA (5)	FACW			
MYRICA CERIFERA	SH (10)	FACW			
JUNIPERUS VIRGINIANA	SH (5)	FACU			
PHRAGMITES AUSTRALIS	H (80)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	1	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT KK-WEST-1-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET KK-2
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6+	A	10YR 3/1	NONE	N/A	MUCK

Hydric Soil Indicators:

	Histosol		Concretions
X	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soil
X	Sulfidic Odor		Organic Streaking in Sandy Soils
X	Aquic Moisture Regime		Listed on Local Hydric Soils List
	Reducing Conditions		Listed on National Hydric Soils List
	Gleyed or Low-Chroma Colors		Other (Explain in Remarks)

Remarks: HYDRIC SOIL.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: WETLAND. THIS AREA IS IN THE SECOND (MOST DOWN-GRADIENT) OF TWO DETENTION CELLS THAT FILTER RUNOFF FRPM DREDGE SPOIL DISPOSAL AREA BEFORE ENTRY TO JOHNS CREEK.

Classification: PEM

DATA POINT KK-WEST-1-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET KK-2
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	OF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	KK-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
PINUS TAEDA	C (40)	FAC-	ROBINIA PSEUDOACACIA	C (5)	FACU-
ROBINIA PSEUDOACACIA	SA (5)	FACU-	JUNIPERUS VIRGINIANA	SA (+)	FACU
PINUS VIRGINIANA	SA (5)	NI	PHRAGMITES AUSTRALIS	H (10)	FACW
FESTUCA ARUNDINACEA	H (90)	FACU	ILEX OPACA	H (5)	FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT KK-WEST-1-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET KK-2
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-18+	N/A	10YR 6/2-6/3	10YR 4/1	<10%, DISTINCT	SANDY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: FILL SOIL COMPRISING EARTHEN DAM

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND. THIS SITE IS LOCATED ON A MAN-MADE EARTHEN DAM SEPARATING TWO SEQUENTIAL RUNOFF WATER DETENTION CELLS LEADING DOWN-GRADIENT (SOUTH) FROM DREDGE SPOIL DISPOSAL AREA. WETLAND BOUNDARY CORRESPONDS TO TOE OF SLOPE AT DOWNWARD EDGE OF EARTHEN DAM.

Classification: UPLAND (U)

DATA POINT KK-WEST-2-1
APPROXIMATELY 15 FEET EAST OF (INSIDE) FLAG WET KK-15
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	OF (PHRAGMITES)
Is the site significantly disturbed (Atypical Situation)?: DETENTION BASIN	**Yes**	No	Transect ID:	KK-WEST-2
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
PINUS TAEDA	C (30)	FAC-	LIQUIDAMBAR STYRACIFLUA	C (5)	FACW
ACER RUBRUM	SA (15)	FAC	LIQUIDAMBAR STYRACIFLUA	C (5)	FACW
PINUS TAEDA	SA (5)	FAC-			
PHRAGMITES AUSTRALIS	H (60)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: HYDROPHYTIC VEGETATION. DETERMINATION CONSIDERS OTHER AS WELL AS DOMINANT PLANT SPECIES.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: 2 (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT KK-WEST-2-1
APPROXIMATELY 15 FEET EAST OF (INSIDE) FLAG WET KK-15
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-0.5	A	10YR 2/1	NONE	N/A	MUCK
0.5-18+	B	10YR 6/6	10YR 5/2	APPROX 80:20	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. DISTURBED SOIL WITH WETLAND HYDROLOGICAL REGIME.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: WETLAND. THIS AREA IS IN THE SECOND (MOST DOWN-GRADIENT) OF TWO DETENTION CELLS THAT FILTER RUNOFF FROM DREDGE SPOIL DISPOSAL AREA BEFORE ENTRY TO JOHNS CREEK.

Classification: PEM

DATA POINT KK-WEST-2-2
APPROXIMATELY 15 FEET WEST OF (OUTSIDE) FLAG WET KK-15
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	OF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	KK-WEST-2
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
PINUS TAEDA	C (25)	FAC-	ACER RUBRUM	C (5)	FAC
LIQUIDAMBAR STYRACIFLUA	SA (5)	FACW	LIQUIDAMBAR STYRACIFLUA	C (5)	FACW
ACER RUBRUM	SA (5)	FAC	LIQUIDAMBAR STYRACIFLUA	H (5)	FACW
ROSA MULTIFLORA	SH (5)	FACU	JUNIPERUS VIRGINIANA	H (+)	FACU
PHRAGMITES AUSTRALIS	H (30)	FACW	CAREX SP.	H (5)	FACW
			ILEX OPACA	H (5)	FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60

Remarks: ALTHOUGH GREATER THAN 50% OF DOMINANT SPECIES ARE FAC, FACW, OR OBL, VEGETATION DOES NOT APPEAR TO BE TRUE HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	15	(in.)
Depth to Saturated Soil:	10	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT KK-WEST-2-2
APPROXIMATELY 15 FEET WEST OF (OUTSIDE) FLAG WET KK-15
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-0.5	A	10YR 2/1	NONE	N/A	LOAMY SAND
0.5-18+	B	10YR 6/6	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND. GRADUAL TRANSITION FROM WETLAND TO UPLAND AT EDGES OF DETENTION CELL.

Classification: UPLAND (U)

ASSESSMENT AREA VII
FIELD DATA SHEETS

DATA POINT EE-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) MIDPOINT FLAG WET EE-18 AND 19
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	BHF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	EE-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	1

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
ACER RUBRUM	C (20)	FAC			
LIQUIDAMBAR STURACIFLUA	SA (5)	FACW			
LIQUIDAMBAR STURACIFLUA	SH (5)	FACW			
FAGUS GRANDIFOLIA	SH (5)	FACU			
SMILAX GLAUCA	V (5)	FAC			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 80

Remarks: HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	10	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT EE-WEST-1-1
APPROXIMATELY 15 FEET SOUTH OF (INSIDE) MIDPOINT FLAG WET EE-18 AND 19
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	2.5Y 3/2	NONE	N/A	TOPSOIL
2-6	B	2.5Y 6/3	2.5Y 6/6	50:50	SAND
6-10	B	2.5Y 5/1	NONE	N/A	LOAMY FINE SAND
10-18+	B	2.5Y 6/2	NONE	N/A	FINE LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. LAYERS REFLECT HISTORY OF PERIODIC SEDIMENTATION EVENTS IN STREAM.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND

Classification: PFO1

DATA POINT EE-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF MIDPOINT FLAG WET EE-18 AND 19
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	EE-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
FAGUS GRANDIFOLIA	C (35)	FACU	PINUS VIRGINIANA	C (5)	UPL
ACER RUBRUM	C (20)	FAC			
LIQUIDAMBAR STURACIFLUA	SA (5)	FACW			
ILEX OPACA	SA (5)	FACU			
KALMIA LATIFOLIA	SH (20)	FACU			
ILEX OPACA	SH (20)	FACU			
ASIMINA TRILOBATA	H (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 29

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT EE-WEST-1-2
APPROXIMATELY 15 FEET NORTH OF MIDPOINT FLAG WET EE-18 AND 19
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-0.5	A	2.5Y 3/2	NONE	N/A	SILT LOAM
0.5-18+	B	2.5Y 5/6	NONE	N/A	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND

Classification: UPLAND (U)

DATA POINT FF-WEST-1-1
APPROXIMATELY 15 FEET SOUTHWEST OF (INSIDE) FLAG WET FF-90A15
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	FF-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (25)	FACW			
LIQUIDAMBAR STYRACIFLUA	SA (10)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	4	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT FF-WEST-1-1
APPROXIMATELY 15 FEET SOUTHWEST OF (INSIDE) FLAG WET FF-90A15
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-18+	B	2.5YR 5/2	NONE	N/A	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND

Classification: PFO1

DATA POINT FF-WEST-1-2
APPROXIMATELY 15 FEET NORTHEAST OF (OUTSIDE) FLAG WET FF-90A15
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	FF-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
QUERCUS PRINUS	C (25)	UPL	ACER RUBRUM	C (5)	FAC
LIRIODENDRON TULIPIFERA	C (10)	FACU			
FAGUS GRANDIFOLIA	C (10)	FACU			
ACER RUBRUM	SA (5)	FAC			
KALMIA LATIFOLIA	SH (15)	FACU			
ILEX OPACA	SH (5)	FACU			
ASIMINA TRILOBATA	H (5)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 29

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE	(in.)
Depth to Saturated Soil:	NONE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT FF-WEST-1-2
APPROXIMATELY 15 FEET NORTHEAST OF (OUTSIDE) FLAG WET FF-90A15
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-1	A	2.5Y 3/2	NONE	N/A	SILT LOAM
1-18+	B	2.5Y 5/6	NONE	N/A	SILT LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present?	Yes	No		

Remarks: NOT WETLAND

Classification: UPLAND (U)

DATA POINT FF-WEST-2-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET FF-4
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	FF-WEST-2
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
FRAXINUS PENNSYLVANICA	SA (5)	FACW	BOEHMERIA CYLINDRICA	H (15)	FACW+
NYSSA SYLVATICA	SA (5)	FAC	IMPATIENS CAPENSIS	H (15)	FACW
PHRAGMITES AUSTRALIS	H (100)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	1	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT FF-WEST-2-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET FF-4
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	10YR 3/1	NONE	N/A	MUCK
4-18+	B	10YR 5/1	NONE	N/A	FINE LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- X High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND

Classification: PFO1

DATA POINT FF-WEST-2-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET FF-4
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	9/20/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	FF-WEST-2
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
QUERCUS PRINUS	C (40)	UPL			
FAGUS AMERICANA	C (30)	FACU			
ACER RUBRUM	SA (5)	FAC			
KALMIA LATIFOLIA	SH (100)	FACU			
ASIMINA TRILOBATA	H (5)	FACW			
KALMIA LATIFOLIA	H (5)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT FF-WEST-2-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET FF-4
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-0.5	A	10YR 4/1	NONE	N/A	SILT LOAM
0.5-18+	B	10Y 6/6	NONE	N/A	SILTY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND

Classification: UPLAND (U)

DATA POINT T-WEST-1-1
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET T-177
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/21/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	T-WEST-1
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
NYSSA SYLVATICA	C (10)	FAC	CARPINUS CAROLINIANA	SA (5)	FAC
LIQUIDAMBAR STYRACIFLUA	SA (30)	FAC	MICROSTEGIUM VIMINEUM	H (15)	FAC
LIQUIDAMBAR STYRACIFLUA	SH (5)	FAC	DICHANTHELIUM CLANDESTINUM	H (10)	
BOEHMERIA CYLINDRICA	H (40)	FACW	ONOCLEA SENSIBILIS	H (10)	FACW
THELYPTERIS NOVEBORACENSIS	H (40)	FAC	CAREX STRICTA	H (5)	OBL
			PARTHENOCISSUS QUINQUEFOLIA	H (+)	FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- X Other (Explain in Remarks) RECENT DRY CONDITIONS

Remarks: THE INSPECTION DATE IMMEDIATELY FOLLOWED A PERIOD OF 4 WEEKS WITHOUT APPRECIABLE RAINFALL. BASED ON SOILS AND VEGETATION, IT IS ASSUMED THAT THIS AREA IS SATURATED TO THE SURFACE FOR EXTENDED PERIODS DURING YEARS OF NORMAL RAINFALL.

DATA POINT T-WEST-1-1
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET T-177
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	STEEP LAND, ERODED	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-4	A	7.5YR 4/1	NONE	N/A	SILTY CLAY LOAM
4-18+	B	7.5YR 5/1	7.5YR 5/4	10%/DISTINCT	SILTY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- X Concretions MANGANESE
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND BOUNDARY ABRUPTLY DEFINED BY TOE OF SLOPE

Classification: PFO1

DATA POINT T-WEST-1-2
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET T-177
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/18/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	T-WEST-1
Is the area a potential Problem Area?: (If needed, explain on reverse)	Yes	No	Plot ID:	2

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (40)	FACU	ISOTRIA VERTICILLATA	H (2)	FACU
QUERCUS PRINUS	C (10)	UPL	ACER RUBRUM	H (2)	FAC
ACER RUBRUM	C (10)	FAC	QUERCUS PRINUS	H (2)	UPL
ACER RUBRUM	SA (10)	FAC	QUERCUS ALBA	H (2)	FACU-
KALMIA LATIFOLIA	SH (60)	FACU	LIRIODENDRON TULIPIFERA	H (2)	FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 40

Remarks: NOT HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE	(in.)
Depth to Saturated Soil:	NONE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NOT WETLAND HYDROLOGY

DATA POINT T-WEST-1-2
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET T-177
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	ERODED LAND, STEEP	Drainage Class:	N/A
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-2	A	10YR 3/2	NONE	N/A	LOAMY SAND
2-18+	B	10YR 6/4	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: NOT HYDRIC SOIL. CONTRARY TO SOIL SURVEY, SOILS IN THIS AREA ARE NOT SIGNIFICANTLY ERODED. SOILS LIKELY ARE NATURAL SASSAFRAS OR WESTPHALIA SERIES SOILS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: UPLANDS JUST UP-GRADIENT OF TOE OF SLOPE

Classification: UPLAND (U)

ASSESSMENT AREA VIII
FIELD DATA SHEETS

DATA POINT HH-WEST-1-1
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET HH-139
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	HH-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
ILEX OPACA	SH (5)	FACU	CAREX STRICTA	H (5)	FAC
THELYPTERIS NOVEBORACENSIS	H (30)	FAC	VIOLA BLANDA	H (5)	FACW
			MICROSTEGIUM VIMINEUM	H (5)	FAC
			ARISAEMA TRIPHYLLUM	H (5)	FACW-

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: HYDROPHYTIC VEGETATION. DETERMINATION CONSIDERS OTHER AS WELL AS DOMINANT PLANT SPECIES.

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	4	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY

DATA POINT HH-WEST-1-1
APPROXIMATELY 15 FEET NORTH OF (INSIDE) FLAG WET HH-139
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6	A	10YR 3/1	NONE	N/A	MUCK
6-18+	B	10YR 5/2	NONE	N/A	LOAMY SAND

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- X Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. IRREGULAR BOUNDARY BETWEEN SURFACE MUCK LAYER AND UNDERLYING LOAMY SAND.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND. THIS TRANSECT ILLUSTRATES THE TRANSITION FROM WETLAND TO UPLAND AT UP-GRADIENT POINT ON A TYPICAL SWALE IN THIS PART OF THE SITE.

Classification: PFO1

DATA POINT HH-WEST-1-2
APPROXIMATELY 15 FEET SOUTH OF (OUTSIDE) FLAG WET HH-139
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	HH-WEST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (40)	FAC			
ACER RUBRUM	C (30)	FAC			
ILEX OPACA	SA (10)	FACU			
ILEX OPACA	SH (10)	FACU			
KALMIA LATIFOLIA	SH (10)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 40

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT HH-WEST-1-2
APPROXIMATELY 15 FEET TBD OF (OUTSIDE) FLAG WET HH-139
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc.
0-8	B	10YR 5/2-5/3	10YR 5/6-5/8	10%/DISTINCT	SILTY CLAY LOAM
8-18+	B	10YR 5/2	10YR 5/6	10%/DISTINCT	SANDY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: LOW CHROMA SOIL COLORS MAY REFLECT PREVIOUS RATHER THAN CURRENT HYDROLOGICAL CONDITIONS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND. THIS TRANSECT ILLUSTRATES THE TRANSITION FROM WETLAND TO UPLAND AT UP-GRADIENT POINT ON A TYPICAL SWALE IN THIS PART OF THE SITE.

Classification: UPLAND (U)

DATA POINT HH-WEST-2-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET HH-4
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	PDBDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	HH-WEST-2
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
THELYPTERIS NOVEBORACENSIS	H (50)	FAC	DICHANTHELIUM CLANDESTINUM	H (5)	FAC+
BOEHMERIA CYLINDRICA	H (10)	FACW+	ONOCLEA SENSIBILIS	H (5)	FACW
VIOLA BLANDA	H (10)	FACW	GERANIUM CAROLINIANUM	H (5)	NA
ARISAEMA TRIPHYLLUM	H (10)	FACW-			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100

Remarks: HYDROPHYTIC VEGETATION. VEGETATION IS SHADED BY CANOPY OF SWEET GUM TREES GROWING IN ADJOINING UPLANDS.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	NONE	(in.)
Depth to Saturated Soil:	12	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- X Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY (BASED ON SECONDARY INDICATORS). PRECEEDING WEEKS HAD BEEN DRY.

DATA POINT HH-WEST-2-1
APPROXIMATELY 15 FEET WEST OF (INSIDE) FLAG WET HH-4
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-3	B	10YR 5/1	10YR 5/8	10%/DISTINCT	SILTY CLAY LOAM
3-12	B	7.5YR 6/1	10YR 6/6	40%/INDISTINCT	SANDY CLAY LOAM
12-18+	B	10YR 6/1	10YR 6/6	10%/DISTINCT	LOAMY SAND

Hydric Soil Indicators:

___	Histosol	___	Concretions
___	Histic Epipedon	___	High Organic Content in Surface Layer in Sandy Soil
___	Sulfidic Odor	___	Organic Streaking in Sandy Soils
X	Aquic Moisture Regime	___	Listed on Local Hydric Soils List
___	Reducing Conditions	___	Listed on National Hydric Soils List
X	Gleyed or Low-Chroma Colors	___	Other (Explain in Remarks)

Remarks: HYDRIC SOIL. SOIL PROFILE APPEARS TO CONSIST OF LAYERS OF ERODED SOIL DEPOSITED BY RUNOFF.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks: WETLAND. THIS TRANSECT ILLUSTRATES THE TRANSITION FROM WETLAND TO UPLAND AT THE SIDES OF A TYPICAL SWALE IN THIS PART OF THE SITE. THE TRANSITION IS ABRUPTLY DEFINED BY THE TOE OF THE SIDE SLOPE.

Classification: PFO1

DATA POINT HH-WEST-2-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET HH-4
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	8/25/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	**Yes**	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	**No**	Transect ID:	HH-WEST-2
Is the area a potential Problem Area?:	Yes	**No**	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIQUIDAMBAR STYRACIFLUA	C (40)	FAC			
ACER RUBRUM	C (30)	FAC			
ILEX OPACA	SA (10)	FACU			
ILEX OPACA	SH (10)	FACU			
KALMIA LATIFOLIA	SH (10)	FACU			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 40

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):
- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NONE (in.)
- Depth to Free Water in Pit: NONE (in.)
- Depth to Saturated Soil: NONE (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: NO INDICATORS OF WETLAND HYDROLOGY

DATA POINT HH-WEST-2-2
APPROXIMATELY 15 FEET EAST OF (OUTSIDE) FLAG WET HH-4
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MATAPEAKE SILT LOAM, 5-10% SLOPES, SEVERELY ERODED	Drainage Class:	WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-8	B	10YR 5/2-5/3	10YR 5/6-5/8	10%/DISTINCT	SILTY CLAY LOAM
8-18+	B	10YR 5/2	10YR 5/6	10%/DISTINCT	SANDY CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: LOW CHROMA SOIL COLORS MAY REFLECT PREVIOUS HYDROLOGICAL CONDITIONS.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: NOT WETLAND. THIS TRANSECT ILLUSTRATES THE TRANSITION FROM WETLAND TO UPLAND AT UP-GRADIENT POINT ON A TYPICAL SWALE IN THIS PART OF THE SITE.

Classification: UPLAND (U)

ASSESSMENT AREA IX
FIELD DATA SHEETS

DATA POINT Q-EAST-1-1
APPROXIMATELY 15 FEET SOUTHEAST OF (INSIDE) FLAG WET Q-5
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	1/8/07
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	HMV
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	Q-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	1
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
NYSSA SYLVATICA	C (10)	FAC	PINUS TAEDA	C (5)	FAC-
ILEX OPACA	SA (5)	FACU+	ACER RUBRUM	C (5)	FAC
SALIX NIGRA	SA (5)	FACW+			
NYSSA SYLVATICA	SA (5)	FAC			
ILEX OPACA	SH (5)	FACU+			
NYSSA SYLVATICA	SH (5)	FAC			
PHRAGMITES AUSTRALIS	H (60)	FACW			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 71

Remarks: HYDROPHYTIC VEGETATION.

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

- Depth of Surface Water: 2 (in.)
- Depth to Free Water in Pit: SURFACE (in.)
- Depth to Saturated Soil: SURFACE (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- X Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: WETLAND HYDROLOGY.

DATA POINT Q-EAST-1-1
APPROXIMATELY 15 FEET SOUTHEAST OF (INSIDE) FLAG WET Q-5
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	SASSAFRAS AND WESTPHALIA SOILS STEEP	Drainage Class:	MODERATELY WELL DRAINED
Taxonomy (subgroup):	TYPIC HAPLUDULTS (SASSAFRAS) OCHREPTIC HAPLUDULTS (WESTPHALIA)	Field Observations Confirmed Mapped Type?	Yes **No**

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-6+	A	10YR 2/1	NONE	N/A	MUCK

Hydric Soil Indicators:

- X Histosol
- ___ Histic Epipedon
- X Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: HYDRIC SOIL. COULD NOT BE AUGURED DEEPER THAN 6 INCHES BECAUSE OF STANDING WATER.

WETLAND DETERMINATION

	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	**Yes**	No	Is this Sampling Point Within a Wetland?	**Yes**	No
Wetland Hydrology Present?	**Yes**	No			
Hydric Soils Present?	**Yes**	No			

Remarks:

Classification: PEM1

DATA POINT Q-EAST-1-2
APPROXIMATELY 15 FEET NORTHWEST OF (OUTSIDE) FLAG WET Q-5
WETLAND DELINEATION DATA FORM, PAGE 1
1987 MANUAL

Project/Site:	CALVERT CLIFFS	Date:	1/7/06
Applicant:	UNISTAR, INC.	County:	CALVERT
Investigators:	J. PEYTON DOUB, PWS, CEP & RIMA MILEY	State:	MARYLAND

Do Normal Circumstances exist on the site?:	Yes	No	Community ID:	MDF
Is the site significantly disturbed (Atypical Situation)?:	Yes	No	Transect ID:	Q-EAST-1
Is the area a potential Problem Area?:	Yes	No	Plot ID:	2
(If needed, explain on reverse)				

VEGETATION

Dominant Plant Species	Stratum	Indicator	Other Plant Species	Stratum	Indicator
LIRIODENDRON TULIPIFERA	C (25)	FACU			
LIQUIDAMBAR STYRACIFLUA	C (30)	FAC			
QUERCUS ALBA	C (20)	FACU-			
ACER RUBRUM	C (10)	FAC			
QUERCUS ALBA	SA (5)	FACU-			
ACER RUBRUM	SA (5)	FAC			
ILEX OPACA	SH (5)	FACU+			

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 43

Remarks: NO INDICATORS OF HYDROPHYTIC VEGETATION

HYDROLOGY

Recorded Data (Described in Remarks):

- ____ Stream, Lake, or Tide Gauge
- X Aerial Photographs
- ____ Other
- ____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	NONE	(in.)
Depth to Free Water in Pit:	6	(in.)
Depth to Saturated Soil:	SURFACE	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks: SURFACE SATURATION BUT OUTSIDE OF GROWING SEASON. SURFACE SOIL LIKELY NOT SATURATED FOR EXTENDED PERIODS DURING A NORMAL YEAR'S GROWING SEASON.

DATA POINT Q-EAST-1-2
APPROXIMATELY 15 FEET NORTHWEST OF (OUTSIDE) FLAG WET Q-5
WETLAND DELINEATION DATA FORM, PAGE 2
1987 MANUAL

SOIL

Map Unit Name (Series and Phase):	MIXED ALLUVIAL	Drainage Class:	POORLY DRAINED
Taxonomy (subgroup):	N/A	Field Observations Confirmed Mapped Type?	Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture Concretions, Structure, etc,
0-1	A	10YR 3/2	NONE	N/A	TOPSOIL
1-18+	B	10YR 5/4	NONE	N/A	FINE SANDY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer in Sandy Soil
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

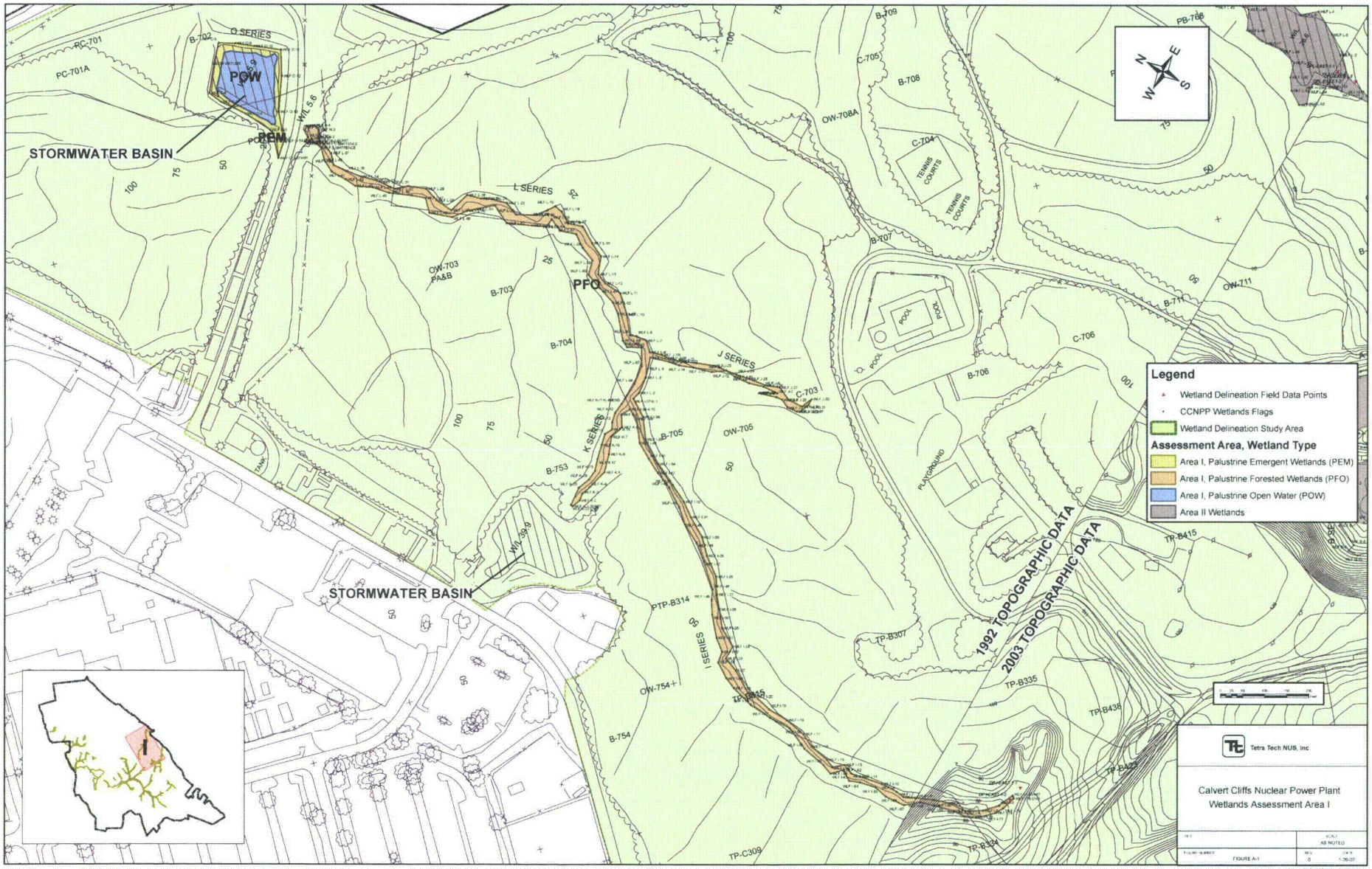
Remarks: NO INDICATORS OF HYDRIC SOIL

WETLAND DETERMINATION

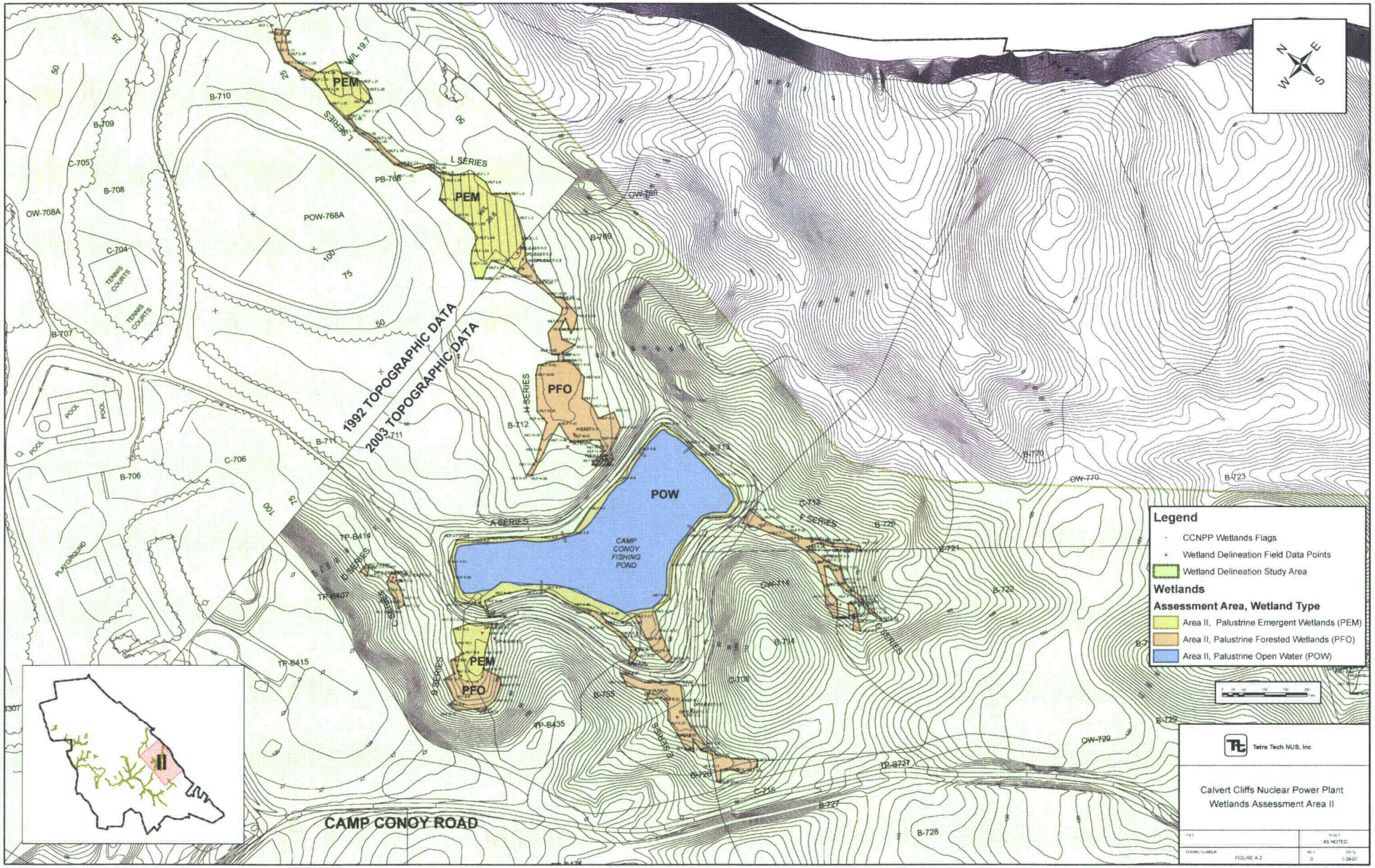
	(Circle)			(Circle)	
Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

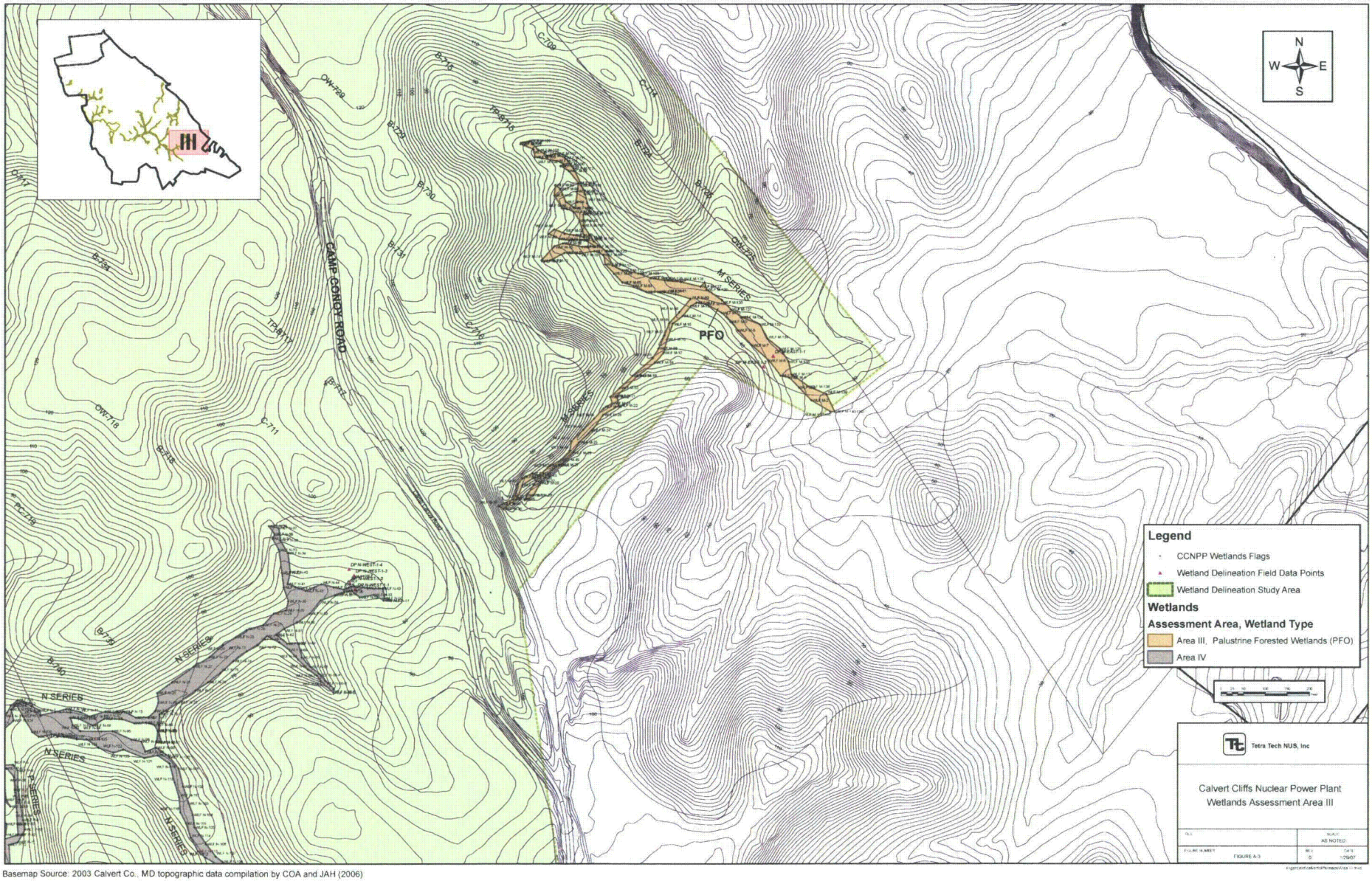
Classification: UPLAND (U)



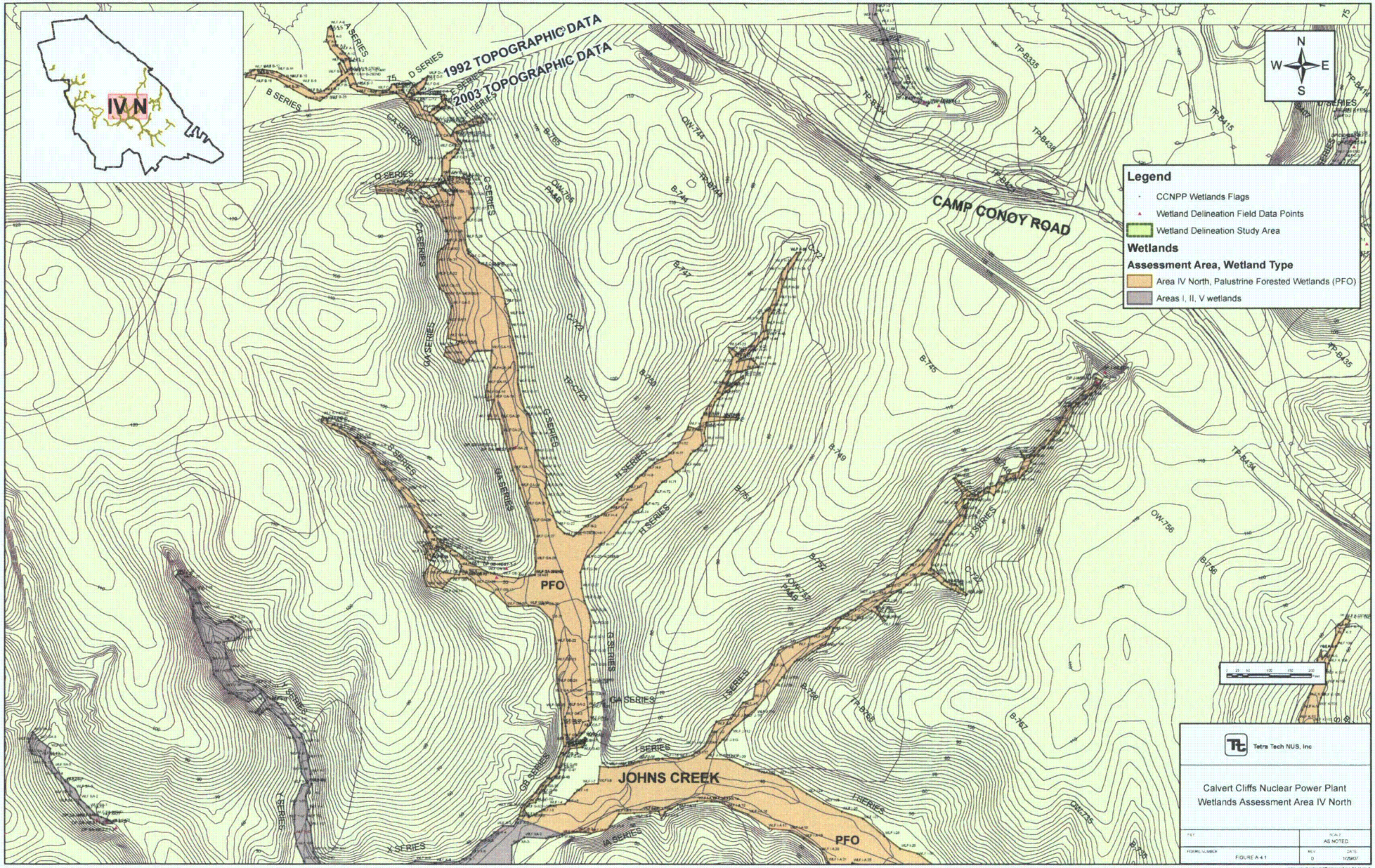
Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



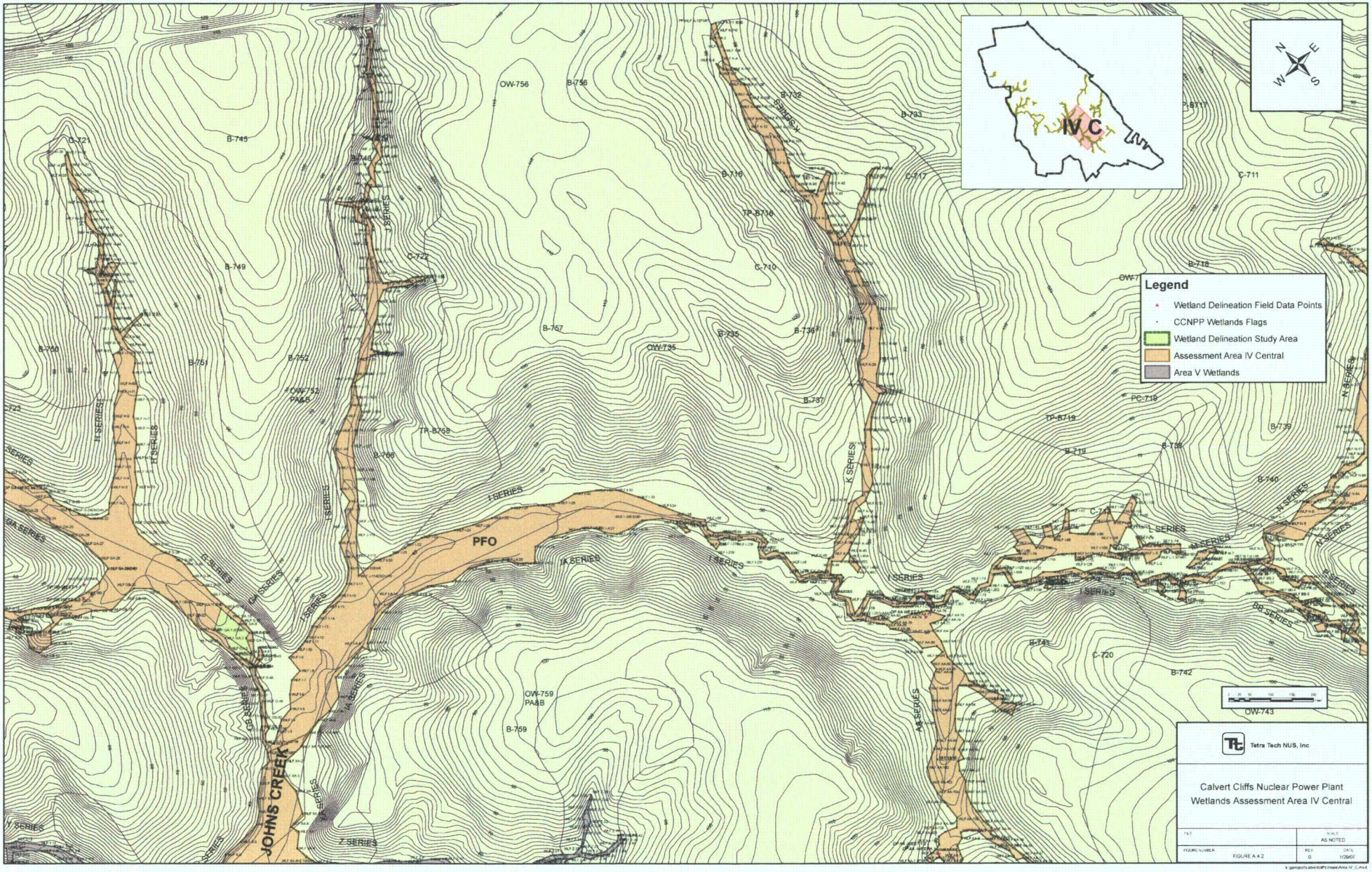
Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



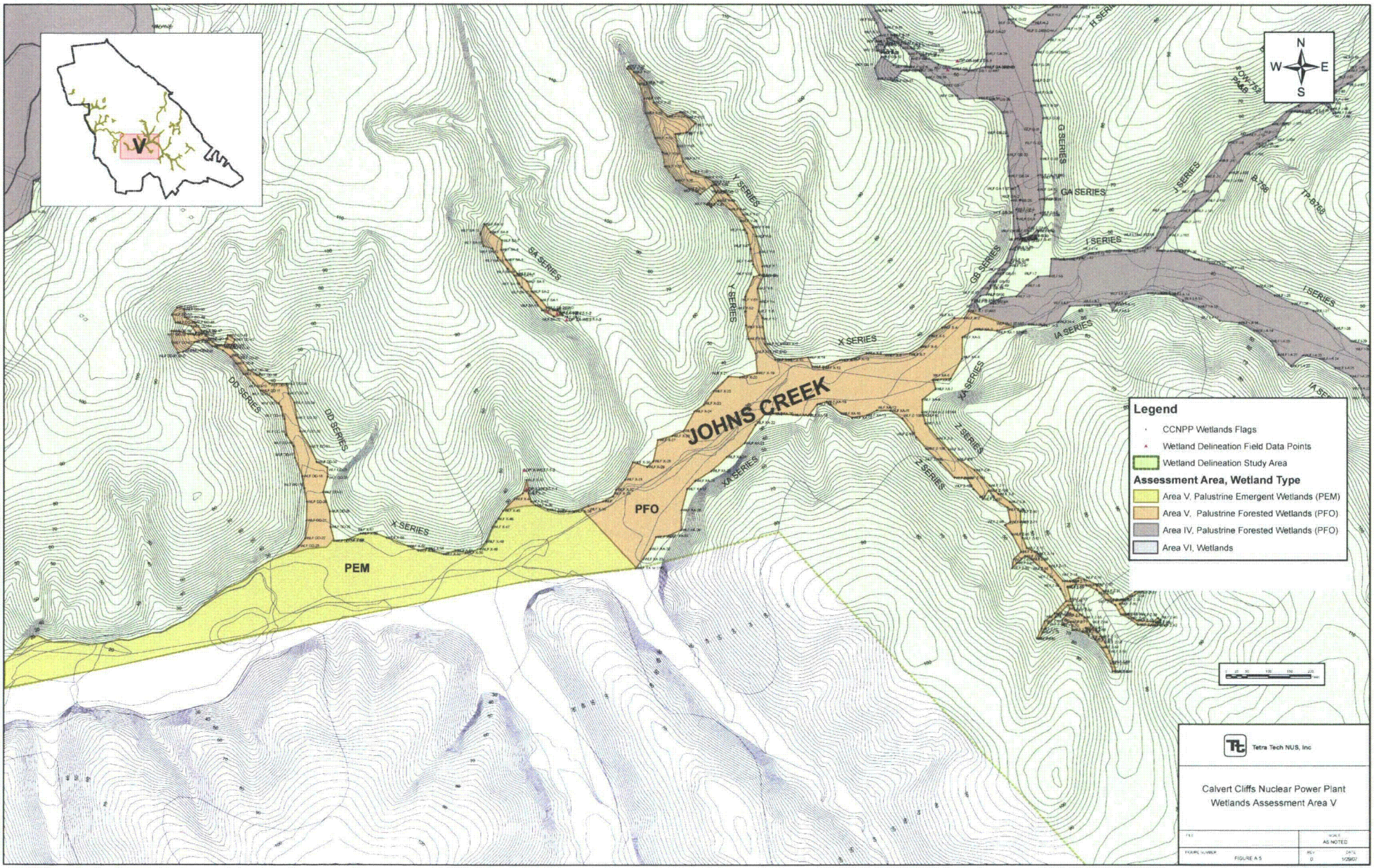
Tetra Tech NUS, Inc

Calvert Cliffs Nuclear Power Plant
Wetlands Assessment Area IV Central

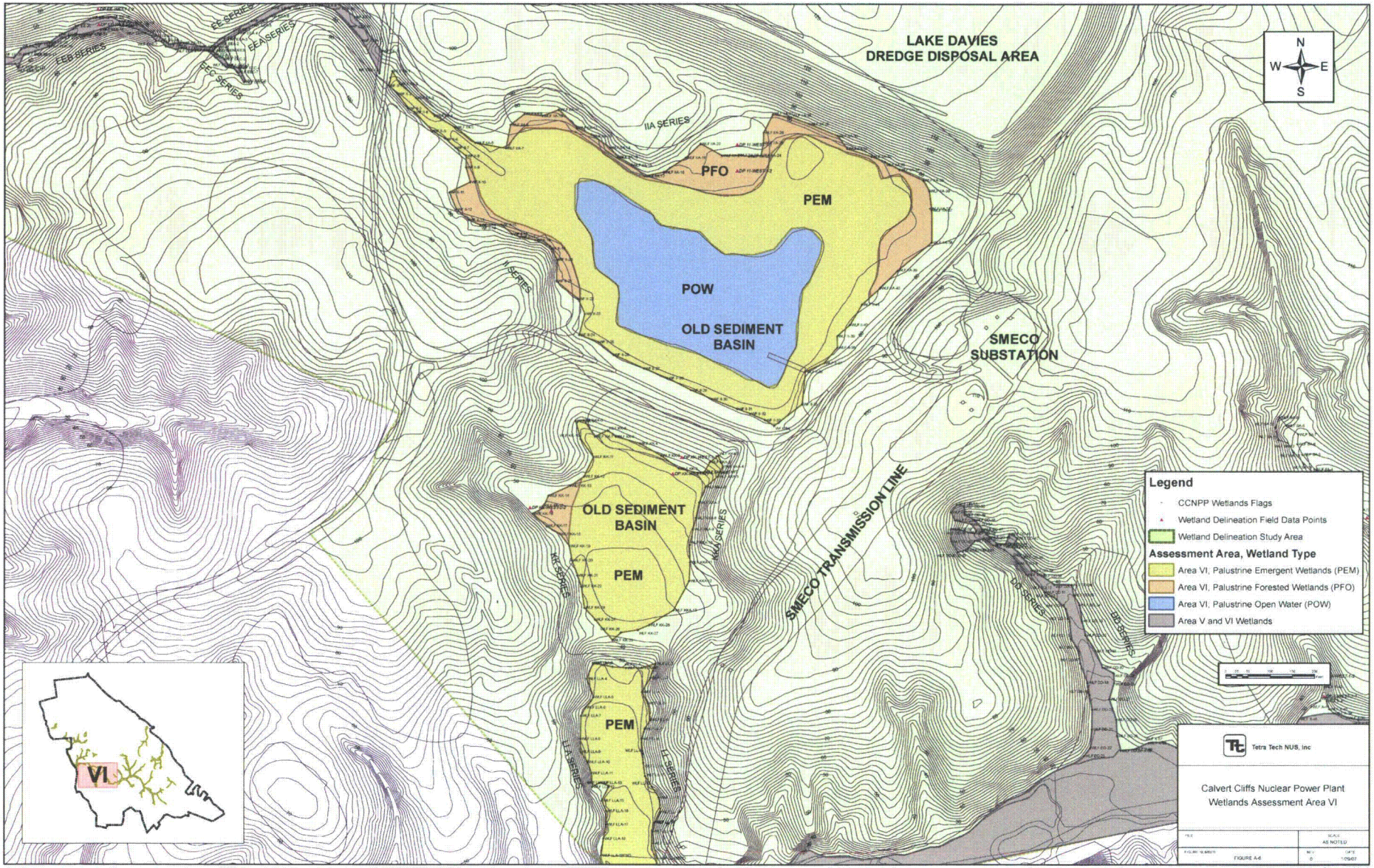
TITLE	SCALE: AS NOTED
FIGURE NUMBER: FIGURE A 4-2	REV: 0 DATE: 1/29/07

Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)

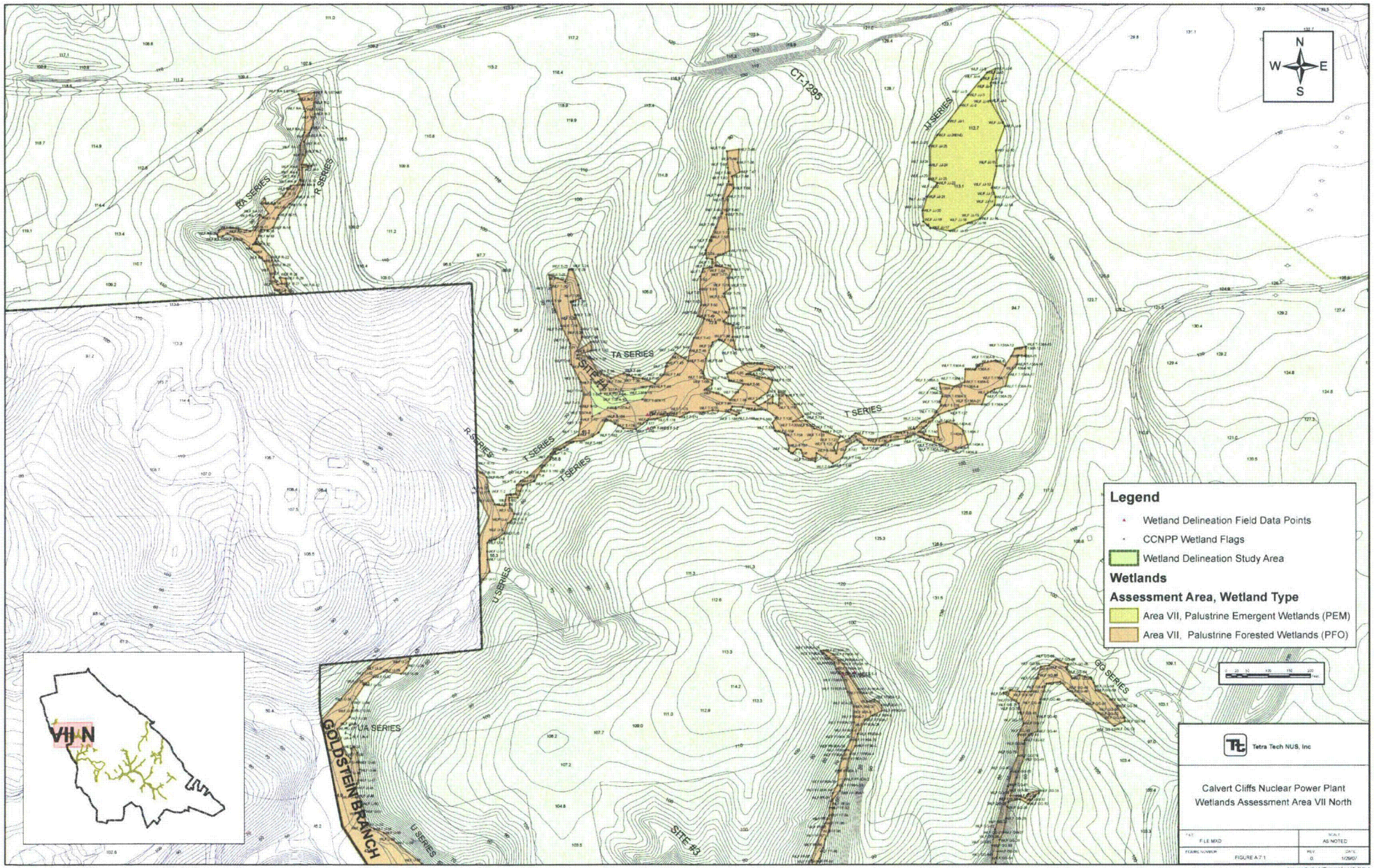
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



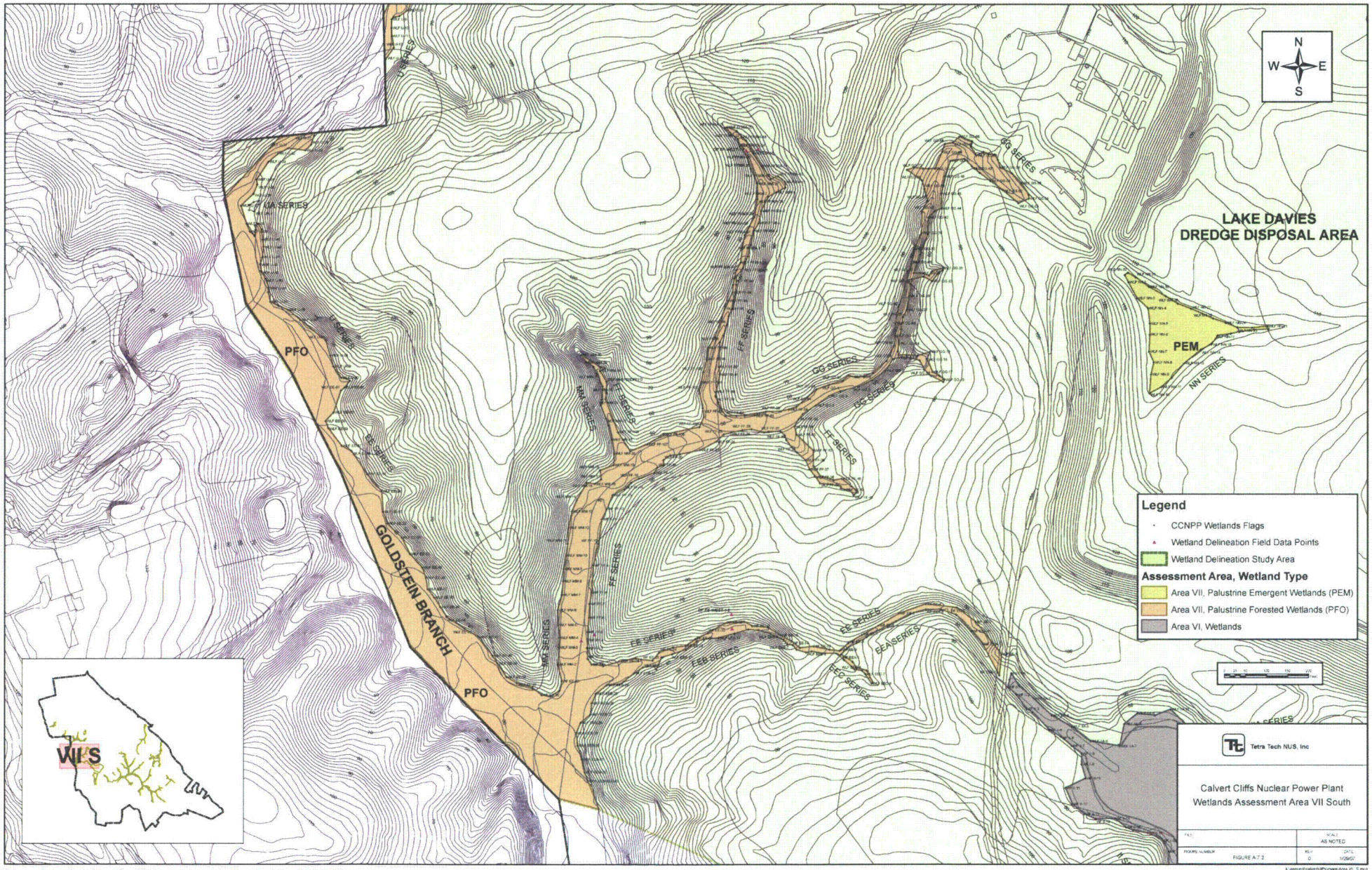
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



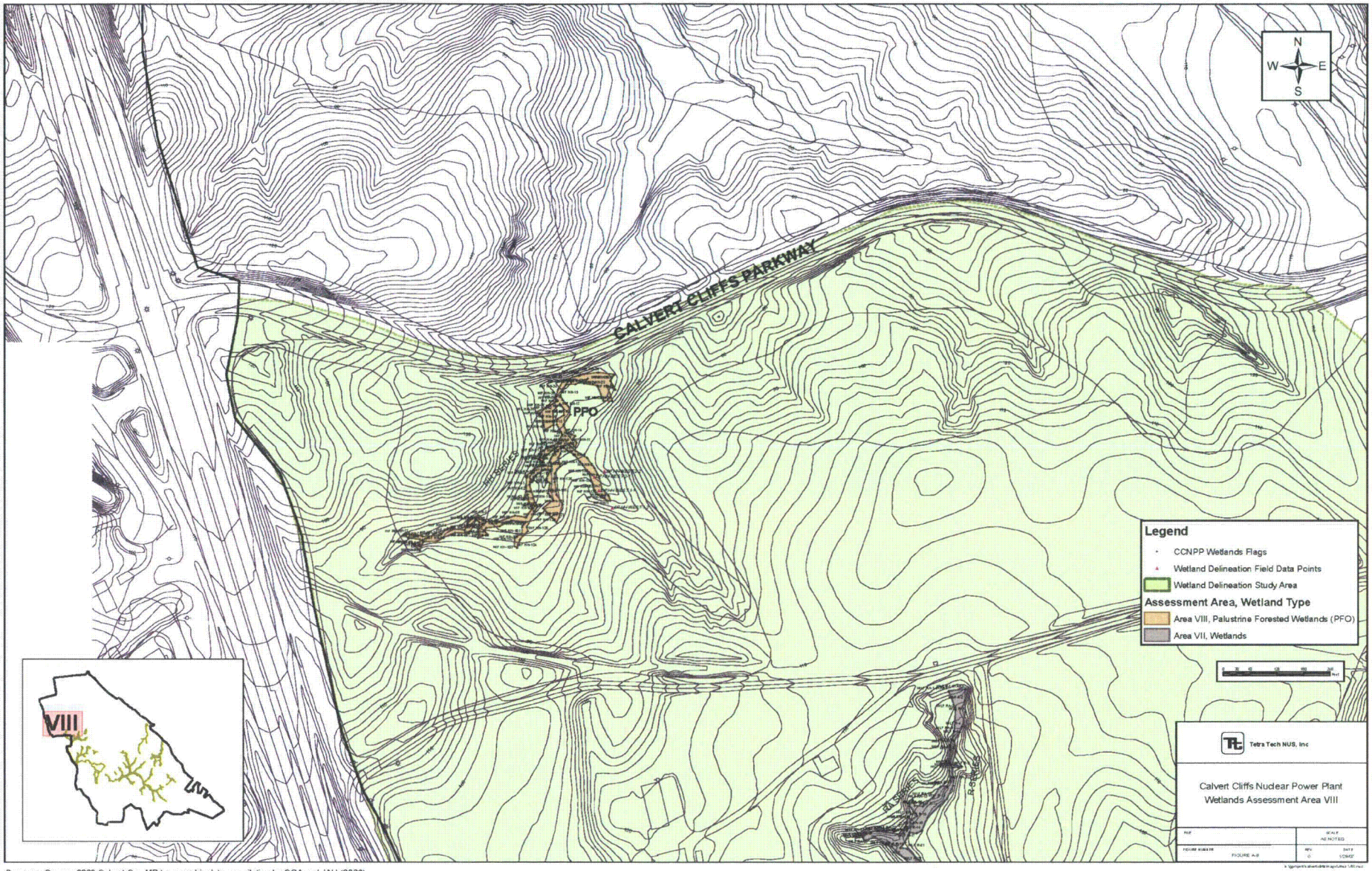
Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)



Basemap Source: 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)

Basemap Source: 1992 and 2003 Calvert Co., MD topographic data compilation by COA and JAH (2006)