GEOTECHNICAL SUBSURFACE INVESTIGATION DATA REPORT (REVISION NO. 1)

CGG Combined Operating License Application (COLA) Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

April 13, 2007

Prepared By:

SCHNABEL ENGINEERING NORTH, LLC
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(Schnabel Project No. 06120048)

Submitted To:

BECHTEL POWER CORPORATION
Frederick, Maryland
(Bechtel Subcontract No. 25237-103-HC4-CY00-00001)

Schnabel

Schnabel Engineering North, LLC

April 13, 2007

Mr. Frank Lopez, Jr., P.E.
Bechtel Power Corporation
5275 Westview Drive
Frederick, MD 21703-8306

Subject: **Geotechnical Subsurface Investigation Data Report (Revision No. 1)
CGG Combined Operating License Application
(COLA) Project, Calvert Cliffs Nuclear Power Plant
(CCNPP), Calvert County, Maryland
Subcontract No. 25237-103-HC4-CY00-00001
(Schnabel Project No. 06120001)**

Dear Mr. Lopez:

Schnabel Engineering North, LLC (Schnabel) is pleased to submit this Geotechnical Subsurface Investigation Data Report (Revision No. 1) for the above referenced project. This data report contains a summary of the equipment and methods used, subsurface information Schnabel personnel collected for this project, and soil and water laboratory testing. This report supersedes the Geotechnical Subsurface Investigation Data Report dated December 19, 2006, and incorporates information contained in Addendum No. 1, dated January 8, 2007, and Addendum No. 2, dated January 31, 2007.

This report has been prepared in accordance with the Technical Services Subcontract agreement between Bechtel Power Corporation (Bechtel) and Schnabel, dated March 23, 2006, and subsequent Change Orders.

Sampling and testing activities for this project were performed under Bechtel's quality assurance program meeting NQA-1 requirements, and according to the pre-approved project technical specification, technical procedures, and work plans.

We appreciate the opportunity to be of service to you for this project. Please contact Mr. Brian Banks at (301) 417-2400 if you have any questions regarding this report.

Very truly yours,

SCHNABEL ENGINEERING NORTH, LLC

Brian K. Banks, P.G.
Associate

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1.0 Introduction

Schnabel Engineering North, LLC (Schnabel) performed a geotechnical subsurface investigation under the direction of Bechtel Power Corporation (Bechtel) to support the Combined Operation License Application (COLA) for two new nuclear reactors and associated infrastructure (e.g., heat sinks, cooling towers, switch yard, construction access road, water intake structure, etc.) and help evaluate the siting feasibility for the new reactors.

1.1 Site Description

The project site is located adjacent to the existing Calvert Cliffs Nuclear Power Plant (CCNPP). The site is bordered by the CCNPP to the north, and by Calvert Cliffs along the western shores of the Chesapeake Bay to the east.

The site includes the land currently occupied by "Camp Canoy", a lightly developed recreational facility with a few small, widely-spaced buildings and shelters; a baseball field; tennis courts; pool; a small, earth-dam pond; both paved and un-paved access roads; and utilities.

The majority of the site is wooded with small to large trees and a thin understory of brush and vines, except for some open grassy areas in Camp Canoy. The topography generally consists of gently to moderately sloped terrain, although some areas exhibit steep slopes. Streams and wetland areas occupy many of the topographic lows. Wetland areas were also found at intermediate levels on some of the slopes.

1.2 Scope of Work

The scope of our work as defined by Exhibit D, Scope of Work and Technical Specification 25237-103-3PS-CY00-00001 of the Subcontract included performing field testing and sampling, conducting laboratory testing, providing quality control surveillances during field and laboratory activities, and preparing this data report. Specifically, the following scope items were performed:

- Surveying to establish the horizontal and vertical locations of subsurface exploration points;
- Detecting underground utilities at subsurface exploration points;

- Drilling 145 standard penetration test (SPT) borings to depths up to 403 feet, and collection of disturbed SPT and undisturbed tube soil samples;
- Installation and development of 40 ground water observation wells to depths up to 122 feet, permeability testing in each well, and ground water sampling in each well;
- Excavating 20 test pits to depths up to ten feet and collection of bulk soil samples;
- Performing 63 cone penetration test (CPT) soundings, some including shear wave and/or pore water pressure dissipation measurements, to depths up to 142.4 feet with auger pre-drilling;
- Conducting two-dimensional field electrical resistivity testing along four alignments;
- Performing borehole geophysical logging including natural gamma, long- and short-normal resistivity, spontaneous potential, three-arm caliper, and direction survey, and P-S velocity logging in 10 SPT borings;
- Conducting SPT hammer energy testing for each of the five hammer-rod combinations used.
- Soils laboratory testing for moisture content, unit weight, specific gravity, sieve and hydrometer analysis, Atterberg limits, organic content, chemical analysis (pH, sulfate, chloride, cation exchange capacity), moisture-density, unconfined compression, unconsolidated-undrained triaxial compression, consolidated-undrained triaxial compression, direct shear, resonant column torsional shear (RCTS), and consolidation properties. RCTS data is not yet available and will be submitted as an addendum to this report.
- Water laboratory testing for alkalinity, ammonia, nitrogen, bromide, chloride, dissolved solids, fluoride, nitrate, nitrite, sulfate, and sulfide.

This data report, prepared to convey information collected during the subsurface investigation, includes the following:

- Table listing the manufacturer field equipment used,
- As-built exploration point survey data,
- List of subcontractors used,
- Underground utility detection report,
- Typed SPT boring logs,
- CPT report,
- Typed observation well logs,

- Field permeability test results,
- Field electrical resistivity test results,
- Borehole geophysical logging results,
- Laboratory test results, and
- SPT hammer energy study results.

Services with respect to providing engineering analyses and recommendations, approval of testing locations, environmental assessments, and wetlands identification are not included in our scope of services.

2.0 Field Testing and Sampling

The subsurface investigation, including field testing and sampling, was performed between April 27, 2006 and August 8, 2006, except for the as-built survey which was performed between September 15, 2006 and October 19, 2006, and the ground water sampling which was performed between December 19 through 21, 2006. All field testing and sample collection was performed in accordance with technical procedures and work plans established for this project. The field equipment used during field testing and sampling activities is provided as Table A1 in Appendix A.

The subsurface exploration test locations were planned by Bechtel personnel and presented to us on the Subsurface Investigation Location Plan (Drawings 25237-0-CY-0000-00001 and 25237-0-CY-0000-00002) and on the Test Pit Location Plan, (Drawing 25237-0-CY-0000-00003). Each planned test location was staked in the field in advance of the associated testing activity. Offsets from the planned locations were sometimes necessary to avoid steep slopes, large trees, wetland buffers, overhead power lines, underground utilities, and debris piles. Offset locations were approved by Bechtel personnel in advance of testing.

2.1 Surveying Services

Surveying services included both an initial stakeout prior to testing and an as-built survey after testing. The originally planned subsurface exploration point locations (i.e., northing and easting) were staked in the field during the initial stakeout. The follow-up survey was performed after completion of field testing activities to determine the as-built locations for subsurface exploration points offset from their originally planned locations. A summary of the as-built subsurface exploration point locations is provided as Table A2 in Appendix A.

2.2 Underground Utility Detection

Underground utility detection activities were performed to investigate for the presence of underground utilities at each subsurface exploration point location. When underground utility conflicts were detected, subsurface exploration point locations were offset to avoid underground utilities. The underground utility location report prepared by AMT (provided in Appendix B) includes the methods used and the results of the underground utility detection activities.

2.3 SPT Drilling and Sampling

A total of 145 SPT borings were performed to depths up to 403 feet. Schnabel personnel provided full-time field inspection of SPT boring activities and logged each boring during drilling. SPT boring logs are presented in Appendix C. Five drilling rigs equipped with automatic SPT hammers were used to advance the borings, including:

1. Failing 1500 (truck-mounted)
2. CME 75 (truck-mounted)
3. CME 550 (ATV-mounted)
4. CME 750 (ATV-mounted)
5. Diedrich D50 (ATV-mounted)

Borings were advanced using primarily mud rotary techniques, although hollow-stem augers were used as casing in the upper portions of some borings. Details about the drilling tools used for each boring are included on the boring logs. The drilling mud, consisting of a weighted bentonite-water mixture, was used to stabilize the borehole walls and to facilitate sediment removal during drilling. Clean water was used during drilling. The water was brought in from offsite and stored in a water tank.

Standard penetration testing (ASTM D 1586) was generally conducted at a regular spacing of one test every five feet. However, tests were conducted every two-and-a-half feet in the upper 15 feet of each boring. Additionally, SPTs were conducted approximately every ten feet below a depth of about 300 feet in boring B-401. Pocket penetrometer measurements were collected on the exposed bottom portion of selected cohesive undisturbed tube samples. SPT and pocket penetrometer results are included on the boring logs in Appendix C.

Soil sampling in SPT borings included collecting disturbed SPT samples and undisturbed tube samples. SPT split-spoon samples retrieved at each SPT interval were visually described and classified by a Schnabel field inspector. A representative portion of each recovered split-spoon sample was placed in a glass sample jar sealed with a moisture-proof lid. Undisturbed tube samples were collected at selected intervals between SPT tests. The methods used to collect tube samples, including Shelby tubes, Osterberg, and Pitcher sampling, were selected on based on geologic conditions. When possible, the exposed bottom portion of each recovered tube sample

was visually described and classified by a Schnabel field inspector before the tubes were capped and sealed with wax.

SPT borings were backfilled with bentonite-cement grout using a tremie-pipe to displace drilling mud during grout placement. All borings were sealed with grout except for the boring in which wells were installed. A note indicating whether a boring was sealed with grout or finished with a well is included on each boring log.

2.4 Test Pit Excavation

A total of 20 test pits were excavated to depths up to ten feet with a backhoe. Schnabel personnel provided full-time field inspection of test pit excavation activities and logged each test pit during excavation. The Schnabel field inspector collected bulk soil samples at various depths within the test pit excavations. Test pit logs, including subsurface soil descriptions and classifications, ground water observations, and sampling depth intervals, are presented in Appendix C.

2.5 Well Installation

A total of 40 ground water observation wells were installed to depths up to 122 feet. Schnabel personnel provided full-time field inspection of well installation activities and prepared a well construction field log during well installation. Wells were either installed in SPT boreholes in lieu of grout backfill, or at an offset location, typically about ten feet from the SPT "companion" boring. For wells installed in SPT boreholes, the borehole was grouted to the planned bottom depth of the well and reamed to at least six-inch diameter using mud rotary methods and biodegradable drilling fluid. The well holes installed at offset locations were advance using either six-and-a-quarter-inch inside diameter hollow-stem augers or six-inch diameter mud rotary methods with biodegradable drilling fluid. No SPT sampling was conducted at offset well locations.

Well construction logs are presented in Appendix D. Ground water observation wells were constructed using two-inch diameter schedule 40 PVC riser casing; ten-foot long, ten-slot (0.01-inch), machine-cut PVC screen; and a two-foot long sump made of blank casing capped on the bottom. Centralizers were placed above and below the screen interval. Filter pack sand consisting of clean, well-graded sand was placed around the sump and screen intervals, and at

least two feet above the top of the screen. A bentonite seal at least three feet thick was placed above the filter pack. The annular space around the riser casing above the bentonite seal was backfilled with cement-bentonite grout. A protective steel well cover, locking cap, and concrete surface seal were installed for each well.

Each well was developed by pumping and/or flushing with clean water to remove sediment from the well and filter pack prior to field permeability testing. The duration and extent of well development was determined by Bechtel field personnel. However, in general development was carried out until the well water appeared clear.

2.6 Field Permeability Testing

Schnabel personnel performed field permeability testing at each of the 40 ground water observation wells from July 21 to 31, 2006. We followed the falling head slug test method in accordance with Section 8 of ASTM D 4044. A falling head slug test is an unsophisticated test method in which an object of known volume is lowered into a well to induce a rise in water level in the well. Water in the well is subsequently forced out into the surrounding aquifer due to an increase in water pressure at a rate proportional to the hydraulic conductivity of the aquifer. Permeability testing results are presented in Appendix D.

Of the 40 wells tested, 38 contained water immediately prior to testing and two, OW-729 and OW-770, were dry immediately prior to testing. We used a mechanical slug in the wet wells and a water slug in the two dry wells. The mechanical slug was a five-foot long, 1-¼ inch internal diameter (1-¾ external diameter) PVC pipe filled with sand. The water slug was a measured amount of water poured quickly into the well.

We recorded a pre-test water level for each well using a water level indicator. Prior to conducting the falling head test at each well, we used an In-situ, Inc. LevelTroll pressure transducer to obtain pre-test water level trends. The LevelTroll was inserted into the well and linked by a cable to a field laptop at the surface. We recorded water level measurements with the LevelTroll every two seconds until the water level in the well recovered from the insertion of the transducer.

To conduct the falling head test, we quickly inserted the slug in the well to raise the water height almost instantaneously. The LevelTroll recorded the water level in the well every 0.250 seconds for the first five minutes, and every two seconds thereafter. The duration of the tests

varied from several minutes to three hours, depending on the time it took for the water levels to return to approximate pre-test levels. We ended the test when the water level recovered to within about 0.3 feet of the pre-test water levels, or three hours duration.

2.7 Hydraulic Conductivity Analysis

Hydraulic conductivity analysis was performed for each set of permeability test data using the Bouwer and Rice method for slug/bail testing and Aquifer Test software (version 2.57) by Waterloo Hydrogeologic, Inc. Input parameters (static water level, depth to bottom of aquifer, length of screen, casing radium, and radius of influence) used in the analysis are included on each of the hydraulic conductivity data report sheets included in Appendix D. The porosity of the well filter pack was assumed to be 25%. The hydraulic conductivity results are summarized in Table 1. The hydraulic conductivity analysis results for the two dry observation wells (OW-729 and OW-770) are not reported because the permeability testing for these wells impacted the filter pack material rather than the surrounding formation soil.

Table 1: Summary of Hydraulic Conductivity Results

Location	Screened Interval Depth (ft)	USCS	Hydraulic Conductivity (ft/s)
OW-301	65 – 75	SP	$1.58X10^{-4}$
OW-313A	40 – 50	SM, ML	$7.50X10^{-6}$
OW-313B	95 – 105	CL, ML, MH	$2.74X10^{-7}$
OW-319A	20 – 30	SP-SM, SC, CH, CL	$2.89X10^{-6}$
OW-319B	70 – 80	SM	$3.42X10^{-5}$
OW-323	30 – 40	SP, SP-SM	$6.24X10^{-5}$
OW-328	60 – 70	SM, OH	$3.79X10^{-6}$
OW-336	60 – 70	SP-SM, SM	$2.10X10^{-5}$
OW-401	63 – 73	SM	$6.77X10^{-6}$
OW-413A	35 – 45	SP-SM	$1.21X10^{-5}$
OW-413B	110 – 120	SP-SM, SM	$2.78X10^{-6}$
OW-418A	25 – 35	SP-SM	$4.41X10^{-6}$
OW-418B	75 – 85	SC, SM	$2.16X10^{-7}$
OW-423	28 – 38	SP-SM, SM, SC	$6.86X10^{-5}$
OW-428	35 – 45	SM, SC	$1.19X10^{-5}$
OW-436	29 – 39	SC, SM	$2.80X10^{-6}$
OW-703A	35 – 45	SM	$1.34X10^{-5}$

OW-703B	68 – 78	SM, ML	$1.08X10^{-6}$
OW-705	40 – 50	SC, SM	$4.99X10^{-6}$
OW-708	22 – 32	SM	$2.56X10^{-5}$
OW-711	35 – 45	SM	$6.04X10^{-6}$
OW-714	38 – 48	SP-SM, SC	$2.81X10^{-6}$
OW-718	30 – 40	SP-SM	$4.44X10^{-6}$
OW-725	48 – 58	SM	$7.54X10^{-6}$
OW-735	60 – 70	SP-SM, SM	$5.48X10^{-5}$
OW-743	40 – 50	SP-SM, SM	$6.23X10^{-7}$
OW-744	38 – 48	CL, SC, SM	$1.07X10^{-6}$
OW-752A	25 – 35	CH, SM	$7.03X10^{-5}$
OW-752B	85 – 95	SP-SM	$3.35X10^{-6}$
OW-754	32 – 42	CL, SM	$5.29X10^{-6}$
OW-756	30 – 40	SP-SM, SP-SC	$2.01X10^{-4}$
OW-759A	20 – 30	SM, SC, MH	$4.64X10^{-7}$
OW-759B	75 – 85	SM, SP, SP-SM	$1.17X10^{-6}$
OW-765A	17 – 27	SP-SM	$1.00X10^{-5}$
OW-765B	82 – 92	SM	$1.36X10^{-6}$
OW-766	20 – 30	SP-SM	$1.10X10^{-6}$
OW-768	30 – 40	SM	$5.29X10^{-6}$
OW-769	32 – 42	SM, SC	$1.74X10^{-6}$

2.8 Ground Water Sampling

Ground water sampling was performed between December 19 and 21, 2006 to obtain ground water samples for laboratory analysis. A total of 15 ground water observation wells, were sampled, including OW-301, OW-323, OW-336, OW-401, OW-423, OW-428, OW-705, OW-708A, OW-711, OW-725, OW-735, OW-744, OW-752, OW-768A, and OW-769. The wells were purged prior to obtaining the ground water samples. Water quality field parameters including pH, dissolved oxygen, electrical conductivity, oxidation-reduction potential, and turbidity, were measured during purging in accordance with ASTM D 6452. Water sampling was also performed in accordance with ASTM D 6452 using a submersible pump laced below the water level in the well and above the screen interval, if possible. The well sampling records for each well are included in Appendix D.

2.9 Field Electrical Resistivity Testing

Field electrical resistivity (ER) testing was performed on June 19 and 20, 2006 to provide apparent resistivity values and modeled one dimensional ground resistivity profiles for

grounding design. ER testing results are provided in Tables 1 and 2 below, and in graphical format (i.e., Resistivity Sounding Data Sheets) in Appendix E.

Schnabel personnel collected field resistivity data using an Advanced Geosciences, Inc., Sting resistivity meter, a Wenner four-electrode array, and "a" spacings of 1.5, 3, 5, 7.5, 10, 15, 20, 30, 40, 50, 100, 200, and 300 feet in accordance with ASTM G57 and IEEE 81. The arrays were centered on the surveyed and staked locations R-1 and 2, R-3, and R-4 as shown on the Subsurface Investigation Location Plan. The electrode locations used for the "a" spacings were located using 300 ft measuring tapes along the appropriate bearings using a Brunton compass. ER line R-1, oriented to site east-west, and line R-2, oriented to site north-south crossed at their midpoints. ER lines R-3 and R-4 were single lines in two separate locations oriented to site north-south. Ground cover at the testing locations generally consisted of forest litter underlain by sandy soil.

Perpendicular lines R-1 and R-2 may be used to observe resistivity anisotropy in the subsurface. Anisotropy is typically caused by differing soil types, soil grain orientation, or moisture content within the test area. In general, the site soils exhibited anisotropy at greater depths. However, consideration should be given to the terrain, which varied between lines R-1 and R-2. The measurements appear to be consistent with those expected from coastal plain soils. The location of the vertical resistivity profile is considered at the midpoint of the array. The depth of the measurements is about ⅓ of the "a" spacing (Roy, A. and Apparao, A., 1971, *Depth of Investigation in Direct Current Methods,* Geophysics, v. 36, No. 5, pp. 943-959).

The raw field data are considered "apparent" resistivity values because the measured data includes influences from the large volume of material that is sampled and influences from the geometry of the array used. Modeling the data is an attempt to remove these influences and develop vertical profiles that estimate the true subsurface resistivity values. Schnabel personnel modeled the apparent resistivity data using the modeling software Res1D by M.H. Loke, which uses an iterative approach to model true conditions, and a multi-layer approach. The multiple-layer inversion method results in models with much lower RMS error than a simple two layer method. We found that a seven-layer scenario resulted in the lowest error for ER-1 (12.4%), and a five-layer scenario resulted in the lowest RMS error for line R-2 (7.70%). The inversion results for lines R-1 and R-2 are presented in Table 2 below and on the Resistivity Sounding Data Sheet (sheet one of three) in Appendix E.

Table 2: Field Resistivity Results, ER Lines R-1 and R-2

Location	Bottom Depth of Layer (ft)	Resistivity (Ohm-feet)
R-1	0.5	1,404
	2.2	40,413
	6.3	3,169
	15.0	10,216
	43.1	167
	119.4	56
	N/A	308
R-2	0.5	2,096
	7.6	11,969
	17.9	7,372
	62.9	3,885
	N/A	223

The two perpendicular lines R-1 and R-2 show similar apparent resistivity values in the upper layers. However, the models show differences between their layer resistivities and thicknesses. This may be due to complexities in the subsurface that the inversion program cannot resolve or the fact that lines R-1 and R-2 had potentially significant differences in topography.

The model inversions for lines R-3 and R-4 resulted in best fit of a four layer model with an RMS error of 9.4%, and a best fit of a five layer model with an RMS error of 11.2%, respectively. Although these ER lines were collected with the same trend, the raw data show significant differences which are reflected in the inverted model results. The inversion results for lines R-3 and R-4 are presented in Table 3 below and on the Resistivity Sounding Data Sheets (sheets 2 and 3 of 3) in Appendix E.

Table 3: Field Resistivity Results, ER Lines R-3 and R-4

Location	Bottom Depth of Layer (ft)	Resistivity (Ohm-feet)
ER-3	2.4	9,685
	10.6	39,140
	59.8	420
	N/A	98
ER-4	4.6	1,621
	13.8	16,535
	39.9	2,923
	53.2	1,230
	N/A	118

2.10 CPT Soundings

ConeTec, Inc. completed a total of 63 cone penetration test (CPT) soundings to depths up to 142.4 feet, including seismic and pore pressure dissipation testing at selected depth intervals. Many CPT soundings encountered refusal above the target depths. Predrilling with hollow-stem augers was performed in several locations to penetrate refusal zones. Schnabel personnel provided full-time field inspection of CPT activities.

The ConeTec report, *Presentation of In Situ Testing Program Results*, is presented in Appendix F. The ConeTec report includes a summary of the equipment and methods used as well as CPT test results (i.e., CPT logs, shear wave velocity data, and pore pressure dissipation curves).

2.11 Borehole Geophysical Logging

Geovision, Inc. performed borehole geophysical logging in a total of ten SPT borings. Borehole geophysical methods included natural gamma, long- and short-normal resistivity, spontaneous potential, three-arm caliper, direction survey, and P-S velocity logging. Schnabel personnel provided full-time field inspection of borehole geophysical logging activities. The Geovision report, *Boring Geophysical Logging*, is presented in Appendix G. The Geovision report includes a summary of the equipment and methods used as well as the borehole geophysics test results.

2.12 SPT Hammer Energy Testing

GRL Engineers, Inc. performed SPT energy measurements for each of the five SPT drilling rigs used for this project to evaluate the energy transfer efficiency for each rig-hammer combination. Schnabel personnel provided full-time field inspection of SPT energy measurement activities. The GRL report, *Summary Report for SPT Energy Measurements*, is included in Appendix H. The GRL report presents a summary of the equipment and methods used as well as the results of the SPT hammer energy testing.

2.13 Subcontractors

Table A3 in Appendix A lists the subcontractors used by Schnabel on the project.

3.0 Laboratory Testing

Laboratory testing of selected soil samples was performed on disturbed SPT and bulk samples, and undisturbed tube samples recovered from the SPT test borings and test pit excavations. Laboratory testing of selected water samples was performed on ground water samples obtained from ground water observation wells. The samples selected for testing were based on laboratory assignments provided by Bechtel personnel. Soil laboratory tests included moisture content, grain size (sieve and hydrometer), Atterberg limits, organic content, chemical analysis (pH, chloride, sulfate, cation exchange capacity), unit weight, specific gravity, moisture-density, California bearing ratio (CBR), consolidation, unconfined compression (UC), unconsolidated-undrained triaxial compression (UU), consolidated-undrained triaxial compression (CIU-bar), direct shear, resonant column torsional shear (RCTS) testing. Water laboratory testing included total dissolved solids, inorganic ions (bromide, chloride, fluoride, sulfide, sulfate, nitrite, and nitrate), alkalinity (bicarbonate/carbonate), and ammonia. Laboratory testing was conducted in accordance with the following ASTM standards:

1) Identification and Index Testing:
   a) Unified Soil Classification System (USCS) – ASTM D 2487 and ASTM D 2488
   b) Sieve and Hydrometer Analysis – ASTM D 422 and ASTM D 6913
   c) Atterberg Limits – ASTM D 4318
   d) Natural Moisture Content – ASTM D 2216
   e) Specific Gravity – ASTM D 854
   f) Organic Content – ASTM D 2974

2) Compaction and Strength Tests
   a) Moisture-Density Relationship – ASTM D 1557
   b) California Bearing Ratio – ASTM D 1883
   c) Unconfined Compression – ASTM D 2166
   d) Unconsolidated-undrained Triaxial Compression – ASTM D 2850
   e) Consolidated-undrained Triaxial compression – ASTM D 4767
   f) Direct Shear – ASTM D 3080

3) Compressibility Tests
   a) Consolidation – ASTM D 2435

4) Chemical Testing – Soil
   a) pH – ASTM D 4972
   b) Chloride – EPA 300.0
   c) Sulfate – EPA 300.0
   d) Cation Exchange Capacity – ECL-SOP-313

5) Chemical Testing – Water
   a) Total Dissolved Solids – ECL-SOP-306
   b) Inorganic Ions – ECL-SOP-301a
   c) Alkalinity – ECL-SOP-312
   d) Ammonia – ECL-SOP-320 and ECL-SOP-350

A total of five approved soil testing laboratories were used to conduct soil laboratory testing for this project, including:

- Schnabel Engineering, Baltimore, Maryland

  Performed moisture content, sieve, sieve with hydrometer, Atterberg limits, unit weight, specific gravity, moisture density, and CBR tests.

- Schnabel Engineering, Blacksburg, Virginia

  Performed moisture content, sieve with hydrometer, Atterberg limits, unit weight, specific gravity, consolidation, UC, UU, CIU-bar and direct shear tests.

- GeoTesting Express, Boxborough, Massachusetts

  Performed moisture content, sieve, sieve with hydrometer, Atterberg limits, unit weight, specific gravity, consolidation, UC, UU, CIU-bar and direct shear tests.

- Enviro-Chem, Baltimore, Maryland

  Performed chemical analysis tests on soil and ground water samples.

- Fugro Consultants, Houston, Texas

  Performed RCTS tests (results pending).

Detailed laboratory test results are presented in Appendix I. The boring logs in Appendix B include moisture content, grain size, and Atterberg limits results. The Unified Soil Classification System (USCS) group names and group symbols shown on the logs are consistent with laboratory testing results. The color descriptions on the gradation curves indicate the colors observed during laboratory testing and therefore may differ from the color descriptions on the boring logs which reflect field observations.

APPENDIX A
SUMMARY TABLES

- Table A1: Field Equipment List
- Table A2: As-Built Subsurface Exploration Point Locations
- Table A3: Subcontractors

Table A1
Field Equipment List

Table A1
Field Equipment List
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Field Activity	Equipment Used				
	General Description	Manufacturer	Model	Serial Number	Calibration Certification Date
Surveying	Transit	Topcon	GPT-3002W	990609	2/13/2006
Underground Utility Detection	Pipe/Cable Locator	Radiodetection	RD-4000	142021NZ	1/26/2006
	Pipe/Cable Locator	Radiodetection	RD-4001	2938UZ	1/26/2006
	Pipe/Cable Locator	Metrotech	Metrotech	3222	3/13/2006
	Pipe/Cable Locator	Metrotech	Metrotech	3222	3/13/2006
Standard Penetration Testing (SPT) and Well Installation	SPT Drilling Rig	Failing	1500 (truck-mounted)	N/A	N/A
	SPT Drilling Rig	Central Mine Equipment Co.	75 (truck-mounted)	N/A	N/A
	SPT Drilling Rig	Central Mine Equipment Co.	550 (ATV-mounted)	N/A	N/A
	SPT Drilling Rig	Central Mine Equipment Co.	750 (ATV-mounted)	N/A	N/A
	SPT Drilling Rig	Diedrich Drill, Inc.	D50 (ATV-mounted)	N/A	N/A
	Automatic SPT Hammer	Central Mine Equipment Co.	N/A	C-I	4/18/2006
	Automatic SPT Hammer	Central Mine Equipment Co.	N/A	C-II	4/18/2006
	Automatic SPT Hammer	Diedrich Drill, Inc.	N/A	C-III	5/12/2006
	Automatic SPT Hammer	Central Mine Equipment Co.	N/A	UTD-001	4/20/2006
	Automatic SPT Hammer	Central Mine Equipment Co.	N/A	UTD-002	4/24/2006
Cone Penetration Testing (CPT)	CPT Sounding Rig	ConeTec, Inc./Moroka	TC3	N/A	N/A
	Load Cell	ConeTec, Inc.	N/A	LC1129	5/15/2006
	Electronic Seismic Piezo Cone	ConeTec, Inc.	N/A	AD195	2/13/2006 & 7/11/2006
	Electronic Seismic Piezo Cone	ConeTec, Inc.	N/A	AD184	9/14/2005 & 7/11/2006
Field Electrical Resistivity	Resistivity Meter	Advanced Geosciences, Inc.	STING R1 Resistivity Meter	990324	6/16/2006

Table A1
Field Equipment List
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Field Activity	Equipment Used				
	General Description	Manufacturer	Model	Serial Number	Calibration Certification Date
SPT Hammer Energy Study	Accelerometer	Pile Dynamics, Inc.	N/A	P548	11/11/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0280	11/17/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0018	6/29/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0262	6/30/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0277	5/30/2006
	Accelerometer	Pile Dynamics, Inc.	N/A	K0019	5/16/2006
	Accelerometer	Pile Dynamics, Inc.	N/A	122J	11/3/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0363	9/22/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0455	2/2/2006
	Accelerometer	Pile Dynamics, Inc.	N/A	K0417	12/1/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0397	12/1/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0281	7/20/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0286	7/20/2005
	Accelerometer	Pile Dynamics, Inc.	N/A	K0287	7/20/2006
	Accelerometer	Pile Dynamics, Inc.	N/A	K0288	12/13/2005
	Pile Driving Analyzer	Pile Dynamics, Inc.	Model PAK	1702	5/19/2006
	Pile Driving Analyzer	Pile Dynamics, Inc.	Model PAK	1638	3/23/2005
Downhole Geophysics	Caliper Calibration Plate	Robertson Geo Logging	N/A	201	4/6/2006
	Suspension Logger	Oyo Corp.	3331-A	19029	4/21/2006
	Suspension Telemetry	Oyo Corp.	3403	160023	4/21/2006
	Seismograph	Geometrics	STRATAVIEW	75299	4/21/2006
	Counter	Hewlett Packard	2626A09881	5335A	4/21/2006
	FCTN Gen	Hewlett Packard	2847A14447	3325B	4/21/2006

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Field Activity	Equipment Used				
	General Description	Manufacturer	Model	Serial Number	Calibration Certification Date
Permeability Testing	Pressure Transducer	InSitu, Inc.	Level Troll 700	104259	1/24/2006
	Pressure Transducer	InSitu, Inc.	Level Troll 700	104213	1/19/2006
	Pressure Transducer	InSitu, Inc.	Level Troll 700	104255	1/23/2006
	Water Level Meter	Heron Instruments	Dipper-T	WLP-001	7/20/2006
Pocket Penetration Index Testing	Pocket Penetrometer	Ben Meadows Company	5JF-49015	PP-01	4/25/2006
	Pocket Penetrometer	Ben Meadows Company	5JF-49015	PP-02	4/25/2006
	Pocket Penetrometer	Ben Meadows Company	5JF-49015	PP-03	4/25/2006
	Pocket Penetrometer	Ben Meadows Company	5JF-49015	PP-04	4/25/2006

Table A2
As-Built Subsurface Exploration Point Locations

Table A2
As-Built Subsurface Exploration Point Locations
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Location	Depth (ft)	Termination Elevation (ft)	Coordinates (ft) Maryland State Plane (NAD 1927)		Ground Surface Elevation (ft) (NGVD 29)	Elevation (ft) Top of Concrete at Base of Well Head Protector	Elevation (ft) Ground Water Level Measuring Point (V-Notch)	Date of As Built Survey
			North	East				
B-301	403.0	-308.5	217024.06	960815.05	94.51	N/A	N/A	9/15/2006
B-302	200.0	-123.6	217122.24	960766.98	76.41	N/A	N/A	9/15/2006
B-303	200.0	-112.6	217016.91	960867.69	87.40	N/A	N/A	9/15/2006
B-304	200.0	-132.0	217188.61	960896.88	68.00	N/A	N/A	9/15/2006
B-305	151.5	-79.5	217166.25	960686.74	72.01	N/A	N/A	9/15/2006
B-306	150.0	-31.4	217024.31	960681.82	118.58	N/A	N/A	9/15/2006
B-307	201.5	-82.2	216955.27	960690.13	119.28	N/A	N/A	9/15/2006
B-308	150.0	-42.9	216906.69	960771.28	107.10	N/A	N/A	9/15/2006
B-309	150.0	-49.9	216949.24	960890.70	100.06	N/A	N/A	9/15/2006
B-310	100.0	-8.4	217081.40	960616.60	91.62	N/A	N/A	5/15/2006
B-311	150.0	-91.6	217268.61	960771.76	58.43	N/A	N/A	9/15/2006
B-312	99.5	-44.2	217293.00	960740.00	55.27	N/A	N/A	5/15/2006
B-313	150.0	-99.3	217372.34	960713.67	50.73	N/A	N/A	9/15/2006
B-314	100.0	-47.2	217321.89	960654.50	52.78	N/A	N/A	9/15/2006
B-315	100.0	-34.5	217184.68	960559.43	65.54	N/A	N/A	9/15/2006
B-316	100.0	8.1	216767.16	960864.35	108.07	N/A	N/A	9/15/2006
B-317	100.0	-5.6	217094.70	961249.20	94.42	N/A	N/A	5/15/2007
B-318	200.0	-102.2	217019.30	961227.20	97.82	N/A	N/A	5/15/2006
B-319	100.0	2.9	216963.62	961123.01	102.87	N/A	N/A	9/15/2006
B-320	150.0	-43.6	216943.50	961044.10	106.43	N/A	N/A	5/15/2006
B-321	150.0	-79.3	217152.50	960333.20	70.66	N/A	N/A	5/25/2006
B-322	100.0	-10.1	217170.03	960202.65	89.87	N/A	N/A	9/15/2006
B-323	200.0	-92.5	217027.97	960060.86	107.48	N/A	N/A	9/15/2006
B-324	101.5	3.7	216906.40	960114.44	105.20	N/A	N/A	9/15/2006
B-325	100.0	-15.0	216948.98	960549.73	84.97	N/A	N/A	9/15/2006
B-326	100.0	3.1	216859.22	960652.25	103.11	N/A	N/A	9/15/2006
B-327	150.0	-63.1	216865.70	960573.37	86.92	N/A	N/A	9/15/2006
B-328	150.0	-73.7	216828.86	960493.21	76.29	N/A	N/A	9/19/2006
B-329	100.0	-25.2	216800.38	960379.43	74.83	N/A	N/A	9/19/2006
B-330	100.0	-14.5	216715.40	960523.70	85.46	N/A	N/A	9/15/2006
B-331	100.0	-31.7	216970.57	960481.79	68.32	N/A	N/A	9/15/2006
B-332	100.0	-34.6	217127.42	960400.52	65.40	N/A	N/A	9/15/2006
B-333	98.8	-9.3	216657.04	960386.24	89.49	N/A	N/A	9/15/2006
B-334	100.0	-13.3	216515.53	960556.61	86.75	N/A	N/A	9/15/2006
B-335	100.0	-0.5	216732.70	960703.30	99.47	N/A	N/A	5/15/2006
B-336	100.0	-3.1	216632.91	960750.27	96.87	N/A	N/A	9/15/2006
B-337	100.0	-28.2	217257.88	960264.41	71.77	N/A	N/A	9/15/2006
B-338	99.6	-1.6	217121.10	960150.10	97.97	N/A	N/A	5/25/2006
B-339	100.0	-8.0	217095.21	960211.99	91.96	N/A	N/A	9/15/2006

Table A2
As-Built Subsurface Exploration Point Locations
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Location	Depth (ft)	Termination Elevation (ft)	Coordinates (ft) Maryland State Plane (NAD 1927)		Ground Surface Elevation (ft) (NGVD 29)	Elevation (ft) Top of Concrete at Base of Well Head Protector	Elevation (ft) Ground Water Level Measuring Point (V-Notch)	Date of As Built Survey
			North	East				
B-340	100.0	-15.4	217171.34	961225.22	84.57	N/A	N/A	9/15/2006
B-341	100.5	-2.3	217036.40	961104.48	98.16	N/A	N/A	9/15/2006
B-401	401.5	-329.4	216344.12	961516.81	72.06	N/A	N/A	9/15/2006
B-402	200.0	-117.8	216405.10	961463.50	82.22	N/A	N/A	5/15/2006
B-403	200.0	-136.6	216305.80	961562.90	63.41	N/A	N/A	5/15/2006
B-404	200.0	-132.1	216441.34	961596.49	67.90	N/A	N/A	9/21/2006
B-405	150.0	-28.0	216487.38	961408.73	122.00	N/A	N/A	9/15/2006
B-406	150.0	-31.6	216315.62	961352.01	118.36	N/A	N/A	9/15/2006
B-407	200.0	-118.4	216238.96	961412.45	81.63	N/A	N/A	9/15/2006
B-408	150.0	-81.6	216261.74	961482.04	68.41	N/A	N/A	9/15/2006
B-409	150.0	-88.5	216253.80	961614.80	61.55	N/A	N/A	4/20/2006
B-410	55.0	64.1	216374.30	961323.70	119.05	N/A	N/A	4/20/2006
B-410A*	98.7	20.4	216381.30	961323.70	119.05	N/A	N/A	4/20/2006
B-411	150.0	-68.6	216556.31	961517.19	81.45	N/A	N/A	9/15/2006
B-412	98.9	-6.7	216589.24	961495.42	92.17	N/A	N/A	9/15/2006
B-413	150.0	-27.1	216694.88	961413.25	122.90	N/A	N/A	9/15/2006
B-414	100.0	21.2	216630.18	961354.48	121.20	N/A	N/A	9/15/2006
B-415	98.7	20.6	216480.90	961264.20	119.26	N/A	N/A	4/20/2006
B-416	100.0	-13.8	216084.50	961596.34	86.22	N/A	N/A	9/15/2006
B-417	101.5	-52.3	216435.75	961901.11	49.23	N/A	N/A	9/15/2006
B-418	200.0	-156.3	216340.25	961976.71	43.67	N/A	N/A	9/22/2006
B-419	100.0	-44.7	216267.83	961895.60	55.29	N/A	N/A	9/21/2006
B-420	150.0	-87.4	216213.53	961670.44	62.57	N/A	N/A	9/15/2006
B-421	150.0	-34.4	216497.56	961019.77	115.58	N/A	N/A	9/15/2006
B-422	100.0	4.0	216478.23	960915.01	104.02	N/A	N/A	9/15/2006
B-423	201.5	-91.4	216331.76	960850.21	110.14	N/A	N/A	9/15/2006
B-424	100.0	18.9	216263.30	960818.60	118.92	N/A	N/A	4/26/2006
B-425	101.5	16.9	216247.50	961274.70	118.43	N/A	N/A	4/20/2006
B-426	100.0	-16.3	216193.04	961386.57	83.73	N/A	N/A	9/21/2006
B-427	150.0	-33.7	216164.05	961272.73	116.27	N/A	N/A	9/19/2006
B-428	150.0	-35.9	216109.19	961210.06	114.11	N/A	N/A	9/19/2006
B-429	100.0	3.7	216087.85	961119.27	103.66	N/A	N/A	9/19/2006
B-430	100.0	2.5	216006.88	961193.12	102.48	N/A	N/A	9/19/2006
B-431	101.5	16.9	216271.10	961177.30	118.43	N/A	N/A	4/20/2006
B-432	100.0	18.6	216399.00	961139.10	118.62	N/A	N/A	4/20/2006
B-433	100.0	-2.5	215963.80	961107.50	97.49	N/A	N/A	4/27/2006
B-434	100.0	5.2	215827.10	961244.30	105.15	N/A	N/A	5/2/2006
B-435	100.0	7.7	216020.06	961404.74	107.71	N/A	N/A	9/15/2006
B-436	100.0	8.3	215923.92	961441.55	108.29	N/A	N/A	9/22/2006

Table A2
As-Built Subsurface Exploration Point Locations
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Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Location	Depth (ft)	Termination Elevation (ft)	Coordinates (ft) Maryland State Plane (NAD 1927)		Ground Surface Elevation (ft) (NGVD 29)	Elevation (ft) Top of Concrete at Base of Well Head Protector	Elevation (ft) Ground Water Level Measuring Point (V-Notch)	Date of As Built Survey
			North	East				
B-437	100.5	10.1	216521.76	960968.80	110.63	N/A	N/A	9/15/2006
B-438	6.5	99.5	216414.91	960848.90	105.95	N/A	N/A	9/28/2006
B-438A	100.0	6.6	216411.98	960867.31	106.59	N/A	N/A	9/28/2006
B-439	100.0	13.8	216340.49	960948.68	113.80	N/A	N/A	9/15/2006
B-440	100.0	-43.7	216349.47	961813.66	56.34	N/A	N/A	9/21/2006
B-701	75.0	-66.3	219485.54	960507.60	8.66	N/A	N/A	9/21/2006
B-702	50.0	-39.7	218980.62	961183.23	10.33	N/A	N/A	9/21/2006
B-703	100.0	-54.6	218171.00	960957.01	45.42	N/A	N/A	9/21/2006
B-704	50.0	-10.4	217991.06	960926.05	39.58	N/A	N/A	9/21/2006
B-705	50.0	-3.3	217581.30	960917.90	46.75	N/A	N/A	4/19/2006
B-706	50.0	27.4	217140.14	961339.74	77.42	N/A	N/A	9/21/2006
B-707	50.0	17.4	217396.98	961481.84	67.38	N/A	N/A	9/21/2006
B-708	100.0	-62.7	217585.84	961810.64	37.35	N/A	N/A	9/28/2006
B-709	50.0	-18.8	217642.82	961978.18	31.25	N/A	N/A	9/28/2006
B-710	75.0	-27.0	217542.51	962136.88	47.96	N/A	N/A	9/28/2006
B-711	50.0	3.0	216755.70	961743.50	53.01	N/A	N/A	4/19/2006
B-712	50.0	-7.6	216506.16	961997.56	42.41	N/A	N/A	9/22/2006
B-713	50.0	8.0	216117.68	962283.16	57.99	N/A	N/A	9/28/2006
B-714	50.0	66.0	215705.73	962034.37	116.02	N/A	N/A	10/16/2006
B-715	50.0	36.3	214951.76	962639.59	86.29	N/A	N/A	10/17/2006
B-716	49.5	32.9	215003.21	961364.57	82.35	N/A	N/A	10/16/2006
B-717	50.0	40.7	214302.45	962349.27	90.72	N/A	N/A	10/17/2006
B-718	50.0	67.5	214130.52	961929.05	117.47	N/A	N/A	10/18/2006
B-719	49.4	25.8	213978.69	961500.20	75.23	N/A	N/A	10/18/2006
B-720	75.0	-1.5	215674.48	962378.47	73.47	N/A	N/A	9/28/2006
B-721	100.0	1.3	215545.80	962462.10	101.30	N/A	N/A	5/4/2006
B-722	73.9	25.9	215386.10	962467.00	99.78	N/A	N/A	5/4/2006
B-723	75.0	15.0	215108.00	963000.80	90.02	N/A	N/A	4/28/2006
B-724	100.0	-3.0	214780.00	963106.20	96.97	N/A	N/A	4/28/2006
B-725	75.0	-16.0	214664.30	963219.40	59.02	N/A	N/A	4/28/2006
B-726	75.0	3.3	215564.67	961709.57	78.33	N/A	N/A	10/16/2006
B-727	100.0	4.9	215300.85	961884.98	104.88	N/A	N/A	10/16/2006
B-728	75.0	37.3	215163.63	961910.05	112.30	N/A	N/A	10/16/2006
B-729	75.0	42.3	214861.87	962454.60	117.28	N/A	N/A	10/17/2006
B-730	75.0	40.4	214728.50	962523.84	115.36	N/A	N/A	10/17/2006
B-731	99.3	16.4	214546.48	962547.88	115.67	N/A	N/A	10/17/2006
B-732	75.0	15.7	215034.10	961594.70	90.72	N/A	N/A	5/11/2006
B-733	100.0	-12.1	214866.80	961697.70	87.92	N/A	N/A	5/11/2006
B-734	75.0	30.7	214589.60	961812.50	105.73	N/A	N/A	5/9/2006

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			North	East				
B-735	75.0	16.2	214805.48	961021.83	91.20	N/A	N/A	10/16/2006
B-736	75.0	23.3	214681.67	961154.26	98.29	N/A	N/A	10/16/2006
B-737	100.0	-36.5	214511.91	961147.40	63.47	N/A	N/A	10/16/2006
B-738	75.0	12.3	213826.30	961679.62	87.29	N/A	N/A	10/19/2006
B-739	99.8	0.5	213719.60	961793.32	100.35	N/A	N/A	10/19/2006
B-740	75.0	-0.7	213605.13	961781.13	74.29	N/A	N/A	10/19/2006
B-741	75.0	6.4	213760.48	961029.82	81.38	N/A	N/A	10/18/2006
B-742	100.0	2.4	213472.84	961217.19	102.39	N/A	N/A	10/18/2006
B-743	75.0	28.6	213315.70	961232.00	103.60	N/A	N/A	5/9/2006
B-744	100.0	13.3	216377.30	959963.38	113.28	N/A	N/A	9/29/2006
B-745	75.0	36.7	215971.20	960529.02	111.71	N/A	N/A	9/29/2006
B-746	75.0	7.8	215743.35	960721.36	82.79	N/A	N/A	9/29/2006
B-747	75.0	15.3	216176.28	959944.95	90.34	N/A	N/A	9/29/2006
B-748	100.0	-17.6	216039.74	960288.74	82.40	N/A	N/A	9/29/2006
B-749	75.0	27.5	215775.08	960332.24	102.53	N/A	N/A	9/29/2006
B-750	73.9	-1.6	215849.16	959930.06	72.35	N/A	N/A	9/29/2006
B-751	73.9	18.3	215588.86	960146.20	92.23	N/A	N/A	9/29/2006
B-752	100.0	-4.2	215489.21	960257.57	95.79	N/A	N/A	9/29/2006
B-753	40.0	8.8	217831.20	960648.86	48.81	N/A	N/A	9/21/2006
B-754	50.0	17.0	217369.78	960290.37	67.00	N/A	N/A	9/21/2006
B-755	40.0	55.0	215923.66	961637.86	94.98	N/A	N/A	9/22/2006
B-756	50.0	56.9	215504.60	961215.10	106.85	N/A	N/A	4/21/2006
B-757	40.0	66.9	215135.13	960760.60	106.86	N/A	N/A	10/16/2006
B-758	40.0	42.6	215133.29	960332.67	82.63	N/A	N/A	10/16/2006
B-759	100.0	-1.7	214526.25	960025.32	98.35	N/A	N/A	10/19/2006
B-765	102.0	-4.6	216424.51	959701.22	97.37	N/A	N/A	9/29/2006
B-766	50.0	58.9	216932.89	959791.50	108.89	N/A	N/A	9/19/2006
B-768	100.0	-51.6	217116.03	962242.98	48.39	N/A	N/A	9/28/2006
B-769	50.0	4.2	216589.75	962559.47	54.23	N/A	N/A	9/28/2006
B-770	50.0	71.6	215466.60	962826.95	121.59	N/A	N/A	10/18/2006
C-301	52.3	42.5	217041.78	960820.13	94.84	N/A	N/A	9/15/2006
C-302	61.7	29.3	217088.90	960833.77	90.94	N/A	N/A	9/15/2006
C-302-2*	55.3	39.2	217026.56	960817.55	94.51	N/A	N/A	7/26/2006
C-302-2a*	138.0	-43.5	217026.56	960817.55	94.51	N/A	N/A	7/26/2006
C-303	25.4	36.2	217230.60	960804.00	61.58	N/A	N/A	4/24/2006
C-303a*	47.1	14.5	217230.60	960804.00	61.58	N/A	N/A	7/25/2006
C-303a-1*	71.4	-9.8	217230.60	960804.00	61.58	N/A	N/A	7/25/2006
C-303b*	123.4	-61.8	217230.60	960804.00	61.58	N/A	N/A	7/25/2006

Table A2
As-Built Subsurface Exploration Point Locations
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Location	Depth (ft)	Termination Elevation (ft)	Coordinates (ft) Maryland State Plane (NAD 1927)		Ground Surface Elevation (ft) (NGVD 29)	Elevation (ft) Top of Concrete at Base of Well Head Protector	Elevation (ft) Ground Water Level Measuring Point (V-Notch)	Date of As Built Survey
			North	East				
C-304	26.7	34.2	217235.29	960606.73	60.95	N/A	N/A	9/15/2006
C-305	74.3	41.6	216876.50	960961.50	115.91	N/A	N/A	4/24/2006
C-306	56.9	40.4	217042.12	961184.89	97.31	N/A	N/A	9/15/2006
C-306a*	102.5	-5.2	217038.92	961181.69	97.31	N/A	N/A	7/27/2006
C-307	75.3	42.4	216853.68	961079.64	117.64	N/A	N/A	9/15/2006
C-308	48.2	36.1	217129.90	960263.70	84.33	N/A	N/A	5/1/2006
C-309	70.1	36.0	217045.62	960110.76	106.04	N/A	N/A	9/15/2006
C-311	34.9	39.0	216869.75	960488.16	73.97	N/A	N/A	9/15/2006
C-312	56.4	43.3	216799.20	960596.36	99.75	N/A	N/A	9/15/2006
C-313	37.2	42.7	216757.92	960336.75	79.93	N/A	N/A	9/15/2006
C-314	39.5	40.6	216531.40	960493.83	80.09	N/A	N/A	9/15/2006
C-401	28.1	39.4	216384.26	961574.09	67.46	N/A	N/A	9/15/2006
C-401-2a*	81.9	-14.4	216381.06	961570.89	67.46	N/A	N/A	7/27/2006
C-401-2b*	131.2	-63.8	216381.06	961570.89	67.46	N/A	N/A	7/27/2006
C-402	34.5	38.7	216333.85	961494.18	73.13	N/A	N/A	9/15/2006
C-403	43.8	39.2	216517.33	961511.47	82.96	N/A	N/A	9/15/2006
C-404	80.1	39.2	216524.30	961308.90	119.21	N/A	N/A	4/20/2006
C-405	40.0	35.5	216163.49	961666.32	75.54	N/A	N/A	9/15/2006
C-406	15.6	28.3	216380.92	961901.51	43.89	N/A	N/A	9/28/2006
C-407	32.3	30.9	216159.20	961732.20	63.23	N/A	N/A	6/22/2006
C-407-2a*	96.3	-33.1	216161.50	961726.70	63.23	N/A	N/A	7/28/2006
C-407-b*	142.4	-79.2	216161.50	961726.70	63.23	N/A	N/A	7/31/2006
C-408	77.4	40.8	216396.64	961001.81	118.18	N/A	N/A	9/15/2006
C-408a*	98.3	19.9	216398.76	960999.69	118.18	N/A	N/A	7/24/2006
C-408-2a*	123.7	-5.5	216393.81	961004.64	118.18	N/A	N/A	7/31/2006
C-409	80.5	38.6	216288.45	960760.56	119.12	N/A	N/A	9/15/2006
C-411	80.4	36.2	216178.94	961178.21	116.60	N/A	N/A	9/19/2006
C-412	76.8	37.5	216093.75	961306.66	114.31	N/A	N/A	9/28/2006
C-413	13.6	86.3	216045.53	961037.78	99.90	N/A	N/A	9/28/2006
C-414	62.5	39.9	215893.42	961201.10	102.36	N/A	N/A	9/28/2006
C-415	20.0	36.6	216305.70	961857.40	56.63	N/A	N/A	5/26/2006
C-701	29.5	-18.6	219262.19	960933.61	10.95	N/A	N/A	9/21/2006
C-701a*	28.1	-17.1	219265.39	960936.81	10.95	N/A	N/A	7/21/2006
C-702	20.3	-9.0	218720.05	961033.95	11.34	N/A	N/A	9/21/2006
C-703	32.6	35.2	217361.27	961165.03	67.82	N/A	N/A	10/17/2006
C-704	48.2	-2.9	217500.74	961710.02	45.36	N/A	N/A	9/28/2006
C-705	34.0	-2.9	217637.26	961983.10	31.08	N/A	N/A	9/28/2006
C-706	50.0	55.2	216958.95	961494.86	105.28	N/A	N/A	9/21/2006
C-707	19.5	20.8	216308.12	962079.42	40.35	N/A	N/A	9/22/2006

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			North	East				
C-708	50.0	62.9	215658.28	961962.86	112.97	N/A	N/A	10/16/2006
C-709	50.0	61.7	215027.59	962824.89	111.73	N/A	N/A	10/18/2006
C-710	21.2	85.0	214875.83	961187.31	106.15	N/A	N/A	10/16/2006
C-711	34.9	65.6	214222.13	962176.75	100.54	N/A	N/A	10/17/2006
C-712	29.7	29.4	213909.83	961370.06	59.05	N/A	N/A	10/18/2006
C-713	41.8	21.3	215855.86	962296.57	63.11	N/A	N/A	9/28/2006
C-714	85.1	24.2	214920.30	963057.62	109.32	N/A	N/A	10/18/2006
C-715	57.3	33.6	215445.62	961798.99	90.85	N/A	N/A	10/16/2006
C-716	20.5	75.7	214432.49	962659.44	96.21	N/A	N/A	10.17/2006
C-717	66.6	35.8	214698.14	961692.58	102.35	N/A	N/A	10/16/2006
C-718	34.1	33.6	214343.71	961205.59	67.67	N/A	N/A	10/16/2006
C-719	12.0	78.2	214025.30	961636.90	90.21	N/A	N/A	10/18/2006
C-720	70.7	28.0	213593.77	961134.09	98.66	N/A	N/A	10/18/2006
C-721	52.0	35.6	216157.88	960330.47	87.62	N/A	N/A	9/29/2006
C-722	38.4	36.1	215478.76	960648.26	74.52	N/A	N/A	10/16/2006
C-723	68.7	28.9	215988.18	959760.36	97.60	N/A	N/A	9/29/2006
R-1	N/A	N/A	215837.30	960255.80	85.45	N/A	N/A	5/3/2006
R-2	N/A	N/A	215837.30	960255.80	85.45	N/A	N/A	5/3/2006
R-3	N/A	N/A	216622.50	960406.80	89.12	N/A	N/A	5/2/2006
R-4	N/A	N/A	215915.40	961114.00	99.40	N/A	N/A	4/27/2006
OW-301	80.0	14.5	217048.02	960814.47	94.51	94.78	96.27	9/15/2006
OW-313A	57.5	-6.5	217367.31	960705.30	51.03	51.31	53.20	9/15/2006
OW-313B	110.0	-59.3	217372.34	960713.67	50.73	51.16	53.54	9/15/2006
OW-319A	35.0	68.1	216962.56	961116.12	103.13	103.31	104.91	9/15/2006
OW-319B	85.0	18.5	216957.32	961125.02	103.53	103.85	105.35	9/19/2006
OW-323	43.5	63.5	217034.46	960057.07	106.96	107.55	109.69	9/19/2006
OW-328	72.0	4.3	216828.86	960493.21	76.29	76.55	77.85	9/19/2006
OW-336	74.0	23.1	216643.18	960746.61	97.11	97.50	99.07	9/16/2006
OW-401	77.5	-6.1	216348.86	961530.99	71.38	71.91	73.49	9/21/2006
OW-413A	50.0	73.2	216703.14	961418.81	123.15	123.51	125.04	9/15/2006
OW-413B	125.0	-2.1	216694.88	961413.25	122.90	123.25	124.85	9/15/2006
OW-418A	40.0	3.7	216340.41	961966.46	43.66	44.31	45.83	9/22/2006
OW-418B	92.0	-48.3	216340.25	961976.71	43.67	44.13	45.77	9/22/2006
OW-423	43.0	68.1	216339.99	960882.24	111.12	111.67	113.16	9/15/2006
OW-428	50.0	63.9	216105.21	961212.38	113.92	114.32	115.92	9/19/2006
OW-436	50.0	58.1	215922.47	961446.87	108.13	108.53	110.39	9/22/2006
OW-703A	49.0	-5.0	218171.23	960967.72	44.02	44.44	45.65	9/21/2006

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			North	East				
OW-703B	80.0	-34.4	218171.67	960958.91	45.57	45.97	47.53	9/21/2006
OW-705	52.0	-4.3	217566.62	960917.18	47.71	47.77	50.22	9/15/2006
OW-708A	34.0	3.4	217586.23	961803.52	37.44	37.82	39.61	9/28/2006
OW-711	50.0	2.9	216748.48	961741.61	52.92	53.26	55.31	9/22/2006
OW-714	50.0	66.0	215705.73	962034.37	116.02	116.32	117.98	10/16/2006
OW-718	43.0	75.5	214133.58	961924.87	118.53	118.96	120.41	10/18/2006
OW-725	60.0	-2.0	214649.30	963212.73	58.04	58.38	59.94	10/18/2006
OW-729	42.0	76.9	214872.58	962445.93	118.88	119.44	121.11	10/17/2006
OW-735	72.0	19.2	214805.48	961021.83	91.20	91.81	93.44	10/16/2006
OW-743	55.0	48.7	213320.62	961234.01	103.65	104.05	105.89	10/18/2006
OW-744	50.0	47.5	216405.37	960089.41	97.50	97.96	99.81	9/29/2006
OW-752A	37.0	58.3	215482.18	960250.12	95.30	95.73	97.00	9/29/2006
OW-752B	97.0	-1.2	215489.21	960257.57	95.79	96.09	97.41	9/29/2006
OW-754	44.0	23.0	217369.78	960290.37	67.00	67.21	68.85	9/15/2006
OW-756	42.0	64.6	215497.07	961212.39	106.56	107.07	108.77	10/16/2006
OW-759A	35.0	62.8	214536.47	960055.02	97.78	98.05	99.69	10/19/2006
OW-759B	90.0	8.3	214526.25	960056.32	98.35	98.72	100.14	10/19/2006
OW-765A	29.0	68.4	216424.51	959701.22	97.37	97.92	99.60	9/29/2006
OW-765B	102.0	-5.2	216420.42	959693.64	96.82	97.19	98.47	9/29/2006
OW-766	50.0	58.9	216932.89	959791.50	108.89	109.32	110.72	9/19/2006
OW-768A	42.0	6.5	217106.06	962238.98	48.48	48.96	49.84	9/28/2006
OW-769	42.0	12.2	216589.75	962559.47	54.23	54.39	56.43	9/28/2006
OW-770	42.0	79.6	215466.60	962826.95	121.59	121.79	123.08	10/18/2006
TP-B307	6.7	112.7	216957.53	960690.62	119.35	N/A	N/A	9/19/2006
TP-B314	9.0	43.8	217320.35	960658.25	52.78	N/A	N/A	9/15/2006
TP-B315	8.5	57.3	217182.50	960563.12	65.80	N/A	N/A	9/15/2006
TP-B334	10.0	77.0	216515.64	960560.94	87.03	N/A	N/A	9/19/2006
TP-B335	8.0	91.6	216730.79	960706.97	99.64	N/A	N/A	9/19/2006
TP-B407	7.0	74.3	216391.76	961465.02	81.25	N/A	N/A	9/21/2006
TP-B414	6.5	114.3	216631.18	961530.95	120.83	N/A	N/A	9/15/2006
TP-B415	6.5	112.4	216490.91	961298.37	118.92	N/A	N/A	9/15/2006
TP-B423	8.0	97.9	216414.95	960849.03	105.86	N/A	N/A	9/19/2006
TP-B434	8.5	96.7	215825.90	961244.18	105.24	N/A	N/A	9/22/2006
TP-B435	10.0	97.7	216020.06	961404.74	107.71	N/A	N/A	9/19/2006
TP-B715	8.5	79.7	214964.18	962637.77	88.16	N/A	N/A	10/17/2006
TP-B716	8.8	88.3	214983.83	961289.79	97.13	N/A	N/A	10/16/2006
TP-B717	8.0	82.5	214297.68	962346.36	90.53	N/A	N/A	10/17/2006
TP-B719	8.0	64.3	213966.93	961493.94	72.28	N/A	N/A	10/18/2006

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			North	East				
TP-B727	7.0	97.3	215299.14	961883.13	104.33	N/A	N/A	10/16/2006
TP-B744	6.5	106.8	316377.30	959963.38	113.28	N/A	N/A	9/29/2006
TP-B758	9.0	73.6	215133.29	960332.67	82.63	N/A	N/A	10/16/2006
TP-C309	8.0	100.5	217020.05	960105.24	108.45	N/A	N/A	9/19/2006
TP-C723	7.0	89.8	215989.07	959754.78	96.75	N/A	N/A	9/29/2006

* Location and elevation approximated based on offset observed in the field and recorded on Field Checklist

Table A3
Subcontractors

Table A3
Subcontractors
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Subcontractor Name	Contact Information	Services Provided
ABM Construction	Mr. Al Muirhead P.O. Box 402 Lusby, MD 20657 (410) 326-4277	Test pit excavation, and path construction and grading for boring access.
A. Morton Thomas and Associates, Inc.	Mr. Ken Williams 12750 Twinbrook Parkway Rockville, MD 20852-1700 (301) 881-2545	Underground utility location.
Collinson, Oliff & Associates, Inc.	Mr. Richard Lewis P.O. Box 2209 Prince Frede4rick, MD 20678 (301)-855-1599	Test location surveying.
Connelly and Associates, Inc.	Mr. Sam Connelly 260 Interstate Ct. Frederick, MD 21704-6627 (301) 696-8820	SPT drilling and sampling, and ground water observation well installation and development.
Enviro-Chem Laboratories, Inc.	Mr. Stephen Shelley 100 Lakefront Dr. Hunt Valley, MD 21030 (410) 785-9739	Soil (pH, chloride, sulfate, cation exchange capacity) and water (total dissolved solids, inorganic ions, alkalinity, ammonia) chemical laboratory testing .
GeoTesting Express	Mr. Gary Torosian 1145 Massachusetts Ave. Boxborough, MA 01719 (978) 635-0424	Soil laboratory testing (moisture content, grain size, Atterberg limits, organic content, unit weight, specific gravity, consolidation, unconfined compression, unconsolidated-undrained triaxial compression, consolidated-undrained triaxial compression, direct shear).
GEOVision, Inc.	Mr. John Diehl 1151 Pomona Rd., Unit P Corona, CA 92882 (951) 549-1234	Borehole geophysical logging (natural gamma, long- and short-normal resistivity, spontaneous potential, three-arm caliper, direction survey, and P-S velocity logging)

Table A3
Subcontractors
Constellation Generation Group (CGG) COLA Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Subcontractor Name	Contact Information	Services Provided
GRL Engineers, Inc.	Mr. Wondem Toferra 4535 Renaissance Parkway Cleveland, OH 44128 (216) 831-6131	SPT hammer energy testing.
Mark's Lawn Service, Inc.	Mr. Mark Cox 50 Mulberry Lane Huntington, MD 20639 (410) 257-3885	Silt fence construction.
Uni-Tech Drilling Co., Inc.	Ms. Joan Baer P.O. Box 407 Franklinville, NJ 08322-0407 (856)-694-4200	SPT drilling and sampling, and ground water observation well installation and development.

APPENDIX B
UNDERGROUND UTILITIES

- Underground Utility Location Report

UNDERGROUND UTILITY LOCATION REPORT

Underground Utility Detection Report
A Morton Thomas and Associates, Inc.
October 3, 2006

Consulting Engineers

October 3, 2006

Mr. Brian K. Banks, P.G.
Schnabel Engineering North, LLC
656 Quince Orchard Road, Suite 700
Gaithersburg, MD 20878

Subject: **Underground Utility Detection Report**
CGG Combined Operating License Application (COLA) Project, Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland
AMT Project No. 106-219.001U

Dear Mr. Banks:

A Morton Thomas and Associates, Inc. (AMT) is pleased to submit this Underground Utility Detection Report for the above referenced project. This report contains a summary of the equipment and methods used for, and results of the underground utility detection activities. Underground utility detection activities for this project were performed in accordance with the Subcontractor Agreement between AMT and Schnabel Engineering North, LLC, dated May 31, 2006, and according to the pre-approved project technical specification, technical procedures, and work plans.

1.0 Introduction

AMT performed underground utility location activities under the direction of Schnabel personnel to support the subsurface investigation. Geophysical prospecting techniques including conductive and inductive techniques were used to investigate the occurrence and approximate horizontal location of underground utilities within a 10-foot radial distance of each of the subsurface exploration point locations. 1. Inductive refers to "dropping the box" in the vicinity of a known utility and "sweeping" that area to pick up the electromagnetic signature and alignment of the utility. 2. Conductive refers to "directly connecting to any and all utilities in the dig area to verify there exact location. This work is considered quality Level B. Quality level B refers to utility designating. The marking of the utility in 2 dimensions

on the ground's surface, with paint depicting its approximate horizontal location. This method was needed to clear all bore hole locations.

2.0 Equipment Used

The equipment used on this project included:

1) Metro Tech 810 DX (calibrated on March 13, 2006), and

2) RD 4000 RX (calibrated January 26, 2006)

The Metro Tech 810 DX and the RD 4000 RX are geophysical prospecting instruments that apply a radio signal to a conductive utility with the use of a transmitter. The receiver "senses" that signal and shows a approximate measurement of the location of said utility, both horizontally and vertically. The accuracy of this unit is within 2 feet vertically and horizontally.

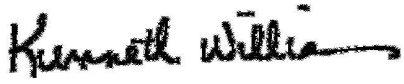
3.0 Results

Nine subsurface exploration point locations were found to have a conflicting utility present, either within the ten foot radius of the staked location or directly outside of this area. These locations include: B-316, B-421, B-408, B-702, B-707, B-717, C-703, C-715, and TP-B415. A site plan showing the approximate locations will be submitted with highlighted bubbles that will include type of utility found to be in conflict with an approximate location of that utility.

We appreciate the opportunity to be of service to you for this project. Please contact Mr. Ken Williams at (301) 881-2545 if you have any questions regarding this report.

Very truly yours,
A MORTON THOMAS AND ASSOCIATES, INC.

Ken Williams



Director of S.U.E.

KW: kw

APPENDIX C
BORINGS AND TEST PITS

- Test Boring and Test Pit Log General Notes
- SPT Boring Logs
- Test Pit Logs

TEST BORING AND TEST PIT LOG GENERAL NOTES

Test Boring and Test Pit Log General Notes

1. Test borings and test pits were logged by Schnabel personnel to provide a record for geotechnical evaluation, construction inspection or other specialized purposes. The log itself includes a description of soil materials encountered using visual classification in the field. The group symbols on the logs represent the Unified Soil Classification System Group Symbols (ASTM D-2487) based on visual observation and limited laboratory testing of the samples. Criteria for visual identification of soil samples are included in this appendix. Some variation may be expected between samples visually classified and samples classified in the laboratory. Boundary lines between various strata are identified where possible and a graphical presentation is included based on the material excavated from the pit. Any significant features such as fill conditions, underground structures, ground water, or water seepage conditions are recorded.

2. Numbers in the sampling data column of test boring logs indicate the standard penetration test (SPT) blow counts, N value, and recovery length for each SPT sample, and the recovery length for each undisturbed sample. The blow counts indicate the number of SPT hammer blows required to drive the SPT sampler three successive 6 in intervals. The first 6 in interval typically represents a seating interval. The total number of blows for the second and third intervals is the N value, unless the standard penetration testing for a given interval was stopped when blow counts reached 50 blows in any 6 in interval (i.e., stopped at "refusal"). In cases where refusal is reached, the N value is defined as the total number of blows performed in the last two intervals (or the total number of blows performed in the first interval if refusal was achieved in the first interval) over the penetration length resulting from those blows (e.g., 60/8").

3. Strata descriptions are based on visual inspection and are in accordance with the Unified Soil Classification System. Representative soil samples are recovered from the boring logs and test pits, generally from each stratum, for later identification and testing. The locations of samples obtained during test pit excavation are generally not shown on the logs unless laboratory tests performed on samples are referred to in the geotechnical analysis.

4. The values following "PP=" in the Sampling Data column of the logs represent pocket penetrometer readings. Pocket penetrometer readings provide an estimate of the unconfined compressive strength of fine-grained soils.

5. Key to abbreviations and symbols:

PL = Plastic Limit
w = Moisture Content
LL = Liquid Limit
WOW = Ground Water Observation Well

 = Interval Sampled by SPT

■ = Tube Sample Pushed

6. The boring and test pit logs and related information depict subsurface conditions at these specific locations and at the particular time when drilled or excavated. Soil conditions at

other locations may differ from conditions occurring at these boring and test pit locations. The passage of time may result in a change in the subsurface soil and ground water conditions at these boring and test pit locations.

7. The stratification lines represent the approximate boundary between soils and/or rock types as observed in the drilling and sampling operation. Some variation may be expected vertically between samples taken. The soil profile, water level observations and penetration resistances presented on the boring and test pit logs have been made with reasonable care and accuracy, but must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.

8. Estimated ground water levels are indicated on the logs. These are only estimates from available data and may vary with precipitation, porosity of the soil, site topography and similar factors.

SPT BORING LOGS

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-301
Contract Number: 06120048
Sheet: 1 of 13

Boring Contractor: UNI-TECH DRILLING
MALAGA, NEW JERSEY

Boring Foreman: J. Evans

Drilling Method: Mud Rotary

Drilling Equipment: Failing-1500 (Truck)

Schnabel Representative: K. Megginson

Dates Started: 5/25/06 **Finished:** 6/6/06

Location: Northing: 217024.06 ft
Easting: 960815.05 ft

Ground Surface Elevation: 94.5 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	5/25	---	10.5'	---	---
Start of day	5/26	---	25.0'	---	---
Start of day	5/30	---	41.0'	---	---
Start of day	6/1	---	10.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	CLAYEY SAND, fine to medium grained, contains root fragments, moist, brown. Majority of root system extends about 0.7 ft below ground surface.	SC				3+3+4 N =7 REC =9"		
2.0			92.5					
	POORLY GRADED SAND WITH SILT, trace gravel, fine to medium grained, moist, stratified orangeish brown and brown, contains fine to coarse silty sand lense at 3.5 ft.	SP-SM				3+4+5 N =9 REC =13"	w=6.6% *	
	fine to coarse grained, brown.				5	4+7+7 N =14 REC =10"		
	fine to medium grained,stratified light brown and yellowish brown					4+7+8 N =15 REC =12"		
	wet, brown and light brown			▽	10	6+9+9 N =18 REC =9"	w=14.3% *	
	light orangeish brown.					8+6+8 N =14 REC =10"		
14.5			80.0		15			
	CLAYEY SAND, fine to medium grained, moist, brown	SC						
17.0			77.5					
	POORLY GRADED SAND WITH SILT, trace gravel, fine to coarse grained, wet, dark orangeish brown and orangeish brown, contains fine to medium clayey sand pockets.	SP-SM			20	6+11+10 N =21 REC =14"	w=19% *	Drilling foreman used 5.4" O.D. Drag Bit from 0 to 18.5 ft. Switched to 4-3/4" O.D. Drag bit below 18.5 ft.
22.0			72.5					
	SANDY LEAN CLAY, fine to medium, trace mica, moist, gray.	CL				3+3+5 N =8 REC =18"		
	continued on next page				25			

Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 2 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		CL						
27.0	SANDY LEAN CLAY, with fine to medium sand, trace mica, contains fine to medium sandy fat clay and fine to medium clayey sand pockets, moist, gray.	CL	67.5		30	2+4+3 N =7 REC =18"	w=28.9% LL=48 PL=17 *	
32.0	FAT CLAY, with fine to medium sand and mica, moist, gray.	CH	62.5		35	REC =22"	w=31.1% LL=59 PL=17 *	Osterberg sampler tube push from 33.5 to 35.5 ft
	gray and dark gray, trace organic matter (±1%), contains fine to medium silty sand pockets.				40	4+5+5 N =10 REC =18"		
	gray and light greenish gray.				45	REC =22"	PP=2.00 tsf	Osterberg sampler tube push from 43.5 to 45.2 ft
47.0	SANDY LEAN CLAY, fine to medium, trace mica, contains indurated lean clay pockets, moist, gray.	CL	47.5		50	5+6+8 N =14 REC =18"	w=29.6% *	
52.0	CLAYEY SAND, fine to medium grained, trace fine to medium shell fragments (±5%), strong HCl reaction, moderate cementation, moist, dark gray, contains indurated silt layer from 54.5 to 54.7 ft (layer exhibits fissility).	SC	42.5		55	11+48+50/3" N =98/9" REC =16"		Switched to 4-3/4" Tri-cone roller bit below 53.5 ft. Moderate difficulty in rotary advancement from 54.5 to 56.5 ft (slight rig chatter).
57.0	POORLY GRADED SAND, trace silt, fine to medium grained, wet, gray, weak	SP	37.5					

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Comments:

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2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 3 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	HCl reaction, trace coarse gravel.	SP				50/3" N =50/3" REC =1"		Sampler refusal at 54.7 ft. Sampler refusal at 58.8 ft.
	few fine to coarse shell fragments (±10%), moderate HCl reaction.					44+50/2" N =50/2" REC =8"	w=20.4% *	Switched to 4-3/4" O.D. Drag Bit below 63.5 ft. Sampler refusal at 64.2 ft.
	contains fine to medium strongly cemented sand pockets, strong HCl reaction.					50 REC =6"		
	moist and light gray, mostly strongly cemented sand layers (±80%), trace fine to coarse shell fragments (±5%), weak HCl reaction.					50/5" N =50/5" REC =3"		Slow rotary advancement from 72.5 to 73.5 ft Sampler refusal at 73.9 ft. Slight to difficult rotary advancement from 74 to 75 ft. Slight to moderately difficult rotary advancement from 77 to 78.5 ft.
	light oliveish gray, mostly fine to medium strongly cemented sand layer (±95%), trace fine to coarse shell fragments (±5%), moderate HCl reaction.					50/5" N =50/5" REC =3"		Switched to 4-3/4" O.D. Tri-cone roller bit below 78.5 ft. Sampler refusal at 78.9 ft.
82.0	SILTY SAND, fine to medium grained, wet, gray, trace fine to coarse shell fragments (±5%), weak HCl reaction.	SM	12.5			4+5+8 N =13 REC =16"	w=26.5% *	Moderate to difficult rotary advancement from 80 to 82 ft. Switched to 4-3/4" O.D. Drag Bit below 83.5 ft.
87.0	No sample recovery.		7.5			REC =0"		Osterberg sampler tube push from 88.5 to 90.5 ft
	continued on next page							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 4 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
92.0	SILTY SAND, fine to medium grained, wet, gray, trace mica, very weak HCl reaction.	SM	2.5		95	6+10+12 N =22 REC =16"	w=25.8% *	
	moist, gray, contains fine to medium moderately cemented sand pockets, moderate HCl reaction.				100	REC =6"		Osterberg sampler tube pushed from 98.5 to 99.8 ft
102.0	LEAN CLAY, moist, greenish gray and light greenish gray, little fine to coarse shell fragments (±20%), contains fine to medium silty sand and silt pockets, strong HCl reaction, trace fine to medium sand.	CL	-7.5					
104.5	SILTY SAND, fine to medium grained, wet, light gray, some fine to coarse shell fragments (±40%), strong HCl reaction.	SM	-10.0		105	14+28+24 N =52 REC =18"	w=17.8% *	
	trace fine to medium shell fragments (±5%).							
	contains fine to medium weakly cemented sand pockets below 109.7 ft				110	22+29+30 N =59 REC =15"	w=23.2% *	
112.0	SANDY LEAN CLAY, fine to medium, moist, greenish gray and gray, trace fine to coarse shell fragments (±5%), strong HCl reaction.	CL	-17.5		115	7+10+15 N =25 REC =18"		
117.0	SILTY SAND, fine to medium grained, wet, gray and light greenish gray, trace fine to medium shell fragments (±1%), weak HCl reaction.	SM	-22.5		120	10+15+19 N =34 REC =18"	w=33.1% *	Resumed drilling at 7:50 AM on 5/26/06.
122.0	ELASTIC SILT, moist, greenish gray, trace fine to medium sand and fine to medium shell fragments (±1%), weak HCl reaction.	MH	-27.5			9+10+16		
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-301
Contract Number: 06120048
Sheet: 5 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH			125	N =26 REC =18"		
127.0	CLAYEY SAND, moist, greenish gray, trace fine to medium shell fragments (±5%) and mica, weak HCl reaction, contains silt pockets.	SC	-32.5		130	7+10+19 N =29 REC =17"	w=42.3% *	
132.0	CLAYEY SAND, fine grained, moist, greenish gray, trace fine to medium shell fragments (±5%), weak HCl reaction.	SC	-37.5		135	5+8+12 N =20 REC =17"		
	fine to medium grained, moist, gray, few fine to coarse shell fragments (±10%)				140	REC =4"		Osterberg sampler tube pushed from 138.5 to 140.5 ft
142.0	SANDY LEAN CLAY, moist, dark greenish gray, with fine sand, trace mica, weak HCl reaction.	CL	-47.5		145	8+13+15 N =28 REC =18"	w=45% *	
147.0	ELASTIC SILT, moist, dark greenish gray, trace fine to medium sand and mica, moderate HCl reaction.	MH	-52.5		150	8+10+13 N =23 REC =18"	w=62.2% LL=114 PL=55 *	Resumed drilling at 8:45 AM on 5/30/06.
152.0	SILTY SAND, moist, dark greenish gray, few fine to medium shell fragments (±10%), strong HCl reaction.	SM	-57.5		155	6+8+11 N =19 REC =18"	w=34% *	
155.0	FAT CLAY, with fine to medium sand, trace mica, very weak HCl reaction.	CH	-60.5					
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 6 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		CH			160	REC =13"	w=38.7% LL=76 PL=30 PP=>4.5 tsf *	Osterberg sampler tube push from 158.5 to 159.6 ft
162.0	CLAYEY SAND, fine to medium grained, moist, dark greenish gray, trace mica, very weak HCl reaction.	SC	-67.5		165	7+8+11 N =19 REC =18"		
167.0	SANDY FAT CLAY, gray.	CH	-72.5		170	REC =9"	w=65.4% LL=112 PL=39 *	Osterberg sampler push from 168.5 to 170.4 ft
172.0	SANDY ELASTIC SILT, moist, greenish gray, trace fine to medium sand and mica, weak HCl reaction.	MH	-77.5		175	7+10+13 N =23 REC =18"		
	trace fine to medium shell fragments (±<5%), moderate HCl reaction, and indurated elastic silt pockets (<1/4 inch). wet, weak HCl reaction below 179.5 ft.				180	6+9+10 N =19 REC =18"	w=60.4% LL=111 PL=47 *	
	moist, mostly indurated elastic silt layers (±100%).				185	REC =10"	PP=>4.5 tsf	Osterberg sampler tube push from 183.5 to 184.3 ft
	dark greenish gray.				190	8+10+15 N =25 REC =18"		
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 7 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH						
	with fine to medium sand, trace organic matter (±1%).				195	6+10+13 N =23 REC =18"	w=53.2% LL=98 PL=45 *	
	greenish gray, trace fine to medium sand, moderate HCl reaction				200	8+9+12 N =21 REC =18"	w=82.6% LL=157 PL=71 *	Resumed drilling at 7:20 AM on 5/31/06.
202.0	CLAYEY SAND, fine to medium grained, moist, dark greenish gray, few fine to coarse shell fragments (±10%), strong HCl reaction.	SC	-107.5					
204.0	SILTY SAND, fine to medium grained, moist, dark gray, few fine to coarse shell fragments (±10%), strong HCl reaction.	SM	-109.5		205	10+20+22 N =42 REC =18"	w=27.5% *	
	wet, dark greenish gray, trace fine to medium shell fragments (±5%), strong HCl reaction				210	8+12+21 N =33 REC =18"	w=32.4% *	
212.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, weak HCl reaction.	SC	-117.5		215	5+8+19 N =27 REC =3"		Driller notes increase in rotary resistance in formation below 214 ft.
217.0	SANDY LEAN CLAY, moist, greenish gray, trace mica, very weak HCl reaction.	CL	-122.5		220	6+10+23 N =33 REC =18"	w=47.9% *	
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 8 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	greenish gray and gray, trace fine to medium circular, orangeish brown organic matter (±1%).	CL			225	5+8+18 N =26 REC =18"		
228.5	CLAYEY SAND, greenish gray, weak HCl reaction.	SC	-134.0		230	7+10+17 N =27 REC =18"	w=54% *	
	with fine sand.				235	7+9+16 N =25 REC =18"		
238.5	LEAN CLAY, moist, greenish gray, with fine sand, trace mica, very weak HCl reaction.	CL	-144.0		240	8+11+17 N =28 REC =18"	w=56.8% *	Resumed drilling at 7:05 AM on 6/1/06.
					245	8+13+19 N =32 REC =18"		
					250			No SPT conducted at 248.5 ft because 210 ft of rods free fell 40 ft (slipped free of slide ring), thus penetrating soil to 251.4 ft due to drill rod free fall momentum.
252.0	SANDY ELASTIC SILT, moist, greenish gray, with fine sand, trace mica, very weak HCl reaction.	MH	-157.5		255	7+9+19 N =28 REC =18"	w=72.7% LL=137 PL=87 *	
	continued on next page							

Comments:
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2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 9 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH						
257.0	LEAN CLAY, moist, greenish gray, with fine sand, trace mica, and orangeish brown organic matter (±1%), very weak HCl reaction.	CL	-162.5		260	9+12+23 N =35 REC =18"		
	trace fine sand, moderate HCl reaction.				265	8+12+24 N =36 REC =18"	w=100.9% *	
267.0	ELASTIC SILT, moist, greenish gray, trace fine sand and mica, moderate HCl reaction.	MH	-172.5		270	10+12+23 N =35 REC =18"		
	trace orangeish brown organic matter (±1%), weak HCl reaction.				275	7+10+19 N =29 REC =18"	w=102% LL=199 PL=119 *	
	trace fine sand and mica.				280	8+12+21 N =33 REC =18"		
282.0	LEAN CLAY with sand, moist, greenish gray, trace fine sand and mica, weak HCl reaction.	CL	-187.5		285	7+11+20 N =31 REC =18"	w=91.3% *	
287.0	ELASTIC SILT, moist, greenish gray, with fine sand, trace mica and dark orangeish brown organic matter (±1%), weak HCl reaction.	MH	-192.5			8+11+21		
	continued on next page							

Comments:

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2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 10 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH			290	N =32 REC =18"		
	fine sandy.				295	7+11+21 N =32 REC =18"	w=64.4% LL=117 PL=73 *	Resumed drilling at 6:55 AM on 6/2/06.
	trace fine sand, very weak HCl reaction.				300	9+14+22 N =36 REC =18"		Moderate to difficult rotary advancement from 301.5 to 303 ft (moderate rig chatter).
302.0	CLAYEY SAND, fine to coarse grained, moist, dark greenish gray, trace mica, contains fine to coarse sandy fat clay lenses, weak HCl reaction trace organic matter (±1%), very weak HCl reaction below 304.5 ft	SC	-207.5		305	21+17+23 N =40 REC =18"	w=24.8% *	
307.0	SANDY FAT CLAY, fine to medium, moist, dark greenish gray and dark gray, contains fine to medium clayey sand pockets and lenses , and indurated fat clay pockets, trace fine to coarse shell fragments (±1%), strong HCl reaction.	CH	-212.5		310	10+13+22 N =35 REC =10"		
312.0	CLAYEY SAND, fine to coarse grained, moist, dark greenish gray and greenish gray, trace fine gravel, few fine to coarse shell fragments (±10%), contains lean clay pockets, strong HCl reaction.	SC	-217.5		315	9+17+28 N =45 REC =18"	w=20% *	
					320	50/2" N =50/2" REC =0"		Sampler refusal at 318.7 ft.
	contains indurated clayey sand pockets, weak HCl reaction, glauconitic.							Very to extremely difficult rotary

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Comments:

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2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 11 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SC						advancement from 319 to 320.5 ft (strong rig chatter).
						11+13+22 N =35 REC =18"	w=27.8% *	
324.7	LEAN CLAY, wet, dark gray, with fine to coarse sand, trace mica, strong HCl reaction.	CL	-230.2		325			
327.0	CLAYEY SAND, fine to coarse grained, moist, dark greenish gray and dark gray, trace fine gravel and mica, very weak HCl reaction, glauconitic.	SC	-232.5					
					330	10+15+19 N =34 REC =18"		Slight to moderate difficulty in rotary advancememt below 328.5 ft.
	light blueish gray and greenish gray, contains fine to coarse sandy fat clay pockets, weak HCl reaction.						w=31.8% *	
					335	9+14+29 N =43 REC =18"		Resumed drilling at 6:50 AM on 6/3/06. Start of day at 6:56 AM
337.0	CLAYEY SAND, moist, dark blackish gray and dark greenish gray, trace mica, contains indurated lean clay pockets and clayey sand pockets, weak HCl reaction, glauconitic.	SC	-242.5					Below 338.5 ft, drillers describe rotary advancement moderately slow due to dense/stiff soils.
					340	18+30+40 N =70 REC =18"		
	fine to coarse sandy, trace shell fragment, strong cementation.						w=22.9% LL=47 PL=24 *	
					345	20+50 N =50 REC =12"		Moderate to difficult rotary advancement from 347 to 347.5 ft (moderate to strong chatter).
	dark greenish gray and dark gray, with fine to medium sand, contains fine to medium sandy lean clay pockets.							
					350	8+17+35 N =52 REC =8"		
	fine to medium sandy, dark blackish gray and dark gray, very weak HCl reaction.						w=36.1% LL=58 PL=22	Slight difficulty in rotary advancement
					355	14+18+28 N =46 REC =13"		

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Comments:

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4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 12 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SC					*	from 355 to 356 ft (slight wobble in kelly bar rotation).
	fine to coarse sandy, trace coarse gravel, and mica, weak HCl reaction.				360	16+27+50 N =77 REC =15"		
362.0	SILTY SAND, fine to medium grained, moist, dark blackish gray and brownish gray, trace mica, weak HCl reaction, glauconitic.	SM	-267.5		365	11+15+27 N =42 REC =18"	w=37.2% LL=54 PL=36 *	Resumed drilling at 6:55 AM on 6/4/06. Start of day at 7:05 AM, drilling mud at 35 ft on 6/4/06. Mubtub (270 gallons) was empty of mud except for soil cuttings at the bottom of the tub on 6/4/06.
					370	14+30+43 N =73 REC =18"		
372.0	CLAYEY SAND, fine to medium grained, moist, dark gray, contains silt pockets, very weak HCl reaction, glauconitic.	SC	-277.5		375	15+28+42 N =70 REC =18"	w=30.3% LL=61 PL=26 *	
377.0	CLAYEY SAND, fine to medium grained, wet, dark blackish gray, trace mica, very weak HCl reaction, glauconitic.	SC	-282.5		380	24+50 N =50 REC =12"		
	dark blackish gray and dark brownish gray.				385	34+50/5" N =50/5" REC =10"		Moderately difficult rotary advancement from 383 to 383.5 ft. Sampler refusal at 384.4 ft. Moderately difficult rotary advancement from 383.5 to 384.5 ft .
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-301** Contract Number: 06120048 Sheet: 13 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	fine to coarse grained, dark blackish gray.	SC			390	16+28+50 N =78 REC =12"	w=32.7% *	
						18+50 N =50 REC =0"		Resumed drilling at 6:45 AM on 6/5/06. Start of day at 6:53 AM, drilling mud at 25 ft on 6/5/06.
	fine to medium grained, dark blackish gray and dark brownish gray, contains clayey sand pockets.				400	19+28+43 N =71 REC =3"	w=33.7% *	
403.0	BOTTOM OF BORING @ 403.0 FT.		-308.5					Start of day at 7:20 AM, drilling mud at 48 ft on 6/6/06.

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/6/06.
3. * = See Appendix I for additional lab testing data.
4. Ground water observation well OW-301 installed at nearby location.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-302
Contract Number: 06120048
Sheet: 1 of 7

Boring Contractor: CONNELLY AND ASSOCIATES, INC. FREDERICK, MARYLAND
Boring Foreman: D. Bender
Drilling Method: Mud Rotary
Drilling Equipment: CME-550
Schnabel Representative: K. Bell
Dates Started: 5/30/06 **Finished:** 5/31/06
Location: Northing: 217122.24 ft
Easting: 960766.98 ft
Ground Surface Elevation: 76.4 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	5/30	---	40.0'	---	---
Start of day	5/31	---	38.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.5	ROOTMAT AND TOPSOIL.		75.9					
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown, trace root fragments.	SP-SM				1+2+2 N =4 REC =11"		
						2+3+4 N =7 REC =16"		
	yellowish brown and orange, trace gravel.				5	4+5+6 N =11 REC =18"		
7.0	CLAYEY SAND, fine to coarse grained, moist, orangeish brown, trace gravel.	SC	69.4			4+5+3 N =8 REC =14"		
	orangeish brown and gray, trace root fragments				10	3+7+8 N =15 REC =17"		
12.0	FAT CLAY, moist, gray, trace sand.	CH	64.4					color change in mud tub from orangeish brown to gray
						2+2+4 N =6 REC =18"		
					15			
						3+3+5 N =8 REC =18"		
					20			
						4+4+7 N =11 REC =18"		
					25			

continued on next page

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-302** Contract Number: 06120048 Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		CH						water loss from mud tub
					30	6+8+10 N =18 REC =18"		
32.0	SILTY SAND, fine to medium grained, moist, gray and greenish gray.	SM	44.4					
					35	6+10+14 N =24 REC =17"		
	greenish gray and white, trace fine to coarse shell fragments, trace cobbles, 20-30%, HCl reaction moderate.			▽	40	24+50/4" N =50/4" REC =7"		
	.				45	50/5" N =50/5" REC =5"		
47.0	SANDY SILT, wet, gray and white, with fine to coarse shell fragments, trace organic matter, HCl reaction strong.	ML	29.4					
					50	26+30+30 N =60 REC =15"		
	greenish gray and white, with fine to coarse shell fragments, 10-20%, HCl reaction moderate.				55	3+50/5" N =50/5" REC =9"		Rig chatter
	continued on next page							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-302** Contract Number: 06120048 Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		ML			60	6+50/4" N =50/4" REC =10"		
					65	5+5+7 N =12 REC =17"		
					70	5+4+7 N =11 REC =18"		
					75	4+4+8 N =12 REC =17"		
					80	2+4+5 N =9 REC =18"		
82.0	SILTY SAND, fine to medium grained, wet, light gray and white, with fine to coarse shell fragments, 20-30%, weak cementation, HCl reaction strong.	SM	-5.6		85	REC =16"	PP=2.00 tsf	
					90	11+11+18 N =29 REC =16"		
	continued on next page							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-302** Contract Number: 06120048 Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM			95	5+8+14 N =22 REC =18"		
	with fine to coarse shell fragments, 25-35%, HCl reaction moderate.				100	4+7+12 N =19 REC =16"		
	trace fine to coarse shell fragments, 5-10%, HCl reaction weak.				105	5+7+11 N =18 REC =18"		Resumed drilling on 5/31/06 @ 7:30am
107.0	SANDY SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-30.6		110	6+7+10 N =17 REC =18"		
					115	6+8+9 N =17 REC =18"		
117.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, with fine to coarse shell fragments, 40-50%, HCl reaction strong.	SM	-40.6		120	6+19+20 N =39 REC =18"		
122.0	SANDY SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-45.6			6+8+11		
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-302** Contract Number: 06120048 Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		ML			125	N =19 REC =18"		
127.0	SANDY ELASTIC SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	MH	-50.6			REC =12"	PP=>4.5 tsf	
					130			
					135	6+7+10 N =17 REC =18"		
					140	5+7+9 N =16 REC =18"		
					145	4+7+9 N =16 REC =18"		
147.0	SANDY FAT CLAY, moist, greenish gray and gray.	CH	-70.6					
					150	6+8+12 N =20 REC =18"		
152.0	SANDY ELASTIC SILT, moist, greenish gray.	MH	-75.6					
					155	6+9+12 N =21 REC =18"		

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TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: B-302 Contract Number: 06120048 Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH			160	5+7+10 N =17 REC =18"		
					165	7+9+12 N =21 REC =18"		
					170	7+7+10 N =17 REC =18"		
					175	8+11+14 N =25 REC =18"		
	trace fine to medium shell fragments, 2-5%, HCl reaction weak.				180	6+9+13 N =22 REC =17"		
182.0	SILTY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SM	-105.6		185	4+5+9 N =14 REC =18"		
					190	8+11+16 N =27 REC =18"		
	continued on next page							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-302
Contract Number: 06120048
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM			195	5+8+16 N =24 REC =18"		
					200	6+7+14 N =21 REC =18"		
200.0	BOTTOM OF BORING @ 200.0 FT.		-123.6					

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-303
Contract Number: 06120048
Sheet: 1 of 7

Boring Contractor: UNI-TECH DRILLING
MALAGA, NEW JERSEY

Boring Foreman: J. Evans

Drilling Method: Mud Rotary

Drilling Equipment: Failing-1500 (Truck)

Schnabel Representative: R. Vinzant

Dates Started: 5/9/06 **Finished:** 5/10/06

Location: Northing: 217016.91 ft
Easting: 960867.69 ft

Ground Surface Elevation: 87.4 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	5/9	---	15.0'	---	---
Start of Day	5/10	---	20.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	Silty sand FILL, fine to medium grained, moist, dark brown, contains root fragments, organic matter, and brick fragments..	FILL				2+2+6 N =8 REC =6"		
2.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light brown.	SP-SM	85.4			2+3+3 N =6 REC =15"		
					5	2+3+4 N =7 REC =14"		
	medium to coarse grained, orangeish brown, some organic matter.					3+5+7 N =12 REC =15"		
9.0	CLAYEY SAND, fine to medium grained, moist, light brown, layers of white clay.	SC	78.4		10	3+3+3 N =6 REC =14"		
	light orange, contains mottles of white clay.			▽	15	2+1+1 N =2 REC =18"		
	dark gray.					2+2+2 N =4 REC =18"		
20.0	LEAN CLAY with sand, fine to medium grained, moist, dark gray.	CL	67.4		20			
						2+3+5 N =8 REC =18"		
					25			

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Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-303** Contract Number: 06120048 Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		CL						
					30	REC =24"	PP=4.25 tsf	
	trace sand.							
						7+7+10 N =17 REC =18"		
35.0	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	52.4		35			
						REC =24"	PP=4.50 tsf	
					40			
41.0	SILTY SAND, fine to medium grained, moist, dark brown, contains mica, and organic matter.	SM	46.4					
						10+14+23 N =37 REC =12"		
45.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, greenish gray, 25% shell fragments, weak HCl reaction, coarse flat shells.	SP-SM	42.4		45			
						50/5" N =50/5" REC =5"		
					50			
51.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, 50% coarse shell fragments, weak HCl reaction.	SC	36.4					
						50/3" N =50/3" REC =4"		
55.0	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, greenish gray, 40% medium to coarse shell fragments, weak HCl reaction.	SP-SM	32.4		55			
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-303** Contract Number: 06120048 Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SP-SM			60	38+35+19 N =54 REC =15"		
61.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, greenish gray, , 5% shell fragments, fine to coarse shell fragments, weak HCl reaction.	SP-SC	26.4					
					65	5+9+25 N =34 REC =18"		
65.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light greenish gray, 5% shell fragments, medium to coarse shell fragments, weak HCl reaction.	SP-SM	22.4					
					70	8+50/3" N =50/3" REC =10"		
73.0	SILTY SAND, fine to medium grained, moist, light greenish gray, 5% shell fragments, medium to coarse shell fragments, weak HCl reaction.	SM	14.4					
					75	5+6+8 N =14 REC =18"		
					80	3+7+12 N =19 REC =18"		
82.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light greenish gray, 5% shell fragments, medium to coarse shell fragments, weak HCl reaction.	SP-SM	5.4					
					85	6+7+9 N =16 REC =18"		
					90	3+5+8 N =13 REC =18"		
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-303** Contract Number: 06120048 Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
91.0	SILTY SAND, fine to medium grained, moist, light gray, 40% shell fragments, and cemented sand pockets, moderate HCl reaction.	SM	-3.6					
					95	12+23+50/5" N =73/11" REC =17"		
	greenish gray, 15% shell fragments.				100	12+18+27 N =45 REC =18"		
	50% shell fragments, layers of shells.				105	9+11+15 N =26 REC =18"		
					110	4+10+14 N =24 REC =18"		
	3% shell fragments.				115	7+11+20 N =31 REC =18"		
					120	8+8+12 N =20 REC =18"		
	25% shell fragments.					7+11+15		

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Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-303** Contract Number: 06120048 Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM			125	N =26 REC =18"		
					130	7+18+15 N =33 REC =18"		
	5% shell fragments.				135	5+8+12 N =20 REC =18"		
	contains mica.				140	8+9+12 N =21 REC =18"		
	greenish gray, 5% shell fragments, weak HCl reaction.				145	8+8+14 N =22 REC =18"		
	3% shell fragments.				150	7+8+10 N =18 REC =18"		
	contains mica.				155	6+10+15 N =25 REC =18"		
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-303
Contract Number: 06120048
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM			160	9+10+14 N =24 REC =18"		
					165	8+10+12 N =22 REC =18"		
					170	7+8+10 N =18 REC =18"		
					175	8+12+14 N =26 REC =18"		
					180	7+8+11 N =19 REC =18"		
					185	7+11+14 N =25 REC =18"		
					190	6+8+13 N =21 REC =18"		

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TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-303
Contract Number: 06120048
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM						
	dark greenish gray, 25% shell fragments.					4+6+15 N =21 REC =18"		
195.0	POORLY GRADED SAND, fine to medium grained, moist, dark greenish gray, 5% shell fragments, moderate HCl reaction.	SP	-107.6		195			
						7+10+15 N =25 REC =18"		
200.0	BOTTOM OF BORING @ 200.0 FT.		-112.6		200			

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-304
Contract Number: 06120048
Sheet: 1 of 7

Boring Contractor: UNI-TECH DRILLING
MALAGA, NEW JERSEY

Boring Foreman: J. Blemings

Drilling Method: Mud Rotary

Drilling Equipment: CME-750 (ATV)

Schnabel Representative: M. Arles

Dates Started: 5/26/06 **Finished:** 5/31/06

Location: Northing: 217188.61 ft
Easting: 960896.88 ft

Ground Surface Elevation: 68.0 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	5/26	---	Dry	0.0'	---
Start of day	5/30	---	10.0'	0.0'	---
Start of day	5/31	---	12.0'	0.0'	---
Start of day	6/1	---	5.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.5	Forest litter, rootmat, and topsoil..		67.5					
	SILTY SAND, fine to coarse grained, moist, yellowish orange, trace gravel.	SM				2+3+5 N =8 REC =16"	w=17.1% *	
	fine to medium grained, dark orange, contains cemented sand.					10+3+4 N =7 REC =6"	w=25.9% *	3'- Driller noted softer material
4.5	SANDY SILT, fine to medium, moist, mottled brownish orange, with clay.	ML	63.5		5	2+2+3 N =5 REC =18"	w=29.4% *	
7.0	FAT CLAY with sand, fine to medium, moist, mottled brownish orange, with shell fragments, 10-15% shell frag, brown colored.	CH	61.0			1+2+3 N =5 REC =18"	w=34.1% LL=57 PL=23 *	
	dark gray, with sand.				10			
	fine to medium sandy.					2+4+5 N =9 REC =18"	w=31.4% LL=59 PL=19 *	
	with sand.					3+3+5 N =8 REC =18"	w=31.7% LL=63 PL=23 *	
	fine to medium sandy				15			
	very stiff.				20	3+6+8 N =14 REC =18"	w=32.1% LL=62 PL=21 *	
22.0	SANDY LEAN CLAY, fine to medium grained, moist, dark gray.	CL	46.0			4+5+6 N =11 REC =18"	w=25.6% LL=38 PL=20	
	continued on next page				25			

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-304** Contract Number: 06120048 Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		CL					*	
27.0	SILTY SAND, fine to coarse grained, moist, mottled brown and orange, with shell fragments, 25-30% brown/red shell frag.	SM	41.0			6+15+45 N =60 REC =18"	w=32.3% *	
29.4	CLAYEY SAND, fine to medium grained, moist, dark gray, contains cemented sand, slightly cemented.	SC	38.6		30			
32.0	POORLY GRADED SAND, fine to medium grained, moist, dark gray, contains cemented sand.	SP	36.0			50/5" N =50/5" REC =5"	w=20.1% *	
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish green, with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.	SP-SM	31.0		35			
					40	28+50/5" N =50/5" REC =11"	w=19.3% *	
	wet, green and white, 60-70% shell frag.				45	16+11+10 N =21 REC =14"	w=21.9% *	
47.0	SILTY and CLAYEY ROCK FRAGMENTS, fine to medium grained, moist, greenish gray, contains cemented sand. 4" shell layer at 49.3 ft	GM-GC	21.0		50	21+15+50/4" N =65/10" REC =16"	w=14.5% LL=25 PL=18 *	49.3'- 4" shell layer
52.0	SILTY SAND, fine to medium grained, moist, green and white, with fine to coarse shell fragments, contains cemented sand, strong HCl reaction, 80% shell frag.	SM	16.0		55	50/2" N =50/2" REC =3"	w=13.5% *	55'- Harder drilling
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-304** Contract Number: 06120048 Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	20-30% shell frag.	SM			60	5+6+11 N =17 REC =18"	w=29.1% LL=NP PL=NP *	
	10-20% shell frag.				65	5+7+9 N =16 REC =18"	w=29.4% LL=30 PL=23 *	65'- Start of day, 5/30/06
	dark green.				70	5+5+6 N =11 REC =18"	w=29.5% *	
	green, with fine to coarse shell fragments, strong HCl reaction, 15-20% shell frag.				75	REC =22"		
77.0	CLAYEY SAND, fine to medium grained, moist, green and white, with fine to coarse shell fragments, contains cemented sand, strong HCl reaction, 45-55% shell frag.	SC	-9.0		80	12+20+15 N =35 REC =18"	w=16.3% LL=32 PL=19 *	77'- Rig chatter
83.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, moderate HCl reaction, 15-25% shell frag.	SM	-15.0		85	5+12+15 N =27 REC =13"	w=21.8% *	
	strong HCl reaction,10-15% shell frag.				90	9+11+11 N =22 REC =18"	w=38.7% LL=49 PL=28 *	
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-304** Contract Number: 06120048 Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM						
					95	5+12+15 N =27 REC =18"	w=33% *	
97.0	CLAYEY SAND, fine to medium grained, moist, green, trace fine to medium shell fragments, moderate HCl reaction, 0-5% shell frag, med dense.	SC	-29.0					
					100	REC =12"	w=42.1% LL=79 PL=28 *	
103.0	SILTY SAND, fine to medium grained, moist, green, trace fine to coarse shell fragments, strong HCl reaction, 5-10% shell frag.	SM	-35.0					
					105	8+9+18 N =27 REC =18"	w=44% *	
	fine to coarse shell fragments, 20-30% shell frag.				110	6+9+17 N =26 REC =18"	w=33.8% *	
	with fine to coarse shell fragments, strong HCl reaction, 20-25% shell frag.				115	9+9+15 N =24 REC =18"	w=43.9% *	
	trace fine to medium shell fragments, 5-10% shell frag.				120	8+11+12 N =23 REC =18"	w=47.9% *	
123.0	SILT, moist, oliveish green.	ML	-55.0			5+10+14	w=60.2%	
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-304
Contract Number: 06120048
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		ML			125	N =24 REC =18"	*	
127.0	CLAYEY SAND, fine to medium grained, moist, oliveish green, with fine to coarse shell fragments, strong HCl reaction, 10-15% shell frag.	SC	-59.0		130	6+6+10 N =16 REC =18"	w=34.9% *	
133.0	FINE TO MEDIUM SANDY SILT, moist, oliveish green, moderate HCl reaction.	ML	-65.0		135	8+9+11 N =20 REC =18"	w=45% *	
137.0	CLAYEY SAND, dark green	SC	-69.0			REC =10"	w=36.5% LL=43 PL=26 *	
140.0	FAT CLAY, trace sand, dark green	CH	-72.0		140			140'- Start of day, 5/31/06
					145	9+9+15 N =24 REC =18"	w=70% LL=134 PL=49 *	
145.0	SANDY ELASTIC SILT, moist, oliveish green, with sand, moderate HCl reaction.	MH	-77.0					
					150	8+8+13 N =21 REC =18"	w=72.1% *	
	trace fine to medium shell fragments, moderate HCl reaction, 0-3% shell frag.				155	9+10+16 N =26 REC =18"	w=70.9% *	

continued on next page

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-304** Contract Number: 06120048 Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH						
	weak HCl reaction.				160	8+10+12 N =22 REC =18"	w=55.1% LL=92 PL=53 *	
					165	8+10+10 N =20 REC =18"	w=47.2% *	
					170	8+11+14 N =25 REC =18"	w=62.9% *	
					175	8+8+10 N =18 REC =18"	w=84% LL=158 PL=84 *	
177.0	CLAYEY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 25-30% shell frag.	SC	-109.0		180	12+14+23 N =37 REC =18"	w=27.5% *	
					185	8+15+15 N =30 REC =18"	w=39.2% *	
	continued on next page				190	7+12+16 N =28 REC =18"	w=42.8% *	

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-304
Contract Number: 06120048
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SC						
193.0	SANDY LEAN CLAY, fine to medium, green, moist	CL	-125.0		195	9+10+13 N =23 REC =18"	w=51.1% *	
	with sand, small 1/4" pockets of gray sand				200	4+5+17 N =22 REC =18"	w=55.8% *	
200.0	BOTTOM OF BORING @ 200.0 FT.		-132.0					

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/1/2006
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-305
Contract Number: 06120048
Sheet: 1 of 5

Boring Contractor: CONNELLY AND ASSOCIATES, INC.
FREDERICK, MARYLAND
Boring Foreman: T. Connelly
Drilling Method: Mud Rotary
Drilling Equipment: CME-550
Schnabel Representative: K. Bell
Dates Started: 7/17/06 **Finished:** 7/20/06
Location: Northing: 217166.25 ft
Easting: 960686.74 ft
Ground Surface Elevation: 72.0 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	7/18	---	37.5'	---	---
Start of Day	7/19	---	35.0'	---	---
Start of Day	7/20	---	24.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace root fragments, trace wood fragments.	SP-SM	71.5			woh+1+2 N =3 REC =11"		
2.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace root fragments, trace wood fragments.	SP-SM	70.0			1+1+3 N =4 REC =7"		
4.5	CLAYEY SAND, fine to medium grained, moist, yellowish brown and orangeish brown, trace root fragments, trace wood fragments.	SC	67.5		5	2+2+3 N =5 REC =12"		
	SILTY SAND, fine grained, moist, gray and orangeish brown, trace root fragments.	SM				woh+woh+1 N =1 REC =4"		
10.0	FAT CLAY, moist, gray and orangeish brown, trace sand.	CH	62.0		10	2+2+2 N =4 REC =15"		
						REC =22"	PP=2.50 tsf	
					15	2+3+4 N =7 REC =18"		color change in mud tub from orangeish brown to gray
						3+4+6 N =10 REC =18"		
19.0	SILTY SAND, fine to medium grained, moist, gray.	SM	53.0		20	REC =16"		
22.5	ELASTIC SILT, moist, gray, trace sand.	MH	49.5			4+4+6 N =10 REC =18"		
	continued on next page				25			

Comments:
1. Boring backfilled with cement/bentonite grout through
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-305** Contract Number: 06120048 Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		MH				5+7+9 N =16 REC =18"		
27.0	SANDY SILT, moist, gray.	ML	45.0			5+5+7 N =12 REC =18"		
	weak cementation				30	4+5+8 N =13 REC =18"		
						8+13+25 N =38 REC =18"		Harder drilling
35.0	CLAYEY SAND, fine to medium grained, wet, gray and white, contains fine to medium shell fragments, 30-40%, HCl reaction strong.	SC	37.0	▽	35	REC =5"		resumed drilling on 7/18/06 @7:30am Harder drilling
						32+45+48 N =93 REC =12"		
					40	REC =23"	w=34.7% LL=72 PL=22 *	
						30+50/5" N =50/5" REC =10"		
					45	50/5" N =50/5" REC =4"		
47.0	CLAYEY SAND, fine to medium grained, wet, white and gray, with fine to coarse shell fragments, 60-70%, HCl reaction strong.	SC	25.0			40+50/5" N =50/5" REC =8"		
					50	12+8+8 N =16 REC =16"		
50.8	LEAN CLAY, wet, gray, trace sand, contains fine to medium shell fragments, 20-30%, HCl reaction moderate.	CL	21.2			REC =8"	PP=>4.5 tsf	harder
55.0	SILTY SAND, fine to medium grained, wet, greenish gray, strong cementation.	SM	17.0		55	50/5" N =50/5" REC =5"		
	with fine to coarse shell fragments, *continued on next page*					36+50/1"		

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-305** Contract Number: 06120048 Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	50-60%, HCl reaction strong	SM				N =50/1" REC =7"		Harder drilling
	contains fine to coarse shell fragments, 20-30%				60	3+4+12 N =16 REC =18"		
	HCl reaction moderate					4+6+8 N =14 REC =18"		
					65	8+9+12 N =21 REC =18"		
						4+5+9 N =14 REC =18"		
					70	4+4+7 N =11 REC =18"		
						4+5+7 N =12 REC =18"		
	trace fine to medium shell fragments, 2-5%, HCl reaction weak				75	3+4+7 N =11 REC =18"		
						4+5+8 N =13 REC =18"		
79.5	SANDY SILT, wet, greenish gray and white, contains fine to coarse shell fragments, 30-40%, HCl reaction strong.	ML	-7.5		80	4+7+9 N =16 REC =18"		
82.0	SILTY SAND, fine to medium grained, wet, white and gray, with fine to coarse shell fragments, 60-70%, strong cementation, HCl reaction strong.	SM	-10.0			8+34+50/2" N =84/8" REC =13"		
84.0	CLAYEY SAND, fine to medium grained, wet, white and gray, with fine to coarse shell fragments, 60-70%, HCl reaction strong.	SC	-12.0					Rig chatter
					85	9+15+9 N =24 REC =18"		
87.0	SILTY SAND, fine to medium grained, wet, gray, contains fine to coarse shell fragments, 30-40%, strong cementation, HCl reaction strong.	SM	-15.0			16+11+29 N =40 REC =18"		
					90	REC =8"		resumed drilling on 7/19/06 @ 7:15am
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-305** Contract Number: 06120048 Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	contains fine to coarse shell fragments, 10-20%, HCl reaction moderate	SM				6+9+14 N =23 REC =18"		
95.0	SANDY SILT, wet, greenish gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.	ML	-23.0		95	7+9+12 N =21 REC =18"		
97.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.	SM	-25.0			6+7+10 N =17 REC =18"		
					100	4+7+11 N =18 REC =18"		
102.0	SANDY SILT, wet, greenish gray and white, trace fine to coarse shell fragments, 5-10%, HCl reaction moderate,weak cementation.	ML	-30.0			8+10+17 N =27 REC =18"		
105.0	SANDY ELASTIC SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	MH	-33.0		105	7+13+13 N =26 REC =18"		
107.0	SANDY SILT, wet, greenish gray and white , trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-35.0			7+7+11 N =18 REC =18"		
					110	6+8+13 N =21 REC =18"		
						6+6+11 N =17 REC =18"		
					115	7+8+12 N =20 REC =18"		
						8+9+16 N =25 REC =18"		
					120	5+7+11 N =18 REC =18"		
						7+10+14 N =24 REC =18"		

continued on next page

Comments:
1. Boring backfilled with cement/bentonite grout through
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-305
Contract Number: 06120048
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		ML			125	6+9+12 N =21 REC =18"		resumed drilling on 7/20/06 @ 7:15am
						9+10+14 N =24 REC =18"		
					130	8+9+11 N =20 REC =18"		
	HCl reaction moderate					7+7+12 N =19 REC =18"		
					135	6+8+10 N =18 REC =18"		
						7+8+11 N =19 REC =18"		
					140	7+7+10 N =17 REC =18"		
						5+8+9 N =17 REC =18"		
	CLAYEY SILT				145	8+8+12 N =20 REC =18"		
						8+9+11 N =20 REC =18"		
					150	10+10+12 N =22 REC =18"		
151.5	BOTTOM OF BORING @ 151.5 FT.		-79.5					

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout through
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-306
Contract Number: 06120048
Sheet: 1 of 5

Boring Contractor: UNI-TECH DRILLING
MALAGA, NEW JERSEY

Boring Foreman: J. Evans

Drilling Method: Mud Rotary

Drilling Equipment: FAILING-1500

Schnabel Representative: R. Vinzant

Dates Started: 5/5/06 **Finished:** 5/8/06

Location: Northing: 217024.31 ft
Easting: 960681.82 ft

Ground Surface Elevation: 118.6 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	5/5	---	18.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	SILTY SAND, fine to medium grained, moist, orangeish brown.	SM				3+3+2 N =5 REC =16"		
	light orangeish brown and black.					2+2+3 N =5 REC =16"		
5	light gray and black.					3+4+4 N =8 REC =13"		
	light orangeish gray and black.					4+3+4 N =7 REC =13"		
10						4+4+5 N =9 REC =13"		
	light orangeish gray.					3+4+5 N =9 REC =14"		
15								
	wet, no black, trace fine gravel.			▽		5+6+6 N =12 REC =13"		
20								
	light orangeish gray and black.					5+7+8 N =15 REC =12"		
25	*continued on next page*							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-306** Contract Number: 06120048 Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM						
	trace fine gravel.					8+13+17 N =30 REC =16"		
	medium to coarse grained,dark orangeish brown.				30			
	orangeish brown and black.					5+8+10 N =18 REC =13"		
					35			
	light orangeish brown, with 3" layer of fine gravel.					4+9+10 N =19 REC =14"		
					40			
41.0	CLAYEY SAND, fine to medium grained, moist, orange and gray.	SC	77.6			3+2+2 N =4 REC =18"		
					45			
	gray, contains mica.					3+3+5 N =8 REC =18"		
					50			
51.0	LEAN CLAY, with sand, fine to medium grained, moist, gray.	CL	67.6			3+3+5 N =8 REC =18"		
					55			
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-306** Contract Number: 06120048 Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	greenish gray.	CL			60	REC =24"	PP=2.00 tsf	
	with fine to medium sand lenses.				65	6+6+7 N =13 REC =18"	PP=1.50 tsf	
67.0	FAT CLAY, trace fine sand, moist, light gray.	CH	51.6		70	REC =24"	w=30.7% LL=62 PL=24 PP=3.15 tsf *	
71.0	SILTY SAND, fine grained, moist, greenish gray, contains mica.	SM	47.6		75	6+8+10 N =18 REC =18"		
	dark gray, with fine shell fragments, weak HCl reaction.				80	38+50/4" N =50/4" REC =10"		
81.0	POORLY GRADED SAND, fine to medium grained, moist, gray, with fine to medium shell fragments, weak HCl reaction.	SP	37.6		85	50/3" N =50/3" REC =4"		
87.0	SILTY SAND, fine to medium grained, moist, light gray, with fine to medium shell fragments, strong HCl reaction.	SM	31.6		90	35+29+41 N =70 REC =18"		
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-306** Contract Number: 06120048 Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM						
92.0	CLAYEY SAND, fine to medium grained, moist, gray, with fine to medium shell fragments, strong HCl reaction.	SC	26.6					
	with fine to medium shell fragments, strong HCl reaction.				95	8+9+9 N =18 REC =18"		
96.0	SILTY SAND, fine and coarse grained, wet, gray, with fine shell fragments, weak HCl reaction.	SM	22.6					
	trace fine to medium shell fragments, weak HCl reaction, contains cemented sand.				100	50/4" N =50/4" REC =4"		
	with fine to coarse shell fragments, no cemented sand, moderate HCl reaction.				105	8+10+17 N =27 REC =18"		
	fine to medium grained, moist, greenish gray, with fine to coarse shell fragments, moderate HCl reaction.				110	8+14+18 N =32 REC =18"		
	gray, trace fine to medium shell fragments, weak HCl reaction.				115	10+14+19 N =33 REC =18"		
	no shell fragments, no HCl reaction.				120	5+9+12 N =21 REC =18"		
121.0	CLAYEY SAND, fine to medium grained, wet, gray, with fine to coarse shell fragments, moderate HCl reaction on shells only.	SC	-2.4			4+11+21		
	continued on next page							

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-306** Contract Number: 06120048 Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SC			125	N =32 REC =18"		
127.0	SILTY SAND, fine to medium grained, wet, light gray and white, with fine to medium shell fragments, strong HCl reaction, contains cemented sand.	SM	-8.4					
						34+50/1" N =50/1" REC =7"		
					130			
	greenish gray, trace fine to medium shell fragments, weak HCl reaction.							
						17+14+20 N =34 REC =18"		
					135			
						9+17+26 N =43 REC =18"		
					140			
	no visable shell fragments, no HCl reaction.							
						8+10+18 N =28 REC =18"		
					145			
	moist, greenish gray, trace fine to medium shell fragments, moderate HCl reaction.							
						8+9+17 N =26 REC =18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-31.4		150			

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:

1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-307** Contract Number: 06120048 Sheet: 1 of 7

Boring Contractor: UNI-TECH DRILLING
MALAGA, NEW JERSEY

Boring Foreman: J. Evans

Drilling Method: Mud Rotary

Drilling Equipment: Failing-1500 (Truck)

Schnabel Representative: K. Megginson

Dates Started: 6/14/06 **Finished:** 6/16/06

Location: Northing: 216955.27 ft
Easting: 960690.13 ft

Ground Surface Elevation: 119.3 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	6/15	---	23.5'	---	---
Start of day	6/16	---	42.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.3	Rootmat and topsoil.		119.0					
	FAT CLAY, moist, brown, trace fine to medium sand, contains root fragments, contains clayey sand and lean clay lenses.	CH				3+6+7 N =13 REC =8"		
2.0			117.3					
	CLAYEY SAND, trace gravel, fine to medium grained, moist, brown, contains clayey sand pockets.	SC				2+1+2 N =3 REC =17"		
	fine to coarse grained, light orangeish brown below 4.5 ft				5			
5.5	CLAYEY SAND, fine to coarse grained, moist, orangeish brown and light brown.	SC	113.8			4+5+6 N =11 REC =11"	w=11.6% *	
7.0	SILTY SAND, fine to medium grained, moist, brown and orangeish brown.	SM	112.3			6+7+9 N =16 REC =15"		
9.5	POORLY GRADED SAND, fine to medium grained, moist, stratified light brown and orangeish brown, trace silt.	SP	109.8		10	5+9+13 N =22 REC =12"		
12.0	SILTY SAND, fine to medium grained, moist, light brown and orangeish brown, with silt.	SM	107.3			22+32+38 N =70 REC =13"	w=7.9% LL=NP PL=NP *	
15					15			
17.0	SILTY SAND, fine to coarse grained, moist, stratified light brown and light yellowish brown.	SM	102.3			9+12+12 N =24 REC =11"		*Drilling foreman used 5.4" O.D. Drag bit from 0 to 18.5 ft. *Switched to 4-3/4" O.D. Drag bit below 18.5 ft.
20					20			
22.0	POORLY GRADED SAND WITH SILT, trace gravel, fine to coarse grained, moist, light brown.	SP-SM	97.3	▽				
24.0	SILTY SAND, fine to coarse grained, wet, light brown.	SM	95.3			7+10+13 N =23 REC =13"	w=13% *	
25					25			

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Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/16/06.
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-307** Contract Number: 06120048 Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	stratified light brown and light yellowish brown below 24.5 ft.	SM						
	light orangeish brown, fine silty gravel layer below 29.8 ft.				30	8+14+20 N =34 REC =12"		
	fine to medium grained, orangeish brown and light brown.				35	8+11+13 N =24 REC =11"	w=14.5% LL=NP PL=NP *	
	fine to coarse grained, orangeish brown, trace fine gravel.				40	7+7+7 N =14 REC =8"		
	fine to medium grained, light grayish brown and orangeish brown.						w=24.8% *	
	fine to coarse grained, gray below 44 ft .				45	3+1+2 N =3 REC =18"		
47.0	SANDY LEAN CLAY, fine to medium, wet, gray, (difficult soil to field classify - may lab classify as SC with high percentage of fines).	CL	72.3					
					50	3+3+6 N =9 REC =18"	w=25.1% *	
52.0	SANDY FAT CLAY, moist, gray and light gray, with fine sand, trace mica.	CH	67.3					
					55	3+4+4 N =8 REC =18"	w=28.1% *	

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Comments:
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3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-307** Contract Number: 06120048 Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	gray and light greenish gray, with fine to medium sand, contains clayey sand lense (1/8 inch thick) at 59.5 ft.	CH			60	4+4+6 N =10 REC =18"	w=33.1% LL=62 PL=20 *	
	trace fine to medium sand, contains sandy fat clay pockets.					4+11+16 N =27 REC =18"	w=35.5% LL=52 PL=18 *	
64.5	SILTY SAND, fine to medium grained, wet, dark gray.	SM	54.8		65			
67.0	FAT CLAY, moist, gray and light gray, with fine sand.	CH	52.3					
	light greenish gray, trace fine sand and organic matter (±1%).				70	6+9+11 N =20 REC =18"	w=34% LL=66 PL=23 *	
72.0	CLAYEY SAND, fine to medium grained, moist, gray, contains fine to medium sandy lean clay pockets, trace mica.	SC	47.3		75	4+7+11 N =18 REC =18"	w=24.9% *	
77.0	SILTY SAND, fine to medium grained, moist, dark gray, few fine to coarse shell fragments (±10%), contains moderately cemented sand, moderate HCl reaction.	SM	42.3		80	28+50/5" N =50/5" REC =11"		*Switched to 5" O.D. Tri-cone roller bit below 78.5 ft.
	wet, gray, contains black particles (1/16 inch), strong HCl reaction.				85	36+50/3" N =50/3" REC =10"	w=20.6% *	
	Silt, gray and light gray, mostly fine to coarse shell fragments (±50%).				90	16+22+31 N =53 REC =15"	w=21.5% LL=NP PL=NP *	*Switched to 4-3/4" O.D. Drag bit below 88.5 ft.
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/16/06.
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-307** Contract Number: 06120048 Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM						
	some fine to coarse shell fragments (±40%).					8+10+17 N =27 REC =18"	w=27.7% *	
94.5			24.8		95			
	LEAN CLAY, moist, gray, trace fine to medium sand, little fine to coarse shell fragments (±25%), strong HCl reaction.	CL						*Very difficult rotary advancement from 97.5 to 98.5 ft (slow advancement rate). *Switched to 5" O.D. Tri-cone roller bit below 98.5 ft.
97.5			21.8					
	CLAYEY SAND, fine to medium grained, moist, light greenish gray and light brownish gray, contains strongly cemented sand pockets, weak HCl reaction.	SC				50/5" N =50/5" REC =5"		
					100			*Very to extremely difficult rotary advancement from 98.5 to 100 ft (very strong rig chatter). *Very to extremely difficult rotary advancement from 101 to 103 ft (very strong rig chatter).
103.0			16.3					
	POORLY GRADED SAND with silt, trace shells, green	SP-SM				8+12+15 N =27 REC =18"		
					105			
						10+14+19 N =33 REC =18"	w=29.2% LL=NP PL=NP *	*Rotary advancement from 98.5 to 103 ft is extremely difficult. *Switched to 4-3/4" O.D. Drag bit below 103.5 ft.
110.0			9.3		110			
	SILTY SAND, fine to medium grained, wet, gray, trace fine to coarse shell fragments (±5%), moderate HCl reaction.	SM						
	gray and light greenish gray, trace fine to medium shell fragments (±5%), weak HCl reaction.					6+10+14 N =24 REC =18"		
					115			
	light greenish gray, trace fine to medium shell fragments (±1%), very weak HCl reaction.					4+7+14 N =21 REC =18"	w=28.9% LL=32 PL=25 *	
					120			
122.0			-2.7					
	CLAYEY SAND gray and light gray, weak HCl reaction.	SC						
						REC =14"	w=29.8%	*Osterberg
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/16/06.
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-307** Contract Number: 06120048 Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SC					LL=35 PL=19 *	sampler tube push from 123.5 to 124.7 ft .
	moist, little fine to coarse shell fragments (±25%), contains strongly cemented sand layer, strong HCl reaction.				125	50 REC =6"		*Slight to moderate difficulty in rotary advancement from 128.5 to 128.8 ft (slight rig chatter).
132.0	SILTY SAND, wet, light greenish gray, trace fine to medium shell fragments (±5%).	SM	-12.7		130			
					135	13+20+30 N =50 REC =17"	w=26% *	
	moist, greenish gray, trace fine to coarse shell fragments (±1%), weak HCl reaction.				140	10+13+20 N =33 REC =18"		
142.0	FINE TO MEDIUM SANDY ELASTIC SILT, moist, greenish gray, trace mica, weak HCl reaction.	MH	-22.7		145	9+11+18 N =29 REC =18"	w=36.8% LL=59 PL=33 *	
	fine sandy.				150	7+12+20 N =32 REC =18"	w=50.6% *	
153.5	SILTY SAND, fine to medium sandy, trace fine to medium shell fragments (±1%), very weak HCl reaction.	SM	-34.2		155	7+13+17 N =30 REC =18"	w=38.8% LL=58 PL=37 *	
	continued on next page							

Comments:

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/16/06.
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-307
Contract Number: 06120048
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
157.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, little fine to coarse shell fragments (±15%), strong HCl reaction.	SC	-37.7		160	7+18+18 N =36 REC =18"		
162.0	FINE TO MEDIUM SANDY LEAN CLAY, moist, gray and light greenish gray, trace fine to medium shell fragments (±5%), strong HCl reaction.	CL	-42.7		165	6+11+18 N =29 REC =18"		
167.0	FINE SANDY SILT, moist, gray and greenish gray, trace fine to medium shell fragments (±5%) and mica, weak HCl reaction.	ML	-47.7		170	8+12+18 N =30 REC =18"		
172.0	CLAYEY SAND, moist, dark greenish gray, trace fine sand and mica, contains indurated elastic silt pockets, weak HCl reaction.	SC	-52.7		175	7+12+14 N =26 REC =18"		
	trace fine to medium sand, mostly indurated elastic silt layers, strong HCl reaction.				180	REC =23"	w=33.5% LL=41 PL=25 PP=>4.5 tsf *	*Osterberg sampler tube push from 178.5 to 180.4 ft
183.5	SILTY SAND, very weak HCl reaction .	SM	-64.2		185	7+12+14 N =26 REC =18"		
					190	6+9+15 N =24 REC =18"	w=43% LL=61 PL=39	

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TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:
1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/16/06.
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering	TEST BORING LOG	Project: Calvert Cliffs Nuclear Power Plant Calvert County, Maryland	Boring Number: **B-307** Contract Number: 06120048 Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
		SM					*	
193.5	Sandy ELASTIC SILT, trace fine sand, weak HCl reaction.	MH	-74.2		195	7+11+14 N =25 REC =18"		
	very weak HCl reaction.				200	7+11+14 N =25 REC =18"	w=68.7% LL=137 PL=61 *	**Resumed grouting at 7:45 AM on 6/16/06.
201.5	BOTTOM OF BORING @ 201.5 FT.		-82.2					

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/6/08

Comments:

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2. Downhole geophysical logging performed on 6/16/06.
3. * = See Appendix I for additional lab testing data.

Schnabel Engineering

TEST BORING LOG

Project: Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland

Boring Number: B-308
Contract Number: 06120048
Sheet: 1 of 5

Boring Contractor: UNI-TECH DRILLING
MALAGA, NEW JERSEY

Boring Foreman: J. Evans

Drilling Method: Mud Rotary

Drilling Equipment: FAILING-1500

Schnabel Representative: R. Vinzant

Dates Started: 5/3/06 **Finished:** 5/4/06

Location: Northing: 216906.69 ft
Easting: 960771.28 ft

Ground Surface Elevation: 107.1 (feet)

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered	5/3	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
0.8	SILTY SAND, fine to medium grained, moist, dark brown, with organic matter, trace fine gravel.	SM	106.4			3+3+3 N =6 REC =18"		
	POORLY GRADED SAND, fine to medium grained, moist, light brown, trace silt.	SP				2+2+4 N =6 REC =14"		
	grayish brown.				5	2+6+5 N =11 REC =16"		
	orangeish brown.					4+4+6 N =10 REC =16"		
	medium to coarse grained, orangeish brown.				10	6+6+9 N =15 REC =16"		
15.0	SILTY SAND, fine to medium grained, moist, orangeish brown, contains mica.	SM	92.1		15	10+13+14 N =27 REC =14"		
	medium to coarse grained, dark orange.			▽	20	7+10+12 N =22 REC =13"		
	continued on next page				25	12+12+14 N =26 REC =12"		

Comments:
1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. * = See Appendix I for additional lab testing data.