

July 12, 2019
File No. 02201056.30

Ms. Martha W. Hynson, Chief
Solid Waste Operations Division
Land and Materials Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 605
Baltimore, MD 21230-1719

Subject: Area C Infill- Phase I Report
Brown Station Road Sanitary Landfill
Prince George's County Government

Dear Ms. Hynson:

On behalf of Prince George's County, Department of the Environment, Resource Recovery Division, SCS Engineers is submitting twelve (12) copies of the Area C Phase I Report, prepared in accordance with COMAR 26.04.07.06 and your guidance provided during our preliminary meetings.

As you know, the existing landfill (Areas A and B) is expected to reach its permitted capacity near the end of Year 2025. In order to meet the County's waste management needs beyond Year 2025, the County proposes Area C, which would infill the air space between Areas A and B. Our Phase I Report, submitted herewith begins the Refuse Disposal Permit application process.

We look forward to continuing our work with you and your staff, as we work on Phases II and III. If you have any questions or comments, please feel free to contact either myself or Darryl Lee Flick.

Sincerely,



Darrin D. Dillah, Ph.D., P.E., BCEE
Project Director and Vice President
SCS Engineers

ddd/rsp/bsp

cc: Marilyn E. Rybak-Naumann, C.P.M., Prince George's County, DoE, RRD
Darryl Lee Flick, Prince George's County DoE, RRD

Enclosures

Area C Infill – Phase I Report

Brown Station Road Sanitary Landfill Facility

Prince George's County
Department of the Environment
Resource Recovery Division
3500 Brown Station Road
Upper Marlboro, MD 20774

SCS ENGINEERS

02201056.30 | July 12, 2019

11260 Roger Bacon Drive
Reston, VA 20190
703-471-6150

Table of Contents

| Section | Page |
|--|-----------|
| 1.0 Introduction..... | 2 |
| 1.1 Purpose | 2 |
| 2.0 Phase I Report Requirements | 2 |
| 2.1 Application Form..... | 3 |
| 3.0 Site Description | 3 |
| 3.1 Current USGS 7.5 Minute Quadrangle Map | 3 |
| 3.2 Current Topographic Map | 3 |
| 3.3 Surrounding area Zoning and Landuse Map | 4 |
| 3.3.1 Zoning Map | 4 |
| 3.3.2 Land Use Map..... | 5 |
| 4.0 Soil Distribution at the Site | 5 |
| 4.1 Description of Soil | 5 |
| 5.0 Site Geology | 6 |
| 5.1 Description of Site Geology..... | 6 |
| 5.2 Aquifer..... | 7 |
| 5.3 Groundwater | 7 |
| 6.0 Description of Proposed Activity..... | 8 |
| 6.1 Region Served..... | 8 |
| 6.2 Type of Waste Accepted..... | 8 |
| 6.3 Convenience Center and Disposal Site Drop-Off Area | 9 |
| 6.4 Weighing Facility and Scale House..... | 9 |
| 7.0 Notice to Federal Aviation Administration | 9 |
| 8.0 References..... | 10 |

Exhibits

| | |
|-------------|--|
| Exhibit 1 | Completed and Signed Refuse Disposal Permit Application Form |
| Exhibit 2. | U.S.G.S. 7.5 Minute Quadrangle Map |
| Exhibit 3. | Current Topographic Map |
| Exhibit 4. | Zoning Map |
| Exhibit 5. | Land Use Map |
| Exhibit 6. | Soils Distribution Map |
| Exhibit 7. | Prince George's County Geology Map |
| Exhibit 8. | Upper Marlboro Geology Map |
| Exhibit 9. | Groundwater Contour Map (March 15, 2018) |
| Exhibit 10. | Groundwater Contour Map (August 23, 2018) |

1.0 INTRODUCTION

The existing Brown Station Road Sanitary Landfill (the Landfill) facility is a municipal solid waste (MSW) landfill with a primary SIC code of 4953 and NAIC code 562212. The Prince George's County Government, Department of the Environment, Resource Recovery Division (the County) owns and operates the existing landfill disposal areas under Permit No. 2015-WMF-0589, issued by the Maryland Department of the Environment (MDE). The landfill began operation in 1968, about 50 years ago.

The Landfill is located on Brown Station Road about 2.5 miles northwest of the town of Upper Marlboro, (Maryland). The existing landfill disposal areas are bounded on the north and east by Western Branch, on the west by Turkey Branch Creek, and on the south by Brown Station Road. The facility encompasses about 1250 acres. About less than 25 percent of the property is currently used for landfill cells; the remainder is used for buffer, roads, administration, and various other ancillary facilities (e.g., leachate management, recycling, storage, vehicle maintenance, drainage and sedimentation control, and landfill gas (LFG) management).

The existing disposal areas are divided into two primary areas: Area A and B. Area A, approximately 150 acres, is a closed landfill that has two separate areas (Area A-1 and A-2). Area B, approximately 140 acres, has been operational since 1992 and continues to accept municipal solid waste.

1.1 PURPOSE

Area B is expected to reach its final permitted capacity near the end of Year 2025. In order to meet the County's municipal solid waste management needs beyond Year 2025, the County's plan is to infill the air space between the existing landfill disposal areas; herein, this new infill space is referred to as disposal Area C.

This report presents the permit application for the proposed disposal Area C and is intended to meet the requirements of a Phase I Report as addressed in COMAR 26.04.07.06.

2.0 PHASE I REPORT REQUIREMENTS

Maryland Department of Environment's (MDE's) solid waste management regulations, chapter 26.04.07.A and B presents the Phase I report requirements as listed below.

1. Twelve copies of a preliminary (Phase I) report shall be prepared and submitted along with the request for a permit (COMAR 26.04.07.06.A.).
2. Phase I Report, at a minimum, shall include following (COMAR 26.04.07.06.B.):
 - a. Completed and signed refuse disposal application form referenced in Regulation .05B of Chapter 26.04.07;
 - b. Current U.S.G.S. 7.5 minute quadrangle map with the proposed site outlined;
 - c. Current topographic map, which is an accurate depiction of the site at the time of application, at a scale not smaller than 1 inch equals 200 feet, which depicts the property boundaries, on-site buildings and structures, and pertinent surficial features including but not limited to: springs, seeps, streams, rock outcrops, sink holes,

- surface impoundments, water wells, forested areas, and the location of any buried or overhead power transmission lines, utility pipelines, or storage tanks on the property;
- d. Map which depicts the surrounding zoning and land use within 1/2 mile of the site boundaries;
 - e. Map showing the distribution of the soils at the site; narrative description of the soils at the site;
 - f. Map showing the geology at the site based on available data; narrative description of the geology at the site based on available data;
 - g. Description of the proposed activity including: type of facility; area served; capacity; and types of waste accepted.

2.1 APPLICATION FORM

Completed and signed Refuse Disposal Permit Application form is provided in Exhibit 1.

3.0 SITE DESCRIPTION

Refer to Section 1.0 Introduction. The proposed Area C landfill overlaps the existing landfill areas, infilling the space between the existing areas. Area C will be located within the existing facility property boundaries, and is intended to maximize the air space utilized for landfilling.

3.1 CURRENT USGS 7.5 MINUTE QUADRANGLE MAP

The current USGS 7.5 minute quadrangle map showing the proposed disposal Area C is provided in Exhibit 2.

3.2 CURRENT TOPOGRAPHIC MAP

The site topographic map dated February 10, 2019, is provided in Exhibit 3. As required by COMAR 26.04.07.06.B., the map is presented at a scale of 1 inch equals 200 feet on a 30 inch x 42 inch sheet. Surface contours are presented at 10-foot interval for clarity.

The map identifies location of roadways, concrete pads, storage tanks, forested areas, streams, power transmission lines, utility pipelines, buildings, and storage tanks. There are no springs, seeps, rock outcrops, surface impoundments, sink holes, or potable water wells on the site. Sedimentation ponds at the site are used for storm water management.

The following surface water feature in the vicinity of the site are identified from Exhibit 2 and 3:

- Cabin Branch: Located south of Brown Station Road
- Turkey Branch Creek: Borders the western portion of the site to the north and flows into the Western Branch of the Patuxent River north of the facility
- Western Branch of the Patuxent River: Borders the site to the east and flows into the Patuxent River several miles southeast of the facility.
- Wetlands:

- Located along northeast and southeast of the property.

3.3 SURROUNDING AREA ZONING AND LANDUSE MAP

3.3.1 Zoning Map

The surrounding area zoning map is provided in Exhibit 4; the zoning information was obtained from the Prince George's County Mapper. The proposed disposal Area C is zoned for Open Space. Other areas within half mile of the proposed disposal Area C, are zoned for Reserved Open Space, Rural Residential, Residential – Suburban Development, and Village – Low Level. The descriptions of these zones as described in the Guide to Zoning Categories by PGC, Maryland, are summarized below.

Open Space

Provides for areas of low-intensity residential (5 acre) development; promotes the economic use and conservation of land for agriculture, natural resource use, large-lot residential estate, nonintensive recreational use. Standard lot size is about 5 acres and maximum density is about 0.2 dwelling units per net acre.

Reserved Open Space

Provides for permanent maintenance of certain areas of land in an undeveloped state, with the consent of property owners; encourages preservation of large area of trees and open space; designed to protect scenic and environmentally sensitive areas and ensure retention of land for non-intensive active or passive recreational uses; and provides for very low density residential development and limited range if public, recreational, and agricultural uses. Minimum lot size is 20 acres except for public recreational uses, for which there is no minimum. Maximum density is 0.05 dwelling units per net acre.

Residential Estate

Permits large-lot estate subdivision containing lots approximately one (1) acre or larger. Standard lot size is 40,000 square feet. Maximum and estimated average densities are 1.08 and 0.85 dwelling units per net acre, respectively.

Rural Residential

Permits approximately 1.5-acre residential lots; subdivision lot sizes depend on date of recordation; and allows a number of nonresidential special exception uses. Standard lot size is 20,000 square feet if recorded on or after February 1, 1970, 15,000 square feet if recorded prior to February 1, 1970, or 10,000 square feet if recorded prior to July 1, 1967. Maximum and estimated average densities are 2.17 and 1.85 dwelling units per net acre, respectively.

Residential – Suburban Development

A mixture of residential types generally associated with urban development; provides limited commercial uses necessary to serve the dominant residential uses. Minimum tract size is generally 5 adjoining gross acres.

Village – Low Level

Provides for a variety of residential, commercial, recreational, and employment uses within a traditional village setting surrounded by open space; mandates land use area categories: (1) Village Proper, (2) Village Fringe, (3) Residential Areas, (4) Village Buffer, and (5) Recreational Areas. Land use areas are arranged to allow a sense of community with linkage via a pedestrian network to a core which contains commercial, civil, community, and residential uses. Also mandates a mixture of residential types and lots sizes, including affordable housing units. Includes detailed design standard and building material requirements. This zone may be utilized in areas recommended for permanent low density by a Master Plan. Minimum tract size is 150 contiguous gross acres and maximum density is 1.3 dwelling unit per gross acres.

3.3.2 Land Use Map

Refer to Exhibit 5. The proposed disposal Area C and all abutting area's land use is classified as Institutional, Office, and Not Classified. Other land uses within half mile of the proposed disposal Area C are classified as Parks and Open Spaces, Agriculture – Natural Resources, Residential – Single Family, Institutional, Institutional – Church, Transport and Utilities, and Vacant.

4.0 SOIL DISTRIBUTION AT THE SITE

Soil distribution at the proposed disposal Area C of the Landfill is provided in Exhibit 6. According to USDA-NCRS Soil Survey of Prince George's County, Maryland and Soil Survey Data version 16 dated September 11, 2018, the soils at the proposed disposal Area C are classified as Udorthents (Loamy with 0 to 5 and 15 to 25 percent slopes and refuse substratum with 0 to 50 percent slopes) and water. Description of these soils is provided below.

4.1 DESCRIPTION OF SOIL

UdbB: Udorthents, Loamy, 0 to 5 percent Slopes

Parent material of this soil unit is loamy fluviomarine deposits with linear down-slope and down across-slope shapes and interfluves landforms. Typical profile is 0 to 2 inches loam and 2 to 72 inches gravelly loam. Properties and qualities of these soils are: 0 to 5 percent slope; well drained; low runoff; low to very high capacity to transmit water (0.01 to 19.98 inch/hour); water table depth is about 40 to 72 inches, frequency flooding or ponding is none; and average water storage in profile is about 8.4 inches.

UdbE: Udorthents, Loamy, 15 to 25 percent Slopes

Soil unit description is same as UdbB accept that slope varies from 15 to 25 percent.

UdrF: Udorthents, Refuse Substratum, 0 to 50 percent Slopes

Udorthents, refuse substratum and similar soils with linear down-slope and down across-slope shape. Parent material of this soil unit is human transported material. Typical profile is 0 to 6 inches sandy loam, 6 to 59 inches loam, and 59 to 80 inches sandy clay loam. Properties and qualities of these soils are: 0 to 50 percent slope; well drained; high runoff; moderately low to

moderately high capacity to transmit water (0.01 to 0.21 inch/hour); water table depth is about 80 inches, frequency flooding or ponding is none; and average water storage in profile is about 9.9 inches.

W: Water

It contains 100 percent water. It includes the Area A and B sedimentation ponds.

5.0 SITE GEOLOGY

Exhibits 7 and 8 provides the geologic map of PGC and Upper Marlboro Quadrangle. The site geology, aquifer, and groundwater has been studied and monitored extensively during the site's 50-year plus history operating as a landfill. Brief descriptions of these are provided below in this section, but more details can be found in past semiannual Groundwater and Surface Water Monitoring reports (most recent dated June 2019) and the 1982 report entitled "Hydrogeological Characterization of Brown Station Road Sanitary Landfill Area A, Phase I".

5.1 DESCRIPTION OF SITE GEOLOGY

Prince George's County Landfill is located in the Coastal Plain of Maryland. The site geology description gathered from the 2003 Geologic Map of the Prince George's County (Exhibit 7), 1981 Geologic Map of the Upper Marlboro Quadrangle (Exhibit 8), the 1982 report entitled "Hydrogeological characterization of Brown Station Road Sanitary Landfill Area "A", Phase 1", and landfill's 2012 Groundwater and Surface Water Monitoring Plan, is provided below:

- Site geology consists of unconsolidated coastal plain sediments of Pleistocene to Cretaceous ages. The Pleistocene Lowland Deposits consist of gravel, sand, silt and clay deposits.
 - In Area A: Pleistocene Lowland Deposits consist of gravel, sand, silt and clay; carbonaceous material layers are common. Thickness of Pleistocene Deposits range from approximately 5 to 30 feet; thicker and continuous Pleistocene Deposits are located along Western Branch.
 - In Area B: Pleistocene Lowland Deposits consist of gravelly sand and sandy gravel that have limited and discontinuous occurrence. The Pleistocene Deposits in this area have a maximum thickness of approximately 10 feet.
- The Landfill overlies Quaternary Alluvium and Terrace Deposits which overly the Tertiary Nanjemoy and Aquia Formations.
 - The Alluvium Deposits can range in thickness from three to 15 feet. These Alluvium Deposits derived from areas underlain by the Nanjemoy and Aquia Formations is predominantly tan, brown, or pale to dark gray sand with variable glauconite content.
 - The Terrace Deposits can range in thickness from three to 15 feet and consists of tan, reddish brown, or gray interbedded quartz sand and pebbly sand, glauconitic in part, veins of quartz gravel, and thin silty clay beds occur in places.
 - The Nanjemoy Formation is described as:

- dark green to gray, argillaceous, glauconitic, fine- to medium-grained sand
- minor amounts of gray to pale brown clay

The Nanjemoy Formation can range in thickness from three to 60 feet and contains the Marlboro Clay Member at the base of the formation. Marlboro Clay Member at the base of Nanjemoy Formation is a tight, brick-red clay with milk-white bands and/or pods. The clay has not been observed in well logs drilled at Area A. The clay is limited and discontinuous across Area B.

- The Aquia Formation apparently underlies the entire site. It can range in thickness from 3 to 140 feet and consists of dark green to gray-green, argillaceous, highly glauconitic, well sorted fine- to medium-grained sand, and contains layers of calcareous shelly sandstone.
- The Phase I Investigation at Area A show existence of the Brightseat, Monmouth and Magothy Formations below the Aquia. Brightseat and Monmouth Formations are considered to be the lower confining beds of the Aquia. These formations are considered important aquifers at the site.
- The Brightseat and Manmouth Formations which occur between the upper (Aquia Formations) and lower (Magothy Formations) aquifers are of limited permeability and possibly of limited vertical recharge to Magothy Formations.

5.2 AQUIFER

The site's upper-most aquifer is encountered in the unconfined soil matrix of the Nanjemoy Formation. The upgradient area of the landfill lies along Brown Station Road. Shallow groundwater surface at the site slopes from north, northeast, and east across the site towards Western Branch mimicking the surface topography. The shallow aquifer likely discharges laterally to the surface waters.

5.3 GROUNDWATER

Groundwater monitoring for Area A-1 and A-2 was started in 1985 and for Area B the groundwater monitoring started in 1989. At present, the site has 56 groundwater monitoring wells installed around the perimeter of the Landfill. The landfill performs two semiannual groundwater monitoring events during a calendar year. Exhibits 9 and 10 provides groundwater contours during 1st and 2nd semiannual monitoring events performed in 2018.

Based on the 1st and 2nd Semi-Annual 2018 Groundwater and Surface Water Monitoring reports of the Landfill, the groundwater flow and elevation at the site are described below.

- The upper-most aquifer flows north, northeast, and east across the site towards Western Branch mimicking the surface topography outside the waste unit boundaries.
- The groundwater elevation varied from 70 feet to 30 feet, above mean sea level.
- Groundwater monitoring and reporting is performed in accordance with the Detection Monitoring Program (40 CFR 258.54) and Assessment Monitoring Program (40 CFR 258.55).

- Based on the assessments performed in the recent monitoring reports, the current monitoring network continues to operate in a manner appropriate to monitor for the potential migration of regulated constituents from the solid waste management units within the upper-most aquifer as required by 40 CFR 258.51. Moreover, there are no regulated constituents in the groundwater that are above groundwater protection standards beyond the County's property boundary.

6.0 DESCRIPTION OF PROPOSED ACTIVITY

We anticipate that Area C will more than double the life the landfill, adding about 30 million cubic yards of air space. Area C will be constructed to comply with all federal and local regulations, including the RCRA Subtitle D Landfill regulations that prescribe design and construction requirements.

6.1 REGION SERVED

The region served by the landfill will remain the same--all waste accepted at the landfill comes from the Prince George's County area. Only haulers and citizens of Prince George's County are permitted to utilize this facility.

6.2 TYPE OF WASTE ACCEPTED

Lists of acceptable and non-acceptable wastes, as specified in the existing refuse disposal permit, are provided below:

- Acceptable wastes delivered to the landfill include the following:
 - Municipal solid waste.
 - Household appliances and white goods, provided that any refrigerant is removed from the appliances before burial and handled in accordance with Section 608 of the federal Clean Air Act.
 - Friable asbestos waste, provided that the material is packaged and labeled as specified in COMAR 26.11.21.08A and is managed in accordance with the facility's solid waste Permit, COMAR, and NESHAP CFR Part 61.
 - Scrap tires, provided that it is authorized by MDE and the tire waste is managed in accordance with COMAR 26.04.08.
 - Scrap metal.
- Unacceptable wastes include the following:
 - Controlled hazardous substances, defined as hazardous waste in COMAR 26.13.02.
 - Liquid waste or any waste containing free liquids, as determined by the EPA method 9095 Paint Filter Liquid test, as outlined in EPA Publication SW-846 "Test Methods for Evaluating Solid Waste, Volume I, Section C: Laboratory Manual

Physical/Chemical Methods”, Third Edition, dated November 1986, except for small container contained in household waste only.

- Special medical waste as defined in COMAR 26.13.11.02B(11).
- Radioactive hazardous substances as defined in COMAR 26.15.02.
- Automobiles, unless accepted under a plan approved by the Department.
- Drums or tanks, unless emptied or flattened with ends removed. Drums or tanks that have held hazardous waste shall be emptied properly in accordance with COMAR 26.13.02.07.
- Animal carcasses resulting from medical research activities or destruction of diseased animals harboring diseases transmittable to humans, unless acceptance of the carcass(es) is ordered by the local County Health Officer, and the carcasses are covered with soil immediately upon deposition at the working face of the landfill.
- Untreated liquid septage or sewage scavenger waste.
- Chemical or petroleum cleanup material, unless:
 - The nature of the spilled substance is known;
 - The spilled material is not a controlled hazardous substance as defined in COMAR 26.13.02;
 - The spilled material is not likely to adversely affect the landfill liner; and
 - The spilled substance is contained in an absorbent material of sufficient excess volume so that the material deposited at the landfill does not exhibit free liquids as defined in the facility’s solid waste Permit.

6.3 CONVENIENCE CENTER AND DISPOSAL SITE DROP-OFF AREA

The facility has Convenience Center and Disposal Site Drop-Off areas where waste from Prince George’s County citizens is accepted. Waste coming to these areas generally include a wide variety of material, including white goods, scrap tires, waste oil, scrap metal, paper products, general waste, and natural wood waste. Wastes unloaded at these areas are monitored for acceptability by the landfill attendants.

6.4 WEIGHING FACILITY AND SCALE HOUSE

The facility has Scale House which is equipped with a scale to weigh incoming waste. The scale is designed to handle commercial hauler capacities. The unit is equipped with a digital indicator, a computer controlled weigh-in and data collection and management system. All incoming vehicles containing waste go through this weighing facility.

7.0 NOTICE TO FEDERAL AVIATION ADMINISTRATION

Joint Base Andrew (JBA) airport is the closest airport to the site. The horizontal distance of the proposed disposal Area C from the nearest point of the airport runway is just over 4 miles, or more than 20,000 feet.

As Area C will be over 10,000 feet away from the nearest airport, 40 CFR 258.10 (a) (which requires a demonstration that birds are not a hazard to aircrafts) is not applicable. However, in accordance with 258.10 (b), as Area C will be within a 5-mile radius of the airport runway end, JBA and the FAA must be notified about the Area C landfill unit.

According to 14 CFR Part 77 Subpart B (§77.9), any construction or alteration that is more than 200 feet AGL requires a notice of proposed construction to FAA, via FAA Form 7460-1. The maximum height AGL of the existing disposal areas Area A-1, A-2, and B is about 160 feet (minimum ground elevation around Area B is about 50 a.m.s.l. and permitted top elevation is about 210 a.m.s.l.). It is expected that maximum height AGL of the proposed disposal Area C will not be more than 200 feet (ranging from a ground elevation of about 50 a.m.s.l. to a maximum top elevation of 250 a.m.s.l.). As such, an FAA Form 7460-1 is not required at this time.

8.0 REFERENCES

1. A map entitled, "Geologic Map of the Upper Marlboro Quadrangle, Prince George's County, Maryland", by John D. Glaser, 1981.
2. A report entitled, "Hydrogeological Characterization of Brown Station Road Sanitary Landfill Area "A", Phase 1", prepared by Roy F. Weston, Inc., dated August 1982.
3. A report entitled, "Geotechnical Investigation of Area "B", Brown Station Road Sanitary Landfill", prepared by Roy F. Weston, Inc., dated September 1989.
4. A map entitled, " Geologic Map of Prince George's County, Maryland", by John D. Glaser, 2003
5. "Guide to Zoning Categories" by Prince George's County, Maryland, dated November 2010.
6. A report entitled, "Groundwater and Surface Water Monitoring Plan, Brown Station Road Sanitary Landfill", prepared by SCS Engineers, dated September 21, 2011 and revised April 30, 2012.
7. A map entitled, "Upper Marlboro Quadrangle, Maryland-Prince George's County, 7.5 Minute Series", Produced by the U.S. Geological Survey, U.S. Department of the Interior, Upper Marlboro, MD, 2016
8. A report entitled, "1st Semi-Annual 2018 Groundwater and Surface Water Monitoring Report, Brown Station Road Sanitary Landfill", prepared by SCS Engineers, dated June 28, 2018.
9. A report entitled, "2nd Semi-Annual 2018 Groundwater and Surface Water Monitoring Report, Brown Station Road Sanitary Landfill", prepared by SCS Engineers, dated December 19, 2018.
10. Custom Soil Resource Report for Prince George's County, Maryland, Brown Station Road Sanitary Landfill, Natural Resources Conservation Service, United States Department of Agriculture, dated May 30, 2019.

EXHIBIT 1

(Completed and Signed Refuse Disposal Permit Application Form)

Refuse Disposal Permit Application

Authority: Title 9, Environment Article, Annotated Code of Maryland, and Code of Maryland Regulations (COMAR) 26.04.07
Municipal landfills also see 40 CFR Part 258 and EPA guidance for additional requirements.

Application for: New Permit Renewal Permit
Existing Permit No. 2015 - WMF - 0589 Issued Date: 11 / 12 / 2015 Expiration Date: 11 / 12 / 2020

Applicant's Legal Name: Prince George's County, Department of the Environment, Resource Recovery Division

Applicant's Status: Individual Corporation Government Other:

Federal Employer Identification No.: _____
Maryland State Department of Assessments and Taxation (SDAT) ID No.: _____
Please note that a business/entity must be registered to do business in Maryland before a permit can be issued. The business or entity's information provided in this application must match the information in the SDAT register.

Proof of workers' compensation coverage is required under § 1-202 of the Environment Article. Please provide one of the following:
(1) A copy of a Certificate of Compliance issued by the Maryland Workers' Compensation Commission; or
(2) Workers' Compensation Insurance Policy/Binder Number: S-1810

Applicant's Mailing Address: 3500A Brown Station Road City: Upper Marlboro State: MD Zip Code: 20774

Applicant's Telephone No. (301) 780 - 6315 Facsimile No.: (301) 952 - 7611

Emergency Contact Name & Title: Bruce M. O'Dell, Disposal Section Manager
Telephone No.: (301) 952 - 7644

Facility/Site Name: Brown Station Road Landfill
Facility/Site Address: 3500 Brown Station Road City: Upper Marlboro State: MD Zip Code: 20774

County: Prince George's County Maryland Grid Coordinates: 431712, 69N / 1371469, 86 E

County Zoning Map No.: 78, 79
1. Lot/Parcel No.: --/002 Deed/Liber/Folio No.: ---/03571/452
2. Lot/Parcel No.: --/017 Deed/Liber/Folio No.: ---/03493/521
3. Lot/Parcel No.: --/018 Deed/Liber/Folio No.: ---/03500/528
4. Lot/Parcel No.: --/041 Deed/Liber/Folio No.: ---/03410/157

State Legislative District: 25 Local Council / Election District: CM-06

Bay Tributary Watershed Code: 01231103 Latitude/Longitude (Deg/Min/Sec): 38° 51' 6.83" N / 76° 47' 32.48" W

Site Acreage: 217 acres (Area C) Facility Acreage (Estimated): 1,250 acres

Type of Solid Waste Acceptance Facility

Municipal Landfill¹ Rubble Landfill^{1,3} Industrial Landfill¹ Land Clearing Debris Landfill¹ Incinerator^{1,2}
 Transfer Station¹ Processing Facility² Processing Facility & Transfer Station^{1,2}

Notes: 1. Financial Security is required for a privately owned facility. 2. Air Quality Permit may be required. 3. Groundwater Discharge Permit may be required.

Proposed Days & Hours of Operation: Sunday through Saturday: 7:30 AM to 4:00 PM (Only Private Vehicles on Sundays)

Provide a brief description of solid waste handling and other activities to be conducted at this facility: MSW is currently being disposed in Area B which will be at capacity at or around the end of 2025. Area C is being proposed to continue MSW disposal beyond 2025, and for multiple decades thereafter. A convenience Center, HHW Drop-off, Landfill Gas to Energy, Flare Station, Leachate Pretreatment Plant, Vehicle Maintenance Garage, Recycling and Scrap Tire Drop-off are also on site

If available, attach the following documentation required for permit issuance:

- A written statement from the County in which the proposed facility is to be located, demonstrating that the proposed facility meets all applicable County zoning and land use requirements and is in conformity with the County Solid Waste Management Plan, in accordance with §9-210(a)(3) of the Environment Article.
- For an incinerator, a written statement from the County where the proposed facility is to be located, demonstrating that the County has an approved Recycling Plan in accordance with §9-204.1 and §9-505 of the Environment Article.
- For a rubble landfill, a written statement from the County in which the proposed facility is to be located, demonstrating that the County has specified in the County Solid Waste Plan the types of waste that may be disposed of in the facility, in accordance with §9-210(c) of the Environment Article.

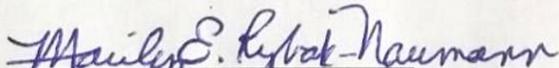
Provide the estimated amount of solid waste to be accepted in Tons (T) or Cubic Yards (CY) from the following facilities and sources:

A. Intermediate Facilities: Processing Facilities _____ Transfer Stations _____ Incinerators _____
B. Origin Of Waste By Region: Within Jurisdiction 354,358 T
Out-of-County in Maryland _____
Out-of-State (Specify Name) _____

Please indicate the estimated amount of solid waste in Tons (T) or Cubic Yards (CY) to be accepted at this facility. This list will be used to determine the type of permit and the list of acceptable materials that will be allowed under the permit for which you are applying.

| Type of Waste | 1 st Year (units) | 5 th Year (units) |
|--|------------------------------|------------------------------|
| Residential (household refuse, domestic waste, garbage, etc.) | 186,145 T | 205,519 T |
| Commercial (waste from businesses, stores, offices, etc.) | 165,611 T | 182,848 T |
| Industrial (non-hazardous sludge, dust, off-spec products, etc. from industrial or manufacturing operations or processes) | | |
| Construction and Demolition (lumber, masonry, drywall, etc.) | 1,101 T | 1,216 T |
| Land Clearing Debris (stumps, limbs, leaves, earthen material, etc.) | | |
| Agricultural (crop residue, manure, unprocessed materials, etc.) | | |
| Institutional (non-hazardous waste from schools, hospitals, etc.) | | |
| Special Medical Waste (infectious waste from hospitals, doctor's offices, research labs, etc.) | | |
| Animal Carcasses (road kills, farm animals, etc.) | | |
| Bulky Waste (appliances, furniture, etc.) | | |
| Litter (street sweepings, municipal wastebaskets, etc.) | | |
| Scrap Tires (automobiles, trucks, etc.) - Requires a separate license for handling or managing tires. | 484 T | 534 T |
| Sewage Sludge or Septage - Requires separate permit for sewage sludge utilization. | | |
| Water Treatment Plant Sludge (alum precipitate, etc.) | | |
| Hazardous Waste (from chemical plants, gas stations, etc.) | | |
| Asbestos (shingles, insulation, etc.) - Requires special training and handling | | |
| Incinerator Ash (from incinerators, waste-to-energy incinerators, special medical waste incinerators, boilers, etc.) | | |
| Fly Ash (pollution abatement equipment dusts & bottom ash from coal fired electric generating plants) | | |
| Other (list): Scrap Metal | 1,017 T | 1,123 T |
| Total | 354,358 T | 391,240 T |

By signing this form, I the applicant or duly authorized representative, do solemnly affirm under the penalties of perjury that the contents of this application are true to the best of my knowledge, information, and belief. I hereby authorize the representatives of the Department to have access to the site of the proposed facility for inspection and to records relating to this application at any reasonable time. I acknowledge that depending on the type of facility applied for, other permits or approvals may be required.


Signature of Applicant

7-11-19
Date

Marilyn E. Rybak-Naumann, C.P.M.
Applicant's Name (Print)

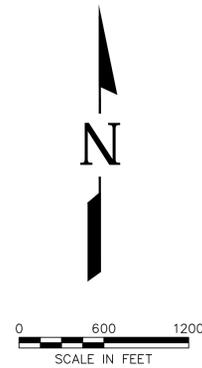
Associate Director
Title

This Notice is provided pursuant to §10-624 of the State Government Article of the Maryland Code. The personal information requested on this form is intended to be used in processing your application. Failure to provide the information requested may result in your application not being processed. You have the right to inspect, amend, or correct this form. The Maryland Department of the Environment ("MDE") is a public agency and subject to the Maryland Public Information Act. This form may be made available on the Internet via MDE's website and is subject to inspection or copying, in whole or in part, by the public and other governmental agencies, if not protected by Federal or State law.

Privacy Act Notice: This Notice is provided pursuant to the Federal Privacy Act of 1974, 5 U.S.C. §552. a. Disclosure of your Social Security Number or Federal Employer Identification Number on this application is mandatory pursuant to the provisions of §1-203 (2003), Environment Article, Annotated Code of Maryland, which requires the MDE to verify that an applicant for a permit has paid all undisputed taxes and unemployment insurance. Social Security or Federal Employer Identification Numbers will not be used for any purposes other than those described in this Notice.

For questions regarding this application form, please contact the Department at (410) 537-3315

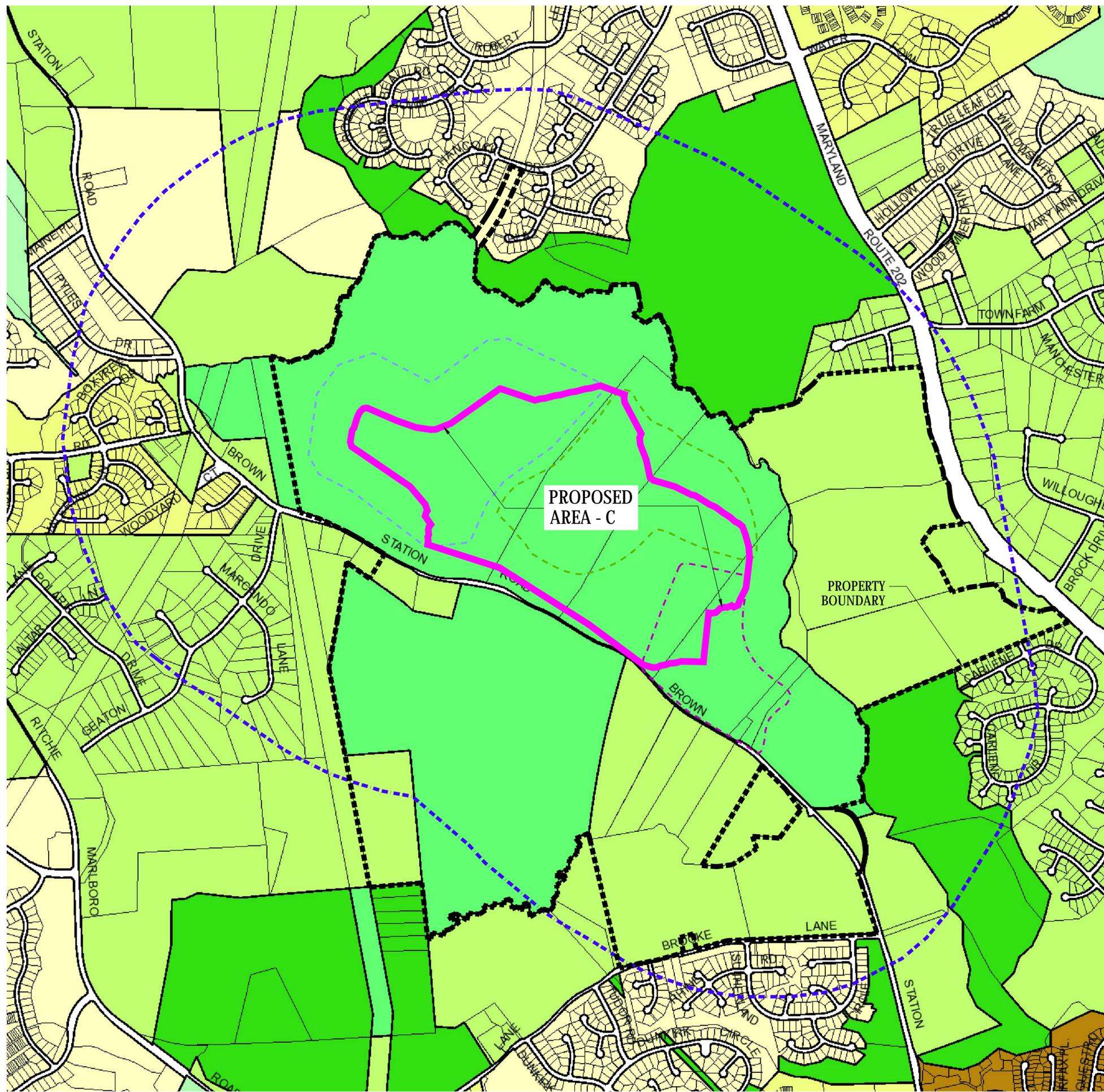
EXHIBITS 2 THROUGH 10



LEGEND

- OPEN SPACE
- RESIDENTIAL ESTATE
- RESIDENTIAL – LOW DEVELOPMENT
- RESERVED OPEN SPACE
- RURAL RESIDENTIAL
- RESIDENTIAL – SUBURBAN DEVELOPMENT
- RESIDENTIAL – URBAN DEVELOPMENT
- VILLAGE – LOW
- WASTE LIMITS – PROPOSED AREA C
- 0.5+ MILE LIMIT FROM SITE
- PROPERTY
- WASTE LIMITS – AREA A1
- WASTE LIMITS – AREA A2
- WASTE LIMITS – AREA B

- DATA SOURCES:**
1. PRINCE GEORGE'S COUNTY MAPPER ACCESSED ON MAY 2, 2019.
 2. GUIDE TO ZONING CATEGORIES, PRINCE GEORGE'S COUNTY, MARYLAND, NOVEMBER 2010.



| NO. | REVISION | DATE |
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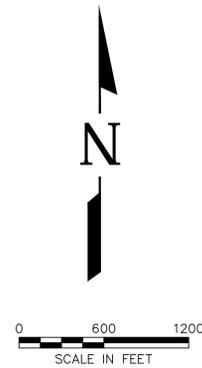
SHEET TITLE: EXHIBIT 4. ZONING MAP
 PROJECT TITLE: AREA C PHASE - I REPORT
 BROWN STATION ROAD SANITARY LANDFILL

CLIENT: PRINCE GEORGE'S COUNTY
 3500 BROWN STATION ROAD
 UPPER MARLBORO, MARYLAND

SCS ENGINEERS
 STEARNS, CONRAD AND SCHMIDT
 CONSULTING ENGINEERS, INC.
 10690 LITTLE PATENT PARKWAY, SUITE 127
 COLUMBIA, MD 21044
 PH. (410) 985-4040
 PROJ. NO. 02201056.30
 DRA BY: BSP/RSF/GR
 CHK BY: DDD
 APP. BY: DDD

CADD FILE: ZONING-MAP.DRW
 DATE: JUNE 28, 2019
 SCALE: AS SHOWN

EXHIBIT NO. 4

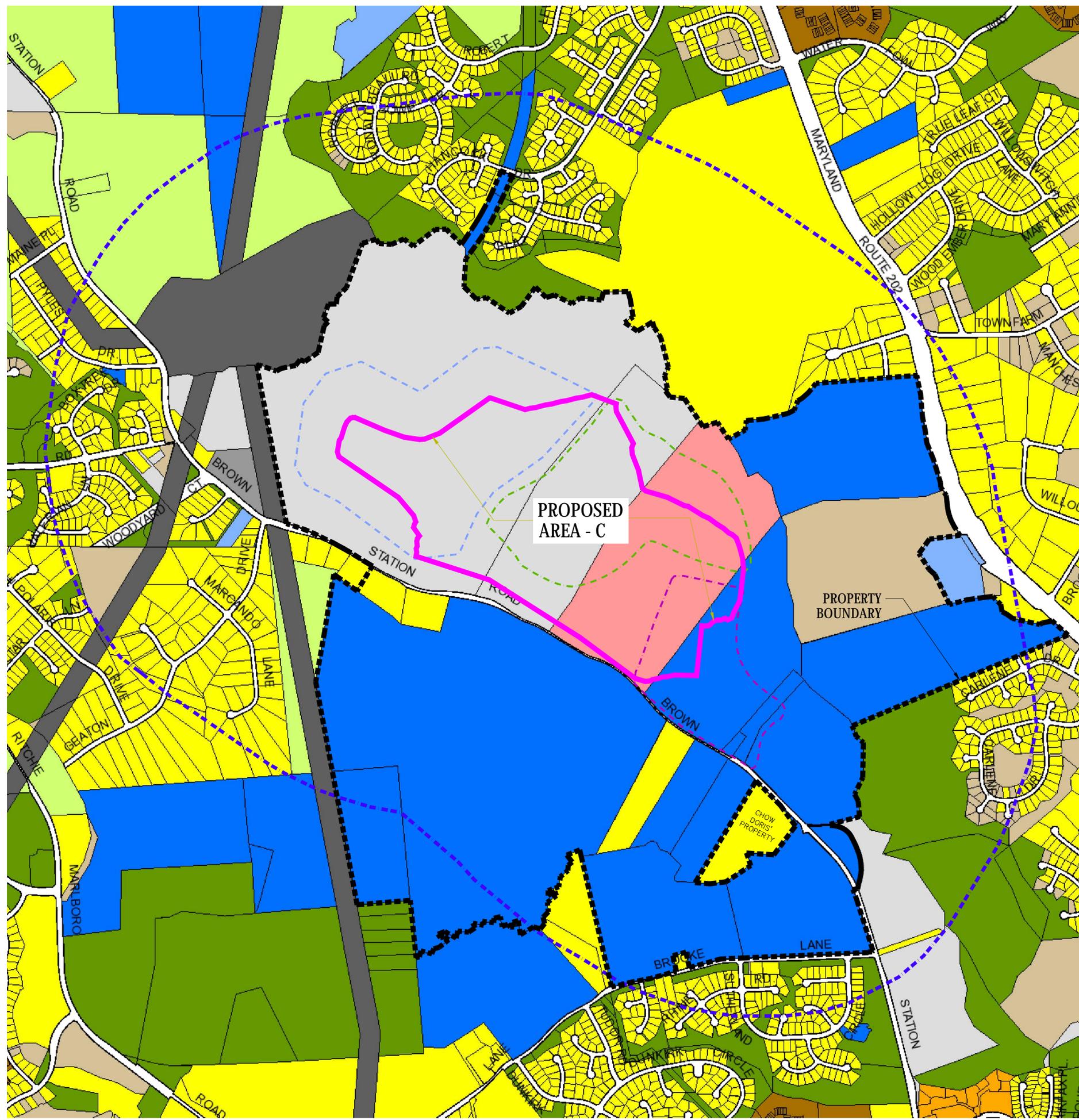


LEGEND

- PARKS AND OPEN SPACE
- AGRICULTURE – NATURAL RESOURCES
- RESIDENTIAL – SINGLE FAMILY
- RESIDENTIAL – TOWNHOUSE
- RESIDENTIAL – MULTI-FAMILY
- OFFICE
- INSTITUTIONAL
- INSTITUTIONAL – CHURCH
- TRANSPORT AND UTILITIES
- VACANT
- NOT CLASSIFIED
- WASTE LIMITS – PROPOSED AREA C
- >0.5 MILE LIMIT FROM SITE
- PROPERTY
- WASTE LIMITS – AREA A1
- WASTE LIMITS – AREA A2
- WASTE LIMITS – AREA B

DATA SOURCES:

1. PRINCE GEORGE'S COUNTY MAPPER ACCESSED ON MAY 2, 2019.



| NO. | REVISION | DATE |
|-----|----------|------|
| | | |
| | | |
| | | |
| | | |

SHEET TITLE: EXHIBIT 5. LAND USE MAP
 PROJECT TITLE: AREA C PHASE - I REPORT
 BROWN STATION ROAD SANITARY LANDFILL

CLIENT: PRINCE GEORGE'S COUNTY
 3500 BROWN STATION ROAD
 UPPER MARLBORO, MARYLAND

SCS ENGINEERS
 STEARNS, CONRAD AND SCHMIDT
 CONSULTING ENGINEERS, INC.
 10690 LITTLE PATENT PARKWAY, SUITE 127
 COLUMBIA, MD 21044
 PH. (410) 985-4040
 PROJ. NO. 02201056.30
 DATE: 06/28/19
 DRAWN BY: BSP/RSP/GR
 CHECKED BY: DDD
 DATE: 06/28/19
 APP. BY: DDD

CADD FILE: LANDUSE-MAP.DRW
 DATE: JUNE 28, 2019
 SCALE: AS SHOWN

EXHIBIT NO. **5**

Geologic Map of Prince George's County, Maryland

by John D. Glaser, 2003

And Silt-Loam Soils with Hardpan in Upland Deposits from Hack (1977)

- ALLUVIUM** - Interbedded sand, silt-clay, and subordinate gravel. Light to dark-gray, tan, or brown; weathers pale-gray, yellow, or brown.

Alluvium includes very heterogeneous, commonly poorly stratified sediments, with sandy sand and silty sand being the most common lithologies. Organic matter, including leaves, branches, and logs, is a common component. Thin peats occur in places. Dark gray organic muds are prevalent in tidal marsh areas. This unit underlies the channels and flanking valley floors of all major streams and many minor ones in the County. Much of this sediment is soft and water-saturated due to perennially high water tables. The composition of the alluvium in any given stream valley reflects the source sediments; thus, alluvial sand contains considerable glauconite where the source is the Aquia, Nanjemoy, or Severn Formations. Small areas of tidal marsh are found bordering the Patuxent and Potomac Rivers. Alluvial sediment thickness ranges from less than 5 feet (1.5 m) to as much as 40 feet (12.2 m), although the average is 20 feet (6.4 m). Sediments mapped under this heading are geologically young, deposited mostly within the past 10,000 years.
- TERRACE DEPOSITS** - Interbedded sand, gravel, and silt-clay. Typically tan, brown, shades of gray, weathers to yellow, orange, or brown base, commonly limonitic.

Included under Terrace deposits are heterogeneous lithologies such as medium to coarse sand, pebbly sand, and subordinate silt-clay. These sediments are contained in a series of distinct bodies flanking the major streams in Prince George's County, reaching as high as 160 feet in elevation across some portions of the county, but declining to near sea level along the Patuxent River. A few such deposits are as thick as 50 feet (15.2 m), but the average is much less. Bedding within these deposits is mostly lenticular, but ranges to massive and unstratified. The Terrace deposits are the product of stream erosion during the early Quaternary, and are now isolated on the valley walls above the modern floodplain by renewed downcutting. Major terraces are associated with Western Branch, Piscataway Creek, and Mattawoman Creek, as well as the Patuxent and Potomac Rivers. Deposits flanking the Patuxent River tend to be more laterally extensive than those along the smaller watercourses, averaging 20 feet (6.4 m) to 7.6 m) in thickness, and have been utilized as a source of construction sand and gravel in the past.
- UPLAND DEPOSITS** - Sand, pebbly sand, and gravel, capped by sandy pebbly silt and medium to coarse gravel. The sand is predominantly quartzitic, and the pebbles are quartzite, sandstone, and chert. The basal beds of the deposit include scattered boulders ranging to several feet in diameter. Bedding is chiefly lenticular, and cross-bedded to massive. Where loose dissection, the uppermost portion of the deposit consists of as much as 15 feet (4.6 m) of compact yellowish to reddish-brown pebbly loam. Total thickness of the unit reaches 100 feet (30.5 m). The Upland deposits are fluvial sediments, presumably laid down by the ancestral Potomac River as it swept southward across southern Maryland in late Miocene and Pliocene time (McCarty, 1989, 1989).

Silt loam soils with hardpan in Upland deposits (Hack, 1977) - Silt-loam surface soils containing thick hardpan as mapped by Hack (1977) within the Upland deposits (T1) (geologic unit). The hardpan is described as 3 to 4 feet thick (0.9 to 1.2 m) and approximately 2 feet (0.6 m) below the ground surface. Hack indicates that the hardpan is moderately impervious and that the surface soil is wet in winter months and may be excessively dry in summer.
- CALVERT FORMATION** - Sand, quartz silt, and diatomaceous silt. Olive-green to olive-gray where unweathered; pale-gray, brown, yellow to orange and shades of brown.

The Calvert Formation consists largely of variably clayey, very fine- to fine-grained sand and silt, as well as diatomaceous silt, and minor amounts of clay. Near the base of the unit is a bed of diatomaceous silt, as thick as 10 feet (3 m), consisting of as much as 40 percent diatoms. The diatomaceous bed thins and feathers out both northward and westward. The upper part of the unit is relatively homogeneous sand and silt, and is characterized by a pervasive burrow-casting. Much of this upper Calvert has been weathered to loosely textured, yellow to orange sand, which makes up the surface sediment over the southeastern part of the county. Most of the Calvert sediments in the county belong to the lower or Falsworth Member of the formation. The upper member, the Plum Point Member, is confined to the southeastern portion of the county (quadrangle of the map area, as an outcrop in the Patuxent River where the unit reaches its maximum thickness of about 100 feet (30.5 m). The Calvert is a lower to middle Miocene marine unit, with most of the Falsworth having accumulated in relatively deep water in a restricted basin. The Plum Point Member is an open shelf deposit laid down in shallow waters.
- NANJEMOY FORMATION** - Sand, glauconitic, variably clayey; and silt-clay. Glauconitic sand, reddish to dark greenish gray, where unweathered; silt-clay, dark-gray to chocolate-brown. Mottled yellow and pale-brown in weathered outcrops.

The Nanjemoy consists mostly of quartz sand, fine- to coarse-grained, with a variable amount of arenaceous silt-clay and as much as 50 percent of green glauconite, imparting a "salt and pepper" aspect to the sediments. Darker silt-clay interbeds are common. Bedding generally appears massive with conspicuous burrow-casting and fossiliferous, but is commonly lenticular. Like sandstone, indurated beds and concretionary bodies occur in places. The sand fraction coarsens upward and the silt and clay content increases downward, restricted to the eastern edge of the county adjacent to the Patuxent River where the unit reaches a maximum of 60 feet (18.3 m) thick. Poor outcrops are found in the southwestern part of the county near Piscataway Creek. The unit is a marine shelf deposit of early Eocene age.
- MARLBORO CLAY** - Clay, pale-red to silvery-gray, and minor interbedded silt, yellowish gray to pale-gray.

The Marlboro Clay is a thin but highly distinctive unit composed of dense, brittle clay, ranging from thick-bedded to finely laminated, lenticular or hummocky in part, containing partings and thin lenses of micaceous and lignitic laminated silt. The lower part of the clay contains thin interbeds of glauconitic sand. Marlboro Clay exposures can be found in the same portions of the county as the Nanjemoy Formation. The Marlboro reaches 20 feet (6.1 m) in thickness in some places. The contact with the overlying Nanjemoy Formation is typically sharp but highly burrowed. Regionally, burrows filled with Nanjemoy sediments are reported to extend up to a foot or more in the Marlboro Clay (Glaser, 1971; Gibson et al., 2000; Gibson and Bybell, 1994). In some areas, Marlboro sediments appear to be revealed into the lower part of the overlying Nanjemoy Formation (McCarty, 1989; Gibson et al., 2000). The lower contact of the Marlboro with the underlying Aquia Formation is sharp in some outcrops (particularly in steep sections) but the transition appears gradual over a vertical distance of several inches to feet in other outcrops and cores (e.g., Glaser, 1971; Gibson et al., 2000). The depositional environment and precise age of this unit have been debated (e.g., based on recent studies focusing on microfossils (foraminifera, calcareous nanoplankton, dinoflagellates) and clay mineralogy, the unit is believed to represent deposition in an inner to middle marine shelf area that received sediments from river drainage systems (e.g., Gibson et al., 2000). Regional microfossil studies indicate that the Marlboro Clay ranges in age from latest Paleocene to earliest Eocene (calcareous nanoplankton upper Zone 9 and lower Zone 10) (e.g., Gibson et al., 2000).

- AQUIA FORMATION** - Sand, variably glauconitic, and minor calcareous or ferruginous sandstones. Dark greenish gray to medium-gray; weathers "salt and pepper" speckled to rusty brown.

The Aquia is composed of sand, fine- to medium-grained, poorly sorted to well sorted, containing as much as 40 percent glauconite. Thin layers and concretionary zones of calcareous shelly sandstones are scattered through the unit. Outcrop sections contain "massy" ferruginous sandstones in places. Bedding is massive for the most part, with burrow mottling common. Molluscan fossils, chiefly large *Turritella* and *Orthis*, are present in some beds. The Aquia reaches a maximum 150 feet (45.7 m) in thickness in Prince George's County. Aquia sands accumulated on the marginal marine shelf in less than 200 feet (61 m) of water during late Paleocene time.
- BRIGHTSEAT-SEVERN FORMATIONS, unindivided**
 - BRIGHTSEAT FORMATION** - Sand and silt, clayey in part, variably glauconitic. Dark-gray to dark greenish gray; weathers pale-gray to brownish gray.

The Brightseat consists of mostly fine-grained, poorly sorted sand, with up to 30 percent glauconite, but generally much less. In places, the basal Brightseat contains some medium to coarse sand with quartz granules, small pebbles, phosphatic clasts, and shark teeth. The unit is essentially a fine-grained sequence, with the relatively coarse lower portion grading rapidly upward to fine-grained clayey sand and finally dense clayey micaceous silt. The abundance of mica is characteristic of the upper Brightseat, as is a decided parallel cast in unweathered sediment. The Brightseat is both thin and lithologically similar to the underlying Severn Formation; thus, the two units are mapped together at this scale. It thickens southward across the county, reaching a maximum of about 60 feet (18.3 m) south of the District of Columbia. The Brightseat is a marine shelf unit of early Paleocene age.
 - SEVERN FORMATION** - Sand, fine-grained, variably glauconitic. Pale-gray to medium-gray; weathers mottled pale-gray and yellow.

The Severn is composed almost entirely of very fine- to fine-grained glauconitic sand, which is moderately to well sorted. The sand grades in places to dense clayey micaceous sand and silt. Glauconite may comprise as much as 40 percent of the sand fraction. The basal few feet of the unit is fine- to medium-grained with scattered granules and pebbles, siderite concretions, and shark teeth. Along the Patuxent River and in tributaries in the vicinity of Bowie, a zone of large lobate or ellipsoidal ferruginous concretions marks the top of the formation. Moreover, outcrops along the Potomac may contain considerable silt. The abundance of mica is characteristic of the upper Brightseat, as is a decided parallel cast in unweathered sediment. The Brightseat is both thin and lithologically similar to the underlying Severn Formation; thus, the two units are mapped together at this scale. It thickens southward across the county, reaching a maximum of about 60 feet (18.3 m) south of the District of Columbia. The Brightseat is a marine shelf unit of early Paleocene age.
- POTOMAC GROUP (Patuxent, Arundel, Patuxent Formations)**
 - Patuxent Formation** - Sand, silt, and clay, with subordinate silt-clay. Sand and gravel typically white, buff, yellow to brown; weathers to yellow, orange, and shades of brown.

The Patuxent Group includes the Patuxent, Arundel and Patuxent Formations. In Prince George's County these units have not been mapped separately at the county scale; instead, they are mapped as a single unit, the Patuxent Group, according to dominant lithology: sand-gravel facies (Ksp) or silt-clay facies (Ksc). Potomac Group strata are Early Eocene in age, and record a period of deposition. A maximum thickness of about 1000 feet (305 m) is known in the outcrop belt.
 - Sand-gravel facies:**
 - Interbedded quartz sand, pebbly sand, gravel, and subordinate silt-clay.** Sands and gravels typically white, buff, yellow to brown; weathers to yellow, orange, and shades of brown. Silt-clay is white, pale gray, or variegated; dark-gray, where highly organic.
 - The sand-gravel facies is largely the lower Patuxent Group (Patuxent Formation), but the upper portion (Patuxent Formation) also contains considerable sand and some gravel, which is included in this map unit. This coarse facies lies mostly west of Indian Creek in the north and northwestern area of the county. The lithology is essentially fine- to coarse-grained sand, grading to pebbly sand and gravel, coarse to very coarse in places, arranged in thin to very thick lenticular beds. Concretionary cross-bedding is common. The sand is calcareous, fine- to medium-grained, and is characterized by a pervasive burrow-casting. Interbedded with these coarser clastics are scattered thin lenticular bodies of tough massive silt-clay. As in typical of fluvial sediments, few beds are laterally continuous for great distance; consequently, great variability in outcrop lithology is the rule.**
 - Silt-clay facies:**
 - Clay, silt, and subordinate fine- to medium-grained sand. Red, tan, gray, buff, or mottled; dark-gray, where heavily organic.**
 - The silt-clay facies of the Potomac Group, comprised of the Arundel Clay and much of the lower Patuxent Formation, lies mostly east of Indian Creek. The lithology is predominantly compact red and dark-gray clay containing large and small lenses and pods of sand and minor gravel. Some of the clay is strikingly variegated in color. Dark-gray lignitic clay is most characteristic of the Arundel and is typically massive and weathers blocky. Silt-clay lenses in the uppermost portion of the unit tend to be whitish or pale-gray, and thinner. Rare dinosaur bones and teeth have been found in Potomac silt-clay, as have plant fossils.**
- LAUREL FORMATION (Hopson, 1964; Fleming et al., 1995)** - Metasedimentary rock unit, which includes considerable mica gneiss and schist, metamorphosed sedimentary melange.

Medium- to coarse-grained, moderately to well foliated sedimentary melange consisting of a quartzofeldspathic matrix that contains quartz "eyes" and fragments of blocks of metamorphic rocks which specifically include fragments of meta-schist and biotite schist in the mapped area (Fleming et al., 1995). The rock weathers to a porous, spongy brown argillaceous and grades upward to a sticky micaceous red and gray clay (Wittmann and Froelich, 1974). Originally thought to be a metamorphosed igneous rock (e.g., gneissic granite, migmatite), the unit is now interpreted as a metamorphosed sedimentary unit that originated as a "chaotic mixture of fragmental rocks and pebbles in an unsorted matrix of sand, silt, and mud" resulting from submarine debris slide and was subsequently metamorphosed (Hopson, 1964). Some previous workers have considered the Laurel Formation to be the same unit as the Skyville Formation and mapped the Laurel and Skyville Formations either as part of the broader gneiss facies of the Washkolton Formation (Southwick and Fisher, 1967; Claves et al., 1968) or simply as the Skyville Formation (e.g., Muller et al., 1989). A preliminary geologic map of the Beltsville area (Wittmann and Froelich, 1974) showed areas that are identified on the current map as Laurel Formation mainly as two facies (diamictonic gneiss and gneiss schist) of the Washkolton Formation. The Laurel Formation nomenclature shown on the current map follows the most recent mapping of the unit by Fleming et al. (1995). The Laurel Formation is considered Early Cambrian in age by Claves et al. (1995). However, the precise age of the unit and the timing of episodes of metamorphism (and intrusions) in the region have been debated for decades (e.g., Hopson, 1964; Muller et al., 1989; Drake et al., 1989).

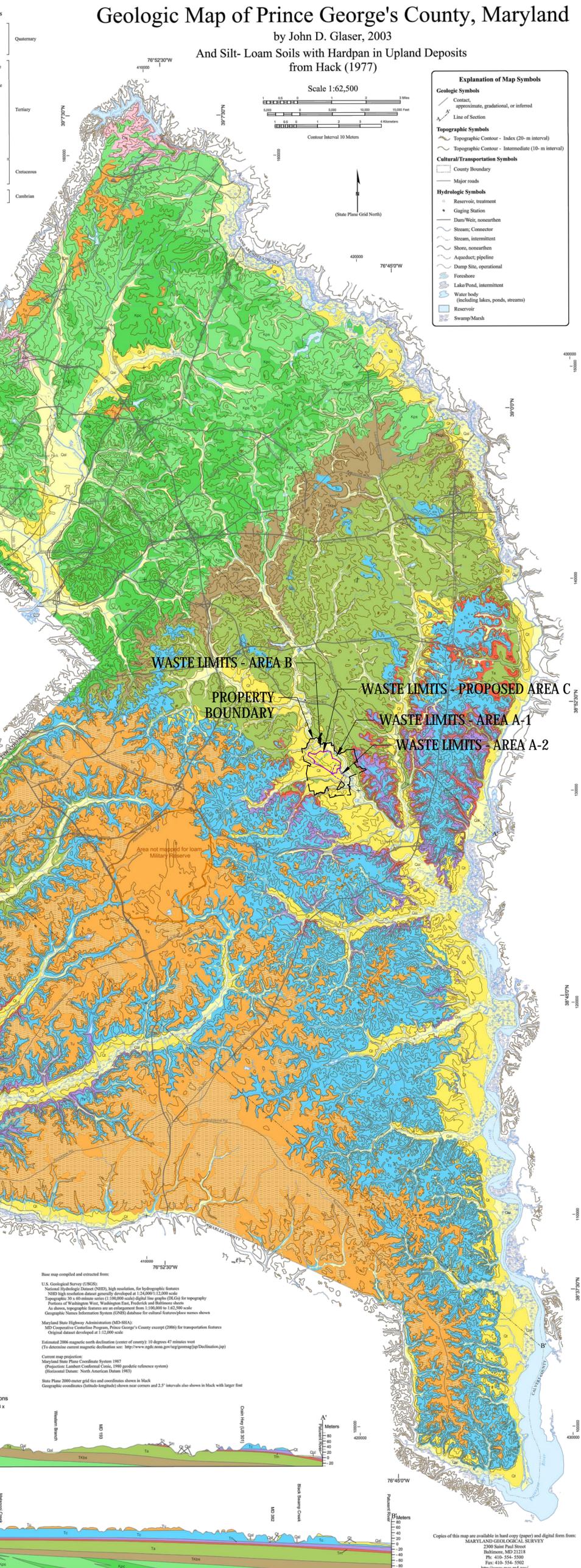
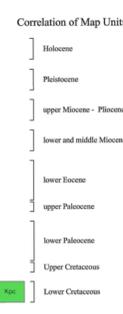


EXHIBIT 7. PRINCE GEORGE'S COUNTY GEOLOGY MAP

EXPLANATION



ALLUVIUM

Interbedded sand, gravel, and silt-clay.
 Interbedded fine to very coarse sand, pebbly sand, and fine to very coarse gravel; massive to laminated silt-clay, often with organic matter such as leaves, twigs, and logs; and rarely, peat beds. Color tan, brown, or pale to dark gray. Alluvium includes typically heterogeneous, generally poorly-sorted sediments, ranging from well-sorted to massive, which strongly reflect the texture and lithology of the source materials. Silt associated with streams draining upland areas of Brandywine and Calvert Formations is chiefly quartzose sand and gravel, whereas silt derived from areas underlain by the Nanjemoy and Aquia Formations is predominantly sand with a variable glauconitic content.
 Silt underlies stream channels, floodplains, and adjacent low areas, and is the product of channel and overbank deposition within the last 10,000 years.
 Thickness 3 to 15 feet.



TERRACE DEPOSITS

Sand, clayey sand, gravel, and minor silt-clay.
 Interbedded fine to coarse quartz sand and pebbly sand, glauconitic in part, and fine to medium vein quartz gravel. Thin silt-clay beds occur in places. Color tan, reddish-brown, or gray. Terrace deposits include largely heterogeneous sandy sediments exhibiting lenticular bedding, in part cross-bedded or flat-bedded, but also massive with poor sorting in some deposits. Gravel is commonly arranged in discontinuous bands. The unit includes small areas of unsorted colluvium. The largest patches of Tc lie along the south side of Western Branch, and on the north side of Charles Branch. These terraces are typically thin (10 to 15 feet) and composed of pebbly sand with thin gravel bands; glauconitic in places.
 The terrace deposits included here are wholly fluvial in origin, and are the product of Late Pleistocene deposition along the larger streams in the map area.
 Thickness 3 to 25 feet.



BRANDYWINE FORMATION

Sand, pebbly sand, and gravel; capped by sandy loam in places.
 Sand, medium to coarse grained, poorly-sorted, interbedded with pebbly sand and medium to coarse gravel. Color tan, orange-brown, or reddish-brown. Pebbles are quartzite, sandstone, and chert. Bedding mostly lenticular; cross-bedded, flat-bedded, or massive. Gravel beds are concentrated in the lower portion of the unit, and contain boulders to several feet in diameter in some places. Where least dissected, the uppermost Brandywine is as much as 15 feet of yellowish to reddish-brown pebbly loam.
 The Brandywine is fluvial in origin and was presumably deposited by the ancestral Potomac River between Late Miocene and Early Pleistocene time.
 Thickness 3 to 40 feet.



CALVERT FORMATION

Sand, clayey to silty, and diatomaceous silt.
 Sand, very fine to fine grained, clayey in part, grading to silt and diatomaceous silt. Color olive-green to olive-gray where unweathered; pale-gray, tan, or brown in weathered sections. The diatomaceous silt is concentrated in the basal portion of the unit, and over the southern half of the map area, forms a bed up to 5 feet thick with up to 40% of diatoms. The diatomaceous bed thins northward and is mostly absent above Md. 4. The upper portion of the Calvert is relatively homogeneous sand and silty sand with obscure bedding. The most prominent sedimentary structure is a pervasive burrow mottling; molds and casts of mollusks are frequently encountered, but intact shells are rare. The lower contact with the underlying Nanjemoy Formation is sharp and unconformable. All of the outcropping Calvert Formation in the Upper Marlboro Quadrangle probably belongs to the Fairhaven, the lower of the two Calvert members.
 The Fairhaven Member of the Calvert Formation probably accumulated in a restricted marine basin in relatively deep water.
 Thickness 3 to 80 feet.



NANJEMOY FORMATION

Sand, clayey and glauconitic; and minor silt-clay.
 Sand, fine to coarse, variably clayey, with glauconite amounts ranging from trace to 50%. Interbedded with sporadic silt-clay lenses. Color medium-gray to dark greenish-gray, silt-clay dark gray to brown; sediments mottled brown and yellow to pale-brown in weathered outcrops. Bedding massive or thick-bedded with pervasive burrow mottling. Fossils common, chiefly molluscan with abundant *Venericardina*. Basal contact with Marlboro Clay abrupt with sand filling burrows in the clay. Indurated layers and concretionary bodies common in places. In general, the Nanjemoy sand coarsens upward through the Formation. This unit thins rapidly northward and is overlapped by the Calvert above Cabin Branch.
 The Nanjemoy was deposited on the inner shelf in relatively shallow marine waters.
 Thickness 3 to 60 feet.



MARLBORO CLAY

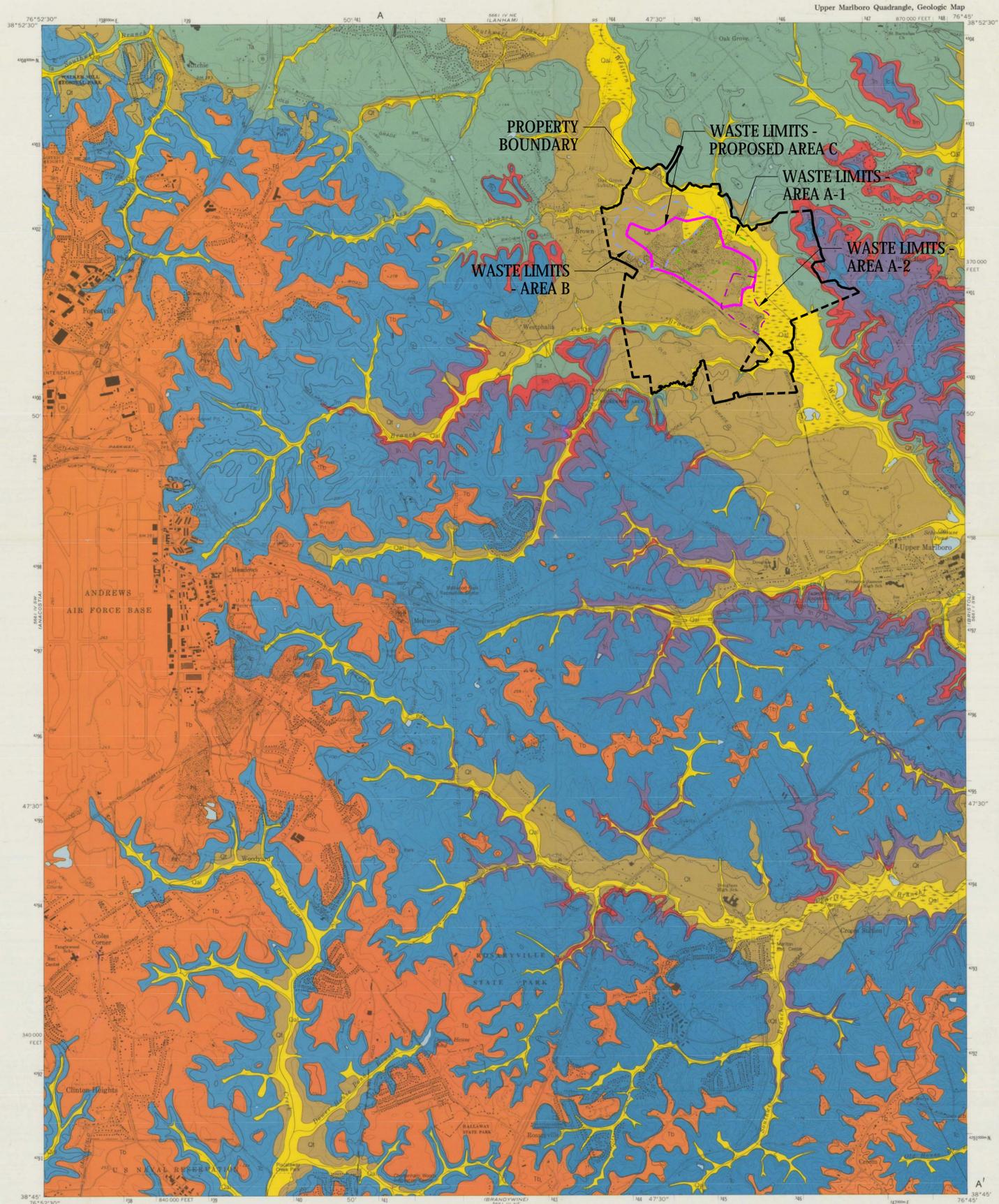
Clay, dense and brittle.
 Clay, dense and brittle, massive or thick-bedded to finely-laminated, bedding irregularly lenticular or hummocky in part; contains sparse partings and thin lenses of micaceous, lignitic, clayey silt, commonly laminated. Color of clay pale red to silvery gray, silt yellowish gray to reddish gray. Typically, the uppermost few inches to eight feet of the unit are gray, and the remainder red; in some sections, the lower few feet are also gray. The lower contact generally exhibits interbedding of thin clay strata and Aquia green sand. The Marlboro thins northward through the map area and is overlapped by the Calvert Formation northwest of Westphalia. In the walls of many stream valleys, the presence of the Marlboro is typically reflected by a prominent flat topped bench marking the outcrop trace.
 The Marlboro Clay probably accumulated in very shallow marine or brackish water, perhaps in part a tidal flat environment.
 Thickness 3 to 20 feet.



AQUIA FORMATION

Sand, variably glauconitic, and minor calcareous sandstone.
 Sand, fine to medium-grained, moderately sorted to well sorted, clayey in part, with as much as 40% of glauconite; contains thin layers and concretionary zones of calcareous shaly sandstone ranging from friable to hard rock. Color dark greenish-gray to medium gray where unweathered, speckled "salt and pepper" to rusty brown in weathered outcrops. Bedding massive or thick-bedded with extensive burrow mottling. Molluscan fossils common in fresh exposures in places, chiefly large *Turritella* and *Ostrea*.
 The Aquia Formation was deposited on the shallow marine shelf, probably in less than 200 feet of water.
 Thickness 3 to 140 feet.

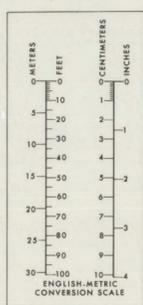
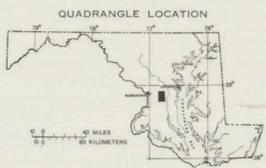
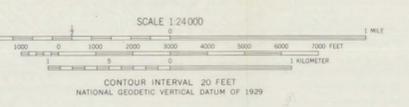
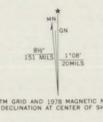
Contact generally approximate or inferred



GEOLOGIC MAP OF THE UPPER MARLBORO QUADRANGLE, PRINCE GEORGES COUNTY, MARYLAND

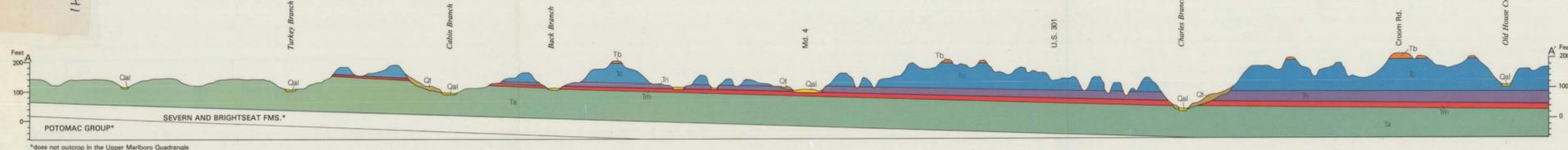
By
 John D. Glaser
 1981

STATE OF MARYLAND
 DEPARTMENT OF NATURAL RESOURCES
 MARYLAND GEOLOGICAL SURVEY
 Kenneth N. Weaver, Director
 Copies of Map available from
 Maryland Geological Survey



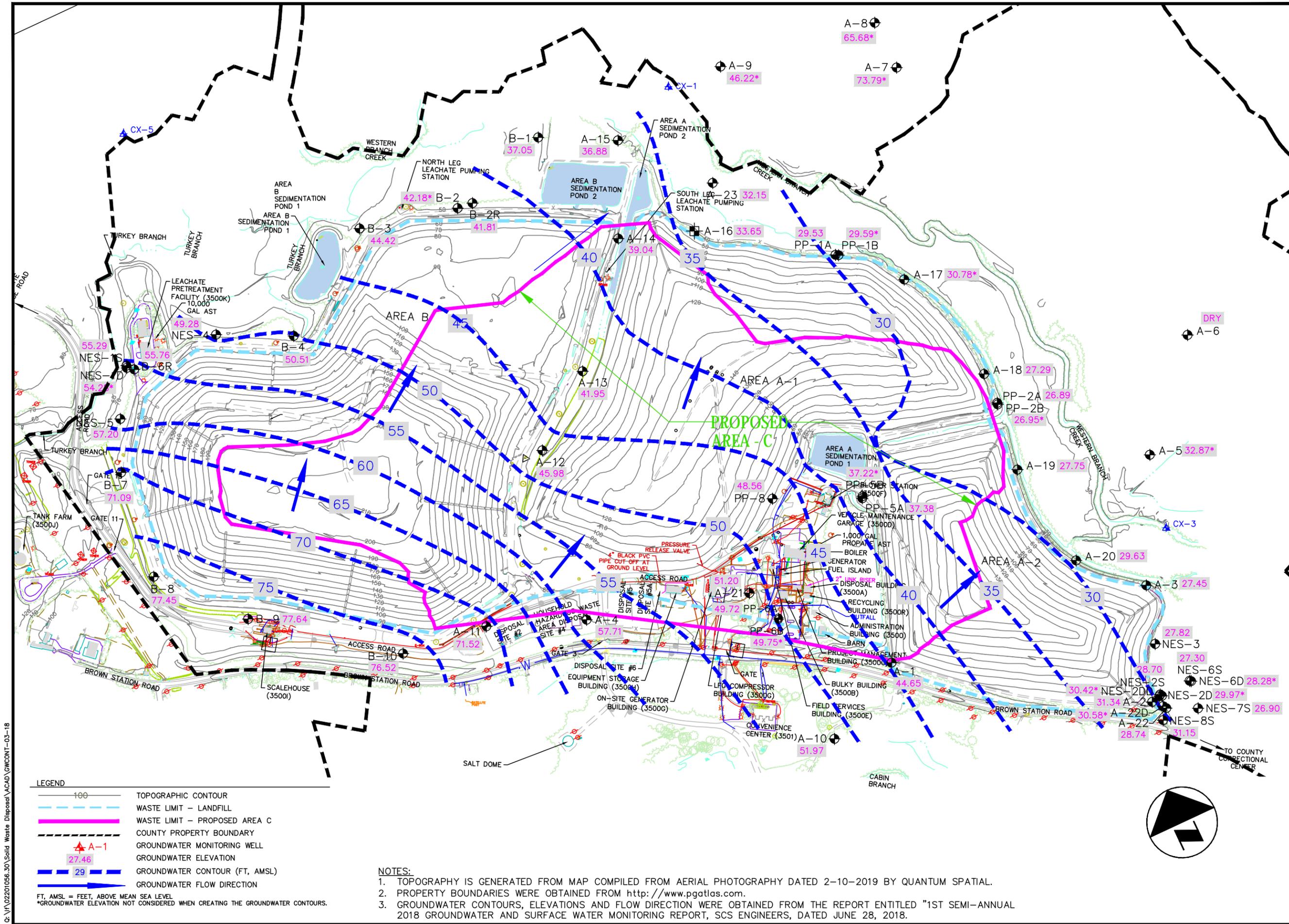
THE ZONE HOPL
 MAR 17 1995
 MAP COLLECTION

CROSS SECTION A-A'
 Vertical Exaggeration 10x



*does not outcrop in the Upper Marlboro Quadrangle

EXHIBIT 8. UPPER MARLBORO GEOLOGY MAP



LEGEND

| | |
|--|--|
| | TOPOGRAPHIC CONTOUR |
| | WASTE LIMIT - LANDFILL |
| | WASTE LIMIT - PROPOSED AREA C |
| | COUNTY PROPERTY BOUNDARY |
| | GROUNDWATER MONITORING WELL GROUNDWATER ELEVATION |
| | GROUNDWATER CONTOUR (FT, AMSL) |
| | GROUNDWATER FLOW DIRECTION |

FT, AMSL = FEET, ABOVE MEAN SEA LEVEL
 *GROUNDWATER ELEVATION NOT CONSIDERED WHEN CREATING THE GROUNDWATER CONTOURS.

- NOTES:**
1. TOPOGRAPHY IS GENERATED FROM MAP COMPILED FROM AERIAL PHOTOGRAPHY DATED 2-10-2019 BY QUANTUM SPATIAL.
 2. PROPERTY BOUNDARIES WERE OBTAINED FROM <http://www.pgatlas.com>.
 3. GROUNDWATER CONTOURS, ELEVATIONS AND FLOW DIRECTION WERE OBTAINED FROM THE REPORT ENTITLED "1ST SEMI-ANNUAL 2018 GROUNDWATER AND SURFACE WATER MONITORING REPORT, SCS ENGINEERS, DATED JUNE 28, 2018.

| | |
|---------------|--|
| DATE | |
| | |
| REVISION | |
| | |
| NO. | |
| SHEET TITLE | EXHIBIT 9 GROUNDWATER CONTOUR MARCH 15, 2018 |
| PROJECT TITLE | AREA C PHASE I REPORT BROWN STATION ROAD SANITARY LANDFILL |
| CLIENT | PRINCE GEORGE'S COUNTY 3500 BROWN STATION ROAD UPPER MARLBORO, MARYLAND |
| SCS ENGINEERS | STEARNIS, CONRAD AND SCHMIDT CONSULTING ENGINEERS, INC. 11260 ROGER BACON DRIVE - RESTON, VA 20190 PH: (703) 471-4150 FAX: (703) 471-4676 |
| CADD FILE: | GWCONT-03-18 |
| DATE: | 06/28/19 |
| SCALE: | AS SHOWN |
| EXHIBIT NO. | 9 |

G:\VA\02201056.30\Solid Waste Disposal\ACAD\GWCONT-03-18

