

**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:*

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*Submitted To:*

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

April 13, 2007

Mr. Frank Lopez, Jr., P.E.  
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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

A handwritten signature in black ink, appearing to read 'B.K. Banks', written in a cursive style.

Brian K. Banks, P.G.  
Associate

BB/PP/AM:bb/pp/am

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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 advanced 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- $\frac{1}{4}$  inch internal diameter (1- $\frac{3}{4}$  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 radius, 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**

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

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

## **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  $\frac{1}{3}$  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**

<b>Location</b>	<b>Bottom Depth of Layer (ft)</b>	<b>Resistivity (Ohm-feet)</b>
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**

<b>Location</b>	<b>Bottom Depth of Layer (ft)</b>	<b>Resistivity (Ohm-feet)</b>
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**

**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
<b>SPT Hammer Energy Study</b>	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
	<b>Downhole Geophysics</b>	Caliper Calibration Plate	Robertson Geo Logging	N/A	201
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

**Table A1**  
**Field Equipment List**  
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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

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**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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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-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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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-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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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				
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

**Table A2**  
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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				
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**

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

Subcontractor Name	Contact Information	Services Provided
<b>ABM Construction</b>	Mr. Al Muirhead P.O. Box 402 Lusby, MD 20657 (410) 326-4277	Test pit excavation, and path construction and grading for boring access.
<b>A. Morton Thomas and Associates, Inc.</b>	Mr. Ken Williams 12750 Twinbrook Parkway Rockville, MD 20852-1700 (301) 881-2545	Underground utility location.
<b>Collinson, Oliff &amp; Associates, Inc.</b>	Mr. Richard Lewis P.O. Box 2209 Prince Frederick, MD 20678 (301)-855-1599	Test location surveying.
<b>Connelly and Associates, Inc.</b>	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.
<b>Enviro-Chem Laboratories, Inc.</b>	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 .
<b>GeoTesting Express</b>	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).
<b>GEOVision, Inc.</b>	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)

## Subcontractors

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

Subcontractor Name	Contact Information	Services Provided
<b>GRL Engineers, Inc.</b>	Mr. Wondem Toferra 4535 Renaissance Parkway Cleveland, OH 44128 (216) 831-6131	SPT hammer energy testing.
<b>Mark's Lawn Service, Inc.</b>	Mr. Mark Cox 50 Mulberry Lane Huntington, MD 20639 (410) 257-3885	Silt fence construction.
<b>Uni-Tech Drilling Co., Inc.</b>	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**

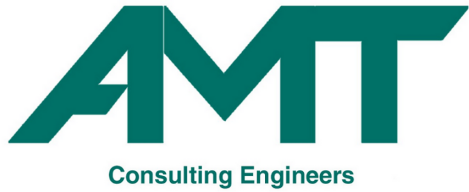
- Underground Utility Location Report

**Schnabel Project No. 06120048**  
**Appendix B: Underground Utilities**

**UNDERGROUND UTILITY LOCATION REPORT**

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





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 their 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

A handwritten signature in black ink that reads "Kenneth Williams". The signature is written in a cursive style with a long horizontal flourish at the end.

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		= Interval Sampled by SPT
w	= Moisture Content		= Tube Sample Pushed
LL	= Liquid Limit		
WOW	= Ground Water Observation Well		
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**





**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
<b>Encountered</b>	5/25	---	10.5'	---	---
<b>Start of day</b>	5/26	---	25.0'	---	---
<b>Start of day</b>	5/30	---	41.0'	---	---
<b>Start of day</b>	6/1	---	10.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
2.0	CLAYEY SAND, fine to medium grained, contains root fragments, moist, brown. Majority of root system extends about 0.7 ft below ground surface.	SC	92.5			3+3+4 N = 7 REC = 9"	w=6.6% *	
	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"		
	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% *	
14.5	light orangeish brown.		80.0		15	8+6+8 N = 14 REC = 10"		
17.0	CLAYEY SAND, fine to medium grained, moist, brown	SC						
	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	77.5			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	SANDY LEAN CLAY, fine to medium, trace mica, moist, gray.	CL	72.5			3+3+5 N = 8 REC = 18"		
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/6/06.
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- Ground water observation well OW-301 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-301**  
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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
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		CL						
	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 <i>continued on next page</i>	SP	37.5					

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	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.
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% *	Sampler refusal at 78.9 ft. 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.
	<i>continued on next page</i>							

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, wet, gray, trace mica, very weak HCl reaction.	SM	2.5			6+10+12 N =22 REC =16"	w=25.8% *	Osterberg sampler tube pushed from 98.5 to 99.8 ft
	moist, gray, contains fine to medium moderately cemented sand pockets, moderate HCl reaction.					REC =6"		
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			14+28+24 N =52 REC =18"	w=17.8% *	
104.5	SILTY SAND, fine to medium grained, wet, light gray, some fine to coarse shell fragments (±40%), strong HCl reaction.	SM	-10.0			22+29+30 N =59 REC =15"	w=23.2% *	
	trace fine to medium shell fragments (±5%). contains fine to medium weakly cemented sand pockets below 109.7 ft							
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			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			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		

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*continued on next page*

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH				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			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			5+8+12 N =20 REC =17"		
	fine to medium grained, moist, gray, few fine to coarse shell fragments (±10%)					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			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			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			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					
	<i>continued on next page</i>							

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

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with fine to medium sand, trace organic matter ( $\pm 1\%$ ).	MH			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 ( $\pm 10\%$ ), strong HCl reaction.	SC	-107.5					
204.0	SILTY SAND, fine to medium grained, moist, dark gray, few fine to coarse shell fragments ( $\pm 10\%$ ), 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 ( $\pm 5\%$ ), 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% *	
	<i>continued on next page</i>							

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
228.5	greenish gray and gray, trace fine to medium circular, orangeish brown organic matter ( $\pm 1\%$ ).	CL	-134.0		225	5+8+18 N =26 REC =18"	w=54% *	
	CLAYEY SAND, greenish gray, weak HCl reaction.	SC			230	7+10+17 N =27 REC =18"		
238.5	with fine sand.		-144.0		235	7+9+16 N =25 REC =18"	w=56.8% *	Resumed drilling at 7:05 AM on 6/1/06.
	LEAN CLAY, moist, greenish gray, with fine sand, trace mica, very weak HCl reaction.	CL			240	8+11+17 N =28 REC =18"		
					245	8+13+19 N =32 REC =18"		
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 *	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.

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
257.0	LEAN CLAY, moist, greenish gray, with fine sand, trace mica, and orangeish brown organic matter (±1%), very weak HCl reaction.  trace fine sand, moderate HCl reaction.	MH	-162.5						
		CL							
					260	9+12+23 N =35 REC =18"			
					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.  trace orangeish brown organic matter (±1%), weak HCl reaction.  trace fine sand and mica.	MH	-172.5						
						270	10+12+23 N =35 REC =18"		
						275	7+10+19 N =29 REC =18"	w=102% LL=199 PL=119 *	
					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. <i>continued on next page</i>	MH	-192.5						
						8+11+21			

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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		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"		
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	SC	-207.5		305	21+17+23 N =40 REC =18"	w=24.8% *	Moderate to difficult rotary advancement from 301.5 to 303 ft (moderate rig chatter).
	trace organic matter (±1%), very weak HCl reaction below 304.5 ft							
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
	<i>continued on next page</i>							

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
324.7	LEAN CLAY, wet, dark gray, with fine to coarse sand, trace mica, strong HCl reaction.	CL	-230.2		325	11+13+22 N=35 REC=18"	w=27.8% *	advancement from 319 to 320.5 ft (strong rig chatter).
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 advancement below 328.5 ft.
	light blueish gray and greenish gray, contains fine to coarse sandy fat clay pockets, weak HCl reaction.				335	9+14+29 N=43 REC=18"	w=31.8% *	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		340	18+30+40 N=70 REC=18"		Below 338.5 ft, drillers describe rotary advancement moderately slow due to dense/stiff soils.
	fine to coarse sandy, trace shell fragment, strong cementation.				345	20+50 N=50 REC=12"	w=22.9% LL=47 PL=24 *	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. <i>continued on next page</i>				355	14+18+28 N=46 REC=13"	w=36.1% LL=58 PL=22	Slight difficulty in rotary advancement

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
	fine to coarse sandy, trace coarse gravel, and mica, weak HCl reaction.	SC				16+27+50 N = 77 REC = 15"	*	from 355 to 356 ft (slight wobble in kelly bar rotation).
362.0	SILTY SAND, fine to medium grained, moist, dark blackish gray and brownish gray, trace mica, weak HCl reaction, glauconitic.	SM	-267.5			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.
						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			15+28+42 N = 70 REC = 18"	w=30.3% LL=61 PL=26 *	
						24+50 N = 50 REC = 12"		
377.0	CLAYEY SAND, fine to medium grained, wet, dark blackish gray, trace mica, very weak HCl reaction, glauconitic.	SC	-282.5			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.
	dark blackish gray and dark brownish gray.							
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
	fine to coarse grained, dark blackish gray.	SC			390	16+28+50 N =78 REC =12"	w=32.7% *	
					395	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.



**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
<b>Encountered</b>	5/30	---	40.0'	---	---
<b>Start of day</b>	5/31	---	38.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.	SP-SM	75.9			1+2+2 N=4 REC=11"		
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown, trace root fragments.					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			2+2+4 N=6 REC=18"		color change in mud tub from orangeish brown to gray
					15	3+3+5 N=8 REC=18"		
					20	4+4+7 N=11 REC=18"		
					25			

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		CH						
32.0	SILTY SAND, fine to medium grained, moist, gray and greenish gray.	SM	44.4			6+8+10 N =18 REC =18"		water loss from mud tub
	greenish gray and white, trace fine to coarse shell fragments, trace cobbles, 20-30%, HCl reaction moderate.					6+10+14 N =24 REC =17"		
						24+50/4" N =50/4" REC =7"		
						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			26+30+30 N =60 REC =15"		
	greenish gray and white, with fine to coarse shell fragments, 10-20%, HCl reaction moderate.					3+50/5" N =50/5" REC =9"		Rig chatter
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		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"		

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

*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.





**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		TESTS	REMARKS
					DEPTH	DATA		
		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"		
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"		Resumed drilling on 5/31/06 @ 7:30am
					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		
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
127.0	SANDY ELASTIC SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-50.6		125	N = 19 REC = 18"	PP=>4.5 tsf	
		MH			130	REC = 12"		
					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"		
<i>continued on next page</i>								

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
		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"		
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		SM						
						5+8+16 N =24 REC =18"		
						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.



**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
<b>Encountered</b>	5/9	---	15.0'	---	---
<b>Start of Day</b>	5/10	---	20.0'	---	---

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



**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		TESTS	REMARKS
					DEPTH	DATA		
		CL						
						REC =24"	PP=4.25 tsf	
35.0	trace sand. CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	52.4			7+7+10 N =17 REC =18"		
41.0	SILTY SAND, fine to medium grained, moist, dark brown, contains mica, and organic matter.	SM	46.4			REC =24"	PP=4.50 tsf	
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			10+14+23 N =37 REC =12"		
51.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, 50% coarse shell fragments, weak HCl reaction.	SC	36.4			50/5" N =50/5" REC =5"		
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			50/3" N =50/3" REC =4"		
<i>continued on next page</i>								

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
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-SM	26.4		60	38+35+19 N =54 REC =15"		
65.0		SP-SC			65	5+9+25 N =34 REC =18"		
73.0	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"		
82.0	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"		
						85	6+7+9 N =16 REC =18"	
	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		90	3+5+8 N =13 REC =18"		
<i>continued on next page</i>								

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
91.0	SILTY SAND, fine to medium grained, moist, light gray, 40% shell fragments, and cemented sand pockets, moderate HCl reaction.	SM	-3.6					
	greenish gray, 15% shell fragments.							
	50% shell fragments, layers of shells.							
	3% shell fragments.							
	25% shell fragments.							
	<i>continued on next page</i>							

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.





**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		TESTS	REMARKS
					DEPTH	DATA		
		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"		
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		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"		
	<i>continued on next page</i>							

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.



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

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.



**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
<b>Encountered</b>	5/26	---	Dry	0.0'	---
<b>Start of day</b>	5/30	---	10.0'	0.0'	---
<b>Start of day</b>	5/31	---	12.0'	0.0'	---
<b>Start of day</b>	6/1	---	5.0'	0.0'	---

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

continued on next page

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to coarse grained, moist, mottled brown and orange, with shell fragments, 25-30% brown/red shell frag.	CL	41.0				*	
29.4		SM	38.6		30	6+15+45 N =60 REC =18"	w=32.3% *	
32.0	CLAYEY SAND, fine to medium grained, moist, dark gray, contains cemented sand, slightly cemented.	SC	36.0					
37.0	POORLY GRADED SAND, fine to medium grained, moist, dark gray, contains cemented sand.	SP	31.0					
	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.  wet, green and white, 60-70% shell frag.	SP-SM	31.0		35	50/5" N =50/5" REC =5"	w=20.1% *	
				40	28+50/5" N =50/5" REC =11"	w=19.3% *		
				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					
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					
						50/2" N =50/2" REC =3"	w=13.5% *	55'- Harder drilling

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

*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.



**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		TESTS	REMARKS
					DEPTH	DATA		
	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 *	
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		SM						
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		95	5+12+15 N=27 REC=18"	w=33% *	
					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%	
	<i>continued on next page</i>							

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
		ML				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			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			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'- Start of day, 5/31/06
140.0	FAT CLAY, trace sand, dark green	CH	-72.0					
145.0	SANDY ELASTIC SILT, moist, oliveish green, with sand, moderate HCl reaction.	MH	-77.0			9+9+15 N =24 REC =18"	w=70% LL=134 PL=49 *	
						8+8+13 N =21 REC =18"	w=72.1% *	
	trace fine to medium shell fragments, moderate HCl reaction, 0-3% shell frag.					9+10+16 N =26 REC =18"	w=70.9% *	
	<i>continued on next page</i>							

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

**Comments:**

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





**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		TESTS	REMARKS
					DEPTH	DATA		
	weak HCl reaction.	MH				8+10+12 N =22 REC =18"	w=55.1% LL=92 PL=53 *	
						8+10+10 N =20 REC =18"	w=47.2% *	
						8+11+14 N =25 REC =18"	w=62.9% *	
						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			12+14+23 N =37 REC =18"	w=27.5% *	
						8+15+15 N =30 REC =18"	w=39.2% *	
						7+12+16 N =28 REC =18"	w=42.8% *	
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
193.0	SANDY LEAN CLAY, fine to medium, green, moist	CL	-125.0			9+10+13 N =23 REC =18"	w=51.1% *	
	with sand, small 1/4" pockets of gray sand					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.



**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
<b>Encountered</b>	7/18	---	37.5'	---	---
<b>Start of Day</b>	7/19	---	35.0'	---	---
<b>Start of Day</b>	7/20	---	24.0'	---	---

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

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

continued on next page

**Comments:**

- Boring backfilled with cement/bentonite grout through
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-305**  
Contract Number: 06120048  
Sheet: 2 of 5

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

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-305**  
Contract Number: 06120048  
Sheet: 3 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	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		85	9+15+9 N =24 REC =18"		Rig chatter
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
	<i>continued on next page</i>							

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
	contains fine to coarse shell fragments, 10-20%, HCl reaction moderate	SM						
95.0	SANDY SILT, wet, greenish gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.	ML	-23.0		95	6+9+14 N =23 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			7+9+12 N =21 REC =18"		
						6+7+10 N =17 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		100	4+7+11 N =18 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	8+10+17 N =27 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+13+13 N =26 REC =18"		
						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"		
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		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.



**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
<b>Encountered</b>	5/5	---	18.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	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"		
	light gray and black.			5		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"		
	wet, no black, trace fine gravel.			▽		5+6+6 N=12 REC=13"		
	light orangeish gray and black.					5+7+8 N=15 REC=12"		
	<i>continued on next page</i>							

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.





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

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
	greenish gray.	CL				REC =24"	PP=2.00 tsf	
	with fine to medium sand lenses.					6+6+7 N =13 REC =18"	PP=1.50 tsf	
67.0	FAT CLAY, trace fine sand, moist, light gray.	CH	51.6			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			6+8+10 N =18 REC =18"		
	dark gray, with fine shell fragments, weak HCl reaction.					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			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			35+29+41 N =70 REC =18"		
	<i>continued on next page</i>							

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.



**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		TESTS	REMARKS	
					DEPTH	DATA			
92.0	CLAYEY SAND, fine to medium grained, moist, gray, with fine to medium shell fragments, strong HCl reaction. with fine to medium shell fragments, strong HCl reaction.	SM	26.6						
		SC							
96.0	SILTY SAND, fine and coarse grained, wet, gray, with fine shell fragments, weak HCl reaction.  trace fine to medium shell fragments, weak HCl reaction, contains cemented sand.  with fine to coarse shell fragments, no cemented sand, moderate HCl reaction.  fine to medium grained, moist, greenish gray, with fine to coarse shell fragments, moderate HCl reaction.  gray, trace fine to medium shell fragments, weak HCl reaction.  no shell fragments, no HCl reaction.	SM	22.6						
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						
	<i>continued on next page</i>								

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.



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

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.



**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
<b>Encountered</b>	6/15	---	23.5'	---	---
<b>Start of day</b>	6/16	---	42.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Rootmat and topsoil.	CH	119.0			3+6+7 N =13 REC =8"		
2.0	FAT CLAY, moist, brown, trace fine to medium sand, contains root fragments, contains clayey sand and lean clay lenses.	SC	117.3			2+1+2 N =3 REC =17"		
5.5	CLAYEY SAND, trace gravel, fine to medium grained, moist, brown, contains clayey sand pockets. fine to coarse grained, light orangeish brown below 4.5 ft	SC	113.8		5	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		15	22+32+38 N =70 REC =13"	w=7.9% LL=NP PL=NP *	
17.0	SILTY SAND, fine to coarse grained, moist, stratified light brown and light yellowish brown.	SM	102.3		20	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.
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. <i>continued on next page</i>	SM	95.3		25	7+10+13 N =23 REC =13"	w=13% *	

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
	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. fine to coarse grained, gray below 44 ft.				45	3+1+2 N =3 REC =18"	w=24.8% *	
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% *	
	<i>continued on next page</i>							

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
	gray and light greenish gray, with fine to medium sand, contains clayey sand lense (1/8 inch thick) at 59.5 ft.	CH				4+4+6 N=10 REC=18"	w=33.1% LL=62 PL=20 *	
64.5	trace fine to medium sand, contains sandy fat clay pockets. SILTY SAND, fine to medium grained, wet, dark gray.	SM	54.8			4+11+16 N=27 REC=18"	w=35.5% LL=52 PL=18 *	
67.0	FAT CLAY, moist, gray and light gray, with fine sand. light greenish gray, trace fine sand and organic matter (±1%).	CH	52.3			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			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. wet, gray, contains black particles (1/16 inch), strong HCl reaction.	SM	42.3			28+50/5" N=50/5" REC=11"		*Switched to 5" O.D. Tri-cone roller bit below 78.5 ft.
						36+50/3" N=50/3" REC=10"	w=20.6% *	
	Silt, gray and light gray, mostly fine to coarse shell fragments (±50%).					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.
<i>continued on next page</i>								

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

**Comments:**

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



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

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

**Comments:**

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





**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		TESTS	REMARKS
					DEPTH	DATA		
		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.					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			13+20+30 N =50 REC =17"	w=26% *	
	moist, greenish gray, trace fine to coarse shell fragments (±1%), weak HCl reaction.					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			9+11+18 N =29 REC =18"	w=36.8% LL=59 PL=33 *	
	fine sandy.					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			7+13+17 N =30 REC =18"	w=38.8% LL=58 PL=37 *	
<i>continued on next page</i>								

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

**Comments:**

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



**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		TESTS	REMARKS
					DEPTH	DATA		
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	

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

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.



**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		TESTS	REMARKS
					DEPTH	DATA		
		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:**

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.



**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
<b>Encountered</b>	5/3	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
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			10+13+14 N=27 REC=14"			
	medium to coarse grained, dark orange.					20	7+10+12 N=22 REC=13"		
						25	12+12+14 N=26 REC=12"		
	<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-308**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	wet, orange, with organic matter, trace fine gravel.	SM						
30.0	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	77.1		30	2+2+3 N =5 REC =14"		
35.0	SANDY LEAN CLAY, fine, moist, dark gray.	CL	72.1		35	2+2+3 N =5 REC =18"		
					40	2+3+2 N =5 REC =18"		
					45	REC =24"	PP=3.00 tsf	
					50	4+5+6 N =11 REC =18"		
					55	REC =16"	PP=3.25 tsf	
	contains mica.							
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-308**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
60.0	SILTY SAND, fine to medium grained, moist, dark gray, with cemented sand.	CL	47.1		60	5+7+7 N =14 REC =18"		
		SM						REC =0"
65.0	CLAYEY SAND, fine grained, moist, gray, with fine to coarse shell fragments, moderate HCl reaction.	SC	42.1		65			
73.5	SILTY SAND, fine to medium grained, moist, dark gray, with cemented sand.  gray, with fine to coarse shell fragments, strong HCl reaction.	SM	33.6		70	17+21+50/5" N =71/11" REC =16"		
					75	50/4" N =50/4" REC =1"		
					80	50/4" N =50/4" REC =1"		
83.5	CLAYEY SAND, fine to medium grained, moist, gray, with fine to coarse shell fragments, moderate HCl reaction.	SC	23.6		85	50/2" N =50/2" REC =0"		
					90	50/5" N =50/5" REC =1"		

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

*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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	strong HCl reaction.	SM						
128.5	CLAYEY SAND, fine to medium grained, moist, trace fine shell fragments, weak HCl reaction	SC	-21.4			9+10+21 N =31 REC =18"		
133.5	SANDY SILT, fine to medium grained, moist, greenish gray, trace fine to medium shell fragments, weak HCl reaction where shell fragments are present	ML	-26.4			9+13+22 N =35 REC =18"		
138.5	SILTY SAND, fine to medium grained, moist, greenish gray, few fine to coarse shell fragments, strong HCl reaction.	SM	-31.4			10+10+15 N =25 REC =18"		
						7+10+16 N =26 REC =18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-42.9			10+17+30 N =47 REC =18"		

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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-309**  
**Contract Number:** 06120048  
**Sheet:** 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/11/06 **Finished:** 5/12/06  
**Location:** Northing: 216949.24 ft  
Easting: 960890.7 ft  
**Ground Surface Elevation:** 100.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Start of day</b>	5/12	---	12.5'	14.0'	---
<b>Start of day</b>	5/15	---	21.5'	14.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL.	FILL	99.7			2+2+2 N=4 REC=17"		Drill hollow stem auger Fill, water loss and hole collapse, drillers cased auger to 14' to keep hole open
2.0	Clayey Sand FILL, fine to medium grained, moist, brownish orange.	FILL	98.1			WOH/18" N=WOH/18" REC=11"		
	Poorly graded sand FILL, fine to coarse grained, moist, brownish orange, contains wood fragments, with clay, trace silt.	FILL			5	1+WOR +WOR N=WOR REC=4"		
7.0	Silty Sand FILL, fine to coarse grained, moist, grayish brown, contains wood fragments.	FILL	93.1			WOH/18" N=WOH/18" REC=18"		
11.0	wet, brown, trace gravel.	FILL	89.1			WOH+2+2 N=4 REC=18"		
12.0	SILTY SAND, fine to coarse grained, moist, brown, trace gravel.	SM	88.1			2+2+3 N=5 REC=13"		
	SANDY LEAN CLAY, fine to coarse, moist, brown.	CL			15	7+10+11 N=21 REC=17"	PP=0.25 tsf	
17.0	POORLY GRADED SAND WITH SILT AND GRAVEL, fine to coarse grained, moist, orangeish brown.	SP-SM	83.1			9+14+8 N=22 REC=14"		
24.8	orange.		75.3		25			
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-309**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, moist, orange.	SM	73.1					
	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC					1+3+2 N=5 REC=18"	
32.0	SANDY LEAN CLAY, fine, moist, dark gray.	CL	68.1					
							REC=23"	
	trace sand.							PP=2.50 tsf
	gray.							PP=3.75 tsf
52.0	CLAYEY SAND, fine to medium grained, moist, greenish gray.	SC	48.1					
							REC=23"	
57.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, grayish <i>continued on next page</i>	SP-SC	43.1					
							3+4+7 N=11 REC=18"	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-309**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	green, with fine to coarse shell fragments (15-20%), HCl+, contains cemented sand.	SP-SC				31+50/3" N =50/3" REC =10"		
62.0	CLAYEY SAND, fine to medium grained, moist, grayish green, 1/4" layers of clay and sand.	SC	38.1			6+12+16 N =28 REC =18"		
67.0	POORLY GRADED SAND, fine to medium grained, moist, grayish green, trace silt, with fine to medium shell fragments (0-10%).	SP	33.1			50/3" N =50/3" REC =4"		
72.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green and white, with fine to coarse shell fragments (30-40%), HCl+.	SP-SM	28.1			23+19+14 N =33 REC =16"		
	greenish gray, with fine to coarse shell fragments (10-20%).					50/4" N =50/4" REC =2"		
	with fine to coarse shell fragments (15-30%).					8+17+22 N =39 REC =18"		
						9+10+9 N =19 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-309**  
Contract Number: 06120048  
Sheet: 4 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium shell fragments (<1%).	SP-SM			95	6+7+8 N =15 REC =18"		
					100	3+3+4 N =7 REC =18"		
	grayish green, with fine to coarse shell fragments (15-30%).				105	5+6+11 N =17 REC =18"		
107.0	SILTY SAND, fine to medium grained, moist, grayish green, with fine to coarse shell fragments (30-40%).	SM	-6.9		110	23+10+26 N =36 REC =18"		
112.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish green, with fine to coarse shell fragments (10-15%), with silt, HCl+.	SP-SM	-11.9		115	9+9+14 N =23 REC =18"		
					120	5+6+7 N =13 REC =18"		
122.0	POORLY GRADED SAND, fine to medium grained, moist, green, trace silt.	SP	-21.9			8+8+10		
	<i>continued on next page</i>							

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-309**  
Contract Number: 06120048  
Sheet: 5 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP				N = 18 REC = 18"		
127.0	SILTY SAND, fine to medium grained, moist, green, trace fine to medium shell fragments (0-5%).	SM	-26.9			7+7+9 N = 16 REC = 18"		
132.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, trace fine to medium shell fragments (0-5%), HCl+.	SP-SM	-31.9			5+7+7 N = 14 REC = 18"		
	with fine to coarse shell fragments (10-25%).					4+6+8 N = 14 REC = 18"		
						5+6+9 N = 15 REC = 18"		
147.0	SILTY SAND, fine to medium grained, moist, green, trace fine to medium shell fragments (0-10%).	SM	-46.9			5+7+8 N = 15 REC = 18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-49.9					

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-310**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 6/15/06 **Finished:** 6/15/06  
**Location:** Northing: 217081.4 ft  
Easting: 960616.6 ft  
**Ground Surface Elevation:** 91.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/15	---	48.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		91.1					
2.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, orangeish brown, trace gravel.	SP-SC	89.6			1+1+1 N=2 REC=6"		
	CLAYEY SAND, fine to medium grained, moist, orangeish brown, trace root fragments, trace gravel, moderate cementation.	SC				3+4+4 N=8 REC=18"		
	yellowish brown				5	4+3+5 N=8 REC=16"		
7.0	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, yellowish brown, trace gravel.	SP-SC	84.6			4+6+6 N=12 REC=15"		
10.0	SILTY SAND, fine to medium grained, moist, yellowish brown and orangeish brown.	SM	81.6		10	3+6+6 N=12 REC=5"		start of mud rotary drilling
13.0	SANDY LEAN CLAY, wet, yellowish brown and gray.	CL	78.6		15	1+1+2 N=3 REC=18"		
					20	2+2+2 N=4 REC=18"		color change in mud tub from orangeish brown to gray
					25	2+2+3 N=5 REC=18"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-310**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CL						
32.0	ELASTIC SILT, moist, gray, trace sand.	MH	59.6		30	2+4+5 N =9 REC =18"		
					35	3+6+7 N =13 REC =17"		
37.0	CLAYEY SAND, fine to medium grained, moist, gray.	SC	54.6		40	4+5+7 N =12 REC =18"		Harder drilling
	strong cementation				45	11+21+50/5" N =71/11" REC =16"		Harder drilling
47.0	SILTY SAND, fine to coarse grained, wet, gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SM	44.6		50	50/5" N =50/5" REC =5"		
					55	50/4" N =50/4" REC =4"		Rig chatter
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-310**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	gray and white, with fine to coarse shell fragments, 60-70%, HCl reaction strong	SM	29.6		60	10+13+9 N =22 REC =18"		
	CLAYEY SILT, moist, greenish gray.	ML			65	4+50 N =50 REC =12"		Harder drilling Rig chatter
72.0	No recovery.		19.6		70	50/2" N =50/2" REC =0"		Harder drilling/rig chatter
	CLAYEY SAND, fine to medium grained, wet, greenish gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.	SC			75	5+7+10 N =17 REC =18"		
					80	REC =15"		
	trace fine to medium shell fragments, 2-5%, HCl reaction weak.				85	5+6+8 N =14 REC =18"		
					90	4+4+8 N =12 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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-310**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC						
	white and gray, with fine to coarse shell fragments, 60-70%, strong cementation, HCl reaction strong.					50/5" N =50/5" REC =4"		Rig chatter
					95			Rig chatter
	contains fine to medium shell fragments, 10-20%, HCl reaction moderate.					27+27+26 N =53 REC =18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		-8.4		100			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-311**  
Contract Number: 06120048  
Sheet: 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** D. Bender

**Drilling Method:** Mud Rotary

**Drilling Equipment:** CME-550X (ATV)

**Schnabel Representative:** K. Bell

**Dates Started:** 5/15/06 **Finished:** 5/16/06

**Location:** Northing: 217268.61 ft  
Easting: 960771.76 ft

**Ground Surface Elevation:** 58.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/15	---	23.5'	---	---
<b>Start of day</b>	5/16	---	10.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.8	ROOTMAT AND TOPSOIL.							
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace root fragments.	SP-SM	57.6			1+1+1 N=2 REC=14"		
	yellowish brown and brown, with wood fragments.					4+3+2 N=5 REC=8"		
					5	1+3+5 N=8 REC=0"		
7.0	FAT CLAY with sand, moist, orangeish brown and gray, trace root fragments.	CH	51.4			2+4+5 N=9 REC=12"		
					10	1+3+5 N=8 REC=17"		
12.0	SILTY SAND, fine to medium grained, moist, gray.	SM	46.4			6+9+10 N=19 REC=20"		
					15	4+5+9 N=14 REC=20"		
	gray and greenish gray.				20	10+15+17 N=32 REC=15"		
22.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and greenish gray.	SP-SM	36.4					Harder drilling
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/16/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-311**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium shell fragments, HCl reaction weak.	SP-SM				30	23+17+15 N =32 REC =14"	
32.0	SILTY SAND, fine to medium grained, wet, gray and white, with fine to coarse shell fragments, HCl reaction strong.	SM	26.4			35	11+11+18 N =29 REC =12"	
37.0	SANDY LEAN CLAY, moist, greenish gray, trace fine to coarse shell fragments, HCl reaction moderate.	CL	21.4			40	28+22+50/3" N =72/9" REC =21"	
42.0	CLAYEY SAND, fine to coarse grained, wet, oliveish gray and gray, trace fine to coarse shell fragments, HCl reaction moderate, weak cementation.	SC	16.4			45	11+19+17 N =36 REC =17"	Harder drilling
47.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, trace fine to coarse shell fragments, HCl reaction weak.	SM	11.4			50	4+4+6 N =10 REC =14"	
						55	4+4+5 N =9 REC =14"	
<i>continued on next page</i>								

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-311**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	greenish gray.	SM			60	2+3+5 N=8 REC=17"		
					65	4+4+7 N=11 REC=18"		
67.0	CLAYEY SAND, fine to medium grained, wet, light gray and white, with fine to coarse shell fragments, HCl reaction strong.	SC	-8.6		70	50/3" N=50/3" REC=2"		
72.0	SILTY SAND, fine to medium grained, wet, greenish gray, trace fine to coarse shell fragments, HCl reaction moderate.	SM	-13.6		75	18+17+23 N=40 REC=17"		
	HCl reaction weak.				80	8+12+15 N=27 REC=18"		
	greenish gray and white, HCl reaction moderate.				85	9+8+10 N=18 REC=18"		
87.0	SANDY ELASTIC SILT, wet, gray and greenish gray.	MH	-28.6		90	6+7+10 N=17 REC=18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-311**  
Contract Number: 06120048  
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DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium shell fragments (5%), HCl reaction weak.	MH			95	6+8+12 N =20 REC =18"		
	greenish gray				100	7+14+12 N =26 REC =18"		
102.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, and fine to coarse shell fragments (35-45%), HCl reaction strong.	SM	-43.6		105	11+12+31 N =43 REC =20"		
107.0	LEAN CLAY with sand, wet, greenish gray and white, trace fine to medium shell fragments (2-5%), HCl reaction moderate.	CL	-48.6		110	7+7+10 N =17 REC =19"		
	trace fine to medium shell fragment (5-10%).				115	5+7+10 N =17 REC =19"		
	trace fine to medium shell fragments <i>continued on next page</i>					5+7+9		Resumed drilling 5/16/06 @ 7:15am

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-311**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	(2-5%), HCl reaction weak.	CL				N = 16 REC = 18"		
	greenish gray.					5+7+9 N = 16 REC = 20"		
132.0	FAT CLAY with sand, moist, greenish gray and gray.	CH	-73.6			7+9+12 N = 21 REC = 21"		Softer drilling
	trace fine to medium shell fragments (<5%), HCl reaction weak.					7+9+12 N = 21 REC = 19"		
	trace fine to medium shell fragments (5%).					6+7+11 N = 18 REC = 20"		
	trace fine to medium shell fragments (<5%).					9+10+13 N = 23 REC = 20"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-91.6					

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-312**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/18/06 **Finished:** 5/18/06  
**Location:** Northing: 217293 ft  
Easting: 960740 ft  
**Ground Surface Elevation:** 55.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/18	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		54.8					
2.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace root fragments.  FAT CLAY, moist, yellowish brown and orangeish brown, trace sand and root fragments.  orangeish brown and gray, trace wood fragments.	SP-SM	53.3			woh+1+2 N=3 REC=15"		
		CH				2+3+4 N=7 REC=11"		
					5	3+4+5 N=9 REC=0"		
						2+3+3 N=6 REC=13"		
			10			REC=21"	PP=>4.5 tsf	
12.0	ELASTIC SILT with sand, moist, dark gray.	MH	43.3			3+4+8 N=12 REC=18"		Color change in tub from yellow brown to gray
17.0	SILTY SAND, fine to medium grained, moist, dark gray and black, organic odor, weakly cemented with no HCl reaction.	SM	38.3			38+50/5" N=50/5" REC=10"		Color change in tub from gray to brown
22.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.	SP-SM	33.3			50 REC=10"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-312**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium shell fragments (5-10%), HCl reaction weak.	SP-SM				50/5" N =50/5" REC =5"		
32.0	ELASTIC SILT with sand, wet, gray, trace organic matter and fine to medium shell fragments (2-5%), HCl reaction weak.	MH	23.3			4+4+6 N =10 REC =15"		Rig chatter
						REC =0"		Rig chatter
42.0	SILTY SAND, fine to coarse grained, wet, greenish gray and gray, trace fine to coarse shell fragments (15-20%), HCl reaction moderate.	SM	13.3			4+6+12 N =18 REC =18"		
	greenish gray and white.					6+8+14 N =22 REC =17"		
	greenish gray, trace fine to coarse shell fragments (10-15%).					6+5+8 N =13 REC =17"		
57.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, trace fine to <i>continued on next page</i>	SC	-1.7					

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-312**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	medium shell fragments (2-5%), HCl reaction weak.	SC			60	3+4+5 N =9 REC =15"		
62.0	SANDY FAT CLAY, wet, greenish gray, trace fine to coarse shell fragments (30-40%), HCl reaction strong.	CH	-6.7		65	5+7+11 N =18 REC =18"		
67.0	SILTY SAND, fine to coarse grained, wet, gray and white, with cemented sand, HCl reaction strong.	SM	-11.7					Rig chatter
69.5	CLAYEY SAND, fine to coarse grained, wet, greenish gray and white, trace fine to coarse shell fragments (30-40%), HCl reaction strong.	SC	-14.2		70	47+10+7 N =17 REC =16"		
	fine to medium grained, greenish gray and light gray, trace fine to medium shell fragments (5-15%), HCl reaction moderate.				75	17+26+29 N =55 REC =18"		
77.0	SANDY ELASTIC SILT, wet, greenish gray, trace fine to coarse shell fragments (10-20%), HCl reaction moderate.	MH	-21.7		80	4+6+11 N =17 REC =17"		
	greenish gray and white, trace fine to medium shell fragments (5-10%), HCl reaction weak.				85	7+8+13 N =21 REC =18"		
	with sand, trace fine to medium shell fragments (2-5%).				90	7+9+12 N =21 REC =20"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-312**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
					95	5+9+3 N =12 REC =20"		
						REC =12"	PP=>4.5 tsf	
100.5	BOTTOM OF BORING @ 100.5 FT.		-45.2		100			

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-313**  
**Contract Number:** 06120048  
**Sheet:** 1 of 5

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/19/06 **Finished:** 5/22/06  
**Location:** Northing: 217372.34 ft  
Easting: 960713.67 ft  
**Ground Surface Elevation:** 50.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/19	---	8.7'	---	---
<b>Start of day</b>	5/22	---	20.0'	---	---
<b>Start of day</b>	5/23	---	0.0'	---	---
<b>Water Reading</b>	7/27	---	20.3'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.	SM	50.2			WOH+1+1 N=2 REC=13"	w=9.9% *	
2.0	SILTY SAND, fine to coarse grained, moist, brown, contains root fragments.	CL-ML	48.7			WOH+2+1 N=3 REC=10"	w=11.8% LL=19 PL=14 *	
4.5	FAT CLAY, moist, light orangeish brown and light brown, trace fine to medium sand.	CH	46.2		5	2+4+4 N=8 REC=18"	w=27.6% LL=67 PL=21 *	
7.5	Sandy LEAN CLAY, light gray and orangeish brown, with fine to medium sand.	CL	43.2			3+4+6 N=10 REC=13"	w=15.1% LL=30 PL=17 *	
8.7	SILTY SAND, fine to medium grained, wet, grayish brown and brown.	SM	42.0	▽		2+3+3 N=6 REC=17"	w=27% *	*Slight drill rig chatter from 11.5 to 13.5 ft.
9.5	SANDY SILT, fine to medium, wet, light grayish brown and orangeish brown.	ML	41.2		10	2+2+2 N=4 REC=16"	w=31.5% *	
17.0	POORLY GRADED SAND, fine to medium grained, wet, light brown, with silt.	SP-SM	33.7		20	4+11+15 N=26 REC=16"	w=23.1% *	
22.0	SILTY SAND, fine to medium grained, wet, dark orangeish brown.	SM	28.7		25	16+17+10 N=27 REC=15"	w=21.1% LL=NP PL=NP	
	<i>continued on next page</i>							

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

**Comments:**

1. Ground water observation well OW-313B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-313A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-313**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM					*	
	gray, mostly fine to coarse shell fragments ( $\pm 60\%$ ), strong HCl reaction, contains black particles ( $< 1/16$ inch).				30	11+14+14 N =28 REC =16"	w=18.2% LL=NP PL=NP *	
32.0	SANDY LEAN CLAY, moist, gray, with fine to medium sand, weak HCl reaction.	CL	18.7					
33.9	SILTY SAND, fine to medium grained, moist, gray, mostly strongly cemented sand ( $\pm 95\%$ ), moderate HCl reaction.	SM	16.8		35	50 REC =6"	w=28.1% LL=38 PL=21 *	*Switched to 3-7/8" Tri-cone roller bit below 33.5 ft. *Very to extremely difficult rotary advancement from 34 to 35.5 ft (strong rig chatter). *Moderate difficulty with rotary advancement from 35.5 to 37.5 ft. *Very difficult rotary advancement from 37.5 to 38 ft (moderate to strong rig chatter). *Moderate to difficult rotary advancement from 40.5 to 41 ft (moderate rig chatter).
	wet, oliveish gray, little fine to coarse shell fragments ( $\pm 30\%$ ), contains cemented sand pockets, strong HCl reaction.				40	24+50/4" N =50/4" REC =10"	w=17.1% *	
41.0	SANDY SILT, fine to medium grained, wet, gray, few fine to coarse shell fragments ( $\pm 10\%$ ), contains silty sand pockets, weak HCl reaction.	ML	9.7					
					45	4+5+6 N =11 REC =18"	w=29.3% LL=34 PL=27 *	
47.0	SILTY SAND, fine to medium grained, wet, greenish gray and gray, few fine to coarse shell fragments ( $\pm 10\%$ ), moderate HCl reaction.	SM	3.7					
					50	6+7+8 N =15 REC =18"	w=27.9% *	
52.0	SILTY SAND, fine to medium grained, wet, greenish gray and gray, weak HCl reaction, contains black particles ( $< 1/16$ inch).	SM	-1.3					
	trace fine to medium shell fragments ( $\pm 5\%$ ) below 54.8 ft.				55	5+6+9 N =15 REC =18"	w=31.5% LL=NP PL=NP *	**Resumed drilling at 8:40 AM on 5/22/06.
	<i>continued on next page</i>							

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

**Comments:**

1. Ground water observation well OW-313B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-313A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-313**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	light greenish gray and gray, trace fine to coarse shell fragments (±5%).	SM				3+5+9 N=14 REC=18"		
62.0	SANDY LEAN CLAY, fine to medium, wet, gray and light gray, mostly fine to coarse shell fragments (±60%), contains clayey sand pockets, strong HCl reaction.	CL	-11.3			11+14+50/5" N=64/11" REC=17"	w=26.2% LL=33 PL=17 *	*Moderate to difficult rotary advancement from 65 to 67 ft (moderate to strong rig chatter).
67.0	SILTY SAND, fine to medium grained, wet, gray, little fine to medium shell fragments (±20%), strong HCl reaction.	SM	-16.3			6+13+22 N=35 REC=18"		
72.0	SANDY SILT, fine to medium, moist, light greenish gray and gray, trace fine to coarse shell fragments (±5%), moderate HCl reaction.	ML	-21.3			5+10+16 N=26 REC=18"	w=28.4% *	
77.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, few fine to coarse shell fragments (±10%), contains cemented shell pockets and strongly cemented sand layer from 77.7 to 77.8 ft, strong HCl reaction.	SC	-26.3			50/4" N=50/4" REC=4"		
82.0	SANDY ELASTIC SILT, fine to medium, moist, greenish gray, trace mica, weak HCl reaction.	MH	-31.3			5+6+13 N=19 REC=18"	w=37.3% *	
87.0	ELATIC SILT, moist, light greenish gray, trace fine to medium sand, mica and fine to medium shell fragments (±1%), weak HCl reaction.	MH	-36.3			7+9+12 N=21 REC=18"	w=55% LL=98 PL=47 *	
<i>continued on next page</i>								

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

**Comments:**

1. Ground water observation well OW-313B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-313A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-313**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	LEAN CLAY, gray, with fine to medium sand, trace mica, weak HCl reaction, trace fine to coarse shell fragments ( $\pm 5\%$ ).	MH	-41.3		95	REC = 14"	w=35.6% LL=49 PL=25 PP=>4.5 tsf *	*Shelby tube sampler push from 93.5 to 94.7 ft.
		CL						
97.0	SANDY SILT, moist, dark gray, some fine to coarse shell fragments ( $\pm 40\%$ ), trace mica, weak HCl reaction.	ML	-46.3		100	8+13+18 N =31 REC =18"	w=32.4% LL=42 PL=28 *	
102.0	SANDY ELASTIC SILT, fine to medium, moist, dark greenish gray, trace fine to medium shell fragments ( $\pm 5\%$ ), trace mica, moderate HCl reaction.	MH	-51.3		105	6+8+12 N =20 REC =18"	w=43.4% LL=70 PL=45 *	
	trace fine to medium sand and mica, moderate HCl reaction.				110	6+10+11 N =21 REC =18"	w=57.7% LL=106 PL=55 *	
	with fine to medium sand, trace mica and fine to coarse shell fragments ( $\pm 5\%$ ), moderate HCl reaction.				115	6+10+12 N =22 REC =18"	w=44.3% LL=72 PL=46 *	
	weak HCl reaction.				120	5+8+11 N =19 REC =18"	w=43.5% LL=81 PL=42 *	*Considered pushing tube at 118.5 ft, but drilling resistance increased from 117.5 to 118.5 ft.
122.0	CLAYEY SAND, dark greenish gray, trace mica, contains indurated sandy silt pockets, weak HCl reaction.	SC	-71.3			REC = 10"	w=33.1%	*Shelby tube

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

*continued on next page*

**Comments:**

1. Ground water observation well OW-313B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-313A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-313**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
		SC					LL=44 PL=26 PP=>4.5 tsf *	sampler push from 123.5 to 124.3 ft.		
127.0	ELASTIC SILT, dark greenish gray, trace mica, contains indurated sandy silt pockets, weak HCL reaction.	MH	-76.3							
							7+9+12 N =21 REC =18"	w=66% LL=132 PL=60 *		
								8+10+11 N =21 REC =18"	w=69.1% *	*Relatively slow rotary advancement below 135 ft.
								7+8+12 N =20 REC =18"	w=62.9% LL=106 PL=51 *	
142.0	Sandy FAT CLAY, moist, greenish gray, trace fine to medium sand, and mica, weak HCL reaction.	CH	-91.3							
							7+11+14 N =25 REC =18"	w=49.1% *		
	dark greenish gray, moderate HCL reaction.									
150.0	BOTTOM OF BORING @ 150.0 FT.		-99.3				w=49.4% LL=103 PL=30 *	**Resumed observation well construction for SPT borehole at 7:00 AM on 5/23/06.		

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

**Comments:**

1. Ground water observation well OW-313B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-313A installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-314**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/16/06 **Finished:** 5/17/06  
**Location:** Northing: 217321.89 ft  
Easting: 960654.5 ft  
**Ground Surface Elevation:** 52.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/16	---	3.5'	---	---
<b>Start of day</b>	5/17	---	10.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL.		52.4			WOH/18" N = WOH/18" REC = 6"	w=9.7% *	
	SILTY SAND, fine to medium grained, moist, yellowish brown, trace silt and root fragments.	SM						
	fine to coarse grained, wet, trace gravel.							
3.5	FAT CLAY with sand, moist, orangeish brown and gray, trace root fragments.	CH	49.3			2+2+5 N = 7 REC = 15"	w=14.1% LL=NP PL=NP *	
					5	1+2+3 N = 5 REC = 12"	w=35% LL=73 PL=25 *	
						2+4+5 N = 9 REC = 19"	w=41.2% LL=59 PL=21 *	Started drilling 5/17/06 @ 7:30am
					10	5+7+9 N = 16 REC = 19"	w=26.2% LL=73 PL=25 *	Color change in tub, yellow/brown to gray below 10 ft.
13.5	CLAYEY SAND, moist, light gray and gray.	SC	39.3			REC = 12"	w=25.9% LL=54 PL=11 PP=>4.5 tsf *	
					15			
17.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, trace fine to medium shell fragments (5%), HCl reaction weak.	SM	35.8			26+50/5" N = 50/5" REC = 11"	w=24.2% *	Harder drilling at 16.5 ft.
					20			
22.0	SILTY SAND, fine to medium grained, wet, light gray and white, trace fine to medium shell fragments (5-10%), HCl reaction moderate .	SM	30.8			29+50/5" N = 50/5" REC = 13"	w=22.6% LL=NP PL=NP	
					25			

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-314**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to coarse grained, wet, gray and white, with fine to coarse shell fragments (60-70%), HCl reaction strong.	SM	25.8				*	Rig chatter at 36.5 ft.
		SM			30	10+10+17 N =27 REC =15"	w=20.3% *	
32.0	Sandy LEAN CLAY with sand, moist, greenish gray.	CL	20.8		35	3+4+6 N =10 REC =20"	w=25.4% LL=42 PL=22 *	
37.0	SILTY SAND, fine to medium grained, wet, gray and greenish gray, trace fine to coarse shell fragments (25-30%), HCl reaction strong, (50-60% medium to coarse grained shell fragments from 39.9-40.0 ft).	SM	15.8		40	5+5+50/3" N =55/9" REC =19"	w=26.8% LL=NP PL=NP *	
					45	4+4+7 N =11 REC =16"	w=31.9% *	
					50	5+9+7 N =16 REC =18"	w=25.4% *	
52.0		SILTY SAND, fine to medium grained, wet, gray and greenish gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.			SM	0.8		55
57.0	POORLY GRADED SAND, trace silt, fine to medium grained, wet, gray and <i>continued on next page</i>	SP	-4.2					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-314**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	greenish gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.	SP	-9.2		60	3+4+6 N=10 REC=16"	w=33% LL=NP PL=NP *	Rig chatter at 67.5 ft.
67.0	SANDY FAT CLAY with sand, wet, greenish gray and white, trace fine to coarse shell fragments (35-45%), HCl reaction strong.	CH	-14.2		65	3+5+8 N=13 REC=18"	w=40.3% LL=59 PL=24 *	
	SANDY SILT, fine to coarse grained, wet, greenish gray and white, trace fine to medium shell fragments (10-15%), HCl reaction moderate.	ML			70	5+11+17 N=28 REC=18"	w=19.5% LL=NP PL=NP *	
	fine to medium grained, gray and greenish gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.				75	8+13+16 N=29 REC=15"	w=27.9% LL=NP PL=NP *	
	greenish gray and white, trace fine to medium shell fragments (20-30%), HCl reaction moderate.				80	13+50/5" N=50/5" REC=16"	w=36.5% LL=NP PL=NP *	
83.5	SANDY ELASTIC SILT, trace fine to medium shell fragments (15-20%), HCl reaction moderate.	MH	-30.7		85	5+7+11 N=18 REC=18"	w=41.2% LL=57 PL=36 *	
87.0	SANDY FAT CLAY, wet, greenish gray and, trace fine to medium shell fragments (<5%), HCl reaction weak, (strongly cemented lense at 89.6 ft exhibits strong HCl reaction).	CH	-34.2		90	8+10+15 N=25 REC=18"	w=34.3% LL=68 PL=20 *	
<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-314**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments (5-10%), HCl reaction moderate.  greenish gray and white, trace fine to medium shell fragments (20-30%), trace organic matter, HCl reaction strong. BOTTOM OF BORING @ 100.0 FT.	CH	-39.2					
		SM						
					95	7+12+15 N =27 REC =18"	w=36.4% *	
					100	7+9+14 N =23 REC =18"	w=31% *	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-315**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/19/06 **Finished:** 5/22/06  
**Location:** Northing: 217184.68 ft  
Easting: 960559.43 ft  
**Ground Surface Elevation:** 65.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/22	---	14.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.8	ROOTMAT AND TOPSOIL.							
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown and orangeish brown, trace root fragments. trace gravel.	SP-SM	64.7			1+1+1 N=2 REC=12"		
						3+4+4 N=8 REC=17"		
					5	4+6+8 N=14 REC=17"		
						6+6+7 N=13 REC=14"	w=5.6% *	
10.0	SILTY SAND, fine to coarse grained, moist, yellowish brown and orangeish brown, trace gravel.	SM	55.5			8+8+9 N=17 REC=16"		
	fine to medium grained, wet, gray.			▽		4+7+6 N=13 REC=15"	w=28.3% *	Resumed drilling on 5/22/06 at 8:30am.
17.0	CLAYEY SAND, moist, gray, trace sand.	SC	48.5			4+7+8 N=15 REC=18"	w=28.3% *	
						REC=14"	w=23.3% LL=41 PL=11	
	continued on next page							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-315**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
25.0	SILTY SAND, fine to medium grained, wet, gray and white, trace fine to coarse shell fragments (30-40%), HCl reaction moderate.	SM	40.5				PP=>4.5 tsf *	
						26+21+22 N =43 REC =18"	w=27.6% *	
						38+44+42 N =86 REC =14"		
	fine to coarse grained, light gray and white, with fine to coarse shell fragments (60-70%), HCl reaction strong.					14+16+16 N =32 REC =14"	w=22.2% LL=NP PL=NP *	
42.0	SILTY SAND, fine to medium grained, moist, greenish gray and gray, trace organic matter.	SM	23.5					
						3+4+4 N =8 REC =18"		
	strong cementation, HCl reaction strong.					50 REC =6"		Rig chatter at 46.5 ft.
53.5	SANDY SILT, light gray and white, trace fine to coarse shell fragments (10-20%), HCl reaction moderate.	ML	12.0				w=25.6% LL=NP PL=NP *	
	<i>continued on next page</i>					5+7+8 N =15 REC =17"		

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-315**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to coarse shell fragments (35-45%), HCl reaction strong .	ML			60	6+8+8 N =16 REC =16"		
63.5	POORLY GRADED SAND WITH SILT, greenish gray, trace fine to medium shell fragments (5-10%), HCl reaction weak.	SP-SM	2.0		65	5+5+9 N =14 REC =15"	w=29.4% LL=NP PL=NP *	Rig chatter at 61 ft.
					70	4+4+6 N =10 REC =18"		
73.5	SANDY FAT CLAY, trace fine to medium shell fragments (20-30%), HCl reaction moderate, green.	CH	-8.0		75	4+5+6 N =11 REC =20"	w=36.3% LL=58 PL=18 *	
77.0	SILTY SAND, fine to coarse grained, wet, light gray and white, trace fine to coarse shell fragments (20-30%), strong HCl reaction, cemented layer from 79' to 79.9 ft.	SM	-11.5		80	16+41+9 N =50 REC =18"		
	fine to medium grained, greenish gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.				85	7+10+10 N =20 REC =19"	w=29.6% LL=NP PL=NP *	
87.0	SANDY ELASTIC SILT, wet, greenish gray and white, trace fine to medium shell fragments (20-30%), HCl reaction moderate.	MH	-21.5		90	6+7+13 N =20 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-315**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.	MH	-26.5				w=35.6% *	
		SM						
						95	5+7+11 N =18 REC =18"	
							7+11+12 N =23 REC =19"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-34.5			100		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-316**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/3/06 **Finished:** 5/3/06  
**Location:** Northing: 216767.16 ft  
Easting: 960864.35 ft  
**Ground Surface Elevation:** 108.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/4	---	24.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.	SP-SC	107.6			2+3+4 N =7 REC =18"		Auger
2.5	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, brown, contains root fragments.							
	SANDY LEAN CLAY, moist, brown.	CL	105.6			2+2+2 N =4 REC =16"	w=19.1% LL=35 PL=16 PP=2.00 tsf *	changed to 3 7/8" roller bit
	fine to coarse grained, moist, brown.			5	2+1+2 N =3 REC =11"			
						2+1+1 N =2 REC =10"		
10.5	SILTY SAND, fine to medium grained, moist, yellowish brown.	SM	97.6			2+3+2 N =5 REC =12"		
13.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brownish orange.	SP-SM	94.6			6+8+8 N =16 REC =12"		
18.5	CLAYEY SAND, fine to coarse grained, moist, orangeish white.	SC	89.6			3+3+4 N =7 REC =12"		
23.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, orangeish brown, . <i>continued on next page</i>	SP-SM	84.6	▽		3+4+5 N =9 REC =15"	w=20% LL=NP PL=NP	

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-316**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM					*	
	brownish orange, 1" clay seam				30	3+5+3 N=8 REC=12"		1" clay seam
					35	2+3+3 N=6 REC=18"	w=20.1% LL=43 PL=17 *	
38.5	SANDY LEAN CLAY, moist, dark gray.	CL	69.6		40	1+3+2 N=5 REC=18"	w=28.5% *	
	with sand.				45	REC=24"	w=28.6% LL=44 PL=16 PP=2.00 tsf *	
48.5	SANDY ELASTIC SILT, moist, dark gray, trace sand.	MH	59.6		50	3+4+4 N=8 REC=18"	w=38.0% PP=1.50 tsf *	
53.5	LEAN CLAY, moist, dark gray, with sand.	CL	54.6		55	REC=24"	w=26.2% LL=33 PL=11 PP=3.25 tsf *	
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-316**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.5	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	49.6		60	5+5+6 N =11 REC =18"	w=24.4% *	
	greenish gray, trace cemented sand.				65	9+10+13 N =23 REC =17"	w=31.3% *	changed to 2 15/16" roller bit
68.5	SILTY SAND, fine to medium grained, moist, gray, with silt, trace fine to medium shell fragments, moderate HCl reaction.	SM	39.6		70	42+50/4" N =50/4" REC =10"	w=19.8% *	Harder drilling
73.5	POORLY GRADED SAND, fine to medium grained, moist, gray, trace fine to medium shell fragments, trace clay, moderate HCl reaction.	SP	34.6		75	50/5.5" N =50/5.5" REC =6"	w=21.2% *	softer drilling
	with fine to coarse shell fragments, strong HCl reaction.				80	50/2" N =50/2"		
	with fine to coarse shell fragments, strong HCl reaction, 1" cemented sand frag.				85	50/3" N =50/3" REC =1"		Rig chatter
	trace fine to medium shell fragments, moderate HCl reaction.				90	50/3" N =50/3" REC =1"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-316**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
93.5	CLAYEY SAND, fine to medium grained, moist, grayish green, with silt, with fine to coarse shell fragments, moderate HCl reaction.  trace medium to coarse shell fragments, weak HCl reaction.	SP	14.6					Easier drilling
		SC				95	5+5+7 N =12 REC =18"	
100.0	BOTTOM OF BORING @ 100.0 FT.		8.1					
						100	6+5+8 N =13 REC =18"	w=27.7% *

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-317**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/4/06 **Finished:** 5/8/06  
**Location:** Northing: 217094.7 ft  
Easting: 961249.2 ft  
**Ground Surface Elevation:** 94.4 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved
5/8	---	21.0'	4.5'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.	SP-SC	93.9			2+2+2 N=4 REC=12"		Hollow stem auger
2.0	POORLY GRADED SAND WITH CLAY, trace fine gravel, fine to coarse grained, moist, brown, contains root fragments.	SC	92.4			1+1+1 N=2 REC=12"		
4.5	CLAYEY SAND, fine to coarse grained, moist, orangeish brown.	SP	89.9		5	1+2+3 N=5 REC=12"		
7.0	POORLY GRADED SAND WITH SILT, trace gravel, fine to coarse grained, moist, brownish orange.	SP-SM	87.4			2+5+7 N=12 REC=14"		
9.5	CLAYEY SAND, with siltfine to coarse grained, moist, brownish orange.	SC	84.9		10	4+5+6 N=11 REC=12"		
12.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brownish orange.	SP-SM	81.9		15			
	fine to coarse grained, orange.				20	6+7+7 N=14 REC=12"		
22.0	SANDY SILT, fine to medium, moist, orange.	ML	72.4					
24.5	SANDY LEAN CLAY, fine to medium, continued on next page	CL	69.9		25	2+2+3 N=5 REC=18"	w=28.4% PP=1.25 tsf *	

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 dat.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-317**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	moist, gray.	CL					PP=1.5, 1.2 tsf	
	dark gray.					REC =24"	w=31.7% LL=27 PL=19 PP=2.25 tsf *	lean clay
32.0	SANDY FAT CLAY, fine to medium, moist, dark gray, Pockets of more/less sand.	CH	62.4			2+3+3 N =6 REC =18"	w=30.2% PP=1.25, 1.0 tsf *	
	dark gray, trace sand.					REC =24"	PP=3.50 tsf	
	gray.					4+6+7 N =13 REC =18"	PP=3.5, 3.75 tsf	
47.0	SANDY LEAN CLAY, fine to medium grained, moist, grayish green.	CL	47.4			REC =22"	w=22.8% LL=35 PL=17 *	
51.0	POORLY GRADED SAND WITH SILT, contains cemented sand, fine to medium grained, moist, dark brownish orange.	SP-SM	43.4			50/4" N =50/4" REC =1"		2 15/16" OD roller bit
	<i>continued on next page</i>							

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 dat.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-317**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
61.0	light orangeish brown.	SP-SM	33.4		60	16+12+50/4" N =62/10" REC =14"	w=26% *	Harder drilling
	CLAYEY SAND, fine to medium grained, moist, gray.	SC			65	28+50/4" N =50/4" REC =5"		
	trace shell fragments, contains cemented sand, shell frag fine to coarse size, moderate HCl reaction.				70	5+50/1" N =50/1" REC =4"		
	wet, greenish white, with fine to coarse shell fragments, strong HCl reaction.				75	8+50/5" N =50/5" REC =11"	w=22.3% *	
77.0	SILTY SAND, fine to medium grained, moist, green, 15% medium to coarse shell frag, strong HCl reaction.	SM	17.4		80	4+6+7 N =13 REC =18"		
	contains cemented sand, 25% medium to coarse shell frag, strong HCl reaction.				85	9+10+13 N =23 REC =18"		
87.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, trace shell fragments, 5% f-m shell frag.	SP-SM	7.4		90	5+6+8 N =14 REC =18"		
<i>continued on next page</i>								

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing dat.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-317**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
						95	3+5+5 N =10 REC =18"	
	20-30% medium to coarse shell frag, moderate HCl reaction.							
100.0	BOTTOM OF BORING @ 100.0 FT.		-5.6			100	9+11+20 N =31 REC =18"	

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 dat.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-318**  
**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:** 6/2/06 **Finished:** 6/5/06  
**Location:** Northing: 217019.3 ft  
Easting: 961227.2 ft  
**Ground Surface Elevation:** 97.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/2	---	20.0'	0.0'	---
<b>Start of day</b>	6/3	---	0.0'	0.0'	---
<b>Start of day</b>	6/4	---	31.0'	0.0'	---
<b>Start of day</b>	6/5	---	31.0'	0.0'	---
<b>Start of day</b>	6/5	---	28.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	CRUSHED STONE.	SP-SC	97.3			5+5+8 N =13 REC =15"			
2.0	POORLY GRADED SAND WITH CLAY, fine to coarse grained, dry, brown.		SP	95.8			5+6+5 N =11 REC =15"		
	yellowish orange					5	5+5+5 N =10 REC =12"		
7.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish orange.	SP-SM	90.8			4+6+6 N =12 REC =12"			
	with gravel, 1/8" orange layers with more silt.					10	5+7+8 N =15 REC =16"		
						15	11+18+7 N =25 REC =14"		
18.0	FINE TO COARSE SANDY SILT, wet, orange.	ML	79.8			5+6+7 N =13 REC =12"			
	moist, mottled orange and gray.					20	2+1+1 N =2 REC =18"		

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

*continued on next page*

**Comments:**

1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/5/2006.
3. \* = See Appendix I for additional lab testing data.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-318**  
Contract Number: 06120048  
Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
27.0	FINE TO MEDIUM SANDY LEAN CLAY, moist, dark gray.	ML	70.8							
		CL								
					30	2+2+3 N =5 REC =18"				
33.0	FAT CLAY, moist, dark gray, with sand.	CH	64.8							
							35	3+4+4 N =8 REC =18"		
							40	4+4+4 N =8 REC =18"		
	3" Clayey sand layer									
					45	4+8+9 N =17 REC =18"				
					50	7+8+12 N =20 REC =18"				
								50' Start of day 6/3		
53.0	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	44.8							
	Cemented sand lenses 55-58'									
					55	5+8+9 N =17 REC =18"				
57.0	POORLY GRADED SAND, fine to medium grained, moist, reddish orange, <i>continued on next page</i>	SP	40.8							

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole Geophysical Testing Performed on 6/5/2006.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-318**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	1/4" red lenses.	SP				50/2" N =50/2" REC =2"		
63.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, gray.	SP-SM	34.8			50/2" N =50/2" REC =2"		
67.0	POORLY GRADED SAND, fine to medium grained, moist, gray, 1/8" and smaller clay lenses.	SP	30.8			50/5" N =50/5" REC =5"		
73.0	CLAYEY SAND, fine to medium grained, moist, gray, with silt, contains cemented sand, 80% cemented sand.	SC	24.8			50/3" N =50/3" REC =2"		
77.0	SILTY SAND, fine to medium grained, moist, green and white, with fine to coarse shell fragments, strong HCl reaction, 60-70% shell frag.	SM	20.8			15+8+15 N =23 REC =18"		
	green, 15-25% shell frag.					5+8+12 N =20 REC =18"		
87.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, strong HCl reaction, 15-20% shell frag.	SP-SM	10.8			7+11+16 N =27 REC =18"		
<i>continued on next page</i>								

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 6/5/2006.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-318**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to coarse shell fragments, moderate HCl reaction, 5-10% shell frag.	SP-SM				95	6+10+12 N =22 REC =18"	
97.0	SILTY SAND, fine to medium grained, moist, green, trace fine to medium shell fragments, moderate HCl reaction, 0-5% shell frag.	SM	0.8			100	5+6+11 N =17 REC =18"	
	green and white, with fine to coarse shell fragments, strong HCl reaction, 75-80% shell frag.					105	10+13+33 N =46 REC =18"	104' thicker shell beds
107.0	POORLY GRADED SAND WITH SILT, with fine to coarse shell fragments, , fine to medium grained, moist, green, strong HCl reaction, 50-60% shell frag.	SP-SM	-9.2			110	13+22+30 N =52 REC =18"	
	25-35% shell frag.					115	7+12+19 N =31 REC =18"	
117.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SM	-19.2			120	9+12+14 N =26 REC =18"	
	trace fine to coarse shell fragments, <i>continued on next page</i>						6+10+13	

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 6/5/2006.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-318**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	moderate HCl reaction, 0-5% shell frag.	SM			125	N =23 REC =18"		
					130	8+11+12 N =23 REC =18"		
	with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.				135	8+10+12 N =22 REC =18"		
	45-55% shell frag.				140	10+17+15 N =32 REC =18"		
	trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.				145	5+7+10 N =17 REC =18"		
	contains shell fragments.				150	REC =3"		Shelby tube pushed 150' Start of day 6/4
					155	6+8+10 N =18 REC =18"		
<i>continued on next page</i>								

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 6/5/2006.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-318**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
157.0	FINE TO MEDIUM SANDY SILT, moist, green, trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.	ML	-59.2					
					160	4+5+7 N =12 REC =18"		
					165	4+7+8 N =15 REC =18"		
167.0	ELASTIC SILT, moist, green, trace sand.	MH	-69.2					
	with clay.				170	6+7+12 N =19 REC =18"		
	moist, green, with clay.				175	4+8+13 N =21 REC =18"		
					180	4+8+9 N =17 REC =18"		
182.0	LEAN CLAY, with silt, moist, green.	CL	-84.2					
					185	6+10+13 N =23 REC =18"		
187.0	ELASTIC SILT, moist, green.	MH	-89.2					
	<i>continued on next page</i>				190	4+5+10 N =15 REC =18"		

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 6/5/2006.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-318**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	oliveish green, trace sand.	MH						
					-195	8+9+13 N =22 REC =18"		
	with sand.							
200.0	BOTTOM OF BORING @ 200.0 FT.		-102.2		-200	5+6+9 N =15 REC =18"		

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 6/5/2006.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-319**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/5/06 **Finished:** 5/8/06  
**Location:** Northing: 216963.62 ft  
Easting: 961123.01 ft  
**Ground Surface Elevation:** 102.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/5	---	10.5'	---	---
<b>Start of day</b>	5/8	---	26.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	ROOTMAT AND TOPSOIL.	SP-SM	102.6			3+4+2 N=6 REC=12"	w=5.7% *	
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brown, contains clayey sand pockets.					3+3+4 N=7 REC=10"		
5.0	POORLY GRADED SAND, wet, brown	SP	97.9		5	4+6+6 N=12 REC=11"	w=4.7% LL=NP PL=NP *	
						5+5+8 N=13 REC=11"		
10.0	POORLY GRADED SAND WITH SILT, light yellowish brown and light grayish brown	SP-SM	92.9	▽	10	6+6+7 N=13 REC=10"	w=7.6% *	
					15	5+5+7 N=12 REC=10"		
	orangeish brown, trace fine gravel.				20	8+9+8 N=17 REC=7"		
23.5	CLAYEY SAND, trace gravel, yellowish brown, contains clayey sand lenses (<1/4 inch thick).	SC	79.4			5+3+2 N=5 REC=15"	w=19.8% *	
24.8	<i>continued on next page</i>		78.1		25			

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - Downhole Geophysical Testing Performed on 6/5/2006.
  - \* = See Appendix I for additional lab testing data.
- Ground water observation wells OW-319A and OW-319B installed at nearby locations.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-319**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY FAT CLAY, fine to medium, wet, light gray and dark brown.	CH	75.9					
29.5	CLAYEY SAND, fine to medium grained, wet, mottled yellowish brown and light gray (high percentage of fines).	SC	73.4			WOH/18" N = WOH/18" REC = 18"	w=24.5% *	
	SANDY LEAN CLAY, fine to medium, wet, gray, trace mica.	CL			30			
						REC = 24"	w=29.2% LL=49 PL=12 PP=2.75 tsf *	*Shelby tube sampler push from 33.5 to 35.5 ft.
37.0	FAT CLAY, moist, gray, trace sand, and mica.	CH	65.9			WOH+3+5 N = 8 REC = 18"	w=27.9% *	
					40			
						REC = 20"	w=32.1% LL=58 PL=13 PP=3.25 tsf *	*Shelby tube sampler push from 43.5 to 45.2 ft.
	light gray.					4+4+8 N = 12 REC = 18"	w=38.6% LL=79 PL=27 *	
					50			
						REC = 4"	PP=4.25 tsf	*Shelby tube sampler push from 53.5 to 54.3 ft.
57.0	FINE TO MEDIUM SILT, with sand, moist, gray and dark greenish gray, continued on next page	ML	45.9		55			

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - Downhole Geophysical Testing Performed on 6/5/2006.
  - \* = See Appendix I for additional lab testing data.
- Ground water observation wells OW-319A and OW-319B installed at nearby locations.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-319**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	trace mica, contains indurated lean clay pockets.	ML	40.9		60	7+10+17 N =27 REC =18"	w=26.7% LL=40 PL=32 *	
	SILTY SAND, fine to medium grained, moist, brown.	SM		65	50/5" N =50/5" REC =1"			
	gray, trace mica.			70	50/4" N =50/4" REC =1"			
	wet, gray and light gray, mostly fine to coarse shell fragments (±80%), strong HCl reaction, (shell fragments up to 1/2 inch in size).			75	31+36+50/3" N =86/9" REC =13"	w=17.5% *	**Resumed drilling at 8:30 AM on 5/8/06.	
	light gray, mostly strongly cemented sand (±>90%), weak HCl reaction.			80	50/5" N =50/5" REC =1"		*Slight to moderate drill rig vibrations at 82 ft.	
	light oliveish gray and light gray, few fine to coarse shell fragments (±10%), moderate HCl reaction, strong cementation.			85	32+43+50/3" N =93/9" REC =11"	w=18.2% *	*Moderately difficult drilling below 85 ft.	
					90	6+6+9 N =15 REC =18"	w=29.8% PP=0.25 tsf *	
<i>continued on next page</i>								

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - Downhole Geophysical Testing Performed on 6/5/2006.
  - \* = See Appendix I for additional lab testing data.
- Ground water observation wells OW-319A and OW-319B installed at nearby locations.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-319**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
	moderate HCl reaction.					6+7+11 N =18 REC =18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		2.9			6+7+11 N =18 REC =18"	w=30% LL=NP PL=NP *	

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - Downhole Geophysical Testing Performed on 6/5/2006.
  - \* = See Appendix I for additional lab testing data.
- Ground water observation wells OW-319A and OW-319B installed at nearby locations.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-320**  
**Contract Number:** 06120048  
**Sheet:** 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/8/06 **Finished:** 5/8/06  
**Location:** Northing: 216943.5 ft  
Easting: 961044.1 ft  
**Ground Surface Elevation:** 106.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/8	---	28.0'	3.5'	---
<b>Start of day</b>	5/9	---	11.3'	3.5'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	ROOTMAT AND TOPSOIL.	SP-SM	105.9			1+2+2 N=4 REC=18"	w=10.4% *		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brown, contains root fragments.  no observable root fragments.					2+3+3 N=6 REC=18"			
4.5	CLAYEY SAND, fine to coarse grained, moist, brownish orange, with fine gravel.	SC	101.9		5	3+3+5 N=8 REC=16"			
7.0	POORLY GRADED SAND, fine to coarse grained, moist, brownish orange.	SP	99.4			5+6+7 N=13 REC=13"	w=6.3% *		
	with gravel.					10			5+7+8 N=15 REC=14"
	reddish orange.					15			6+8+7 N=15 REC=12"
	orange.					20			10+12+10 N=22 REC=14"
	orangeish white.					25			8+14+11 N=25 REC=15"
	<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-320  
**Contract Number:** 06120048  
**Sheet:** 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, orange.	SP	79.4	▽				
29.5	SILTY SAND, fine to medium grained, wet, orange.	SP-SM	76.9		30	7+5+4 N =9 REC =18"		
32.0	CLAYEY SAND, moist, dark gray.	SM	74.4		35	WOH+1+2 N =3	w=26.1% LL=33 PL=18 *	
	with sand.	SC			40	REC =24"	w=29.4% LL=36 PL=16 PP=1.50 tsf *	
42.0	SANDY FAT CLAY, moist, dark gray, with sand.	CH	64.4		45	2+2+3 N =5 REC =18"	w=30% LL=56 PL=19 *	
	fine to medium grained, moist, dark gray.			50	REC =18"	w=34.4% LL=59 PL=19 *		
	trace sand.			55	5+6+7 N =13 REC =18"	w=34.9% LL=69 PL=24 *		
57.0	SILTY SAND, fine to medium grained, moist, greenish gray. <i>continued on next page</i>	SM	49.4					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-320**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				5+7+7 N =14 REC =18"		
62.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, reddish gray, contains snail shell fragments.	SP-SM	44.4					
64.0	POORLY GRADED SAND, fine to medium grained, moist, orangeish red, trace silt, 10% fine to medium shell fragments.	SP	42.4			13+24+20 N =44 REC =18"		
64.5		SP-SM	41.9					
67.0	POORLY GRADED SAND, fine to medium grained, moist, greenish gray, with silt.	SM	39.4					
	SILTY SAND, fine to medium grained, moist, brownish yellow.						50/3" N =50/3" REC =2"	
	grayish green, contains cemented sand, 30-40% fine to medium shell fragments, HCl+.						w=18.8% *	
	5% fine to medium shell fragments.					50/2" N =50/2" REC =2"		
						50/1" N =50/1" REC =0"		
87.0	CLAYEY SAND, fine to medium grained, moist, gray, 50% cemented sand.	SC	19.4			50/2" N =50/2" REC =0"		

TEST BORING LOG: 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/16/08

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-320**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, moist, green, trace silt, with 10-20% fine to coarse shell fragments, HCl+.	SM	14.4					
						7+10+12 N =22 REC =18"	w=25.4% *	
	fine to medium grained.					6+6+9 N =15 REC =18"		
	fine to medium grained, moist, dark green, with silt.					3+5+5 N =10 REC =18"	w=29.2% *	
	20-30% fine to coarse shell fragments, HCl+ below 109.7.					4+5+5 N =10 REC =18"		
112.0	SANDY LEAN CLAY, fine to medium grained, wet, dark green and white, contains cemented sand, 25-35% fine to coarse shell fragments, HCl+.	CL	-5.6			20+18+14 N =32 REC =18"	w=28.5% LL=44 PL=16 *	
	20-30% fine to coarse shell fragments.					10+14+14 N =28 REC =18"		
119.5	SILTY SAND, fine to medium grained, moist, dark green, 0-5% fine to medium shell fragments.	SM	-13.1			5+7+12		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-320**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
124.5	ELASTIC SILT, fine to medium grained, moist, green, with silt, 25-35% fine to coarse shell fragments, HCl+.	MH	-18.1		125	N = 19 REC = 18"	w=34.1% LL=50 PL=30 *	
	dark green.				130	7+8+10 N = 18 REC = 18"		
132.0	CLAYEY SAND, fine to medium grained, moist, dark green.	SC	-25.6		135	7+7+9 N = 16 REC = 18"		
137.0	SILTY SAND, fine to medium grained, moist, dark green, 0-10% fine to medium shell fragments.	SM	-30.6		140	4+6+8 N = 14 REC = 18"		
					145	5+6+6 N = 12 REC = 18"		
	10-30% fine to coarse shell fragments.				150	5+7+7 N = 14 REC = 18"		w=37% *
150.0	BOTTOM OF BORING @ 150.0 FT.		-43.6					

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-321**  
Contract Number: 06120048  
Sheet: 1 of 5

**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:** 6/5/06 **Finished:** 6/6/06  
**Location:** Northing: 217152.5 ft  
Easting: 960333.2 ft  
**Ground Surface Elevation:** 70.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/5	---	13.5'	---	---
<b>Start of day</b>	6/6	---	15.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		70.2					
	CLAYEY SAND, trace gravel, fine to medium grained, moist, yellowish brown, trace wood fragments, trace root fragments.	SC				1+2+2 N=4 REC=12"		
						3+3+4 N=7 REC=17"	w=9.7% *	
4.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown, trace root fragments.	SP-SM	66.2		5	7+7+8 N=15 REC=18"	w=7.4% *	
7.0	SANDY LEAN CLAY, moist, orangeish brown and gray, trace root fragments.	CL	63.7			3+2+2 N=4 REC=18"	w=25.2% *	
10.0	SANDY FAT CLAY, moist, orangeish brown and gray.	CH	60.7		10	1+1+2 N=3 REC=18"	w=36.2% LL=55 PL=20 *	
13.0	CLAYEY SAND, fine to medium grained, wet, gray.	SC	57.7			1+2+3 N=5 REC=18"	w=30% *	
						2+4+7 N=11 REC=18"	w=29.7% *	
23.5	LEAN CLAY, moist, gray	CL	47.2			REC=18"	w=26.2% LL=45 PL=18	
	<i>continued on next page</i>							

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

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-321**  
Contract Number: 06120048  
Sheet: 2 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, wet, gray.	CL	43.7				PP=3.50 tsf *	
		SM			30	3+4+7 N =11 REC =18"	w=27% LL=47 PL=29 *	
33.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, gray, strong cementation, platy structure.	SP-SM	37.7		35	39+50/3" N =50/3" REC =10"	w=30.9% *	
	white, with fine to coarse shell fragments, 50-60%, HCl reaction strong.				40	15+17+31 N =48 REC =16"	w=27.1% *	
					45	9+9+7 N =16 REC =18"	w=26% *	
47.0	ELASTIC SILT with sand, gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak	MH	23.7		50	4+4 N =4	w=35.1% *	
52.0	SILTY SAND, fine to medium grained, wet, light gray and greenish gray, contains fine to coarse shell fragments, 20-30%, HCl reaction strong, weak cementation.	SM	18.7		55	30+11+10 N =21 REC =18"	w=25% LL=NP PL=NP *	
	fine to medium grained, wet, greenish gray, trace fine to coarse shell <i>continued on next page</i>							

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-321**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fragments, 5-10%, HCl reaction moderate.	SM			60	4+4+6 N=10 REC=18"	w=27.4% *	
	gray and white, trace fine to coarse shell fragments, 20-30%, HCl reaction strong, strong cementation.				65	8+9+14 N=23 REC=18"	w=27.6% *	
	trace fine to medium shell fragments, 2-5%, HCl reaction weak.				70	4+7+9 N=16 REC=18"	w=28.4% *	
					75	REC=24"	w=28.5% LL=NP PL=NP PP=3.75 tsf *	
					80	4+6+12 N=18 REC=18"	w=34.9% *	
	fine to medium grained, wet, light gray and white, contains fine to medium shell fragments, 20-30%, HCl reaction strong, strong cementation.				85	22+16+9 N=25 REC=17"	w=20.6% *	
	fine to medium grained, wet, gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.				90	6+12+18 N=30 REC=18"	w=31% *	
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-321**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS			
					DEPTH	DATA					
92.0	CLAYEY SAND, wet, gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SM	-21.3								
		SC									
					95	4+8+12 N =20 REC =18"	w=36.9% LL=59 PL=26 *				
97.0	SILTY SAND, wet, greenish gray.  <b>Remarks</b> 105 ft: Resumed Drilling on 6/6/06 @ 7:15 am	SM	-26.3								
								100	4+9+13 N =22 REC =18"	w=36.1% *	
								105	7+10+13 N =23 REC =17"	w=58.2% *	Resumed Drilling on 6/6/06 @ 7:15 am
								110	5+7+11 N =18 REC =18"	w=42.6% *	
								115	5+4+9 N =13 REC =18"	w=34.6% *	
					120	5+8+13 N =21 REC =18"	w=39.8% *				
						6+9+15	w=43.1%				

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-321**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
125.0	SANDY ELASTIC SILT, wet, greenish gray, trace fine to medium shell fragments, 5-10%, HCl reaction moderate	SM	-54.3		125	N =24 REC =18"	*	
		MH			130	8+11+15 N =26 REC =17"	w=49.5% *	
					135	5+7+11 N =18 REC =18"	w=42.3% *	
					140	6+7+11 N =18 REC =18"	w=39.7% *	
					145	7+10+14 N =24 REC =18"	w=60.2% *	
150.0	ELASTIC SILT, moist, greenish gray, trace sand				150	7+12+15 N =27 REC =18"	w=66% *	
	BOTTOM OF BORING @ 150.0 FT.		-79.3					

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

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-322**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/18/06 **Finished:** 5/18/06  
**Location:** Northing: 217170.03 ft  
Easting: 960202.65 ft  
**Ground Surface Elevation:** 89.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/18	---	10.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Forest litter, rootmat and topsoil.	SM	89.5			1+2+2 N=4 REC=14"		
	SILTY SAND, fine to medium grained, moist, brown.							
	stratified brown and light brown				5	3+3+4 N=7 REC=13"		
						3+3+4 N=7 REC=10"	*	
7.0	CLAYEY SAND, fine to coarse grained, moist, brown, contains fat clay pockets.	SC	82.9			2+4+4 N=8 REC=12"		
9.5	SILTY SAND, fine to medium grained, wet, dark yellowish brown, contains lean clay lenses (<1/8 inch).	SM	80.4	▽	10	5+8+10 N=18 REC=15"		
	dark yellowish brown and yellowish brown.				15	4+4+5 N=9 REC=13"		
17.0	CLAYEY SAND, fine to medium grained, wet, mottled dark yellowish brown and light gray.	SC	72.9			WOH/18" N=WOH/18" REC=18"		
22.0	SANDY LEAN CLAY, fine to medium, moist, gray, trace mica.	CL	67.9			2+2+4 N=6 REC=18"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-322**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with fine to medium sand.	CL				REC =28"	PP=2.75 tsf	*Shelby tube sampler push from 28.5 to 30.5 ft.
32.0	FAT CLAY, moist, light greenish gray and gray, trace fine to medium sand and mica, contains silty sand lenses.	CH	57.9			2+3+5 N =8 REC =18"		
37.0	SILTY SAND, fine to medium grained, wet, gray.	SM	52.9			REC =27"	PP=NP tsf	*Shelby tube sampler push 38.5 from 39.9 ft.
42.0	ELASTIC SILT, moist, light greenish gray, trace fine sand, and mica.	MH	47.9			5+7+9 N =16 REC =18"	PP=3.50 tsf	
47.0	CLAYEY SAND, fine to medium grained, moist, gray, trace mica.	SC	42.9			REC =10"	PP=NP tsf	*Shelby tube sampler push from 48.5 to 49.3 ft.
52.0	SANDY SILT, fine to medium, moist, gray, trace mica.	ML	37.9			19+34+50/5" N =84/11" REC =17"		*Switched to 3-7/8" O.D. Tri-cone roller bit below 53.5 ft. *Sampler refusal at 54.9 ft. *Difficult to very difficult rotary advancement
57.0	SILTY SAND, fine to medium grained, wet, gray, trace fine to medium shell <i>continued on next page</i>	SM	32.9					

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-322**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	fragments ( $\pm 5\%$ ), contains black particles (1/16 inch), strong HCl reaction (strong HCl reaction with shell fragments only).	SM	27.9		60	31+50 N = 50 REC = 10"		from 55.5 to 56 ft. *Moderate to difficult rotary advancement below 57 ft.
	LEAN CLAY, moist, gray, trace fine to medium sand, and mica, weak HCl reaction.	CL			65	6+7+9 N = 16 REC = 18"		
72.0	with fine to medium sand.		17.9		70	3+4+6 N = 10 REC = 18"		*Moderate to difficult rotary advancement below 72 ft (moderate to strong rig chatter). *Very difficult rotary advancement from 75 to 76 ft (strong rig chatter). *Moderately difficult rotary advancement from 76 to 78 ft. *Very difficult rotary advancement from 78 to 78.5 ft (strong rig chatter).
	CLAYEY SAND, fine to medium grained, moist, greenish gray, trace fine to coarse shell fragments ( $\pm 5\%$ ), contains indurated clayey sand layers from 73.5 to 73.8 ft, strong HCl reaction. contains strongly cemented sand layer from 73.8 to 74 ft.	SC			75	50/5" N = 50/5" REC = 5"		
78.5	SILTY SAND, fine to medium grained, wet, gray, few fine to coarse shell fragments ( $\pm 10\%$ ), strong HCl reaction.	SM	11.4		80	7+9+11 N = 20 REC = 18"		
	dark greenish gray, little fine to coarse shell fragments ( $\pm 20\%$ ), moderate HCl reaction.				85	12+13+13 N = 26 REC = 18"		
	light greenish gray, trace fine to medium shell fragments ( $\pm 5\%$ ), weak HCl reaction.				90	7+11+14 N = 25 REC = 18"		

continued on next page

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-322**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	CLAYEY SAND, fine to medium grained, wet, gray, trace mica, weak HCl reaction.  blueish gray and gray, trace fine to coarse shell fragments (±5%).	SM	-2.1					
		SC						
						95	5+7+14 N =21 REC =18"	
							4+5+11 N =16 REC =18"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-10.1			100		

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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-323**  
**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:** 6/7/06 **Finished:** 6/14/06  
**Location:** Northing: 217027.97 ft  
Easting: 960060.86 ft  
**Ground Surface Elevation:** 107.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/7	---	18.5'	0.0'	---
<b>Start of Day</b>	6/8	---	0.0'	0.0'	---
<b>Start of day</b>	6/12	---	20.0'	0.0'	---
<b>Start of Day</b>	6/13	---	0.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
4.5	POORLY GRADED SAND, fine grained, moist, orange.	SP	103.0			1+1+3 N=4 REC=16"	w=5% *	0-4' drag bit
	fine to coarse, with gravel.				3+3+6 N=9 REC=13"			
10.0	POORLY GRADED SAND WITH SILT, moist, orange	SP-SM	97.5		5	7+9+8 N=17 REC=12"	w=13% *	15-45' orange mud return
						9+11+10 N=21 REC=14"		
17.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellow.	SP-SM	90.5		10	7+9+11 N=20 REC=15"	w=16.2% *	
						6+9+9 N=18		
22.0	SILTY SAND, fine to coarse grained, wet, orange and brown, with silt, 1/8" color lenses.	SM	85.5	▽		10+20+20 N=40 REC=17"	w=11.9% LL=NP PL=NP *	
						2+2+2 N=4 REC=16"		
	CLAYEY SAND, fine to coarse grained, wet, orange and red, 1/4" pink clay lenses.	SC						

*continued on next page*

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole Geophysical Testing Performed on 6/14/2006
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-323**  
**Contract Number:** 06120048  
**Sheet:** 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED SAND, fine to coarse grained, wet, orange, trace gravel.	SC	80.5				w=17.6% *	
		SP						
					30	8+9+10 N=19		
32.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, orange	SP-SM	75.5				w=20.7% *	
					35	7+8+9 N=17 REC =13"		
					40	8+15+9 N=24 REC =17"		
42.0	SILT, wet, gray, with sand.  mottled grayish orange.	ML	65.5					45-70' grayish mud return
					45	8+9+9 N=18 REC =18"		
47.0	SANDY FAT CLAY, fine to medium, moist, dark gray.  no sand, very stiff.	CH	60.5				w=28.1% LL=50 PL=17 *	
					50	3+2+5 N=7 REC =18"		
					55	3+3+4 N=7 REC =18"		

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

*continued on next page*

**Comments:**

1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole Geophysical Testing Performed on 6/14/2006
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-323**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with sand.	CH			60	1+4+6 N =10 REC =18"	w=35.1% LL=65 PL=22 *	
					65	6+10+12 N =22 REC =18"		
67.0	CLAYEY SAND, fine to medium grained, moist, green.	SC	40.5		70	8+12+12 N =24 REC =18"	w=29% LL=46 PL=24 *	70' greenish mud return 71' harder drilling
71.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, dark green, with fine to coarse shell fragments, strong HCl reaction.	SP-SM	36.5		75	34+50/3" N =50/3" REC =6"		
77.0	FINE TO MEDIUM SANDY LEAN CLAY, moist, green, with fine to coarse shell fragments, strong HCl reaction, 60-70% shell frag.  trace sand, no shells.  moist, green, contains fine to coarse shell fragments, moderate HCl reaction.	CL	30.5		80	5+5+7 N =12 REC =18"		
					85	REC =16"	w=36.2% LL=42 PL=20 *	
88.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 50-60% shell frag .	SM	19.5		90	30+33+15 N =48 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. Downhole Geophysical Testing Performed on 6/14/2006
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-323**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
	30-40% shell frag.				95	24+16+33 N =49 REC =18"	w=26.3% LL=NP PL=NP *	
					100	4+8+11 N =19 REC =18"		
102.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SP-SM	5.5		105	8+12+14 N =26 REC =18"	w=28.6% LL=NP PL=NP *	
107.0	SILTY SAND, fine to medium grained, moist, green, trace fine to medium shell fragments, moderate HCl reaction, 0-5% shell frag.	SM	0.5		110	3+6+9 N =15 REC =18"		110' more sandy drilling
					115	4+7+12 N =19 REC =18"	w=30.2% *	116' hard layer shells
	with fine to coarse shell fragments, strong HCl reaction, 70-80% shell frag.				120	50/5" N =50/5" REC =5"		118.5 switch to roller bit 118.5 rig chatter
						10+50/5"	w=19.4%	
	<i>continued on next page</i>							

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 6/14/2006
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-323**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				125'  N =50/5" REC =11"	*	125' start of day 6/8/06
	trace fine to coarse shell fragments, moderate HCl reaction, 0-10% shell frag.					130'  8+15+25 N =40 REC =18"		
	with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.					135'  9+12+15 N =27 REC =18"	w=33.1% *	
138.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.	SP-SM	-30.5			140'  6+9+20 N =29 REC =18"		
142.0	SANDY ELASTIC SILT, fine to medium grained, moist, green, trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.	MH	-34.5			145'  7+10+13 N =23 REC =18"	w=48.3% LL=73 PL=38 *	144.5 switch to drag bit
						150'  10+12+15 N =27 REC =18"		
153.0	SILT with sand, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 60-70% shell frag.	ML	-45.5			155'  11+17+27 N =44 REC =18"	w=31.3% LL=39 PL=30 *	
<i>continued on next page</i>								

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole Geophysical Testing Performed on 6/14/2006
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-323**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to coarse shell fragments, 0-10% shell frag.	ML				6+10+12 N =22 REC =18"		
163.0	FINE TO MEDIUM SANDY ELASTIC SILT, moist, green.	MH	-55.5			7+12+16 N =28 REC =18"	w=54.2% *	
167.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SM	-59.5			7+8+13 N =21 REC =18"		
172.0	SANDY FAT CLAY, moist, green, with sand, moderate HCl reaction.	CH	-64.5			6+8+13 N =21 REC =18"	w=44% LL=97 PL=31 *	
179.2	SAND, fine to coarse grained, moist, grayish green, with silt.	SP-SM	-71.7			REC =0"		180' Start of day 6/12/06
182.0	FAT CLAY, trace sand, moist, green.	CH	-74.5			8+11+16 N =27 REC =18"	w=68.3% LL=124 PL=33 *	
	<i>continued on next page</i>					7+11+12 N =23 REC =18"		

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 6/14/2006
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-323**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
195.0	SANDY ELASTIC SILT, trace fine to medium shell fragments, 0-5% shell frag.	MH	-87.5		195	7+11+14 N =25 REC =18"	w=58.1% LL=116 PL=36 *	
200.0	BOTTOM OF BORING @ 200.0 FT.		-92.5		200	7+11+12 N =23 REC =18"	w=52.9% LL=97 PL=62 *	

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 6/14/2006
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-323 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-324**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** W. Wolfe

**Drilling Method:** Mud Rotary

**Drilling Equipment:** CME-550 (ATV)

**Schnabel Representative:** K. Bell

**Dates Started:** 7/12/06 **Finished:** 7/14/06

**Location:** Northing: 216906.4 ft  
Easting: 960114.44 ft

**Ground Surface Elevation:** 105.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/13	---	27.0'	---	---
<b>Start of Day</b>	7/14	---	25.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	ROOTMAT AND TOPSOIL.							
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown, trace gravel.  yellowish brown and reddish brown	SP-SM	104.6			1+2+1 N =3 REC =10"		
						2+2+2 N =4 REC =13"		
				5		2+2+3 N =5 REC =12"		
						3+4+4 N =8 REC =15"		
				10		1+1+3 N =4 REC =11"		
12.0	SILTY SAND, fine to coarse grained, moist, orangeish brown, trace gravel.	SM	93.2			4+4+5 N =9 REC =16"		
				15		3+4+5 N =9 REC =16"		
17.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown and orangeish brown, trace gravel.	SP-SM	88.2			5+7+7 N =14 REC =10"		
19.5	SILTY SAND, fine to coarse grained, moist, orangeish brown and yellowish brown, trace gravel.	SM	85.7		20	3+4+7 N =11 REC =15"		
22.0	CLAYEY SAND, fine to medium grained, wet, orangeish brown and reddish brown.	SC	83.2			5+4+5 N =9 REC =9"		
	<i>continued on next page</i>				25			

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-324**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC				3+2+2 N=4 REC=10"		Resumed drilling on 7-13-06 @ 7:00 am
	<b>Remarks</b> 27 ft: Resumed drilling on 7-13-06 @ 7:00 am					2+2+3 N=5 REC=11"		
30.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, orangeish brown.	SP-SM	75.2		30	3+4+5 N=9 REC=7"		
34.5	CLAYEY SAND, fine to coarse grained, wet, orangeish brown and yellowish brown.	SC	70.7		35	4+6+7 N=13 REC=10"		
38.5	orangeish brown and reddish brown, trace gravel					6+6+10 N=16 REC=12"		
	SANDY FAT CLAY, moist, orangeish brown and reddish brown, iron staining, strong cementation. gray	CH	66.7		40	3+5+7 N=12 REC=18"		
						1+2+3 N=5 REC=18"		
						2+2+3 N=5 REC=18"		
					45	2+2+3 N=5 REC=18"		
						3+3+3 N=6 REC=18"		
	black cemented sand lenses				50	2+4+4 N=8 REC=18"		
52.0	SILTY SAND, fine to medium grained, wet, gray.	SM	53.2			10+18+28 N=46 REC=18"		
54.5	FAT CLAY, moist, gray, trace sand.	CH	50.7		55	3+4+5 N=9 REC=18"		
						3+4+7		

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

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-324**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH				N = 11 REC = 18"		
					60	REC = 21"	PP=>4.5 tsf	
62.5	SANDY LEAN CLAY, wet, gray.	CL	42.7			4+5+7 N = 12 REC = 18"		
64.5	SANDY FAT CLAY, moist, light gray.	CH	40.7		65	5+6+10 N = 16 REC = 18"		
67.0	SILTY SAND, fine to medium grained, wet, gray, strong cementation.	SM	38.2			13+36+50/4" N = 86/10" REC = 16" REC = 22"		
	gray and white, with fine to coarse shell fragments, 50-60%, HCl reaction strong					23+16+26 N = 42 REC = 18"		
74.5	SANDY ELASTIC SILT, wet, gray and white, contains fine to coarse shell fragments, 30-40%, HCl reaction strong.	MH	30.7		75	4+7+9 N = 16 REC = 18"		
	greenish gray, trace sand, trace fine to medium shell fragments, 2-5%, HCl reaction weak					4+5+6 N = 11 REC = 18"		
	trace organic matter				80	4+5+6 N = 11 REC = 18"		
						3+3+4 N = 7 REC = 18"		
84.5	SILTY SAND, fine to medium grained, wet, greenish gray and white, with fine to coarse shell fragments, 50-60%, strong cementation, HCl reaction strong.	SM	20.7		85	50/5" N = 50/5" REC = 5" REC = 3"		
	contains fine to coarse shell fragments, 40-50%, strong cementation, HCl reaction strong					19+12+13 N = 25 REC = 18"		
					90	9+19+50/4" N = 69/10"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-324**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				 REC =16"		
	contains fine to coarse shell fragments, 30-40%					 5+7+9 N =16 REC =18"		
	contains fine to coarse shell fragments, 20-30%, HCl reaction moderate				95	 5+6+11 N =17 REC =18"		
	gray and white, contains fine to coarse shell fragments, 10-20%					 9+13+16 N =29 REC =18"		
101.5	BOTTOM OF BORING @ 101.5 FT.		3.7		100	 4+6+10 N =16 REC =18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-325**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/23/06 **Finished:** 5/23/06  
**Location:** Northing: 216948.98 ft  
Easting: 960549.73 ft  
**Ground Surface Elevation:** 85.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/23	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	ROOTMAT AND TOPSOIL.							
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown, trace root fragments, trace gravel. orangeish brown.	SP-SM	84.4			1 REC = 12"		
						3+2+2 N = 4 REC = 18"		
4.0	SILTY SAND, fine to coarse grained, moist, orangeish brown and reddish brown, trace gravel.	SM	81.0		5	2+2+3 N = 5 REC = 18"		
	orangeish brown and gray, fine to medium grained.					3+2+3 N = 5 REC = 17"		
	trace root fragments.				10	3+3+3 N = 6 REC = 11"		
	gray and orangeish gray.				15	3+3+3 N = 6 REC = 17"		Color change in tub from orangeish brown to gray at 14.5 ft.
17.0	FAT CLAY, moist, gray and greenish gray, trace sand.	CH	68.0			2+3+3 N = 6 REC = 18"		
	wet.					2+3+4 N = 7 REC = 18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-325**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, wet, gray and black.	CH	58.0		30	 3+4+10 N =14 REC =16"		
		SM						
32.0	FAT CLAY, moist, gray, trace sand.	CH	53.0		35	 4+7+10 N =17 REC =18"		
37.0	CLAYEY SAND, fine to medium grained, moist, greenish gray and gray.	SC	48.0		40	 6+9+17 N =26 REC =18"		
42.0	SILTY SAND, fine to coarse grained, moist, gray, trace fine to medium shell fragments (5-10%), HCl reaction weak.  wet, gray and white  trace fine to coarse shell fragments (50-60%), HCl reaction strong.	SM	43.0		45	 31+50 N =50 REC =12"		Harder drilling at 42 ft.
					50	 31+50 N =50 REC =12"		
					55	 17+26+18 N =44 REC =14"		
57.0		SANDY ELASTIC SILT, wet, gray and greenish gray, trace fine to medium <i>continued on next page</i>			MH	28.0		

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. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-325**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	shell fragments (2-5%), HCl reaction weak.	MH	23.0		60	2+4+6 N =10 REC =16"		Rig chatter at 60.5 ft.
	CLAYEY SAND, fine to medium grained, wet, light gray and greenish gray, trace fine to coarse shell fragments (20-30%), HCl reaction moderate.	SC			65	36+10+12 N =22 REC =18"		
67.0	SILTY SAND, fine to coarse grained, wet, gray and greenish gray, trace fine to coarse shell fragments (10-20%), HCl reaction moderate.	SM	18.0		70	7+7+7 N =14 REC =18"		
					75	7+10+9 N =19 REC =17"		
	fine to medium grained, trace fine to medium shell fragments (<5%), HCl reaction weak.				80	6+7+10 N =17 REC =17"		
	trace fine to medium shell fragments, 2-5%, HCl reaction weak.				85	4+7+10 N =17 REC =18"		
87.0	SANDY ELASTIC SILT, wet, gray and white, trace fine to coarse shell fragments (15-25%), HCl reaction moderate.	MH	-2.0		90	5+5+7 N =12 REC =18"		

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-325**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, wet, light gray and, trace fine to coarse shell fragments (30-40%), HCl reaction moderate.  gray, trace fine to medium shell fragments (2-5%), HCl reaction weak.	MH	-7.0					
		SM						
						95	8+6+8 N =14 REC =18"	
							6+10+9 N =19 REC =16"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-15.0			100		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-326**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/4/06 **Finished:** 5/4/06  
**Location:** Northing: 216859.22 ft  
Easting: 960652.25 ft  
**Ground Surface Elevation:** 103.1 (feet)

Groundwater Observations					
Encountered	Date	Time	Depth	Casing	Caved
	5/4	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.	SP-SM	102.6			2+2+2 N=4 REC=18"	w=8.2% *	
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light brown, contains root fragments.					3+2+4 N=6 REC=13"		
	fine to coarse grained.							
	fine to medium grained, stratified light brown and light orangeish brown.				5	4+4+3 N=7 REC=11"		
	fine to coarse grained, yellowish brown and grayish brown, trace fine gravel.					7+6+11 N=17 REC=11"		
	fine to medium grained, light orangeish brown below 8.5 ft.							
	fine to coarse grained.		10		10+9+10 N=19 REC=12"	w=12.2% *		
	fine to medium grained, wet, light yellowish brown.		15	5+5+6 N=11 REC=11"				
	orangeish brown and dark brown.		20	10+12+8 N=20 REC=10"				
23.5	SILTY SAND, fine to coarse grained, wet, light orangeish brown and light grayish brown. <i>continued on next page</i>	SM	79.6			5+2+2 N=4 REC=16"	w=22.7% *	

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

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-326**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
28.5	SANDY LEAN CLAY, fine to medium, wet, gray, contains silt pockets and mica.	CL	74.6		30	2+1+2 N=3 REC =18"		
	moist, with sand.					REC =24"	w=27.6% LL=41 PL=16 PP=2.00 tsf *	*Shelby tube sampler push from 33.5 to 35.5 ft.
38.5	FAT CLAY, moist, gray, trace fine to medium sand and mica.	CH	64.6		40	2+4+5 N=9 REC =18"		
43.5	ORGANIC CLAY, moist, gray, trace fine to medium sand and mica, contains fine to medium clayey sand pockets.	OH	59.6		45	REC =24"	w=33.9% LL=63 PL=22 PP=2.25 tsf *	*Shelby tube sampler push from 43.5 to 45.5 ft.
48.5	FAT CLAY, moist, gray and light gray, trace fine to medium, mica and organic matter (±1%).	CH	54.6		50	4+6+8 N=14 REC =18"		
53.5	SANDY LEAN CLAY, fine to medium, wet, gray, trace mica.	CL	49.6		55	REC =24"	PP=2.25 tsf	*Shelby tube sampler push from 53.5 to 55.5 ft.
continued on next page								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-326**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
59.5	SILTY SAND, fine to medium grained, moist, gray, trace mica, contains cemented sand pockets.	CL	43.6		60	17+8+28 N =36 REC =16"	PP=2.00 tsf	
		SM						
63.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, gray	SP-SM	39.6		65	50/3" N =50/3" REC =1"		
68.5	SILTY SAND, fine to medium grained, wet, gray, trace fine to medium shell fragments ( $\pm 5\%$ ), strong HCl reaction  little fine to coarse shell fragments ( $\pm 25\%$ ), contains clayey sand pockets.  moist, light gray, mostly moderately cemented sand, weak HCl reaction.  wet, oliveish gray and gray, trace fine to coarse shell fragments ( $\pm 5\%$ ), strong HCl reaction.	SM	34.6		70	50/5" N =50/5" REC =1"		
					75	19+24+23 N =47 REC =12"		
					80	50/3" N =50/3" REC =4"		*Rotary advancement considerably slower below 78.5 ft (Moderately difficult rotary advancement). *Rotary advancement comparatively easier from 81 to 83 ft; moderately difficult rotary advancement below 83 ft.
					85	23+13+50/4" N =63/10" REC =14"		
88.5	CLAYEY SAND, fine to medium grained, wet, gray, trace fine to coarse shell fragments ( $\pm 5\%$ ), strong HCl reaction.	SC	14.6		90	9+7+12 N =19 REC =18"		*Switched to 3-7/8" O.D. Tri-cone roller bit below 88 ft.

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-326**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
93.5	SILTY SAND, fine to medium grained, wet, gray, trace fine to medium shell fragments (±5%), strong HCl reaction.	SC	9.6					
		SM				95	7+7+12 N =19 REC =18"	
100.0	SILTY SAND, fine to medium grained, wet, gray, trace fine shell fragments (±1%), weak HCl reaction. BOTTOM OF BORING @ 100.0 FT.		3.1					
						100	6+8+12 N =20 REC =16"	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-327**  
Contract Number: 06120048  
Sheet: 1 of 5

**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:** 5/25/06 **Finished:** 5/26/06  
**Location:** Northing: 216865.7 ft  
Easting: 960573.37 ft  
**Ground Surface Elevation:** 86.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/25	---	28.0'	---	---
<b>Start of day</b>	5/26	---	38.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.	SM	86.4					
2.0	SILTY SAND, fine to coarse grained, moist, brown and yellowish brown, trace root fragments.	SP-SM	84.9			2+3+3 N=6 REC=11"		
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown and orangeish brown, trace root fragments.	SC	82.4			2+3+3 N=6 REC=3"		
7.0	CLAYEY SAND, fine to coarse grained, moist, orangeish brown and reddish brown, trace root fragments.	SM	79.9	5		3+5+6 N=11 REC=12"		
13.0	SILTY SAND, fine to medium grained, moist, orangeish brown and gray.	SC	73.9			5+4+3 N=7 REC=18"		
17.0	CLAYEY SAND, fine to medium grained, moist, gray.	CL	69.9			3+2+1 N=3 REC=18"		
22.0	SANDY LEAN CLAY, moist, gray.	SM	64.9			3+4+3 N=7 REC=17"		
	SILTY SAND, fine to medium grained, moist, gray and light gray.	CL				2+3+3 N=6 REC=18"		
		SM				3+3+4 N=7 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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-327**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
				▽				
33.0	FAT CLAY, moist, light gray, trace sand.	CH	53.9		30	4+5+5 N =10 REC =18"		
37.0	SANDY SILT, moist, greenish gray and gray.	ML	49.9		35	5+6+4 N =10 REC =18"		
43.0	SILTY SAND, fine to medium grained, moist, gray and white, trace fine to medium shell fragments, 15-25%, HCl reaction weak. trace fine to medium shell fragments, >5%, HCl reaction weak, platy structure.	SM	43.9		40	4+4+5 N =9 REC =16"		Harder drilling
					45	27+50 N =50 REC =12"		Rig chatter
					50	13+50 N =50 REC =11"		
					55	50/5" N =50/5" REC =5"		
57.0	SANDY LEAN CLAY, moist, gray and greenish gray, trace fine to medium <i>continued on next page</i>	CL	29.9					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-327**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	shell fragments, 2-5%, HCl reaction weak.	CL	24.9		60	4+4+7 N = 11 REC = 18"		Rig chatter
	SILTY SAND, fine to medium grained, moist, greenish gray and gray, trace fine to medium shell fragments, 2-5, cementation, HCl reaction strong.	SM			65	50/4" N = 50/4" REC = 2"		
77.0	wet, trace fine to coarse shell fragments, 20-30%, HCl reaction moderate.	MH	9.9		70	5+5+7 N = 12 REC = 18"		Rig chatter
					75	7+8+8 N = 16 REC = 17"		
	ELASTIC SILT wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.				80	5+5+8 N = 13 REC = 16"		
87.0		SM	-0.1		85	4+4+8 N = 12 REC = 18"		
	SILTY SAND, fine to medium grained, wet, greenish gray, trace fine to coarse shell fragments, 20-30%, HCl reaction moderate.				90	4+8+12 N = 20 REC = 17"		
<i>continued on next page</i>								

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-327**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS				
					DEPTH	DATA						
	fine to coarse grained, light gray and white, with fine to coarse shell fragments, 50-60%, strong cementation, HCl reaction strong.	SM			95	20+17+13 N =30 REC =18"		Rig chatter				
					100	6+15+18 N =33 REC =16"		Rig chatter				
					105	6+12+19 N =31 REC =18"						
107.0					FAT CLAY, wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	CH		-20.1	110	5+7+12 N =19 REC =18"		
									115	REC =9"	w=44.3% LL=60 PL=24 PP=>4.5 tsf *	
122.0	SILTY SAND, fine to coarse grained, wet, light gray and white, trace fine to coarse shell fragments, 30-40%, strong cementation, HCl reaction strong. <i>continued on next page</i>	SM	-35.1		120	5+7+11 N =18 REC =18"						
						50/3"						

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-327**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				N =50/3" REC =2"		
						5+7+11 N =18 REC =0"		Resumed drilling on 5/26/06 @ 7:20am
	fine to medium grained, moist, greenish gray and gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.					5+6+11 N =17 REC =18"		
						REC =10"	PP=>4.5 tsf	
	trace fine to medium shell fragments, 5-10%, HCl reaction weak.					3+5+7 N =12 REC =18"		
						5+7+10 N =17 REC =18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-63.1					

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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-328**  
**Contract Number:** 06120048  
**Sheet:** 1 of 5

**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:** 6/19/06 **Finished:** 6/20/06  
**Location:** Northing: 216828.86 ft  
Easting: 960493.21 ft  
**Ground Surface Elevation:** 76.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/19	---	9.0'	---	---
<b>Start of day</b>	6/20	---	9.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	ROOTMAT AND TOPSOIL.	SP-SM	76.1			2+1+2 N=3 REC=16"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace root fragments.					2+2+4 N=6 REC=15"	w=4.5% LL=NP PL=NP *	
4.5	SANDY LEAN CLAY, moist, orangeish brown and gray, trace root fragments.	CL	71.8		5	2+3+3 N=6 REC=18"		
7.0	SANDY FAT CLAY, trace sand, wet, gray.	CH	69.3			2+2+2 N=4 REC=18"	w=30% *	
				▽				
					10	3+3+4 N=7 REC=18"	w=28.8% LL=59 PL=17 *	start of mud rotary drilling
13.0	FAT CLAY, trace sand, moist, gray.		63.3			2+3+4 N=7 REC=18"		color change in mud tub from orangeish brown to gray
					15			
18.5	ELASTIC SILT, gray	MH	57.8			5+4+6 N=10 REC=18"	w=35.1% LL=64 PL=36 *	
					20			
23.5	FAT CLAY, dark green	CH	52.8			4+6+9 N=15 REC=18"	w=33% LL=77 PL=28	
					25			
	<i>continued on next page</i>							

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

- Comments:**
- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - \* = See Appendix I for additional lab testing data.
  - Ground water observation well OW-328 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-328**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	CLAYEY SAND, contains shells, moist, gray and black.	CH	49.3				*	Harder drilling
		SC				7+9+14 N =23 REC =18"	w=30.5% LL=40 PL=21 *	
32.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray, contains fine to coarse shell fragments, 30-40%, HCl reaction strong.	SP-SM	44.3					
						33+34+50/4" N =84/10" REC =16"	w=18.2% *	
						50/4" N =50/4" REC =4"	w=22.6% *	
	gray and white, with fine to coarse shell fragments, 50-60%.					3+15+10 N =25 REC =18"	w=24.2% LL=NP PL=NP *	
47.0	CLAYEY SILT, moist, greenish gray, strong cementation, HCl reaction strong.	ML	29.3			10+15+50/1" N =65/7" REC =12"	w=25.8% *	harder drilling/ heavy rig chatter
52.0	SILTY SAND, fine to medium grained, wet, greenish gray, contains fine to coarse shell fragments, 25-35% , HCl reaction strong.	SM	24.3			5+5+21 N =26 REC =18"	w=24% *	Rig chatter
<i>continued on next page</i>								

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.
3. Ground water observation well OW-328 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-328**  
Contract Number: 06120048  
Sheet: 3 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
61.0	ORGANIC SILT, wet, greenish gray, contains fine to coarse shell fragments, 25-35%, HCl reaction, strong.	SM	15.3		60	5+5+8 N =13 REC =18"	w=44.2% LL=72 PL=41 *	
		OH			65	REC =24"		
67.0	SILTY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SM	9.3		70	4+6+9 N =15 REC =18"	w=29.4% LL=NP PL=NP *	
						75		
	greenish gray and white, with fine to coarse shell fragments, 50-60%, strong cementation, HCl reaction strong.				80	8+18+28 N =46 REC =18"		Rig chatter
85.0	SANDY ELASTIC SILT, green	MH	-8.7		85	8+16+50/5" N =66/11" REC =16"	w=21.2% LL=NP PL=NP *	Rig chatter
						90		

continued on next page

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-328 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-328**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
						REC = 13"		
					95			
						5+6+12 N = 18 REC = 18"	w=38.2% LL=53 PL=34 *	softer drilling
102.0	SILTY SAND, wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SM	-25.7			6+9+12 N = 21 REC = 18"	w=62.7% *	
						5+8+13 N = 21 REC = 18"		Resumed drilling on 6/20/06 @ 7:30am
112.0	SANDY ELASTIC SILT, fine to medium grained, wet, greenish gray, contains fine to coarse shell fragments, 20-30%, HCl reaction strong.	MH	-35.7			6+7+14 N = 21 REC = 18"	w=30.5% *	
						5+6+8 N = 14 REC = 18"	w=44.7% *	softer drilling
117.0	ELASTIC SILT, moist, greenish gray, trace fine to medium shell fragments, 5-10%, HCl reaction weak.	MH	-40.7					
						REC = 11"	w=45.6%	
	<i>continued on next page</i>							

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.
3. Ground water observation well OW-328 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-328**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	oliveish gray	MH			125		LL=72 PL=45 PP=>4.5 tsf *	
					130	5+7+10 N=17 REC=18"		
					135	6+6+9 N=15 REC=18"	w=48.2% LL=70 PL=51 *	
					140	6+7+9 N=16 REC=18"		
					145	5+7+8 N=15 REC=18"	w=59.3% *	
150.0	BOTTOM OF BORING @ 150.0 FT.		-73.7		150	6+8+11 N=19 REC=18"	w=74.8% LL=134 PL=100 *	

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.
3. Ground water observation well OW-328 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-329**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 6/13/06 **Finished:** 6/15/06  
**Location:** Northing: 216800.38 ft  
Easting: 960379.43 ft  
**Ground Surface Elevation:** 74.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
Encountered	6/13	---	33.5'	---	---
Start of day	6/14	---	28.0'	---	---
Start of Day	6/15	---	30.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		74.3					
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown, trace root fragments.	SP-SM				2+2+2 N =4 REC =5"		
2.5	CLAYEY SAND, fine to medium grained, moist, orangeish brown.	SC	72.3			3+4+4 N =8 REC =10"		
4.5	SILTY SAND, fine to medium grained, moist, orangeish brown.	SM	70.3	5		3+4+4 N =8 REC =18"		
7.0	SANDY FAT CLAY, moist, gray.	CH	67.8			3+3+3 N =6 REC =18"		
					10	1+4+6 N =10 REC =18"		
					15	2+3+3 N =6 REC =18"		Softer drilling
17.0	ELASTIC SILT with sand, moist, gray.	MH	57.8			3+4+5 N =9 REC =18"		
22.0	SANDY SILT, moist, gray.	ML	52.8			4+6+8 N =14 REC =18"		
	<i>continued on next page</i>				25			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-329**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
32.0	SILTY SAND, fine to medium grained, wet, light gray.	SM	42.8			5+8+13 N =21 REC =18"		
	gray and white, contains fine to medium shell fragments, 10-20%, HCl reaction moderate					13+27+33 N =60 REC =18"		
						18+21+31 N =52 REC =13"		
42.0	CLAYEY SILT, moist, gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	32.8			3+4+6 N =10 REC =18"		
47.0	SILTY SAND, fine to coarse grained, wet, gray, with fine to coarse shell fragments, 40-50%, strong cementation, HCl reaction strong.	SM	27.8			50/4" N =50/4" REC =2"		Rig chatter
52.0	CLAYEY SAND, fine to medium grained, wet, light gray, with fine to coarse shell fragments, 40-50%, strong cementation, HCl reaction strong.	SC	22.8			11+30+33 N =63 REC =17"		
57.0	SILTY SAND, fine to medium grained, wet, greenish gray, contains fine to <i>continued on next page</i>	SM	17.8					

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. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-329**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	coarse shell fragments, 20-30%, HCl reaction moderate.	SM			60	4+5+6 N=11 REC=18"		
					65	REC=22"		
					70	5+5+10 N=15 REC=18"		
					75	REC=24"		
	with fine to coarse shell fragments, 60-70%, strong cementation, HCl reaction strong				80	50/3" N=50/3" REC=2"		
	contains fine to coarse shell fragments, 30-40%				85	14+50 N=50 REC=10"		Rig chatter
87.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments, 5-10%, HCl reaction moderate.	SC	-12.2		90	10+12+24 N=36 REC=18"		Resumed drilling on 6/15/06 @ 7:00am
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-329**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	greenish gray and white, contains fine to medium shell fragments, 30-40%, HCl reaction strong .	SC				95	5+10+14 N =24 REC =16"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-25.2			100	6+8+13 N =21 REC =18"	

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-330**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 5/25/06 **Finished:** 5/26/06  
**Location:** Northing: 216715.4 ft  
Easting: 960523.7 ft  
**Ground Surface Elevation:** 85.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/25	---	10.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	ROOTMAT AND TOPSOIL	SP	85.2			WOH+2+2 N=4 REC=13"		
2.0	POORLY GRADED SAND, fine to coarse grained, moist, yellowish orange, trace gravel.	SP-SM	83.5			5+4+6 N=10 REC=18"		
5.0	POORLY GRADED SAND WITH SILT, trace gravel, fine to coarse grained, moist, orangeish yellow.	SP	80.5		5	2+4+4 N=8 REC=10"		
7.0	POORLY GRADED SAND WITH SILT, trace gravel, fine to coarse grained, moist, brownish orange.	SP-SM	78.5			2+3+3 N=6 REC=10"		
	wet, dark orange, with gravel.				10	4+6+9 N=15 REC=15"		
13.0	SANDY LEAN CLAY, fine to medium, moist, dark gray.	CL	72.5			1+2+3 N=5 REC=18"		
						3+3+3 N=6 REC=18"		
						4+5+6 N=11 REC=18"		
	with sand.							

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-330**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	CLAYEY SAND, fine to medium grained, moist, dark gray.	CL	58.5					
		SC					REC = 0"	
32.0	LEAN CLAY, moist, gray, trace sand.	CL	53.5					
						5+8+9 N = 17 REC = 18"		
37.0	CLAYEY SAND, fine to medium grained, moist, greenish gray.	SC	48.5					
						6+6+8 N = 14 REC = 18"		
42.0	POORLY GRADED SAND, fine to medium grained, moist, greenish gray, with clay, with fine to coarse shell fragments, strong HCl reaction, 10-15% shell frag.  fine to coarse grained, grayish green.  fine to medium grained, with fine to medium shell fragments, strong HCl reaction.	SP	43.5					
						34+50/5" N = 50/5" REC = 8"		
						50/5" N = 50/5" REC = 5"		
						42+50/3" N = 50/3" REC = 10"		
<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-330**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.0	CLAYEY SAND, fine to medium grained, moist, grayish green. with fine to coarse shell fragments, 25-30% shell frag.  with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SC	27.5		60	4+3+5 N =8 REC =18"		
					65	50/5" N =50/5" REC =5"		
67.0	SILTY SAND, fine to medium grained, wet, green, with fine to coarse shell fragments, strong HCl reaction, 15-25% shell frag.  trace fine to coarse shell fragments, moderate HCl reaction, 5-10% shell frag.  0-5% shell frag.  with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SM	18.5		70	6+4+9 N =13 REC =18"		
					75	9+11+10 N =21 REC =18"		
					80	6+7+14 N =21 REC =18"		
					85	5+6+12 N =18 REC =18"		
					90	6+11+18 N =29 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-330**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	POORLY GRADED SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, with silt, strong HCl reaction, 40-50% shell frag, contains cemented sand.  10-25% shell frag.	SM	-6.5					
		SP-SM				50/4" N = 50/4" REC = 4"		
100.0	BOTTOM OF BORING @ 100.0 FT.		-14.5					
						8+12+15 N = 27 REC = 18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-331**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/24/06 **Finished:** 5/24/06  
**Location:** Northing: 216970.57 ft  
Easting: 960481.79 ft  
**Ground Surface Elevation:** 68.3 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/24	---	14.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.7	ROOTMAT AND TOPSOIL.							
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown, trace root fragments, trace wood fragments. yellowish brown.	SP-SM	67.6			1/18" N = 1/18" REC = 18"		
						4+3+3 N = 6 REC = 14"		
11.5	LEAN CLAY, moist, orangeish brown and gray, trace sand, trace root fragments. sandy.	CL	63.8	5		3+4+6 N = 10 REC = 11"	w=20.2% LL=43 PL=15 *	
						3+2+7 N = 9 REC = 18"		
						7+9+9 N = 18 REC = 0"		
14.2	FAT CLAY, moist, gray, trace sand.	CH	54.1	▽	15	5+6+6 N = 12 REC = 16"		
21.5	SANDY SILT, moist, gray.	ML	46.8			REC = 24"	w=30.8% LL=57 PL=23 PP=>4.5 tsf *	
						7+12+16 N = 28 REC = 18"		

continued on next page

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

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-331**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM			60	3+4+10 N=14 REC=18"	w=26.6% *	
	greenish gray, fine to medium shell fragments (2-5%), HCl reaction weak.				65	5+6+8 N=14 REC=16"		
					70	3+4+6 N=10 REC=18"		
	fine to coarse shell fragments (35-45%), HCl reaction strong.				75	3+5+12 N=17 REC=18"	w=35.8% *	
					80	6+6+6 N=12 REC=18"		
	fine to medium shell fragments (2-5%), HCl reaction weak.				85	7+11+12 N=23 REC=16"		
	fine to coarse shell fragments (5-10%), cementation with strong HCl reaction .				90	5+7+16 N=23 REC=18"	w=32.7% *	
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-331**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
96.5	CLAYEY SAND, fine to medium grained, wet, greenish gray, trace fine to coarse shell fragments (5-10%), HCl reaction moderate.	SC	-28.2		95	5+7+10 N =17 REC =18"		
100.0					100	7+10+17 5/8" N =27/11" REC =18"		
	BOTTOM OF BORING @ 100.0 FT.		-31.7					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-332**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 6/1/06 **Finished:** 6/2/06  
**Location:** Northing: 217127.42 ft  
Easting: 960400.52 ft  
**Ground Surface Elevation:** 65.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/1	---	13.5'	---	---
<b>Start of day</b>	6/2	---	10.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL.	SC	65.0			1+1+2 N=3 REC=5"		
4.0	CLAYEY SAND, fine to coarse grained, moist, yellowish brown, trace root fragments.  fine to medium grained, moist, orangeish brown and reddish brown, trace wood fragments, cemented sand gravel size.  FAT CLAY, moist, orangeish brown and gray, trace sand.	CH	61.4			22+2+3 N=5 REC=16"  5 2+2+3 N=5 REC=14"		
8.0	SANDY SILT, moist, gray.	ML	57.4			3+3+4 N=7 REC=18"  10 2+5+7 N=12 REC=18"		
13.0	SILTY SAND, fine to medium grained, wet, dark gray.	SM	52.4	▽		1+2+3 N=5 REC=18"		
17.0	ELASTIC SILT, moist, light gray, trace sand.	MH	48.4			4+6+10 N=16 REC=18"		
22.0	SILTY SAND, fine to coarse grained, moist, greenish gray and gray, weak cementation.	SM	43.4			3+6+11 N=17 REC=16"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-332**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to medium grained, wet, dark gray and white, contains fine to medium shell fragments, 20-30%, HCl reaction strong.	SM				32+50/5" N =50/5" REC =8"		
	with fine to coarse shell fragments, 60-70%					16+15+16 N =31 REC =16"		
37.0	CLAYEY SAND, fine to medium grained, wet, gray and white, with fine to coarse shell fragments, 40-50%, HCl reaction strong.	SC	28.4			7+8+15 N =23 REC =16"		
42.0	SANDY SILT, wet, greenish gray, trace organic matter.	ML	23.4			3+3+5 N =8 REC =18"		
						50/0.5" N =50/0.5"		rig chatter
	white, contains fine to coarse shell fragments, 20-30%, HCl reaction strong.					5+6+7 N =13 REC =18"		rig chatter
57.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, contains <i>continued on next page</i>	SM	8.4					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-332**  
Contract Number: 06120048  
Sheet: 3 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to coarse shell fragments, 20-30%, strong cementation, HCl reaction strong.	SM			60	6+9+50/5" N =59/11" REC =16"		rig chatter
	trace fine to medium shell fragments, 2-5%, HCl reaction weak.				65	5+6+11 N =17 REC =18"		
					70	4+4+8 N =12 REC =18"		
					75	REC =13"		
	light gray and white, with fine to medium shell fragments, 40-50%, strong cementation, HCl reaction strong.				80	38+17+15 N =32 REC =18"		
	trace fine to medium shell fragments, 2-5%, HCl reaction weak.				85	8+12+21 N =33 REC =18"		resumed drilling on 6/2/06 @ 7:15am
87.0	SANDY SILT, wet, greenish gray, trace fine to medium shell fragments, 10-20%, HCl reaction moderate.	ML	-21.6		90	6+8+18 N =26 REC =18"		harder drilling
	<i>continued on next page</i>							

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-332**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	HCl reaction weak	ML			95	6+8+14 N =22 REC =17"		
100.0	BOTTOM OF BORING @ 100.0 FT.		-34.6		100	7+12+14 N =26 REC =18"		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-333**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/17/06 **Finished:** 5/17/06  
**Location:** Northing: 216657.04 ft  
Easting: 960386.24 ft  
**Ground Surface Elevation:** 89.5 (feet)

Groundwater Observations					
Encountered	Date	Time	Depth	Casing	Caved
	5/17	---	10.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.	SP-SM	89.0	▽	1+4+3	N = 7 REC = 17"	w=6.2% *	
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brown, contains root fragments.				2+3+5	N = 8 REC = 13"		
	fine to medium grained.							
	fine to coarse grained, light brown, contains clayey sand pockets.				3+4+4	N = 8 REC = 10"		
	fine to medium grained.				5+5+6	N = 11 REC = 11"		
	fine to coarse grained, wet, brown.				4+8+8	N = 16 REC = 10"		
	dark yellowish brown, trace fine gravel.	2+3+5	N = 8 REC = 17"					
17.0	CLAYEY SAND, fine to coarse grained, wet, dark orangeish brown and dark yellowish brown, contains fine to medium cemented sand pockets, moderate HCl reaction.	SC	72.5					
19.5	FAT CLAY, moist, mottled yellowish brown and light gray, trace fine to medium sand, contains fine to medium clayey sand pockets.	CH	70.0		12+10+10	N = 20 REC = 14"		
	gray, trace mica.			2+2+3	N = 5 REC = 18"		w=32% LL=57 PL=33	

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

*continued on next page*

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-333**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	moist, gray, trace fine to medium sand.	CH				REC =24"	w=38.9% LL=52 PL=19 PP=2.25 tsf *	*Shelby tube sampler push from 28.5 to 30.5 ft.
	gray and dark gray, trace mica.					4+4+6 N =10 REC =18"		
	moist, gray, with fine to medium sand, trace mica.					REC =24"	w=39.7% LL=61 PL=23 PP=4.00 tsf *	*Shelby tube sampler push from 38.5 to 40.5 ft.
43.5	SILTY SAND, fine to medium grained, moist, dark blackish gray, trace fine to medium shell fragments ( $\pm 1\%$ ), contains fine to medium moderately cemented sand pockets, weak HCl reaction.	SM	46.0			5+8+8 N =16 REC =18"	w=26.1% *	
48.5	CLAYEY SAND, wet, gray, some fine to coarse shell fragments ( $\pm 30\%$ ), contains clayey sand and lean clay pockets, strong HCl reaction.	SC	41.0			REC =4"	w=25.2% LL=34 PL=13 *	*Shelby tube sampler push from 48.5 to 48.8 ft
53.5	SILTY SAND, moist, gray, with fine to medium sand, trace fine to medium shell fragments ( $\pm 5\%$ ), moderate HCl reaction, trace mica.	SM	36.0			18+32+33 N =65 REC =16"	w=20.9% *	
<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-333**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	SANDY SILT, fine to medium, moist, gray, contains strongly cemented sand pockets and indurated silt pockets, weak HCl reaction, trace fine to medium shell fragments ( $\pm 1\%$ ).	SM	27.5		60	4+4+6 N = 10 REC = 18"	w=34.5% *	*Slight to moderate difficulty in rotary advancement below 62 ft. *Slight to moderately difficult drilling as rotary advanced below 65.5 ft. *Switched to 3-7/8" Tri-cone roller bit below 68.5 ft. *Moderate difficulty in rotary advancement below 68 ft (moderate drill rig chatter). *Difficult to very difficult rotary advancement from 69.5 to 70 ft (moderate to strong rig chatter).
67.0	SILTY SAND, with gravel, fine to medium grained, wet, light oliveish gray and greenish gray, contains thin (1 inch) shell bed layer and strongly cemented sand pockets, trace fine to coarse shell fragments ( $\pm 5\%$ ), strong HCl reaction.	ML	22.5		65	22+12+15 N = 27 REC = 8"		
78.5	gray, few fine to coarse shell fragments ( $\pm 10\%$ ), weak HCl reaction, (weak HCl reaction applicable to test area where no shell fragments were observed).	SM	22.5		70	50 REC = 6"	w=19.3% *	
78.5	gray, few fine to coarse shell fragments ( $\pm 10\%$ ), weak HCl reaction, (weak HCl reaction applicable to test area where no shell fragments were observed).	SM	22.5		75	8+9+14 N = 23 REC = 18"		
78.5	POORLY GRADED SAND WITH SILT, trace fine to medium shell fragments ( $\pm 5\%$ ).	SP-SM	11.0		80	5+8+12 N = 20 REC = 18"	w=28.7% LL=NP PL=NP *	
87.0	light greenish gray and gray, trace fine to medium shell fragments ( $\pm 1\%$ ), contains silt pockets, weak HCl reaction.	SM	11.0		85	4+6+7 N = 13 REC = 18"		
87.0	SILTY SAND, fine to medium grained, wet, light greenish gray and gray, trace fine to medium shell fragments ( $\pm 1\%$ ), moderate HCl reaction.	SM	2.5		90	6+6+11 N = 17 REC = 18"		
continued on next page								

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

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-333**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
	light gray and gray, mostly fine to coarse shell fragments (±50%), contains fine to medium sandy lean clay pockets, strong HCl reaction, strong cementation, contains black particles (<1/8 inch).				95	11+39+50/5" N =89/11" REC =17"	w=16.1% *	*Moderate to difficult rotary advancement below 95.5 ft (moderate to strong rig chatter at 95.5, 97, and 98 ft).
98.8	mostly moderately cemented sand below 98.7 ft. BOTTOM OF BORING @ 98.8 FT.		-9.3			50/4" N =50/4" REC =4"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-334**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 5/23/06 **Finished:** 5/24/06  
**Location:** Northing: 216515.53 ft  
Easting: 960556.61 ft  
**Ground Surface Elevation:** 86.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/23	---	11.0'	---	---
<b>Start of day</b>	5/24	---	4.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
5.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, dark brown, and organic matter.	SP-SM	81.8		1+1+2 N=3 REC=18"	w=9.6% *		
	Yellowish brown, contains root fragments.	1+1+1 N=2 REC=18"						
7.5	SILTY SAND, light brown	SM	79.3		4+2+2 N=4 REC=12"	w=15.9% *		
9.5	LEAN CLAY, moist, oliveish gray, with sand, Fine-med. sand.	CL	77.3		1+1+1 N=2 REC=18"			
18.5	SILTY SAND, fine to medium grained, wet, light gray.	SM	68.3	▽	4+4+3 N=7 REC=18"	w=15.6% LL=NP PL=NP *		
	Orangeish brown, Med. - coarse sand.	4+7+7 N=14 REC=18"						
23.0	SANDY LEAN CLAY, moist, greenish gray, contains mica.	CL	63.8		1+1+2 N=3 REC=18"	w=31.3% *		
	FAT CLAY with sand, moist, dark greenish gray	CH			REC=24"	w=35.3% LL=51 PL=16 PP=2.00 tsf		
	<i>continued on next page</i>							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-334**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH					*	
33.0	LEAN CLAY, moist, gray	CL	53.8		30	3+5+5 N =10 REC =18"	w=42.5% *	No PP due to bent tube
					35	REC =13"	w=32.6% LL=47 PL=13 *	
38.5	SILTY SAND, fine to medium grained, moist, greenish gray, contains mica.	SM	48.3		40	6+6+7 N =13 REC =18"		
					45	10+15+24 N =39 REC =18"	w=27% *	
					50	15+27+50/2" N =77/8" REC =14"	w=27.2% *	
53.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, light gray, shell fragments, moderate HCl reaction, 40% fine-med. shell.	SP-SM	33.3		55	16+26+36 N =62 REC =18"	w=21.4% *	Start of drilling for the day, harder drilling
56.0	SILTY SAND, fine to medium grained, wet, light gray, shell fragments, strong HCl reaction, 40% shell.	SM	30.8					
	<i>continued on next page</i>							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-334**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
61.0	SILTY GRAVEL with sand, fine to medium grained, wet, greenish gray, shell fragments, contains cemented sand, weak HCl reaction, 5% med. - coarse shell.	SM	25.8		60	12+12+9 N =21 REC =18"			
		GM			65	50/5" N =50/5" REC =5"	w=19% LL=NP PL=NP *		
66.0	SILTY SAND, fine to medium grained, wet, greenish gray, shell fragments, contains cemented sand, weak HCl reaction, 5% fine - med. shell.  Moderate HCl reaction, 15% med. - coarse shell.  3% med. - coarse shell.  3% fine - med. shell.  25% med. - coarse shell.	SM	20.8		70	7+7+7 N =14 REC =18"			
					75	10+11+15 N =26 REC =18"	w=27.3% *		
						80	5+7+13 N =20 REC =18"		
						85	4+6+10 N =16 REC =18"	w=28% *	
						90	4+7+12 N =19 REC =18"		
<i>continued on next page</i>									

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-334**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Light gray, strong HCl reaction, 40% med. - coarse shell.	SM				21+50/5" N =50/5" REC =11"		
	Light gray, 25% med. - coarse shell.					9+14+22 N =36 REC =18"	w=28.9% *	
100.0	BOTTOM OF BORING @ 100.0 FT.		-13.3					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-335**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 5/2/06 **Finished:** 5/3/06  
**Location:** Northing: 216732.7 ft  
Easting: 960703.3 ft  
**Ground Surface Elevation:** 99.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/2	---	19.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL.	SP-SM	99.1			2+3+3 N=6 REC=15"		
2.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown, trace root fragments.	CL	97.0			1+3+4 N=7 REC=13"		
5.0	LEAN CLAY with sand, moist, orangeish brown, trace root fragments.	SM	94.5	5		1+2+1 N=3 REC=8"		
7.5	SILTY SAND, fine to medium grained, moist, orangeish brown.	SP-SM	92.0			4+5+10 N=15 REC=16"		
10.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brown and orangeish brown.	SM	89.0	10		12+12+7 N=19 REC=14"		
13.5	SILTY SAND, fine to medium grained, moist, brown and orangeish brown.	SP-SM	86.0	15		7+8+13 N=21 REC=12"		
	wet, orange and brownish yellow.			▽		7+9+10 N=19 REC=18"		
23.5		SC	76.0			7+7+2 N=9		
24.5	CLAYEY SAND, fine to coarse grained, moist, brown and reddish yellow, trace fine gravel.	SM	75.0		25			

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-335**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
28.5	SILTY SAND, trace fine gravel, fine to coarse grained, wet, yellow and orangeish brown.	SM						
	LEAN CLAY with sand, moist, gray.	CL	71.0		30	WOH+WOH+9 N=9 REC=18"		Resumed drilling on 5/3/06, drilling mud @ ground surface
						REC=24"	PP=2.50 tsf	
33.5	FAT CLAY with sand, moist, gray.	CH	66.0		35	WOH+3+3 N=6 REC=18"		
					40		REC=24"	PP=2.50 tsf
43.5	LEAN CLAY with sand, moist, gray.	CL	56.0		45	4+4+5 N=9 REC=18"		
					50			PP=>4.5 tsf
	gray and light gray.							
					55	4+4+5 N=9 REC=18"		

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

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-335**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.8	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, gray and light gray, trace fine to medium shell fragments, moderate HCl reaction.	CL	40.7		60		REC =1" 30+50/2" N =50/2" REC =13"	tube refusal at 13 inches bent tube
		SP-SM						
63.5	SILTY SAND, moist, light gray, trace fine to medium shell fragments, moderate HCl reaction.  fine to coarse shell fragments, strong HCl reaction.	SM	36.0		65		15+18+21 N =39 REC =18"	hard pan encountered
					70		18+20+20 N =40 REC =17"	
73.5	LEAN CLAY with sand, moist, light gray and white, trace fine to medium shell fragments, strong HCl reaction.	CL	26.0		75		10+50/2" N =50/2" REC =17"	PP=1.50 tsf
78.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light gray and white, with fine to coarse shell fragments, strong HCl reaction.	SP-SM	21.0		80		8+8+24 N =32 REC =18"	Changed to roller bit
79.2		SM						
	SILTY SAND, fine to medium grained, moist, light gray and grayish brown, with fine to coarse shell fragments, strong HCl reaction.				85		6+8+7 N =15 REC =18"	
	gray and white.				90		5+3+5 N =8 REC =18"	
	dark gray and white.							
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-335**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	wet, gray and greenish gray, trace fine to coarse shell fragments.	SM			95	4+5+5 N =10 REC =18"		
100.0	SILTY SAND, fine to medium grained, wet, gray and greenish gray, trace shell fragments. BOTTOM OF BORING @ 100.0 FT.	SM	-0.5		100	5+7+9 N =16 REC =18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-336**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/12/06 **Finished:** 5/15/06  
**Location:** Northing: 216632.91 ft  
Easting: 960750.27 ft  
**Ground Surface Elevation:** 96.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/12	---	10.5'	---	---
<b>Start of day</b>	5/15	---	12.8'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Forest litter, rootmat and topsoil.	FILL	96.6			3+4+3 N=7 REC=18"		*NWJ rods used.
	Silty sand PROBABLE FILL, fine to coarse grained, moist, brown, FILL.					2+2+2 N=4 REC=11"		
	fine to medium grained.				5	WOH+1+2 N=3 REC=12"		
	brown and grayish brown.					1+1+1 N=2 REC=10"		
	brown.							
10.5	Clayey sand PROBABLE FILL, fine to medium grained, wet, brown, contains leaf fragments.	FILL	86.4	▽	10	WOH+WOH+6 N=6 REC=16"	w=11.4% *	
11.5		SC	85.4			2+6+4 N=10 REC=14"		
	CLAYEY SAND, fine to medium grained, moist, brown.							
	light blueish gray.							
17.0	SANDY LEAN CLAY, fine to medium, moist, light blueish gray and light orangeish brown.	CL	79.9			WOH+3+6 N=9 REC=14"	PP=2.00 tsf	
22.0	SANDY SILT, fine to medium, wet, yellowish brown and light gray.	ML	74.9			1+2+1 N=3 REC=18"	PP=1.00 tsf	
	<i>continued on next page</i>							

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.
3. Ground water observation well OW-336 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-336**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	FAT CLAY, moist, gray, trace fine to medium sand and mica.	ML	69.9		30		w=26.9% *	
	trace fine sand.	CH						
37.0	ELASTIC SILT, moist, light greenish gray and gray, trace fine sand and mica.	MH	59.9		40			
42.0	FAT CLAY, moist, gray, trace fine sand and mica.	CH	54.9		45		PP=3.25 tsf	
47.0	SANDY LEAN CLAY, fine to medium, moist, gray, trace mica.	CL	49.9		50		w=25.9% *	**Resumed drilling at 8:45 AM on 5/15/06.
52.0	CLAYEY SAND, fine to medium grained, moist, gray, contains clayey sand pockets.	SC	44.9		55		PP=NA tsf	
56.0	POORLY GRADED SAND WITH SILT, fine to medium grained, trace coarse gravel, contains clayey sand pockets, moist, gray.	SP-SM	40.9					*Relative difficulty in rotary advancement below 56 ft.

*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.
3. Ground water observation well OW-336 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-336**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0		SP-SM	34.9		60	33+50 N =50 REC =12"		
	SILTY SAND, fine to medium grained, moist, gray, trace fine to medium shell fragments (±5%), weak HCl reaction.	SM		65	50/5" N =50/5" REC =4"			
	wet, gray, little fine to coarse shell fragments (±20%), strong HCl reaction.			70	20+17+20 N =37 REC =14"	w=19.6% *		
	moist, light gray, mostly moderately cemented sand layers, weak HCl reaction.			75	50/3" N =50/3" REC =2"		*Moderate to difficult rotary advancement below 73.5 ft. *Slight to moderate difficulty in rotary advancement below 75 ft.	
	wet, oliveish gray and light gray, few fine to coarse shell fragments (±10%), moderate HCl reaction, moderate cementation.			80	50/3" N =50/3" REC =4"			
	gray, trace fine to coarse shell fragments (±5%), strong HCl reaction, (strong HCl reaction with shell fragments only).			85	6+7+12 N =19 REC =18"	w=27.3% *		
	weak HCl reaction.			90	7+6+14 N =20 REC =18"			
<i>continued on next page</i>								

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.
3. Ground water observation well OW-336 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-336**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	gray, trace fine to medium shell fragments (±5%), contains clayey sand layers, weak HCl reaction.	SM				7+7+11 N = 18 REC = 18"		
97.0	CLAYEY SAND, fine to medium grained, wet, gray, trace fine to medium shell fragments (±1%), weak HCl reaction.	SC	-0.1			4+6+7 N = 13 REC = 18"	w=32.1% *	
100.0	BOTTOM OF BORING @ 100.0 FT.		-3.1					

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.
3. Ground water observation well OW-336 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-337**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 6/6/06 **Finished:** 6/7/06  
**Location:** Northing: 217257.88 ft  
Easting: 960264.41 ft  
**Ground Surface Elevation:** 71.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/6	---	9.0'	---	---
<b>Start of day</b>	6/7	---	10.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.8	ROOTMAT AND TOPSOIL.		71.0					
2.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown and orangeish brown, trace root fragments.	SP-SM	69.3			1+2+2 N=4 REC=9"		
4.5	CLAYEY SAND, fine to coarse grained, moist, orangeish brown, trace root fragments, trace wood fragments.	SC	67.3			3+3+4 N=7 REC=15"		
7.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown.	SP-SM	64.8		5	3+3+2 N=5 REC=7"		
	SILTY SAND, fine to medium grained, wet, gray.	SM	64.8	▽		2+3+3 N=6 REC=16"		
					10	3+3+6 N=9 REC=18"		
13.0	SANDY ELASTIC SILT, wet, gray.	MH	58.8		15	2+3+4 N=7 REC=18"		resumed drilling on 6/7/06 @ 7:30am
17.0	SILTY SAND, fine to medium grained, wet, gray.	SM	54.8			5+7+7 N=14 REC=18"		
22.0	FAT CLAY, moist, gray, trace sand.	CH	49.8		25	4+5+7 N=12 REC=18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-337**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
27.0	CLAYEY SILT, moist, gray, trace sand.	CH	44.8						
		ML							
					30	4+6+6 N =12 REC =18"			
					35	9+19+50 N =69 REC =16"	w=29% *		
37.0	SILTY SAND, fine to medium grained, moist, gray and white, contains fine to medium shell fragments, 20-30%, weak cementation, HCl reaction strong.  wet, with fine to coarse shell fragments, 40-50%.	SM	34.8						
						40	29+50/4" N =50/4" REC =9"		
						45	13+17+17 N =34 REC =15"		
47.0	CLAYEY SAND, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SC	24.8						
						50	3+5+5 N =10 REC =18"	w=39.9% *	
					55	REC =13"	w=25.7% LL=38 PL=19 PP=2.00 tsf *		
57.0	SILTY SAND, fine to medium grained, wet, greenish gray, contains fine to <i>continued on next page</i>	SM	14.8						

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-337**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	coarse shell fragments, 20-30%, HCl reaction strong.	SM			60	21+20+10 N=30 REC=18"		
62.0	LEAN CLAY with sand, wet, greenish gray, trace fine to coarse shell fragments, 10-20%, HCl reaction weak.	CL	9.8		65	5+8+10 N=18 REC=18"		
67.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, trace fine to medium shell fragments, 5-10%, HCl reaction weak.	SM	4.8		70	4+6+9 N=15 REC=18"		
					75	5+5+9 N=14 REC=18"	w=30.9% *	
					80	4+5+8 N=13 REC=18"		Rig chatter
	fine to coarse grained, gray and white, with fine to coarse shell fragments, 50-60%, strong cementation, HCl reaction strong.				85	50/5" N=50/5" REC=4"		
	contains fine to coarse shell fragments, 10-20%.				90	12+14+50/5" N=64/11" REC=16"	w=21% *	Rig chatter
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/16/08

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-337**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SANDY SILT, wet, greenish gray, trace fine to medium shell fragments, 5-10%, HCl reaction weak.	SM	-20.2					
		ML						
						95	4+7+12 N = 19 REC = 18"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-28.2			100	4+5+7 N = 12 REC = 18"	

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-338**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 6/8/06 **Finished:** 6/13/06  
**Location:** Northing: 217121.1 ft  
Easting: 960150.1 ft  
**Ground Surface Elevation:** 98.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/8	---	25.0'	---	---
<b>Start of day</b>	6/13	---	35.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.  POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown.  orangeish brown and reddish brown.  trace gravel.	SP-SM	97.5			2+2+2 N=4 REC=12"		
						3+3+3 N=6 REC=18"		
					5	3+4+5 N=9 REC=16"		
						5+6+7 N=13 REC=18"		
					10	7+8+9 N=17 REC=18"		
						6+8+6 N=14 REC=16"		
17.0	CLAYEY SAND, fine to coarse grained, wet, orangeish brown.	SC	81.0			6+4+9 N=13 REC=18"		resumed drilling on 6/9/06 @ 7:00 fat clay layer
						2+2+2 N=4 REC=16"		
	<i>continued on next page</i>				▽			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-338**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	LEAN CLAY, moist, gray, with sand.	CL	71.0		30	1+2+2 N =4 REC =18"		color change in mud tub from orangeish brown to gray
32.0	FAT CLAY, moist, gray, with sand.	CH	66.0		35	2+3+3 N =6 REC =18"		
42.0	SANDY SILT, moist, gray.	ML	56.0		40	1+3+4 N =7 REC =18"		
49.5	ELASTIC SILT, moist, gray, trace sand.	MH	48.5		45	3+3+4 N =7 REC =18"		
57.0	SANDY SILT, moist, gray, weak cementation. <i>continued on next page</i>	ML	41.0		55	6+8+11 N =19 REC =18"		
							PP=>4.5 tsf	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-338**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML			60	9+11+14 N =25 REC =18"		
					65	50/5" N =50/5" REC =5"		
67.0	SILTY SAND, fine to medium grained, wet, gray and white, contains fine to coarse shell fragments, 30-40%, HCl reaction strong, 1/2" clay lense.	SM	31.0		70	10+17+19 N =36 REC =15"		Rig chatter
72.0	LEAN CLAY, moist, greenish gray, trace sand, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	CL	26.0		75	5+5+7 N =12 REC =18"		
77.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, trace fine to coarse shell fragments, 2-5%, HCl reaction weak.	SC	21.0		80	4+4+6 N =10 REC =18"		
82.0	SILTY SAND, fine to coarse grained, wet, light gray, contains fine to coarse shell fragments, 20-30%, strong cementation, HCl reaction strong.	SM	16.0		85	7+19+21 N =40 REC =18"		Rig chatter
	greenish gray and white.				90	7+9+12 N =21 REC =18"		no shelly tube taken due to heavy rig chatter Resumed drilling on 6/13/06 @ 7:00am
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-338**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with fine to coarse shell fragments, 50-60%, strong cementation.	SM				50/4" N =50/4" REC =3" REC =0"		
	contains fine to medium shell fragments, 10-20%, HCl reaction moderate.					3+6+6 N =12 REC =18"		
99.6	BOTTOM OF BORING @ 99.6 FT.		-1.6			REC =7"	PP=2.00 tsf	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-339**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 6/7/06 **Finished:** 6/8/06  
**Location:** Northing: 217095.21 ft  
Easting: 960211.99 ft  
**Ground Surface Elevation:** 92.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/7	---	15.0'	---	---
<b>Start of day</b>	6/8	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.							
	POORLY GRADED SAND, trace gravel, trace silt, fine to coarse grained, moist, yellowish brown. orangeish brown.	SP	91.5			1+4+6 N=10 REC=15"		
						3+2+3 N=5 REC=10"		
					5	3+3+4 N=7 REC=16"	w=6.9% *	
	reddish brown and orangeish brown.					5+6+6 N=12 REC=17"		
					10	4+6+6 N=12 REC=16"		
13.5	SILTY SAND, trace rock fragments, red-brown, 0.5" cemented sand lense	SM	78.5	▽	15	7+11+9 N=20 REC=18"	w=19.9% *	
17.0	CLAYEY SAND, fine to medium grained, wet, orangeish brown and gray.	SC	75.0			1+1+2 N=3 REC=18"		resumed drilling on 6/8/06 @ 7:30am
22.0	LEAN CLAY, wet, gray, with sand.	CL	70.0			1+3+6 N=9 REC=18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-339**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
27.0	SANDY FAT CLAY, wet, gray, with sand.	CL	65.0						
		CH							
						30	2+2+3 N =5 REC =18"	w=31.5% LL=55 PL=19 *	
						35	2+3+4 N =7 REC =18"	w=27% LL=62 PL=21 *	
						40	2+3+5 N =8 REC =18"	w=28.6% LL=71 PL=17 *	
			45	3+4+7 N =11 REC =18"	w=31% LL=60 PL=22 *				
48.5	SANDY LEAN CLAY, dark gray	CL	43.5						
				50	4+6+7 N =13 REC =17"	w=27.8% LL=40 PL=20 *			
53.5	SILTY SAND, moist, greenish gray, trace sand.	SM	38.5						
				55	6+11+15 N =26 REC =18"	w=30.8% LL=48 PL=30 *			
57.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and <i>continued on next page</i>	SP-SM	35.0					Harder drilling	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-339**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	white, contains fine to coarse shell fragments, 10-20%, strong cementation, HCl reaction moderate.	SP-SM	30.0		60	28+50/5" N =50/5" REC =10"	w=28.1% LL=NP PL=NP *	
67.0	CLAYEY SAND, fine to coarse grained, wet, gray and white, with fine to coarse shell fragments, 60-70%, HCl reaction strong.	SC		65	8+8+7 N =15 REC =18"	w=25% LL=49 PL=21 *		
72.0	ELASTIC SILT, moist, gray and greenish gray, trace sand.	MH	25.0		70	4+5+5 N =10 REC =18"	w=38.8% LL=53 PL=38 *	
	SILTY SAND, fine to coarse grained, wet, gray, Strong cementation, HCl reaction strong.	SM	20.0		75	50/2" N =50/2" REC =1"		No shelly tube taken due to heavy rig chatter
								Rig chatter
	fine to medium grained, gray and white, with fine to coarse shell fragments, 40-50%.				80	21+22+15 N =37 REC =18"	w=16.6% *	
	greenish gray and white, contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.				85	5+7+12 N =19 REC =18"	w=31.5% *	
88.5	POORLY GRADED SAND WITH SILT, contains shells, dark gray	SP-SM	3.5		90	7+7+14 N =21 REC =18"	w=29% *	Rig chatter
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-339**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
					95	5+6+10 N = 16 REC = 17"	w=31.7% *	
100.0	BOTTOM OF BORING @ 100.0 FT.		-8.0		100	4+5+8 N = 13 REC = 18"	w=32.7% *	

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

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-340**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 8/3/06 **Finished:** 8/7/06  
**Location:** Northing: 217171.34 ft  
Easting: 961225.22 ft  
**Ground Surface Elevation:** 84.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	8/3	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	TOPSOIL.	SM	84.2			3+5+5 N =10 REC =18"		0-15'- Used 6 1/4" HSA to enlarge hole for taking Pitcher samples
	SILTY SAND, fine to coarse grained, moist, orangeish brown, trace root fragments, trace gravel, PROBABLE FILL.					3+3+2 N =5 REC =18"		
	brown, trace gravel.				5	2+2+2 N =4 REC =18"		
						4+2+2 N =4 REC =18"		
	grayish brown.				10	5+5+5 N =10 REC =18"		
13.0	CLAYEY SAND, fine to coarse grained, wet, orangeish brown.	SC	71.6	▽		4+9+9 N =18 REC =16"		15'- Start of day 8/4/06 15'- Begin mud rotary
17.0	SILTY SAND, fine to coarse grained, wet, orangeish brown.	SM	67.6			4+6+6 N =12 REC =13"		
22.0	SANDY FAT CLAY, fine to medium, moist, dark gray.	CH	62.6			4+2+4 N =6 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-340**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with sand, contains mica.	CH			30	3+3+4 N = 7 REC = 18"		
	gray.				35	4+6+8 N = 14 REC = 18"		
37.0	CLAYEY SAND, fine to medium grained, wet, dark gray, contains mica.	SC	47.6		40	5+7+9 N = 16 REC = 18"		
42.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, dark orangeish brown, trace cemented sand, weak cementation.	SP-SM	42.6		45	8+8+8 N = 16 REC = 18"		
	fine to medium grained, light brownish white.				50	29+34+50/4" N = 84/10" REC = 0"		
	light gray.				55	31+50/5" N = 50/5" REC = 7"		
57.0	FINE TO MEDIUM SANDY FAT CLAY, moist, gray and brownish white, 0-10% <i>continued on next page</i>	CH	27.6					45'- Driller noted harder drilling

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-340**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to decomposed shell fragments.	CH	22.6		60	4+4+20 N =24 REC =18"		
	CLAYEY SAND, fine to medium grained, wet, light gray and brownish white, 20-30% fine to coarse shell fragments, some cemented sand, strong HCl reaction, moderate cementation, HCl reaction localized to decomposed shell fragments.	SC			65	7+13+15 N =28 REC =18"		
	1' zone of strongly cemented sand and fine to coarse shell fragments, strong HCl reaction, gray weak cementation, HCl reaction localized to decomposed shell fragments.							66'- Pitcher sample;
					70	6+8+12 N =20 REC =11"		68'- Start of day 8/7/06
	20-30% fine to coarse shell fragments, with cemented sand, strong HCl reaction, moderate cementation, 1" of highly cemented sand at tip of shoe.				75	7+14+40 N =54 REC =12"		
77.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, dark gray and brownish white, 0-10% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments.	SP-SC	7.6		80	4+7+9 N =16 REC =16"		
	dark gray, 0-10% fine to medium shell fragments, weak HCl reaction, HCl reaction localized to shell fragments.				85	4+7+14 N =21 REC =13"		
87.0	CLAYEY SAND, fine to medium grained, wet, greenish gray and brownish white, 30-40% fine to coarse shell fragments, strong HCl reaction, HCl reaction generally localized to shell fragments.	SC	-2.4		90	4+8+11 N =19 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-340**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	light gray and brownish white, 30-40% fine to coarse shell fragments, with cemented sand, strong HCl reaction, strong cementation.	SC				95	7+10+46 N =56 REC =15"	
97.0	POORLY GRADED SAND WITH CLAY, wet, dark gray, 0-10% fine to medium shell fragments, weak HCl reaction, HCl reaction localized to very small shell fragments.	SP-SC	-12.4				14+15+27 N =42 REC =14"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-15.4			100		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-341**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 7/11/06 **Finished:** 7/12/06  
**Location:** Northing: 217036.4 ft  
Easting: 961104.48 ft  
**Ground Surface Elevation:** 98.2 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	7/11	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Poorly graded sand FILL, fine to coarse grained, moist, light brown, trace silt, contains black filter fabric fragment at 0.5 ft.	FILL SM	97.7			2+5+7 N =12 REC =10"		
	SILTY SAND, fine to coarse grained, moist, brown yellowish brown and light brown. stratified below 3.8 ft					3+4+5 N =9 REC =12"		
	stratified brown and yellowish brown, trace fine gravel				5	4+5+6 N =11 REC =12"		
	yellowish brown.					3+4+4 N =8 REC =13"		
	trace fine to coarse gravel.				10	5+8+11 N =19 REC =12"		
	wet, yellowish brown and light orangeish brown. stratified below 14.7 ft.					6+10+11 N =21 REC =11"		
	brown and light brown.					3+7+10 N =17 REC =11"		*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.
	fine to medium grained, light brownish gray, yellowish brown, and orangeish brown, contains clayey sand layer below <i>continued on next page</i>					1+3+2 N =5 REC =4"		

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-341**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
24.7 ft .		SM						
27.0	SANDY LEAN CLAY, fine to medium, wet, yellowish brown and light grayish brown, contains clayey sand pockets.  gray, trace mica below 29 ft.	CL	71.2					
					30	2+3+3 N =6 REC =18"		
32.0	FAT CLAY, moist, brownish gray and dark gray, trace fine to medium sand and mica, contains fine to medium clayey sand pockets.    brownish gray and gray, contains fat clay with fine to medium sand pockets.    trace organic matter (±1%), (soil may lab classify as MH).	CH	66.2					
					35	2+2+4 N =6 REC =18"		
					40	2+4+4 N =8 REC =18"		
					45	3+5+7 N =12 REC =18"		
47.0	ELASTIC SILT, moist, gray, trace fine to medium sand and mica, contains silty sand and clayey sand pockets and lenses.	MH	51.2					
					50	6+8+12 N =20 REC =18"		
52.0	CLAYEY SAND, fine to medium grained, moist, gray, trace mica.  grayish brown and dark reddish brown, little fine to coarse oxidized shell fragments (±20%), contains silty sand pockets below 54.5 ft.	SC	46.2					
					55	8+15+27 N =42 REC =18"		
57.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, dark <i>continued on next page</i>	SP-SM	41.2					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-341**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	brown and brown.	SP-SM				40+50/4" N =50/4" REC =10"		*Switched to 5" O.D. Tri-cone roller bit below 58.5 ft.
62.0	POORLY GRADED SAND, trace silt, fine to medium grained, moist, gray.	SP	36.2			50 REC =5"		*Switched to 4-3/4" O.D. Drag bit below 63.5 ft.
67.0	SILTY SAND, fine to medium grained, moist, gray, some fine to coarse shell Fragments (±40%), strong HCl reaction.	SM	31.2			27+50/5" N =50/5" REC =9"		
	mostly strongly cemented sand layers (±80%), little fine to coarse shell fragments (±20%).					50/2" N =50/2" REC =1"		*Very difficult rotary advancement from 73 to 73.5 ft (slow rotary advancement). *Very to extremely difficult rotary advancement from 73.5 to 78.5 ft (very strong rig chatter).
	oliveish gray, mostly weak to strongly cemented sand pockets.					21+50/3" N =50/3" REC =9"		*Switched to 5" O.D. Tri-cone roller bit below 73.5 ft. *Extremely difficult rotary advancement from 78.5 to 82.5 ft (very strong rig chatter).
	gray, trace fine to coarse shell fragments (±5%), moderate HCl reaction.					6+7+11 N =18 REC =18"		*Switched to 4-3/4" O.D. Drag bit below 83.5 ft.
	trace fine to medium shell fragments (±<5%).					REC =24"		*Osterberg sampler tube push from 88.5 to 90.5 ft
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-341**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	very weak HCl reaction	SM				5+8+11 N =19 REC =15"		
97.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray, trace fine to medium shell fragments (±1%), moderate HCl reaction, (soil may lab classify as SP).	SP-SM	1.2			REC =24"		*Osterberg sampler tube push from 98.5 to 100.5 ft
100.5	BOTTOM OF BORING @ 100.5 FT.		-2.3					

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-401**  
**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:** 6/19/06 **Finished:** 6/29/06  
**Location:** Northing: 216344.12 ft  
Easting: 961516.81 ft  
**Ground Surface Elevation:** 72.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/19	---	33.5'	---	---
<b>Start of day</b>	6/20	---	12.0'	---	---
<b>Start of day</b>	6/22	---	35.0'	---	---
<b>Start of day</b>	6/26	---	33.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
9.5	SILTY SAND, fine to coarse grained, moist, brown, contains root fragments.	SM	62.6			2+3+3 N=6 REC=13"	w=3.6% *	*Relatively difficult rotary advancement from 2 to 2.5 ft (difficult advancement probably due to large root fragment).  *5.4" O.D. Drag bit below 0 ft.
	stratified brown and light brown, trace fine gravel.				2+3+2 N=5 REC=14"			
	fine to medium grained, light brown.				5 2+6+12 N=18 REC=13"			
	fine to coarse grained, brown.				5+6+7 N=13 REC=14"			
18.5	fine to medium grained, light grayish brown and light orangeish brown below 8.5 ft.	CH	53.6			2+4+5 N=9 REC=16"	w=26.6% LL=66 PL=20 *	*Slight rig chatter at 11 ft.
	FAT CLAY, trace fine to medium sand, moist, light gray, yellowish brown and orangeish brown, contains root fragments.				10 2+4+4 N=8 REC=18"			
23.5	light gray and yellowish brown, contains dark reddish brown pockets and subvertical planes.		48.6			2+3+6 N=9 REC=18"	w=36.9% LL=70 PL=37 *	*4-3/4" O.D. Drag bit below 18.5 ft.
	SANDY ELASTIC SILT, with shells, gray, trace mica and organic matter (±1%).	MH			20 3+5+6 N=11 REC=18"			
	SANDY LEAN CLAY, with fine to medium sand, contains clayey sand lenses and pockets, moist, grayish <i>continued on next page</i>	CL					w=27.9% LL=47 PL=28	

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 2 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	brown and dark yellowish brown, contains dark orangeish brown pockets.	CL					*	
	fine to medium sandy, gray and grayish brown, contains dark orangeish brown pockets.					4+7+16 N =23 REC =18"		
32.0	POORLY GRADED SAND, fine to medium grained, trace silt, wet, light brown	SP	40.1	▽		23+50/5" N =50/5" REC =11"	w=20.8% *	
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray.	SP-SM	35.1			36+50/5" N =50/5" REC =8"		
42.0	SILTY SAND, fine to medium grained, wet, gray.	SM	30.1			WOH+50/4" N =50/4" REC =4"	w=21.4% *	*Very to extremely difficult rotary advancement from 44 to 48 ft (moderate to strong rig chatter).
	moist, oliveish gray, mostly moderately cemented sand (±100%), moderate HCl reaction below 44 ft.					7+6+15 N =21 REC =18"		**Resumed drilling at 6:55 AM on 6/20/06. *Switched to 5" O.D. Tri-cone roller bit below 48.5 ft.
	wet, gray, little fine to coarse shell fragments (±15%), strong HCl reaction.					4+7+10 N =17 REC =18"	w=31.6% *	*Moderate to difficult rotary advancement from 50 to 53.5 ft (moderate to strong rig chatter). *Switched to 4-3/4" O.D. Drag bit below 53.5 ft.
	trace fine to coarse shell fragments (±5%), very weak HCl reaction.							
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 3 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	little fine to coarse shell fragments (±20%), weak HCl reaction.	SM				7+14+50 N =64 REC =18"	w=25% *	
	gray and light gray, some fine to coarse shell fragments (±30%), contains moderately cemented sand pockets, strong HCl reaction below 59.5 ft.							
	gray, trace fine to medium shell fragments (±1%), very weak HCl reaction.					5+7+10 N =17 REC =13"		
	weak HCl reaction.					REC =23"		*Osterberg sampler tube push from 68.5 to 70.5 ft
	gray and light gray, some fine to coarse shell fragments (±40%), strong HCl reaction.					16+50/5" N =50/5" REC =11"		*Moderate to difficult rotary advancement from 74 to 78 ft (moderate to strong rig chatter).
	gray and oliveish gray, mostly fine to coarse shell fragments (±50%), contains strongly cemented sand pockets.					5+20+27 N =47 REC =13"	w=17.5% *	
	gray and greenish gray, trace fine to medium shell fragments (±1%), trace organic matter (±<1%), weak HCl reaction, contains clayey sand pockets.					5+9+13 N =22 REC =16"		
						9+12+17 N =29 REC =18"	w=35.3% *	
<i>continued on next page</i>								

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 logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-401  
**Contract Number:** 06120048  
**Sheet:** 4 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	ELASTIC SILT, moist, gray and light greenish gray, trace fine to coarse shell fragments ( $\pm 5\%$ ), weak HCl reaction.	SM	-19.9				w=50.5% LL=78 PL=48 PP=>4.5 tsf *	*Osterberg sampler tube push from 98.5 to 99.8 ft
		MH						
					95	6+11+16 N=27 REC=18"		
					100	REC=15"		
103.5	SILTY SAND, fine to medium sandy, light greenish gray, trace fine to coarse shell fragments ( $\pm 5\%$ ) and organic matter ( $\pm 1\%$ ), contains clayey sand layers.	SM	-31.4				w=35.6% *	
					105	5+9+22 N=31 REC=18"		
					110	5+10+17 N=27 REC=13"		
112.0	LEAN CLAY, moist, gray and light greenish gray, with fine to medium sand, trace and fine to coarse shell fragments ( $\pm 5\%$ ), strong HCl reaction.	CL	-39.9				w=46.1% *	
					115	4+8+10 N=18 REC=18"		
117.0	SILT, moist, gray and light greenish gray, with fine to medium sand, trace mica and fine to medium shell fragments ( $\pm 5\%$ ), weak HCl reaction.	ML	-44.9					
					120	5+9+12 N=21 REC=18"		
122.0	ELASTIC SILT, moist, gray, trace fine to medium sand, mica, and fine to medium shell fragments ( $\pm 1\%$ ), weak HCl reaction.  <i>continued on next page</i>	MH	-49.9			REC=16"	w=57.4%	*Osterberg

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 5 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH					LL=85 PL=54 PP=>4.5 tsf *	sampler tube push from 123.5 to 124.8 ft
128.5	SANDY SILT, gray and greenish gray, with fine to medium sand, trace fine to medium shell fragments ( $\pm < 5\%$ ), strong HCl reaction.	ML	-56.4			5+6+11 N = 17 REC = 18"	w=43.8% *	
	fine to medium sandy, greenish gray, very weak HCl reaction.					7+9+11 N = 20 REC = 18"		
137.0	SANDY FAT CLAY, moist, greenish gray, fine to medium sand, strong HCl reaction.	CH	-64.9			REC = 23"	w=44.1% LL=80 PL=31 PP=>4.5 tsf *	*Osterberg sampler tube push from 138.5 to 140.5 ft
142.0	ELASTIC SILT, moist, greenish gray, trace fine to medium sand, weak HCl reaction	MH	-69.9			7+9+11 N = 20 REC = 18"	w=77.1% LL=142 PL=104 *	
	trace mica.					8+10+12 N = 22 REC = 18"	w=72.7% LL=150 PL=89 *	**Resumed drilling at 6:55 AM on 6/21/06.
						6+8+11 N = 19 REC = 18"	w=68.8% LL=142 PL=93 *	
<i>continued on next page</i>								

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 logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 6 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	dark greenish gray.	MH				REC = 10"	w=49.9% LL=81 PL=54 PP=>4.5 tsf *	*Osterberg sampler tube push from 158.5 to 159.3 ft
	with fine to medium sand.							
						8+10+15 N =25 REC =18"	w=53.9% LL=103 PL=52 *	
172.0	FAT CLAY, trace fine sand, greenish gray.	CH	-99.9			REC = 11"	w=33.7% LL=57 PL=17 PP=>4.5 tsf *	*Osterberg sampler tube push from 173.5 to 174.4 ft
						4+10+21 N =31 REC =0"		
182.0	SILTY SAND, fine to medium grained, contains clayey sand pockets, wet, dark greenish gray, trace fine to medium shell fragments (±1%), moderate HCl reaction.	SM	-109.9			7+15+22 N =37 REC =18"	w=31.2% *	
187.0	CLAYEY SAND, fine to medium grained, contains sandy lean clay pockets, wet, dark greenish gray and brownish gray, trace fine to medium shell fragments (±1%)	SC	-114.9			5+9+19 N =28 REC =11"		
	<i>continued on next page</i>							

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 logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 7 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
192.0	SANDY SILT, fine to medium, contains clayey sand pockets, moist, dark greenish gray, very weak HCl reaction	SC	-119.9		195	6+9+17 N =26 REC =18"	w=49.2% *	
		ML						
197.0	SILTY SAND, fine grained, moist, greenish gray, very weak HCL reaction, trace mica.	SM	-124.9		200	REC =22"	w=48.8% LL=82 PL=55 PP=>4.5 tsf *	*Osterberg sampler tube push from 198.5 to 200.3 ft
202.0	ELASTIC SILT, with fine to medium sand, trace mica and organic matter (±1%), moist, greenish gray, very weak HCl reaction.  trace fine to medium shell fragments (±1%).	MH	-129.9		205	5+8+13 N =21 REC =18"	w=58.4% LL=94 PL=69 *	
					210	7+11+16 N =27 REC =18"	w=62.7% LL=113 PL=74 *	**Resumed drilling at 7:00 AM on 6/22/06.
212.0	ELASTIC SILT, trace fine to medium sand, contains indurated silt pockets, moist, greenish gray, very weak HCl reaction.  trace mica.	MH	-139.9		215	REC =13"	PP=>4.5 tsf	*Osterberg sampler tube push from 213.5 to 214.6 ft
					220	7+11+15 N =26 REC =18"	w=77.4% *	
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. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 8 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace organic matter ( $\pm < 1\%$ ).	MH			225	9+13+18 N=31 REC=18"		
	contains indurated silt pockets.				230	REC=13"	w=58.6% LL=139 PL=88 PP=>4.5 tsf *	*Osterberg sampler tube push from 228.5 to 229.6 ft
					235	10+15+21 N=36 REC=18"		
	weak HCl reaction.				240	8+11+21 N=32 REC=18"	w=122.5% *	
	mostly indurated silt layers.				245	REC=8"	w=96.2% LL=140 PL=65 PP=>4.5 tsf *	*Osterberg sampler tube push from 243.5 to 244.4 ft
					250	7+8+17 N=25 REC=18"	w=122.8% LL=218 PL=100 *	
					255	7+10+15 N=25 REC=18"		
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 9 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium sand, very weak HCl reaction.	MH				8+11+19 N=30 REC=18"	w=130.2% *	
						9+16+21 N=37 REC=0"		**Resumed drilling at 7:15 AM on 6/23/06.
267.0	SILTY SAND, dark green, with fine to medium sand, trace organic matter ( $\pm 1\%$ ), very weak HCl reaction.	SM	-194.9			7+12+18 N=30 REC=18"	w=63.5% *	
	greenish gray, weak HCl reaction.					8+12+15 N=27 REC=18"		
	trace fine to medium sand, moderate HCl reaction.					50/3" N=50/3" REC=4"		*Switched to 5" O.D. Tri-cone roller bit below 278.5 ft.
283.0	SANDY ELASTIC SILT, moist, dark greenish gray, trace fine to coarse sand, some fine to coarse shell fragments ( $\pm 30\%$ ), strong HCl reaction.	MH	-210.9			11+13+17 N=30 REC=18"	w=30.2% LL=76 PL=42 *	*Very to extremely difficult rotary advancement from 278 to 280 ft (moderate rig chatter). *Switched to 5" O.D. Drag bit below 284.5 ft.
287.0	CLAYEY SAND, fine to medium grained, wet, dark brownish gray and blackish gray, few fine to coarse shell fragments ( $\pm 10\%$ ), trace mica, strong <i>continued on next page</i>	SC	-214.9			9+17+23		**Resumed drilling at 11:00 AM on 6/26/06.

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 10 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	HCl reaction, glauconitic	SC			290	N =40 REC =18"		
	dark brownish gray and dark greenish gray, trace fine to coarse shell fragments (±5%). fine to coarse grained, moist, dark brownish gray and blackish gray, trace fine gravel and fine to medium shell fragments (±5%) below 294.5 ft.				295	8+12+50/2" N =62/8" REC =14"	w=20.7% *	*Switched to 5" O.D. Tri-cone roller bit below 293.5 ft. *Extremely difficult rotary advancement from 294.5 to 295.5 ft (very strong rig chatter). *Extremely difficult rotary advancement from 297.3 to 298.3 ft (mod to strong rig chatter). **Resumed drilling at 7:20 AM on 6/27/06. *Switched to 4-3/4" O.D. Drag bit below 298.5 ft.
	brownish gray and light blackish gray, trace fine to coarse shell fragments (±5%), weak HCl reaction, contains lean clay layers and pockets.				300	9+14+18 N =32 REC =18"		
306.0			-233.9		305			
	SILTY SAND, fine to coarse, contains clayey sand pockets, moist, dark greenish gray and dark blackish brown, very weak HCl reaction	SM			310	10+12+20 N =32 REC =18"	w=27.4% LL=57 PL=42 *	
					315			
317.0			-244.9		320	18+26+35 N =61 REC =18"	w=28.9% LL=58 PL=28 *	
	SANDY FAT CLAY, fine to medium grained, moist, dark greenish gray and dark blackish gray, very weak HCl reaction, glauconitic.	CH						
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 11 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
					325			
					330	11+11+17 N=28 REC=0"		
					335			
337.0	SILT with fine to coarse sand, trace fine gravel and mica, contains sandy lean clay pockets, moist, dark brownish gray and blackish gray, moderate HCl reaction, silt exhibits fissility.	ML	-264.9		340	8+12+29 N=41 REC=8"	w=25.3% *	
345.0	SILTY SAND, fine to coarse grained, moist, dark brownish gray and blackish gray, moderate HCl reaction	SM	-272.9		345			
					350	REC=7"	w=35.6% LL=52 PL=39 *	*Osterberg sampler tube push from 348.5 to 350.5 ft
					355			

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

*continued on next page*

**Comments:**

1. Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 12 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	contains clayey sand pockets, trace mica, very weak HCl reaction	SM				30+50/5" N =50/5" REC =9"		
367.0	POORLY GRADED SAND WITH SILT, fine to medium grained, contains silty sand and lean clay pockets, trace mica, moist, dark brownish gray and blackish gray, very weak HCl reaction.	SP-SM	-294.9			16+25+44 N =69 REC =18"	w=36.9% *	**Resumed drilling at 7:00 AM on 6/28/06.
377.0	SILTY SAND, fine to medium grained, moist, dark brownish gray and blackish gray, trace mica, very weak HCl reaction.	SM	-304.9			16+21+36 N =57 REC =18"		
	fine to coarse grained, contains lean clay pockets, moist, dark brownish gray <i>continued on next page</i>							

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 logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-401**  
Contract Number: 06120048  
Sheet: 13 of 13

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	and blackish gray, trace mica, very weak HCl reaction.	SM			390	12+20+32 N =52 REC =18"		
					395			
	fine to medium grained.				400	11+15+29 N =44 REC =18"	w=33.1% *	**Resumed grouting at 7:00 AM on 6/29/06.
401.5	BOTTOM OF BORING @ 401.5 FT.		-329.4					

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 logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground water observation well OW-401 installed at a nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-402  
**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:** 7/19/06 **Finished:** 7/21/06  
**Location:** Northing: 216405.1 ft  
Easting: 961463.5 ft  
**Ground Surface Elevation:** 82.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/19	---	7.5'	0.0'	---
<b>Start of day</b>	7/20	---	15.0'	0.0'	---
<b>Start of day</b>	7/21	---	12.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
2.5	POORLY GRADED SAND, fine to coarse grained, moist, brown, contains root fragments, contains organic matter.	SP	79.7			1+3+4 N=7 REC=18"		
	SILTY SAND, fine to coarse grained, moist, brown.	SM				1+1+2 N=3 REC=12"		
4.5	POORLY GRADED SAND, fine to coarse grained, moist, orangeish brown, wet, orange, with gravel.	SP	77.7		5	1+4+4 N=8 REC=14"		
						3+4+2 N=6 REC=8"		
10.0	SILTY SAND, fine to medium grained, moist, orange.	SM	72.2		10	2+3+4 N=7 REC=14"		
13.0	SANDY SILT, fine to medium grained, wet, mottled grayish orange.	ML	69.2		15	1+3+6 N=9 REC=16"		
17.0	FAT CLAY, moist, gray, with sand.  no sand.  <i>continued on next page</i>	CH	65.2			WOH+2+3 N=5 REC=18"		
					20	2+3+4 N=7 REC=18"		
					25			

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-402**  
Contract Number: 06120048  
Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
	fine to medium sandy					30	3+4+6 N =10 REC =18"	
						35	4+4+5 N =9 REC =18"	
37.0	SILTY SAND, fine to medium grained, moist, mottled grayish red, contains cemented sand.	SM	45.2			40	6+10+10 N =20 REC =14"	
42.0	POORLY GRADED SAND, fine to medium grained, moist, yellowish white.	SP	40.2			45	21+50 N =50 REC =9"	
	gray.					50	29+50/5" N =50/5" REC =11"	
	cemented sand with shells, strong HCl reaction.							
	Cemented sand with shells, strong HCl reaction.							
55.0	SILTY SAND, fine to medium grained, wet, grayish green, contains cemented sand, with fine to coarse shell fragments, strong HCl reaction, 70-80% shell frag.	SM	27.2			55	50/2" N =50/2" REC =1"	54' hard drilling
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-402**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				50 REC =6"		
62.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SP-SM	20.2			4+6+9 N =15 REC =18"		
67.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.	SM	15.2			6+8+11 N =19 REC =18"		
72.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, green, weak HCl reaction.	SP-SM	10.2			6+9+13 N =22 REC =16"		
77.0	SILTY SAND, fine to medium grained, wet, green, weak HCl reaction.	SM	5.2			3+4+7 N =11 REC =18"		
	contains cemented sand, with fine to coarse shell fragments, strong HCl reaction, 70-80% shell frag.					9+13+21 N =34 REC =18"		
	strong HCl reaction, 50-60% shell frag.					13+11+17 N =28 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-402**  
Contract Number: 06120048  
Sheet: 4 of 7

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	moist, trace fine to coarse shell fragments, moderate HCl reaction, 0-10% shell frag.	SM			95	8+12+21 N = 33 REC = 18"		
	moist, with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.				100	6+9+12 N = 21 REC = 18"		
	trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.				105	5+8+11 N = 19 REC = 18"		
107.0	SANDY SILT, fine to medium, moist, green, weak HCl reaction.	ML	-24.8		110	6+8+9 N = 17 REC = 18"		
112.0	SILTY SAND, fine to medium grained, moist, green, trace fine to coarse shell fragments, moderate HCl reaction, 0-10% shell frag.	SM	-29.8		115	6+9+11 N = 20 REC = 18"		
	with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.				120	7+10+13 N = 23 REC = 18"		
122.0	SANDY SILT, fine to medium, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag. <i>continued on next page</i>	ML	-39.8			5+6+9		

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-402**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
127.0	ELASTIC SILT, moist, oliveish green.  trace fine to medium shell fragments, moderate HCl reaction, 0-5% shell frag.	ML	-44.8		125	N = 15 REC = 18"		
		MH			130	6+8+11 N = 19 REC = 18"		
					135	4+6+8 N = 14 REC = 18"		
					140	4+7+8 N = 15 REC = 18"		
					145	4+6+7 N = 13 REC = 18"		
					150	4+8+9 N = 17 REC = 18"		
					155	5+9+11 N = 20 REC = 18"		
<i>continued on next page</i>								

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-402**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
					160	4+6+8 N =14 REC =18"		
					165	6+9+11 N =20 REC =18"		
	with sand.				170	7+7+10 N =17 REC =18"		
	no sand.				175	4+5+9 N =14 REC =18"		
					180	5+8+9 N =17 REC =18"		
					185	5+9+12 N =21 REC =18"		
187.0	SILTY SAND, fine to medium grained, moist, oliveish green, with fine to coarse shell fragments, strong HCl reaction, 20-40% shell frag.	SM	-104.8		190	10+13+16 N =29 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-402**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	40-60% shell frag.	SM				8+10+12 N =22 REC =18"		
	no sand, weak HCl reaction.					5+6+14 N =20 REC =18"		
200.0	BOTTOM OF BORING @ 200.0 FT.		-117.8					

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. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-403**  
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-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 6/20/06 **Finished:** 6/22/06  
**Location:** Northing: 216305.8 ft  
Easting: 961562.9 ft  
**Ground Surface Elevation:** 63.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/20	---	13.5'	---	---
<b>Start of day</b>	6/21	---	10.5'	---	---
<b>Start of day</b>	6/22	---	9.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		62.9					
2.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brown, trace root fragments, trace wood fragments.	SP-SM	61.4			1+2+3 N=5 REC=4"		
4.5	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, yellowish brown and gray.	SP-SC	58.9			3+2+2 N=4 REC=11"		
7.0	CLAYEY SAND, fine to coarse grained, moist, yellowish brown and gray.	SC	56.4		5	4+3+3 N=6 REC=10"		
10.0	SANDY LEAN CLAY, moist, orange and gray, trace root fragments, iron staining.	CL	53.4			3+2+3 N=5 REC=18"		
17.0	FAT CLAY, moist, orangeish brown and gray, trace sand, iron staining.	CH	46.4			2+3+3 N=6 REC=18"		
22.0	SANDY LEAN CLAY, wet, gray.	CL	41.4			3+5+6 N=11 REC=18"		
						3+4+5 N=9 REC=17"		start mud rotary drilling
						34+50/5" N=50/5" REC=10"		

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

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-403**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM			60	2+3+4 N=7 REC=18"		
					65	REC=20"		Rig chatter
67.0	CLAYEY SAND, fine to medium grained, wet, greenish gray and white, with fine to coarse shell fragments, 40-50%, HCl reaction strong.	SC	-3.6		70	21+18+12 N=30 REC=18"		
	trace fine to coarse shell fragments, 5-10%, HCl reaction moderate				75	6+7+12 N=19 REC=18"		
77.0	SANDY LEAN CLAY, wet, greenish gray, contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.	CL	-13.6		80	11+7+9 N=16 REC=18"		
82.0	SANDY SILT, wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction moderate.	ML	-18.6		85	5+8+13 N=21 REC=18"		
					90	6+6+10 N=16 REC=17"		
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-403**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
					95	6+9+13 N=22 REC=18"		
					100	REC=12"	PP=3.00 tsf	
					105	4+6+9 N=15 REC=18"		
					110	5+6+11 N=17 REC=18"		
					115	5+7+9 N=16 REC=18"		
					120	4+6+8 N=14 REC=18"		
						REC=12"	PP=>4.5 tsf	
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-403**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
127.0	ELASTIC SILT, moist, greenish gray, trace sand, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-63.6		125			
		MH			130	4+8+10 N = 18 REC = 18"		
137.0	SANDY SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction moderate.	ML	-73.6		135	6+8+11 N = 19 REC = 18"		
					140	6+7+10 N = 17 REC = 18"		
					145	7+8+13 N = 21 REC = 18"		
					150	7+9+12 N = 21 REC = 18"		
					155	5+8+12 N = 20 REC = 18"		
continued on next page								resumed drilling on 6/22/06 @ 7:30am

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-403**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
					160	6+8+11 N =19 REC =18"		
					165	5+8+12 N =20 REC =18"		
	oliveish gray, trace fine to medium shell fragments, 5-10%, HCl reaction moderate.				170	3+6+9 N =15 REC =18"		
172.0	CLAYEY SAND, fine to medium grained, wet, oliveish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SC	-108.6		175	6+10+23 N =33 REC =17"		
177.0	SANDY SILT, moist, oliveish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-113.6		180	6+10+20 N =30 REC =18"		
					185	6+8+15 N =23 REC =18"		
					190	5+8+13 N =21 REC =18"		
	<i>continued on next page</i>							softer drilling

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-403**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
						6+6+12 N = 18 REC = 18"		
						7+9+14 N = 23 REC = 18"		
200.0	BOTTOM OF BORING @ 200.0 FT.		-136.6					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**  
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:** B. Bradfield  
**Dates Started:** 6/22/06 **Finished:** 6/27/06  
**Location:** Northing: 216441.34 ft  
Easting: 961596.49 ft  
**Ground Surface Elevation:** 67.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/22	---	30.0'	---	---
<b>Start of day</b>	6/23	---	27.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
2.0	SILTY SAND, fine to coarse grained, moist, orangeish brown, trace fine rounded gravel, contains root fragments.	SM	65.9		1+2+2 N=4 REC=13"			1.5'- Mud rotary with 3 7/8" drag bit
4.5	SANDY SILT, fine to coarse, moist, orangeish brown and gray, contains decomposed root fragments.	ML			5+5+5 N=10 REC=8"			
7.0	LEAN CLAY with sand, moist, orangeish brown and gray, colors layered <1/2" thick.	CL	63.4	5	4+4+5 N=9 REC=12"			
10.0	FAT CLAY with sand, moist, gray and orangeish brown, colors layered 1/4" to 3/4" thick.	CH	60.9		2+2+2 N=4 REC=18"			
	LEAN CLAY with sand, moist, gray, contains mica.	CL	57.9	10	3+3+5 N=8 REC=18"			
	With darker gray pockets up to 1" thick.			15	4+5+6 N=11 REC=18"			
				20	3+6+7 N=13 REC=18"			
22.0	CLAYEY SAND, fine to medium grained, moist, dark gray, contains mica.	SC	45.9		3+4+7 N=11 REC=18"			
	<i>continued on next page</i>			25				

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

- Comments:**
- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
  - Downhole geophysical logging performed on 6/27/06.
  - \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**  
Contract Number: 06120048  
Sheet: 2 of 7

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.5	POORLY GRADED SAND, fine to medium grained, wet, orange and yellowish brown, trace silt.  None silt, with gray clay lenses <1/4" thick.	SC	40.4	▽	30	40+50/3" N =50/3" REC =8"		29-30'- Harder drilling
		SP						
39.9	CLAYEY SAND, fine to medium grained, moist, gray.	SC	28.0		40	WOH/18" N = WOH/18" REC =2"		
43.0	SILTY SAND, fine to coarse grained, wet, light gray and brownish white, 20-30% cemented sand, 30-40% fine to coarse shell fragments.	SM	24.9		45	48+32+29 N =61 REC =18"		
47.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and brownish white, 20-30% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments.  20-30% fine to medium shell fragments, strong HCl reaction.  10-20% fine to medium shell fragments, HCl reaction localized to shell fragments.	SP-SM	20.4		50	4+4+5 N =9 REC =18"	w=27.7% LL=NP PL=NP *	52'- Shelby tube pushed
					55	5+10+10 N =20 REC =18"		
57.5	SILTY SAND, fine to medium grained, <i>continued on next page</i>	SM	10.4					

**Comments:**

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- Downhole geophysical logging performed on 6/27/06.
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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.5	wet, dark gray, 0-10% fine to medium shell fragments, weak HCl reaction.	SM	5.4		60	4+5+7 N =12 REC =18"		
	CLAYEY SAND, fine to medium grained, wet, dark gray, 0-10% fine to medium shell fragments, weak HCl reaction, HCl reaction localized to shell fragments.	SC			65	2+3+4 N =7 REC =18"		
	Gray and brownish white, 20-30% fine to medium shell fragments, strong HCl reaction.					REC =18"		66'- Shelby tube pushed
	Wet, dark gray and brownish white, 30-40% fine to medium shell fragments, strong HCl reaction.				70	10+14+13 N =27 REC =18"		68.5'- Start of day 6/23/06
77.5	20-30% fine to medium shell fragments, 10-20% cemented sand, strong HCl reaction, cemented sand fragments <3/4" in diameter.		-9.6		75	4+19+21 N =40 REC =13"		
	SILTY SAND, fine to medium grained, wet, dark gray, 0-10% fine to medium shell fragments, weak HCl reaction.	SM			80	6+7+10 N =17 REC =15"		
	greenish gray and brownish white, 20-30% fine to medium shell fragments, strong HCl reaction.					REC =17"	w=32.2% LL=53 PL=28 *	83.5'- Shelby tube pushed
87.5	SILTY SAND, fine to medium grained, wet, greenish gray and dark gray, 0-10% fine to medium shell fragments, weak HCl reaction.	SM	-19.6		90	5+8+11 N =19		
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/27/06.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.5	SANDY ELASTIC SILT, fine to medium, moist, greenish gray, 0-10% fine to medium shell fragments, contains mica, weak HCl reaction.	SM	-24.6		92.5	REC = 18"		
		MH			95	6+9+10 N = 19 REC = 18"		
97.5	SILTY SAND, fine to medium grained, wet, greenish gray, 0-10% fine to medium shell fragments, contains mica, weak HCl reaction.	SM	-29.6		97.5			
					100	4+9+12 N = 21 REC = 18"		
103.0	CLAYEY SAND, fine to medium grained, moist, greenish gray and brownish white, 30-40% fine to medium shell fragments, contains mica, strong HCl reaction, shell fragments decomposed and fractured.	SC	-35.1		103.0			
					105	7+12+15 N = 27 REC = 18"		
107.5	FINE TO MEDIUM SANDY ELASTIC SILT, moist, greenish gray, 10-20% fine to medium shell fragments, contains mica, moderate HCl reaction, shell fragments decomposed.  0-10% fine to medium shell fragments, weak HCl reaction, shell fragments decomposed.	MH	-39.6		107.5			
					110	4+6+10 N = 16 REC = 18"		
					115	5+7+10 N = 17 REC = 18"		
117.5	SANDY SILT, fine to medium, moist, greenish gray, 0-10% fine to medium shell fragments, contains mica, weak HCl reaction, HCl reaction localized to shell fragments.	ML	-49.6		117.5			
					120	5+8+10 N = 18 REC = 18"		
						5+5+7		
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/27/06.
- \* = See Appendix I for additional lab testing data.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
127.5	ELASTIC SILT with sand, moist, greenish gray, contains mica.	ML	-59.6		125	N = 12 REC = 10"		128.5'- Start of day 6/26/06
		MH			130	5+6+8 N = 14 REC = 18"		
137.5	FAT CLAY with sand, moist, greenish gray, contains mica.	CH	-69.6		135	6+9+10 N = 19 REC = 18"		
		MH			140	5+6+8 N = 14 REC = 18"		
147.5	SANDY ELASTIC SILT, fine to coarse, moist, greenish gray, contains mica.	MH	-79.6		145	5+6+11 N = 17 REC = 18"		
		MH			150	6+8+12 N = 20 REC = 18"		
					155			

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

*continued on next page*

**Comments:**

1. Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
2. Downhole geophysical logging performed on 6/27/06.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
					160	6+8+12 N =20 REC =18"		
					165	7+9+9 N =18 REC =18"		
167.5	LEAN CLAY, moist, greenish gray, trace sand, contains mica.	CL	-99.6		170	6+8+11 N =19 REC =18"		
172.0	CLAYEY SAND, fine to medium grained, wet, greenish gray and white, 10-20% fine to medium shell fragments, moderate HCl reaction, shell fragments decomposed.	SC	-104.1		175	3+5+12 N =17 REC =18"		
	0-10% fine to medium shell fragments, weak HCl reaction, shell fragments decomposed.				180	6+14+20 N =34 REC =18"		
	no shell fragments.				185	5+7+18 N =25 REC =18"		183.5'- Start of day 6/27/06
187.0	SANDY LEAN CLAY with silt, fine to medium, moist, greenish gray, trace sand.	CL	-119.1		190	4+6+15 N =21 REC =18"		
	<i>continued on next page</i>							

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 6/27/06.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-404**

Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
193.0	SANDY ELASTIC SILT, fine to medium, wet, greenish gray.	CL	-125.1					
		MH						
197.5	SANDY LEAN CLAY, fine to medium, moist, greenish gray.	CL	-129.6					
200.0	BOTTOM OF BORING @ 200.0 FT.		-132.1					

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 6/27/06.
3. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-405**  
**Contract Number:** 06120048  
**Sheet:** 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/15/06 **Finished:** 5/16/06  
**Location:** Northing: 216487.38 ft  
Easting: 961408.73 ft  
**Ground Surface Elevation:** 122.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/15	---	43.5'	19.0'	---
<b>Start of day</b>	5/16	---	25.0'	18.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.3	ROOTMAT AND TOPSOIL.	SM	121.7			WOH+2+2 N =4 REC =18"		4-1/4" I.D. Hollow stem augers to 18 ft.	
	SILTY SAND, fine to coarse grained, moist, orangeish brown, contains root fragments.  brownish orange, trace gravel.								2+1+2 N =3 REC =18"
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brownish orange, trace gravel.	SP-SM	117.5		5	2+1+1 N =2 REC =18"			
7.0	POORLY GRADED SAND, fine to coarse grained, moist, orange, trace silt, with gravel.	SP	115.0			2+1+1 N =2 REC =18"			
					10	1+1+1 N =2 REC =14"			
12.0	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, light orange, trace gravel.	SP-SC	110.0			2+4+6 N =10 REC =18"		Mud rotary below 18 ft.	
	orange (small 1/8" layers of clay sand).								4+5+6 N =11 REC =16"
	with gravel.								8+8+9 N =17 REC =16"
	<i>continued on next page</i>				25				

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-405**  
**Contract Number:** 06120048  
**Sheet:** 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orange, trace gravel.  with gravel.	SP-SC	95.0					
		SP-SM						
42.0	POORLY GRADED SAND, trace silt, with gravel, fine to coarse grained, wet, yellowish white.	SP	80.0					
47.0	SILTY SAND, fine to medium grained, moist, yellowish orange.	SM	75.0					
52.0	SANDY SILT, fine to medium, moist, orange.	ML	70.0					
53.8	SANDY LEAN CLAY, fine to medium, moist, dark gray.	CL	68.2					
54.5		GP-GC	67.5					
57.0	LEAN CLAY, moist, dark gray, with sand.	CL	65.0					

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

*continued on next page*

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-405**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CL				REC =22"		
62.0	FAT CLAY, moist, dark gray, trace sand.	CH	60.0			2+4+4 N =8 REC =18"		
67.0	LEAN CLAY, moist, dark gray.	CL	55.0			REC =24"		
72.0	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	50.0			4+5+7 N =12 REC =18"		
77.0	SILTY SAND, fine to coarse grained, moist, red and gray.	SM	45.0			9+15+15 N =30 REC =18"		
82.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown.	SP-SM	40.0			50/4" N =50/4" REC =2"		Harder drilling
	gray.					50 REC =4"		

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-405**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
94.0	SILTY SAND, fine to coarse grained, moist, white and gray, with fine to coarse shell fragments (15-25%), contains cemented sand, strong HCl reaction.  fine to medium grained, grayish green, with fine to medium shell fragments (10-20%), moderate HCl reaction.	SP-SM	28.0					Start of drilling for the day (5/16/06).	
		SM							
102.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish green, with fine to coarse shell fragments (10-20%), moderate HCl reaction.  grayish green, with fine to coarse shell fragments (15-25%), strong HCl reaction. 4 inch shell bed below 109 ft.  trace fine to medium shell fragments (0-10%), strong HCl reaction.  dark green.	SP-SM	20.0						
122.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments (15-30%), strong HCl reaction.  <i>continued on next page</i>	SM	0.0						

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. \* = See Appendix I for additional lab testing.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-405**  
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Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				N =31 REC =18"		
127.0	CLAYEY SAND, fine to medium grained, moist, greenish white, with fine to coarse shell fragments (20-35%), strong HCl reaction.	SC	-5.0			7+9+11 N =20 REC =18"		
132.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, with fine to coarse shell fragments (10-15%), moderate HCl reaction.	SP-SM	-10.0			8+12+12 N =24 REC =18"		
137.0	CLAYEY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments (10-20%), strong HCl reaction.	SC	-15.0			6+7+12 N =19 REC =18"		
142.0	SILTY SAND, fine to medium grained, moist, green.	SM	-20.0			6+8+10 N =18 REC =18"		
147.0	CLAYEY SAND, fine to medium grained, moist, grayish green.	SC	-25.0			6+7+12 N =19 REC =18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-28.0					

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. \* = See Appendix I for additional lab testing.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-406**  
**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:** B. Bradfield / R. Vinzant  
**Dates Started:** 5/17/06 **Finished:** 5/17/06  
**Location:** Northing: 216315.62 ft  
Easting: 961352.01 ft  
**Ground Surface Elevation:** 118.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/17	---	18.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	TOPSOIL.	FILL	118.1			2+3+3 N=6 REC=15"		Drilling with N3 rods  4.0-5.0'-rig chatter
	Silty sand FILL, fine and coarse grained, moist, orangeish brown, trace gravel.  fine to medium grained.					2+5+2 N=7 REC=15"		
	fine and coarse grained.				5	1+2+2 N=4 REC=17"		
6.0	CLAYEY SAND, fine to coarse grained, moist, orangeish brown and gray, <1/8" clay lenses throughout sample.	SC	112.4			4+5+5 N=10 REC=18"		
9.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown and yellowish brown.	SP-SM	109.4		10	3+3+3 N=6 REC=18"		
	1 1/2" piece of limonitic cemented sand.				15	5+3+4 N=7 REC=1"		
17.0	SILTY SAND, fine to coarse grained, wet, orangeish brown.	SM	101.4			3+3+4 N=7 REC=12"		
	orangeish brown and yellowish brown.				20	8+11+7 N=18 REC=17"		
24.8	<i>continued on next page</i>		93.6		25			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-406**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	POORLY GRADED SAND WITH SILT, fine and coarse grained, wet, white and yellowish brown.	SP-SM					REC = 0"	
	slight layering (<1 1/2") throughout sample.						10+12+12 N = 24 REC = 14"	30'-change from 6" to 4" drag bit
32.0	POORLY GRADED SAND, fine and coarse grained, moist, orangeish brown and yellowish brown, trace fine gravel, trace silt.	SP	86.4				14+14+15 N = 29 REC = 14"	34.5'- 1" lense of fine rounded gravel
	medium to coarse grained, gravel is limonitic cemented sand.						9+9+15 N = 24 REC = 9"	39.8' - 1" limonitic cemented sand lense
42.0	CLAYEY SAND, fine to medium grained, moist, mottled orangeish brown and brown, some grayish brown clay pockets <1/8" thick.	SC	76.4				3+7+7 N = 14 REC = 8"	45'-Penetrol wetting agent added
48.0	SANDY ELASTIC SILT, fine to medium, moist, orangeish brown and gray.	MH	70.4				2+1+1 N = 2 REC = 18"	~48'-driller noted probable change from sand to silt/clay
52.0	SILTY SAND, fine to medium grained, wet, gray, contains mica.	SM	66.4				17+23+22 N = 45 REC = 17"	53.5'-return mud changed color from brown to grayish brown
57.0	LEAN CLAY with sand, moist, gray and dark gray, contains mica <i>continued on next page</i>	CL	61.4					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-406**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	medium grained.	CL				2+3+4 N =7 REC =15"		
62.0	ORGANIC SILT, with sand, moist, gray, contains mica, fine to medium grained,	OH	56.4			REC =24"	w=36.1% LL=63 PL=19 *	63.5'- Pushed tube using Osterberg
67.0	LEAN CLAY with sand, moist, light gray, fine to medium grained.  1" clay lense	CL	51.4			4+6+7 N =13 REC =18"		69.2' - 1" clayey sand lense
72.0	CLAYEY SAND, fine to medium grained, moist, gray.	SC	46.4			REC =12"		73.5'- Pushed tube using Osterberg
77.0	POORLY GRADED SAND, fine to coarse grained, moist, dark orangeish brown and gray, trace silt, with fine to coarse gravel consisting of limonitic cemented sand.	SP	41.4			31+30+31 N =61 REC =14"		78.5'- Distinct shell patterns imprinted on surfaces of cemented sand gravel
	fine to medium grained, yellowish brown. gray.					20+15+13 N =28 REC =12"		
87.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and white, 40-50% fine to medium shell fragments, strong HCl reaction.	SP-SM	31.4			33+29+19 N =48 REC =16"		86'-Lost 200 gallons of drilling mud to formation
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-406**  
Contract Number: 06120048  
Sheet: 4 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	FINE TO MEDIUM SANDY LEAN CLAY, moist, gray and brownish white, <10% fine to medium shell fragments, weak HCl reaction.	SP-SM	26.4					94.4'- change to 3 7/8" tri-cone roller bit and encountered slight rig chatter
		CL						
97.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, light gray and brownish white, 10-20% fine to coarse shell fragments, moderate HCl reaction.	SP-SM	21.4					
					95	27+50/5" N =50/5" REC =10"		
102.0	POORLY GRADED SAND, fine to medium grained, wet, gray and brownish white, trace silt, 10-20% fine to coarse shell fragments, moderate HCl reaction.	SP	16.4					
					100	35+25+12 N =37 REC =18"		
107.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and brownish white, <1% fine to medium shell fragments, weak HCl reaction.	SP-SM	11.4					
					105	6+13+15 N =28 REC =18"		
112.0	SILTY SAND, fine to medium grained, wet, greenish gray, weak HCl reaction, <5% fine to medium shell fragments.	SM	6.4					
					110	8+10+11 N =21 REC =14"		
117.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, weak HCl reaction, <5% fine to medium shell fragments.	SC	1.4					
					115	6+8+8 N =16 REC =17"		
122.0	SILTY SAND, fine to medium grained, wet, light gray, strong HCl reaction, 45-55% fine to coarse shell.	SM	-3.6					
					120	3+4+6 N =10 REC =15"		
						7+50/3"		
	<i>continued on next page</i>							

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-406**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	greenish gray.	SM			125	N =50/3" REC =10"		
					130	16+28+20 N =48 REC =18"		
	trace mica, weak HCl reaction.				135	3+8+17 N =25 REC =15"		133.5'-No return water
	<5% medium to coarse shell fragments, weak HCl reaction, HCl reaction limited to shell fragments.				140	4+9+14 N =23 REC =18"		140'-Drilled blind to 140', 1 bag quick gel
142.0	SANDY LEAN CLAY, fine to medium, moist, greenish gray, trace mica, <5% medium to coarse shell fragments, weak HCl reaction.	CL	-23.6		145	9+12+24 N =36 REC =18"		141.5'-added 1 bag quick gel and 500 gallons of water, still no return
150.0	BOTTOM OF BORING @ 150.0 FT.		-31.6		150	6+11+14 N =25		148.5'-3rd bag quick get added, no return

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

**Comments:**

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2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-407**  
**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:** 6/14/06 **Finished:** 6/16/06  
**Location:** Northing: 216238.96 ft  
Easting: 961412.45 ft  
**Ground Surface Elevation:** 81.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/14	---	10.5'	0.0'	---
<b>Start of day</b>	6/15	---	30.0'	0.0'	---
<b>Start of Day</b>	6/16	---	20.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
4.0	SANDY SILT, fine to coarse grained, moist, brown, contains root fragments.	ML	77.6	▽	2+2+2	N=4 REC=18"	w=4.8% LL=NP PL=NP *		
	goldenish brown, with gravel.				2+2+5	N=7 REC=14"			
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light brown, with gravel.	SP-SM			5	4+4+4			N=8 REC=16"
	orange.					3+6+5			N=11 REC=12"
	with gravelly sand, wet.				10	4+5+7			N=12 REC=12"
17.0	with gravel.		64.6	▽	15	2+3+6	N=9 REC=15"		
	SILTY SAND, fine to medium, moist, orange.	SM			20	6+11+12	N=23 REC=18"		w=24.9% *
23.0	ELASTIC SILT, moist, dark gray, trace sand.	MH	58.6	▽	25	2+2+3	N=5 REC=18"		

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

*continued on next page*

- Comments:**
- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
  - Downhole geophysical logging performed on 6/29/06.
  - \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-407**  
Contract Number: 06120048  
Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
					30	3+4+4 N=8 REC=18"	w=35.1% *	
					35	4+6+6 N=12 REC=18"	w=39.4% LL=77 PL=43 *	
37.0	SANDY LEAN CLAY, fine to medium, moist, dark gray.	CL	44.6					
					40	3+5+7 N=12 REC=18"		
42.0	SILTY SAND, fine to coarse grained, moist, reddish orange, contains cemented sand, small 1/4" more silty or sand lenses, 1/8" cemented sand layers.	SM	39.6					
					45	6+13+21 N=34 REC=18"	w=23.3% *	
47.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, dark gray.	SP-SC	34.6					
					50	4+10+14 N=24 REC=16"		
52.0	SILTY SAND, fine to coarse grained, moist, green, with fine to coarse shell fragments, strong HCl reaction.	SM	29.6					
					55	REC=11"		55' start of day 6/15/06 55' grinding, switch to rollerbit
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-407**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
63.0	gray, contains cemented sand, moderate HCl reaction, 60-70% cemented sand.	SM	18.6		50/5"	N = 50/5" REC = 5"		
	SILTY SAND, fine to coarse grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 25-35% shell frag.	SM		5+6+8	N = 14 REC = 16"	w=28.1% *		
				6+8+15	N = 23 REC = 18"	w=30% *		
				4+6+13	N = 19 REC = 18"	w=27.3% *		
	greenish gray, 0-5% shell frag.			REC = 4"			77' softer drilling, try tube	
	green, with clay, with fine to coarse shell fragments, strong HCl reaction, 40-60% shell frag.			3+6+9	N = 15 REC = 18"	w=38.3% *		
70-90% shell frag, 10-20% cemented sand.		21+29+30	N = 59 REC = 10"	w=12.4% *	90' Rig chatter			
<i>continued on next page</i>								

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-407**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	POORLY GRADED SAND, fine to medium grained, moist, green, with silt, with fine to coarse shell fragments, strong HCl reaction, 15-25% shell frag.  moderate HCl reaction, 5-15% shell frag.	SM	-10.4		95	6+11+24 N =35 REC =16"	w=30.8% *	
		SP-SM				100		
102.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SM	-20.4		105	4+5+8 N =13 REC =18"		
107.0	SANDY SILT, fine to medium, moist, green, weak HCl reaction.	ML	-25.4		110	6+9+10 N =19 REC =18"	w=47.8% *	
112.0	SILTY SAND, fine to medium grained, moist, green, trace fine to coarse shell fragments, moderate HCl reaction, 0-10% shell frag.  with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.	SM	-30.4		115	8+9+11 N =20 REC =18"	w=34.2% *	
					120	5+11+16 N =27 REC =18"		
123.0	SANDY ELASTIC SILT, fine to medium, moist, green, with fine to medium shell <i>continued on next page</i>	MH	-41.4			4+7+7	w=42.2%	

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

**Comments:**

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- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-407**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
127.0	fragments, strong HCl reaction, 10-20% shell frag.	MH	-45.4		125	N = 14 REC = 18"	*	125-128' harder drilling then softer
	SANDY SILT, fine to medium, moist, green, with fine to coarse shell fragments, moderate HCl reaction.	ML				REC = 6"	PP=4.00 tsf	128.5' Pushed tube 6" recovered 6"
136.0	trace fine to medium shell fragments, 0-5% shell frag.	SM	-54.4		135	4+8+10 N = 18 REC = 18"		
	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.					3+4+8 N = 12 REC = 18"	w=49.2% *	
142.0	SANDY ELASTIC SILT, fine to medium, moist, oliveish green.	MH	-60.4		145	4+7+8 N = 15 REC = 18"	w=56.4% LL=92 PL=63 *	
147.0	FAT CLAY, moderate HCl reaction.	CH	-65.4		150	5+5+8 N = 13 REC = 18"	w=43.1% LL=81 PL=45 *	
153.5	SANDY ELASTIC SILT, contains sand.	MH	-71.9			REC = 5"	PP=0.17 tsf	
continued on next page								

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-407**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with clay.	MH				3+5+8 N =13 REC =18"	w=78.4% *	
						5+7+11 N =18 REC =18"	w=62.7% LL=120 PL=50 *	
170.0	FAT CLAY, oliveish brown.	CH	-88.4			5+7+8 N =15 REC =18"	w=55.2% LL=104 PL=69 *	
						4+7+12 N =19 REC =18"	w=53.7% LL=102 PL=37 *	
180.0	ELASTIC SILT, moist, oliveish green.	MH	-98.4			6+8+12 N =20 REC =18"	w=50.9% LL=102 PL=40 *	
						3+5+11 N =16 REC =18"	w=82.2% LL=154 PL=97 *	
187.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-25% shell frag.	SM	-105.4			4+7+25 N =32 REC =18"	w=32.6% *	
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-407**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to coarse shell fragments, weak HCl reaction, 0-5% shell frag.	SM				7+9+13 N =22 REC =18"	w=31.6% *	
195								
						5+7+12 N =19 REC =18"	w=32.7% *	
200.0	BOTTOM OF BORING @ 200.0 FT.		-118.4					

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/29/06.
- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-408**  
**Contract Number:** 06120048  
**Sheet:** 1 of 5

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 7/24/06 **Finished:** 7/25/06  
**Location:** Northing: 216261.74 ft  
Easting: 961482.04 ft  
**Ground Surface Elevation:** 68.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/24	---	6.0'	---	---
<b>Start of day</b>	7/25	---	20.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.  SILTY SAND, fine to medium grained, moist, light brown, contains root fragments, and organic matter.  Yellowish brown.	SM	67.9			2+2+1 N=3 REC=18"		
4.5	CLAYEY SAND, fine to medium grained, wet, mottled grayish orange, contains root fragments, trace mica.  Mottled orangeish gray.	SC	63.9	▽	5	3+6+5 N=11 REC=18"		
10.0	SANDY SILT, fine to medium, moist, gray, contains mica.	ML	58.4		10	2+4+3 N=7 REC=15"		
13.0	SANDY SILT, fine to medium, moist, dark greenish gray, contains mica.	ML	55.4		15	2+3+3 N=6 REC=18"		
						2+2+4 N=6 REC=18"		
						2+3+4 N=7 REC=18"		
						3+4+5 N=9 REC=18"		
22.0	SANDY SILT, fine to medium, moist, dark greenish gray, contains mica.	ML	46.4		20	4+6+6 N=12 REC=18"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-408**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
27.0	SILTY SAND, fine to medium grained, moist, reddish brown.  Gray.  Wet.	ML	41.4							
		SM								
42.0	SANDY SILT, fine to medium, moist, greenish gray, strong HCl reaction, strong cementation, 5% med. - coarse shell fragments.  Moderate HCl reaction, no cemented sand, 15% med. - coarse shell fragments.  Dark greenish gray, moderate HCl reaction, 15% med. - coarse shell fragments.  <i>continued on next page</i>	ML	26.4							
								Rig chatter		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-408**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Weak HCl reaction, 5% med. - coarse shell fragments.	ML			60	5+8+12 N=20 REC=18"		
	5% med. - coarse shell fragments.				65	4+3+5 N=8 REC=18"		
	5% med. - coarse shell fragments.				70	2+6+6 N=12 REC=18"		
	Light greenish gray, strong HCl reaction, strong cementation, 40% med. - coarse shell fragments.				75	26+48+50/5" N=98/11" REC=17"		
	Dark greenish gray, weak HCl reaction, 3% med. - coarse shell fragments.				80	6+11+12 N=23 REC=18"		
	Greenish gray, no shell fragments.				85	6+9+17 N=26 REC=18"		
					90	5+8+12 N=20 REC=18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-408**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
	Weak HCl reaction, 3% med. - coarse shell fragments.				95	7+8+11 N =19 REC =18"		
	Weak HCl reaction, 3% med. - coarse shell fragments.				100	4+8+11 N =19 REC =18"		
	Weak HCl reaction, 3% med. - coarse shell fragments.				105	4+6+7 N =13 REC =18"		
	Weak HCl reaction, 3% med. - coarse shell fragments.				110	5+7+13 N =20 REC =18"		
	Dark greenish gray, weak HCl reaction, 5% med. - coarse shell fragments.				115	6+7+9 N =16 REC =18"		Start of drilling for the day
	Weak HCl reaction, 3% med. - coarse shell fragments.				120	5+8+8 N =16 REC =18"		
	Weak HCl reaction, 5% med. - coarse <i>continued on next page</i>					5+6+9		

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-408**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	shell fragments.	ML			125	N = 15 REC = 18"		
	Weak HCl reaction, 3% med. - coarse shell fragments.				130	4+6+9 N = 15 REC = 18"		
	No shell fragments.				135	5+7+7 N = 14 REC = 18"		
	Greenish gray.				140	4+6+8 N = 14 REC = 18"		Rig chatter
	Dark greenish gray, weak HCl reaction, 3% med. - coarse shell fragments.				145	6+9+12 N = 21 REC = 18"		
	Greenish gray, no shell fragments.				150	5+8+10 N = 18 REC = 18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-81.6					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-409**  
Contract Number: 06120048  
Sheet: 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 6/21/06 **Finished:** 6/27/06  
**Location:** Northing: 216253.8 ft  
Easting: 961614.8 ft  
**Ground Surface Elevation:** 61.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/21	---	7.5'	7.5'	---
<b>Start of day</b>	6/22	---	3.0'	14.0'	---
<b>Start of day</b>	6/23	---	5.0'	14.0'	---
<b>Start of day</b>	6/26	---	19.5'	14.0'	---
<b>Start of day</b>	6/27	---	20.0'	14.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Crushed Stone	FILL	61.1			3+3+4 N=7 REC=12"		0-14'-6-1/4" hollow stem auger
	Poorly graded sand FILL, trace gravel, fine to coarse grained, moist, brown.					3+2+2 N=4 REC=18"		
	trace silt. brownish gray.				5	1+1+2 N=3 REC=18"		
	contains wood fragments, FILL.					3+1+1 N=2 REC=18"		
8.5	wet, blackish gray, with gravel, PROBABLE FILL.	CL	53.1	▽		1+2+2 N=4 REC=16"		9' very soft augering
	LEAN CLAY, moist, gray, trace sand.					3+5+5 N=10 REC=18"		
	with silt.				10	1+4+3 N=7 REC=18"		
14.5	FAT CLAY, moist, gray, trace sand.	CH	47.1		15	REC=24"		14' start of day 6/22/06 14': 3-7/8 roller bit
17.0	CLAYEY SAND, fine to medium grained, moist, greenish gray.	SC	44.6			3+4+4 N=8 REC=18"		17.5' Tube pushed
	green.				20	4+2+4 N=6 REC=18"		
22.0	SANDY FAT CLAY, fine to medium, moist, gray.	CH	39.6					22.5' harder drilling
23.0	CLAYEY SAND, fine to medium grained, moist, reddish orange.	SC	38.6					
24.5	POORLY GRADED SAND WITH CLAY, <i>continued on next page</i>	SP-SC	37.1		25			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-409**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	fine to medium grained, moist, orange, small 1/16" clay layers.	SP-SC	34.6		15+26+28 N =54 REC =18"			
29.0	POORLY GRADED SAND, fine to medium grained, moist, orange.	SP		32.6		38+50/5" N =50/5" REC =11"		
	POORLY GRADED SAND with silt, fine to medium grained, moist, gray	SP-SM			30 18+50/5" N =50/5" REC =11"			
					30+40+40 N =80 REC =18"			
					35 [Solid Black]		w=23.3% LL=NP PL=NP *	pitcher sample pushed
37.0	CLAYEY SAND, fine to medium grained, moist, gray, contains cemented sand, with fine to coarse shell fragments, 10% shell frag, gray colored.	SC	24.6		3+26+6 N =32 REC =12"			
	wet, grayish green.					40 WOH+WOR +WOR N = WOR REC =18"		
	contains cemented sand.				3+38+28 N =66 REC =18"			
44.5	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, contains cemented sand, strong HCl reaction, 20-30% shell frag.	SM	17.1		45 5+6+6 N =12 REC =18"			
						4+5+5 N =10 REC =18"		
					50 [Solid Black]	REC =24"		tube pushed
					4+5+5 N =10 REC =18"			
54.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, strong HCl reaction, 10-20% shell frag.	SP-SM	7.1		4+5+6 N =11 REC =18"			
	weak HCl reaction. <i>continued on next page</i>					4+3+5		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-409**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
59.5	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.  contains fine to coarse shell fragments, moderate HCl reaction.  with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.	SP-SM	2.1			N =8 REC =18"		tube pushed
		SM			60	2+3+2 N =5 REC =18"		
						REC =24"		
67.0	CLAYEY SAND, fine to medium grained, moist, green and white, contains cemented sand, with fine to coarse shell fragments, strong HCl reaction, 70-80% shell frag.	SC	-5.5			8+14+16 N =30 REC =18"		
69.5	WELL GRADED SAND WITH CLAY, fine to medium grained, wet, green and white, with fine to coarse shell fragments, strong HCl reaction, 70-90% shell frag.  moist, green, with silt, with fine to coarse shell fragments, strong HCl reaction, 60-80% shell frag.	SW-SC	-8.0		70	11+6+12 N =18 REC =18"		
74.5	SILTY SAND, fine to medium grained, moist, green, trace fine to coarse shell fragments, moderate HCl reaction, 0-10% shell frag.  with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.  trace fine to medium shell fragments, moderate HCl reaction, 0-10% shell frag.  with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SM	-13.0		75	5+7+13 N =20 REC =18"		
						5+7+9 N =16 REC =18"		
					80	5+7+10 N =17 REC =18"		
						7+8+11 N =19 REC =18"		
					85	4+5+7 N =12 REC =18"		
89.5	SANDY SILT, fine to medium, moist, green, trace fine to medium shell fragments, moderate HCl reaction, <i>continued on next page</i>	ML	-28.0		90	5+7+9 N =16		79' start of day 6/23/06

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-409**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	0-10% shell frag.	ML	-30.5		92.0	REC = 18"		
	SILTY SAND, fine to medium grained, moist, green, trace fine to medium shell fragments, moderate HCl reaction, 0-10% shell frag.	SM			94.0	5+6+6 N = 12 REC = 18"		
97.0	contains fine to medium shell fragments, greenish gray		-35.5		95.0	REC = 19"	w=33.1% LL=61 PL=42 *	95' tube pushed
	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SM			98.0	4+6+5 N = 11 REC = 18"		
102.0	30-50% shell frag.		-40.5		100.0	2+5+6 N = 11 REC = 18"		
	CLAYEY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 50-60% shell frag.	SC			102.0	8+10+8 N = 18 REC = 18"		
104.5	SANDY SILT, fine to medium, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	ML	-43.0		105.0	4+5+8 N = 13 REC = 18"		105' start of day 6/26/06
	oliveish green, trace fine to coarse shell fragments, weak HCl reaction, 0-5% shell frag.				106.0	4+6+6 N = 12 REC = 18"		
114.5	moderate HCl reaction, 0-10% shell frag.		-53.0		110.0	5+6+7 N = 13 REC = 18"		
	with sand.				112.0	5+6+8 N = 14 REC = 18"		
117.0	ELASTIC SILT, moist, oliveish green, trace fine to medium shell fragments, weak HCl reaction, 0-10% shell frag.	MH	-53.0		115.0	6+6+9 N = 15 REC = 18"		
122.0	SANDY SILT, fine to medium, moist, oliveish green, trace fine to coarse shell fragments, moderate HCl reaction, 0-10% shell frag.	ML	-55.5		117.0	4+6+8 N = 14 REC = 18"		
	with fine to coarse shell fragments, strong HCl reaction, 10-25% shell frag.				120.0	4+5+5 N = 10 REC = 18"		
122.0	ELASTIC SILT, moist, oliveish green, trace fine to medium shell fragments, with sand, weak HCl reaction, 0-5% shell frag.	MH	-60.5		122.0	4+5+7 N = 12 REC = 18"		

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-409**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	no shells.	MH			125	5+5+7 N =12 REC =18"		
	with clay.					4+5+6 N =11 REC =18"		
					130	5+5+7 N =12 REC =18"		130' start of day 6/27/06
						6+7+9 N =16 REC =18"		
					135	5+6+9 N =15 REC =18"		
						REC =18"	PP=4.00 tsf	137.5' tube pushed
					140	5+6+8 N =14 REC =18"		
						5+6+8 N =14 REC =18"		
					145	4+6+7 N =13 REC =18"		
147.5	LEAN CLAY, moist, oliveish green, with silt.	CL	-86.0					
150.0	BOTTOM OF BORING @ 150.0 FT.		-88.5		150	7+8+10 N =18 REC =18"		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-410**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** D. Reese

**Drilling Method:** Mud Rotary

**Drilling Equipment:** CME-75

**Schnabel Representative:** M. Arles

**Dates Started:** 4/28/06 **Finished:** 5/2/06

**Location:** Northing: 216374.3 ft  
Easting: 961323.7 ft

**Ground Surface Elevation:** 119.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	4/28	---	44.0'	5.0'	---
<b>Start of day</b>	5/1	---	35.1'	5.0'	---
<b>Start of day</b>	5/2	---	26.0'	5.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	TOPSOIL.	SM	118.8			1+2+4 N=6 REC=18"		
	SILTY SAND, fine to coarse grained, moist, orange.							
2.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orange.	SP-SM	116.6			3+3+4 N=7 REC=18"		
					5	4+3+2 N=5 REC=14"		
	fine to coarse grained, yellow orange.					3+3+3 N=6 REC=12"		
					10	2+3+3 N=6 REC=12"		
10.8	fine to medium grained, orange. POORLY GRADED SAND, fine to medium grained, moist, orange.	SP	108.3			2+3+4 N=7 REC=15"		
					15	3+5+8 N=13 REC=18"		
13.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orange white, small layers of color changes.	SP-SM	105.6			7+10+8 N=18 REC=17"		
	fine to coarse grained, orange, grades fine to coarse.				20			
					25			

*continued on next page*

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Boring abandoned due to stuck tube at 55 feet. Offset to 410A



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-410**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
28.5	SILTY SAND, fine to coarse grained, moist, orange.	SP-SM	90.6		30	5+8+8 N =16 REC =12"		
		SM						
33.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orange.	SP-SM	85.6		35	6+9+11 N =20 REC =18"		
		SP-SM						
43.5	SILTY SAND, fine grained, wet, orange white.	SM	75.6	▽	45	3+1+1 N =2 REC =18"		
		SM						
53.5	LEAN CLAY, moist, dark gray, with sand.	CL	65.6		50	WOH+3+3 N =6 REC =18"		
		CL						
55.0	BOTTOM OF BORING @ 55.0 FT.		64.1		55	5+3+3 N =6 REC =18"		Pushed tube and some metal; Bechtel abandon hole due to stuck tube problem

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.
3. Boring abandoned due to stuck tube at 55 feet. Offset to 410A





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-410A**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** D. Reese

**Drilling Method:** Mud Rotary

**Drilling Equipment:** CME-75

**Schnabel Representative:** M. Arles

**Dates Started:** 4/28/06 **Finished:** 5/2/06

**Location:** Northing: 216381.3 ft  
Easting: 961323.7 ft

**Ground Surface Elevation:** 119.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	4/28	1:46	44.0'	5.0'	---
<b>Start of day</b>	5/1	9:07	35.1'	5.0'	---
<b>Start of day</b>	5/2	7:14	26.0'	5.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	SEE BORING LOG B-410 FOR SAMPLE DESCRIPTIONS FROM 0 TO 58.0 FEET.							Boring was advanced without sampling to 58.5' (depth at which original boring was terminated)
					5			
					10			
					15			
					20			
					25			
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-410A**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	SEE BORING LOG B-410 FOR SAMPLE DESCRIPTIONS FROM 0 TO 58.0 FEET.							
					30			
					35			
					40			
				▽	45			
					50			
					55			

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

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-410A**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	FAT CLAY, moist, dark gray, with sand.	CH			60	1+2+3 N=5 REC=18"		
	trace sand.				65	REC=7"	PP=2.25 tsf	
	with sand.				70	2+4+5 N=9 REC=18"		
					75	REC=18"		Bottom of tube contains fine sand
75.0	CLAYEY SAND, fine grained, moist, greenish gray.	SC	44.1					
78.5	POORLY GRADED SAND, fine to medium grained, moist, brown.	SP	40.6		80	9+11+50/5" N=61/11" REC=16"		
	yellowish brown.				85	50/2" N=50/2" REC=1"		
88.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, greenish gray, with fine to medium shell fragments, moderate HCl reaction.	SP-SM	30.6		90	42+50/4" N=50/4" REC=10"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-410A**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
93.5	POORLY GRADED SAND, fine to coarse grained, moist, greenish gray, with fine to medium shell fragments, moderate HCl reaction.	SP	25.6			50/1" N =50/1" REC =1"		Rig chatter
98.5 98.6	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, greenish gray, with fine to coarse shell fragments, moderate HCl reaction. BOTTOM OF BORING @ 98.6 FT.	SP-SM	20.6 20.5			50/2" N =50/2" REC =1"		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-411**  
**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:** 7/26/06 **Finished:** 7/27/06  
**Location:** Northing: 216556.31 ft  
Easting: 961517.19 ft  
**Ground Surface Elevation:** 81.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/26	---	7.0'	---	---
<b>Start of Day</b>	7/27	---	5.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		81.0					
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, trace gravel.  yellowish brown and orangeish brown, trace root fragments.	SP-SM				woh+woh+2 N=2 REC=11"		
						2+2+2 N=4 REC=15"	w=6.8% *	
5.6	CLAYEY SAND, fine to medium grained, wet, orangeish brown and reddish brown, trace root fragments, trace gravel, iron staining.	SC	75.9		5	3+3+3 N=6 REC=18"		
7.5	SANDY LEAN CLAY, wet, orangeish brown.	CL	74.0	▽		1+2+1 N=3 REC=12"	w=27.4% *	
	orangeish brown and gray				10	1+1+1 N=2 REC=16"		start of mud rotary drilling
13.0	FAT CLAY, moist, gray, trace sand.	CH	68.5			2+2+3 N=5 REC=18"	w=31.0% *	
18.5	ORGANIC CLAY, moist, gray	OH	63.0			1+2+3 N=5 REC=18"		
						REC=16"	w=37.9% LL=61 PL=19	
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-411**  
Contract Number: 06120048  
Sheet: 2 of 5

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	ELASTIC SILT, moist, gray, trace sand.	MH	54.5		30	3+4+6 N =10 REC =18"	PP=3.50 tsf *	
32.0	SANDY SILT, moist, gray.	ML	49.5		35	4+5+6 N =11 REC =18"	w=24.4% *	
37.0	CLAYEY SAND, fine to medium grained, wet, reddish brown and orangeish brown, contains fine to medium shell fragments, 10-20%, weak cementation, HCl reaction moderate.	SC	44.5		40	10+12+14 N =26 REC =13"		
42.0	SILTY SAND, fine grained, moist, yellowish brown and orangeish gray.	SM	39.5		45	21+50 N =50 REC =12"	w=24.0% *	
52.0	SANDY LEAN CLAY, moist, gray.	CL	29.5		50	50/5" N =50/5" REC =4"		
57.0	SILTY SAND, fine to medium grained, wet, light gray, with fine to coarse shell <i>continued on next page</i>	SM	24.5		55	11+6+23 N =29 REC =18"	w=25.2% LL=44 PL=17 *	Harder drilling

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-411**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	fragments, 50-60%, HCl reaction strong.	SM	19.5		60	28+6+13 N =19 REC =18"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and white, contains fine to coarse shell fragments, 30-40%, HCl reaction strong.	SP-SM			65	6+4+5 N =9 REC =18"	w=34.4% *	
	contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.				70	6+5+7 N =12 REC =18"		
	trace fine to medium shell fragments, 2-5%, HCl reaction weak				75	5+4+6 N =10 REC =18"	w=32.0% *	
	gray and white, contains fine to coarse shell fragments, 40-50%, weak cementation, HCl reaction strong				85	6+7+7 N =14 REC =18"	w=36.4% *	
87.0	SILTY SAND, fine to medium grained, wet, gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction strong.	SM	-5.6		90	7+9+11 N =20 REC =18"		resumed drilling at 7/27/06 @ 7:45am
	<i>continued on next page</i>							

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.







**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-411**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH					LL=63 PL=43 *	
					125	N = 16 REC = 18"		
					130	5+7+9 N = 16 REC = 18"		
					135	5+7+7 N = 14 REC = 18"		
					140	4+6+6 N = 12 REC = 18"		
					145	5+6+8 N = 14 REC = 18"		
					150	6+7+8 N = 15 REC = 18"		
150.0	BOTTOM OF BORING @ 150.0 FT.		-68.6					

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-412**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 8/7/06 **Finished:** 8/8/06  
**Location:** Northing: 216589.24 ft  
Easting: 961495.42 ft  
**Ground Surface Elevation:** 92.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	8/7	---	13.5'	---	---
<b>24 hours</b>	8/8	---	6.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
2.0	Silt with sand, PROBABLE FILL, moist, brown, contains root fragments.	FILL	90.2			3+6+6 N =12 REC =18"		Drilled 4 1/4" HSA to 13.5'
4.5	Silty sand PROBABLE FILL, fine to coarse grained, moist, reddish brown, contains root fragments, trace gravel.	FILL				4+3+3 N =6 REC =18"		
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light brown and brown.	SP-SM	87.7	5		4+4+8 N =12 REC =18"		
	fine to medium grained, light yellowish brown and brownish white, some slight iron stained bands <1/4" thick.				5+11+10 N =21 REC =18"			
10.0	SILTY SAND, fine to coarse grained, moist, light yellowish brown and dark reddish brown, trace cemented sand, moderate cementation, some iron stained bands ~1.5" thick.	SM	82.2	10		8+10+10 N =20 REC =18"		
13.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light grayish brown and dark reddish brown, with cemented sand, trace gravel, strong cementation, limonitic cemented bands up to 2" thick.	SP-SM	79.2	15		4+6+8 N =14 REC =18"		15'- Begin mud rotary with 2 15/16" tri-cone roller bit
17.0	SILTY SAND, fine grained, wet, light yellowish brown and mottled gray, limonitic cemented bands up to 2" thick.	SM	75.2			1+1+1 N =2 REC =18"		
22.0	SANDY LEAN CLAY, fine, moist, dark gray, contains mica.	CL	70.2			1+2+3 N =5 REC =18"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-412**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with sand, gray.	CL						
32.0	FAT CLAY with sand, moist, gray, contains mica.	CH	60.2		30	2+2+3 N =5 REC =18"		
37.0	LEAN CLAY with sand, moist, gray, contains mica.	CL	55.2		35	2+4+3 N =7 REC =18"		33.5'- Start of day 8/8/06
42.0	SANDY FAT CLAY, fine to medium, moist, gray, contains mica.	CH	50.2		40	3+3+6 N =9 REC =18"		
49.5	trace cemented sand, weak cementation.				45	5+7+9 N =16 REC =18"		
52.0	SILTY SAND, fine to coarse grained, wet, dark reddish brown and grayish white, with limonitic cemented sand, moderate cementation, imprints of shell fragments, highly oxidized zone.	SM	42.7		50	5+5+16 N =21 REC =18"		51'- Driller noted harder drilling
	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, light grayish white.	SP-SM	40.2		55	19+22+50 N =72 REC =12"		54.5'- Some light iron staining in sample
	light gray and mottled orangeish brown.							

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-412**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	light brown.	SP-SM			60	50/5" N =50/5" REC =5"		
					65	50/5" N =50/5" REC =2"		
67.0	CLAYEY SAND, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, trace cemented sand, moderate HCl reaction, moderate cementation.	SC	25.2		70	24+11+11 N =22 REC =18"		
	gray and grayish white, 10-20% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to decomposed shell fragments.				75	6+6+10 N =16 REC =18"		
	10-20% fine to coarse shell fragments, strong HCl reaction, HCl reaction localized to decomposed shell fragments.				80	9+9+10 N =19 REC =14"		
	dark gray, 10-20% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to decomposed shell fragments.				85	7+9+15 N =24 REC =18"		
	weak HCl reaction, <5% fine shell fragments, HCl reaction localized to decomposed shell fragments.				90	5+4+6 N =10 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-412**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	dark gray and brownish white, 30-40% fine to coarse shell fragments, strong HCl reaction, HCl reaction localized to decomposed shell fragments.	SC				95	4+9+18 N =27 REC =18"	
98.9	light gray and brownish white, 40-50% fine to coarse shell fragments, with cemented sand, strong HCl reaction, moderate cementation. BOTTOM OF BORING @ 98.9 FT.		-6.7				50/5" N =50/5" REC =4"	

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-413**  
**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 (Truck)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/12/06 **Finished:** 5/15/06  
**Location:** Northing: 216994.88 ft  
Easting: 961413.25 ft  
**Ground Surface Elevation:** 122.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Start of day</b>	5/15	---	20.0'	---	---
<b>Water Reading</b>	5/16	---	84.6'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Forest litter, root mat and topsoil.	SP-SM	122.5			4+6+8 N=14 REC=18"	w=9.7% *	
	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, light orangeish brown.					5+4+6 N=10 REC=18"		
					light orangeish gray.	5		
	light orangeish brown.					4+5+7 N=12 REC=16"		
	light reddish brown.				10	3+4+5 N=9 REC=14"		
	light orangeish brown.				15	3+2+3 N=5 REC=12"		
						4+6+6 N=12 REC=15"		
						9+10+14 N=24 REC=16"		
	3" layer of darker strata.							
	<i>continued on next page</i>							

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

**Comments:**

1. Ground Water Observation Well OW-413B installed upon completion
2. \* = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-413A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-413**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
					30	9+12+16 N =28 REC =15"		
	orangeish brown.				35	10+12+14 N =26 REC =17"	w=8.6% *	
	wet, light orangeish gray.				40	16+18+18 N =36 REC =16"		
	moist, light orangeish brown.				45	7+14+16 N =30 REC =16"		
45.0	SILTY SAND, fine to medium grained, moist, light orange, mottles of white clay.	SM	77.9					
					50	3+2+2 N =4 REC =18"	w=26.9% LL=NP PL=NP *	
53.5	SANDY ELASTIC SILT, moist, oliveish gray.	MH	69.4		55	2+3+3 N =6 REC =18"	w=25.7% LL=56 PL=27 *	
	<i>continued on next page</i>							

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

**Comments:**

1. Ground Water Observation Well OW-413B installed upon completion
2. \* = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-413A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-413**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with sand, fine to medium grained, moist, oliveish gray,	MH			60	2+4+4 N=8 REC=18"	w=27.5% LL=58 PL=29 *	
70.0	FAT CLAY, moist, gray	CH	52.9		70	4+5+7 N=12 REC=18"	PP=1.50 tsf	
75.0	SILTY SAND, fine to medium grained, moist, greenish gray, contains mica.	SM	47.9		75	REC=24"	w=35.5% LL=51 PL=15 PP=4.25 tsf *	
81.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, dark orangeish brown.	SP-SM	41.9		80	4+4+10 N=14 REC=18"	w=26.1% *	
	light greenish gray, mottles of orange color.				85	25+50/3" N=50/3" REC=10"	w=21% *	
					90	50/3" N=50/3" REC=4"		

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

*continued on next page*

**Comments:**

1. Ground Water Observation Well OW-413B installed upon completion
2. \* = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-413A installed at a nearby location





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-413**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
95.0	greenish gray, trace fine gravel, orange.	SP-SM	27.9					
	SILTY SAND, fine to medium grained, moist, greenish gray, trace shell fragments, moderate HCl reaction.	SM			50/3" N =50/3" REC =4"			
105.0	25% shell fragments, and cemented sand, weak HCl reaction.		17.9				w=34.9% *	Resumed on 5/15/06 8:30am
	POORLY GRADED SAND WITH SILT, fine to medium grained, greenish gray, moderate HCl reaction, 25% shell fragments, layers of flat shells.	SP-SM			8+11+50/5" N =61/11" REC =17"			
113.5			9.4				w=24.8% *	
	SILTY SAND, fine to medium grained, light gray, strong HCl reaction, 50% shell fragments.	SM			50/5" N =50/5" REC =5"			
							w=26.3% *	
							w=32.5% *	
							w=35.1%	
	<i>continued on next page</i>							

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

**Comments:**

1. Ground Water Observation Well OW-413B installed upon completion
2. \* = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-413A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-413**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM					*	
					125	N = 16 REC = 18"		
	15% shell fragments.							
					130	15+43+23 N = 66 REC = 18"	w=18.7% *	
	5% shell fragments, moderate HCl reaction, one layer of flat shells.							
					135	28+27+34 N = 61 REC = 18"	w=24.8% *	
	weak HCl reaction.							
					140	11+12+16 N = 28 REC = 8"	w=27.5% *	
					145	12+18+19 N = 37 REC = 18"	w=32.1% *	
					150	8+13+22 N = 35 REC = 18"	w=39.8% *	
150.0	BOTTOM OF BORING @ 150.0 FT.		-27.1					

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

**Comments:**

1. Ground Water Observation Well OW-413B installed upon completion
2. \* = See Appendix I for additional lab testing data.
3. Ground Water Observation Well OW-413A installed at a nearby location



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-414**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 5/11/06 **Finished:** 5/11/06  
**Location:** Northing: 216630.18 ft  
Easting: 961354.48 ft  
**Ground Surface Elevation:** 121.2 (feet)

Groundwater Observations					
Encountered	Date	Time	Depth	Casing	Caved
	5/11	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown, with root fragments and organic matter.	SP-SM				3+5+6 N =11 REC =15"		
	light orangeish brown.					3+5+7 N =12 REC =14"		
	fine to medium grained, light reddish orange.			5		5+7+9 N =16 REC =18"		
	fine to coarse grained.					6+8+12 N =20 REC =17"	w=4.2% *	
				10		6+7+8 N =15 REC =16"		
	wet, light orangeish brown.			15	▽	5+9+7 N =16 REC =15"		
				20		6+7+10 N =17 REC =13"	w=9.2% *	
				25		13+17+19 N =36 REC =17"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-414**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
27.0	POORLY GRADED SAND, fine to coarse grained, wet, grayish brown, trace silt and white clay.	SP-SM	94.2						
29.5		SP							
29.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, orangeish brown.	SP-SM	91.7		30	5+6+14 N =20 REC =15"			
						11+12+14 N =26 REC =18"			w=9.7% *
						10+13+17 N =30 REC =14"			
42.0	SILTY SAND, fine to medium grained, moist, orange.  light orange, mottles of white clay.	SM	79.2			2+3+2 N =5 REC =18"	w=20.6% LL=NP PL=NP *		
						2+1+1 N =2 REC =18"			w=27.7% LL=NP PL=NP *
53.5	SANDY LEAN CLAY, moist, greenish gray, with fine sand.	CL	67.7			2+3+3 N =6 REC =18"	w=28.0% LL=42 PL=23 *		
57.0	FAT CLAY, moist, greenish gray, with fine sand <i>continued on next page</i>	CH	64.2						

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-414**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH				REC =24"	w=33.2% LL=58 PL=19 PP=3.25 tsf *	
						3+5+6 N =11 REC =18"	w=38.3% * PP=2.50 tsf	
						REC =24"	w=36.7% LL=51 PL=15 PP=3.80 tsf *	
72.0	SANDY LEAN CLAY, moist, greenish gray, fine grained.	CL	49.2			4+6+9 N =15 REC =18"	w=22.9% LL=39 PL=20 PP=2.75 tsf *	
77.0	SANDY SILT, greenish gray, with organic matter, 50% dark brown and black organic matter.	ML	44.2			4+8+14 N =22 REC =18"	w=29.8% *	
82.0	SILTY SAND, fine to medium grained, wet, light greenish gray.	SM	39.2			42+50/4" N =50/4" REC =10"	w=19.0% *	
	dark gray.					50/5" N =50/5" REC =5"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-414**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
95.0	SILTY GRAVEL, weak HCl reaction.	GM	26.2		8+50/2" N =50/2" REC =8"		w=20.1% *	water loss from 93.5-95 ft, 1 bag quick gel
100.0	BOTTOM OF BORING @ 100.0 FT.		21.2		35+50/3" N =50/3" REC =10"		w=13.5% *	600 gal. water, 4 bag bentonite, still losing water

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-415**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 4/27/06 **Finished:** 4/28/06  
**Location:** Northing: 216480.9 ft  
Easting: 961264.2 ft  
**Ground Surface Elevation:** 119.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	4/27	---	18.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
2.0	Poorly graded sand FILL, fine to medium grained, contains lean clay layer, moist, brown.	FILL	117.3			3+2+5 N = 7 REC = 18"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, trace silt, moist, light brown.	SP-SM				4+3+4 N = 7 REC = 16"		
	light brown and brown.				5	3+4+4 N = 8 REC = 18"	w=3.6% *	
	light brown.					3+4+5 N = 9 REC = 14"		
	light brown and yellowish brown.				10	3+4+4 N = 8 REC = 17"		
12.0	POORLY GRADED SAND, fine to coarse grained, moist, light brown and orangeish brown, trace silt.	SP	107.3			4+4+6 N = 10 REC = 17"	w=2.5% *	
	wet, contains lean clay pockets.					6+7+9 N = 16 REC = 15"		*Used hollow stem augers to depth of 18.5 ft. *Switched to 3-7/8" O.D. Tri-cone roller bit below 18.5 ft.
22.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, yellowish brown.	SP-SM	97.3			6+6+8 N = 14 REC = 6"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/16/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-415**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	orangeish brown and yellowish brown, trace gravel, contains clayey sand pockets.	SP-SM				30	5+7+9 N =16 REC =9"	w=13.5% *
	light brown.					35	4+10+13 N =23 REC =6"	
	light brown and brown, contains clayey sand pockets.					40	4+9+13 N =22 REC =8"	
42.0	SILTY SAND, fine to medium, wet, dark gray, contains mica.	SM	77.3			45	2+2+2 N =4 REC =15"	w=28.2% LL=26 PL=22 PP=0.50 tsf *
47.0	CLAYEY SAND, fine to medium grained, wet, dark gray, contains mica.  fine to coarse grained below 49.5 ft.	SC	72.3			50	4+7+2 N =9 REC =14"	
52.0	LEAN CLAY, moist, light greenish gray, trace sand, contains mica.	CL	67.3			55	2+3+3 N =6 REC =18"	
57.0	FAT CLAY, moist, light greenish gray, trace sand, contains mica. <i>continued on next page</i>	CH	62.3					

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-415**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
62.0	ELASTIC SILT, moist, light greenish gray and dark gray, trace sand, contains mica.	MH	57.3		60	2+4+5 N =9 REC =18"	w=36.6% LL=61 PL=21 PP=1.50 tsf *	**Resumed drilling at 7:00 on 4/28/06.
					65	3+4+5 N =9 REC =18"		
67.0	FAT CLAY, moist, light greenish gray, trace sand.	CH	52.3		70	5+7+9 N =16 REC =18"		
72.0	SANDY SILT, fine to coarse, moist, gray, trace gravel, contains mica.	SM	47.3		75	5+5+8 N =13 REC =18"	w=26.3% LL=40 PL=30 PP=2.00 tsf *	
					80	26+100 N =100 REC =11"		
	fine to coarse grained, wet, gray and greenish gray, contains shell fragments and lean clay lenses, strong HCl reaction.				85	17+22+31 N =53 REC =14"	w=17.0% *	
	gray, contains clayey sand pockets.				90	100 REC =6"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-415**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	CLAYEY SAND, fine to coarse grained, wet, light gray, contains cemented sand, and lean clay layers, moderate HCl reaction.	SM	27.3					
		SC						
97.0	SILTY SAND, fine to coarse grained, moist, light gray, contains cemented sand, and shell fragments, strong HCl reaction. BOTTOM OF BORING @ 98.7 FT.	SM	22.3					
98.7			20.6					

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-416**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 8/2/06 **Finished:** 8/3/06  
**Location:** Northing: 216084.5 ft  
Easting: 961596.34 ft  
**Ground Surface Elevation:** 86.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	8/3	---	58.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
4.5	SILTY SAND, fine to medium grained, moist, light brown, contains wood fragments.	SM	81.7		1+2+2	N = 4 REC = 13"	w=3.8%	Drilled with 4 1/4 HSA to 45'	
	Orangeish brown, trace gravel.				5+5+6	N = 11 REC = 18"			
	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light brown and orangeish brown, trace gravel.	SP-SM			5	4+4+6			N = 10 REC = 16"
	Slight banding of colors 1/4-1/2" thick.					4+7+7			N = 14 REC = 17"
13.0	SILTY SAND, fine to medium grained, moist, light orangeish brown and gray, some iron staining visible.	SM	73.2		10	5+6+6	N = 12 REC = 14"	w=13.0%	
	Brown, colors are mottled.				15	4+4+4	N = 8 REC = 18"		
22.0	SANDY FAT CLAY, moist, dark gray and greenish gray, contains mica, some gray pockets of fine sand present <3/4".	CH	64.2		20	2+1+1	N = 2		
	<i>continued on next page</i>				25	2+3+4	N = 7 REC = 18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-416**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	With sand, some clayey sand lenses present <1/8".	CH			30	4+4+7 N=11 REC=18"	w=33.7% LL=58 PL=17	
32.0	LEAN CLAY with sand, moist, dark gray and greenish gray, contains mica.	CL	54.2		35	3+4+4 N=8 REC=18"		
37.0	FAT CLAY with sand, moist, dark gray and greenish gray, contains mica.	CH	49.2		40	3+4+6 N=10 REC=18"		
42.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, contains mica, 1" pocket of gray clayey sand in sample.	SC	44.2		45	3+4+7 N=11 REC=18"	w=25.6%	45'- Begin mud rotary with 2 15/16" tri-cone roller bit
	Moist, reddish brown and brownish gray, with cemented sand, weak cementation, impressions of shell fragments, highly oxidized zone.				50	3+13+21 N=34 REC=18"		
52.0	SILTY SAND, fine to medium grained, moist, gray.	SM	34.2		55	22+33+50/3" N=83/9" REC=13"		55'- Start of day 8/3/06
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-416**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Wet, contains mica.	SM					w=26.2%	
62.0	SANDY LEAN CLAY with silt, moist, gray and brownish white, trace cemented sand, 0-10% fine to medium shell fragments, moderate HCl reaction, moderate cementation, strong HCl reaction at decomposed shell fragments.	CL	24.2		60	41+35 +50/5.5" N =85/11.5" REC =16"		
67.0	CLAYEY SAND, fine to coarse grained, wet, light gray and gray, trace cemented sand, 10-20% fine to medium shell fragments, strong HCl reaction, moderate cementation, darker gray areas are similar to strata at 65'. Light gray, with cemented sand, 30-40% fine to coarse shell fragments, strong HCl reaction, strong cementation.	SC	19.2		65	49+50/3" N =50/3" REC =8"		
72.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, gray and brownish white, 10-20% fine to coarse shell fragments, strong HCl reaction, HCl reaction localized to shell fragments.  20-30% fine to coarse shell fragments, strong HCl reaction, HCl reaction localized to shell fragments.	SP-SC	14.2		70	13+16+42 N =58 REC =16"		
					75	6+8+10 N =18 REC =18"	w=29.5%	
					80	6+8+9 N =17 REC =15"		
82.0	CLAYEY SAND, fine to medium grained, wet, gray, 0-10% fine to coarse shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments.  0-10% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments.	SC	4.2		85	4+5+8 N =13 REC =16"		
					90	5+4+7 N =11 REC =18"	w=33.5%	
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-416**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC						
	Light gray and white, 40-50% fine to coarse shell fragments, with cemented sand, strong HCl reaction, strong cementation.				95	24+17+15 N =32 REC =14"		93'- Harder drilling with rig chatter
100.0	Light gray and brownish white, 20-30% fine to coarse shell fragments, trace cemented sand, strong HCl reaction, weak cementation. BOTTOM OF BORING @ 100.0 FT.		-13.8		100	10+9+11 N =20		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-417**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 7/24/06 **Finished:** 7/25/06  
**Location:** Northing: 216435.75 ft  
Easting: 961901.11 ft  
**Ground Surface Elevation:** 49.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/24	---	10.8'	---	---
<b>Start of Day</b>	7/25	---	7.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.	CL	48.7			2+2+4 N=6 REC=8"		
	SANDY LEAN CLAY, moist, brown, trace root fragments.					5+5+5 N=10 REC=18"		
	trace wood fragments, iron staining				5	1+2+3 N=5 REC=7"		
7.0	POORLY GRADED SAND with silt, fine to medium grained, moist, yellowish brown and orangeish brown, trace fine to coarse shell fragments, iron staining, HCl reaction moderate.	SP-SM	42.2			6+10+17 N=27 REC=16"		possible fill
10.0	SANDY LEAN CLAY, moist, brown and reddish brown, trace root fragments.	CL	39.2		10	3+7+16 N=23 REC=18"		start of mud rotary drilling
10.8	POORLY GRADED SAND with silt, fine to medium grained, wet, yellowish brown and orangeish brown.	SP-SM	38.4	▽		6+6+6 N=12 REC=11"		
12.0	POORLY GRADED SAND with clay, fine to medium grained, wet, gray, 1/8th inch clay lenses throughout.	SP-SC	37.2			2+2+2 N=4 REC=18"		color change in mud tub from orangeish brown to gray
14.5	FAT CLAY, moist, gray, trace sand.	CH	34.7		15	1+2+2 N=4 REC=18"		
	trace fine to coarse shell fragments, 2-5%, HCl reaction weak				20	23+11+6 N=17 REC=18"		cemented sand lenses
22.0	CLAYEY SAND, fine to medium grained, wet, gray and greenish gray, contains fine to coarse shell fragments, 30-40%, strong cementation, HCl reaction strong.	SC	27.2			14+38+38 N=76 REC=18"		Harder drilling
24.5	<i>continued on next page</i>	SM	24.7		25			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-417**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
30.0	SILTY SAND, fine to medium grained, wet, gray and greenish gray, contains fine to coarse shell fragments, 30-40%, strong cementation, HCl reaction strong.	SM	19.2		6+8+27 N =35 REC =18"			
					44+5+6 N =11 REC =18"			
37.0	CLAYEY SAND, fine to medium grained, wet, gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.  gray and white	SC	12.2		30	3+4+4 N =8 REC =18"		Rig chatter
						4+7+7 N =14 REC =18"		
					35	5+10+9 N =19 REC =16"		
47.0	SILTY SAND, fine to medium grained, wet, gray and greenish gray, trace fine to medium shell fragments, 5-10%, HCl reaction weak.	SM	2.2			3+4+5 N =9 REC =18"		
					40	3+3+3 N =6 REC =18"		
						2+3+3 N =6 REC =18"		
					45	2+2+3 N =5 REC =18"		
52.0	SANDY SILT, wet, gray and greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.  greenish gray and white, contains fine to coarse shell fragments, 40-50%, strong cementation , HCl reaction strong.	ML	-2.8			2+3+4 N =7 REC =18"		
					50	5+8+50/3" N =58/9" REC =16"		
52.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, contains fine to coarse shell fragments, 40-50%, strong cementation, HCl reaction strong.  contains fine to coarse shell fragments, <i>continued on next page</i>	SM				6+10+44 N =54 REC =18"		resumed drilling on7/25/06 @ 7:00am
					55	27+14+20 N =34 REC =18"		
						8+14+20		

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-417**  
Contract Number: 06120048  
Sheet: 3 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	10-20%, weak cementation , HCl reaction moderate	SM				N =34 REC =16"		
					60	11+14+27 N =41 REC =18"		
67.0	SANDY SILT, wet, greenish gray, contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.	ML	-12.8			4+6+10 N =16 REC =18"		
					65	4+7+14 N =21 REC =18"		
70.0	SILTY SAND, fine to medium grained, wet, greenish gray, contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.	SM	-17.8			5+6+10 N =16 REC =18"		
72.0	SANDY SILT, wet, greenish gray, contains fine to coarse shell fragments, 10-20%, HCl reaction moderate.	ML	-20.8		70	4+6+9 N =15 REC =18"		
79.5	ELASTIC SILT, moist, blueish gray, trace sand, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	MH	-22.8			6+7+10 N =17 REC =18"		
					75	5+7+10 N =17 REC =18"		
						6+6+8 N =14 REC =18"		
84.5	SANDY SILT, moist, blueish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-30.3		80	5+7+10 N =17 REC =18"		
						5+6+8 N =14 REC =18"		
87.0	SILTY SAND, fine to medium grained, moist, blueish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	SM	-35.3		85	4+6+7 N =13 REC =18"		
87.0	SANDY SILT, moist, blueish gray and white, contains fine to medium shell fragments, 10-20%, HCl reaction moderate .	ML	-37.8			7+7+14 N =21 REC =18"		organic oder
					90	5+6+9 N =15		
	trace fine to medium shell fragments, 5-10%, HCl reaction weak <i>continued on next page</i>							

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-417**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	ELASTIC SILT, moist, greenish gray, trace sand, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-42.8			REC = 18"		
		MH				5+7+9 N = 16 REC = 18"		
94.5	SANDY SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	ML	-45.3		95	5+6+9 N = 15 REC = 18"		
						6+6+8 N = 14 REC = 18"		
						100	5+6+10 N = 16 REC = 18"	
101.5	BOTTOM OF BORING @ 101.5 FT.		-52.3					

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-418**  
**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:** B. Bradfield  
**Dates Started:** 6/28/06 **Finished:** 6/29/06  
**Location:** Northing: 216340.25 ft  
Easting: 961976.71 ft  
**Ground Surface Elevation:** 43.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/28	---	6.5'	---	---
<b>Water Reading</b>	7/6	---	10.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	TOPSOIL.	SP-SM	43.4	▽		8+8+5 N =13 REC =8"		1.5'- Mud rotary with 3 7/8" drag bit
2.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brownish gray and orange, contains root fragments, weak limonitic cementation. CLAYEY SAND, fine to coarse grained, moist, gray and orangeish brown.	SC	41.7			4+3+4 N =7 REC =13"	w=27.9% *	
4.5	SILTY SAND, fine to medium grained, wet, orangeish brown and reddish brown.	SM	39.2		5	6+7+8 N =15 REC =14"		
7.0	SILTY SAND, fine to medium, moist, gray.  With sand.	SM	36.7			5+4+3 N =7 REC =14"	w=30.9% LL=NP PL=NP *	
					10	3+2+3 N =5 REC =18"		
13.0	SANDY LEAN CLAY, fine to medium, moist, gray, contains mica.	CL	30.7			4+4+5 N =9 REC =18"	w=32.7% LL=49 PL=22 *	
17.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, strong HCl reaction.	SP-SM	26.7			15+8+8 N =16 REC =18"		
	30-40% fine to coarse shell fragments, strong HCl reaction.  <i>continued on next page</i>				25	4+5+8 N =13 REC =18"	w=25.2% *	

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

**Comments:**

1. Observation Well OW-418B installed upon completion.
2. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground Water Observation Well OW-418A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-418**  
Contract Number: 06120048  
Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	20-30% fine to coarse shell fragments, strong HCl reaction.	SP-SM				6+8+10 N =18 REC =14"		
	10-20% fine to coarse shell fragments, strong HCl reaction.					4+5+7 N =12 REC =15"	w=28.4% *	
	Brownish, 0-10% fine to coarse shell fragments, weak HCl reaction.					1+1+2 N =3 REC =18"		
42.0	CLAYEY SAND, fine to medium grained, wet, gray and brownish white, 30-40% fine to coarse shell fragments, strong HCl reaction.	SC	1.7			3+8+13 N =21 REC =18"	w=27.4% *	
	White, 30-40% fine to coarse shell fragments, 40-50% cemented sand, strong HCl reaction, strong cementation.					11+13+18 N =31 REC =18"		
52.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, gray and brownish white, 10-20% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments.	SP-SC	-8.3			7+19+19 N =38 REC =16"	w=23.3% *	
57.0	SANDY SILT with clay, fine to medium, moist, gray, 10-20% fine to medium <i>continued on next page</i>	ML	-13.3					47'- Grinding/ rig chatter

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

**Comments:**

1. Observation Well OW-418B installed upon completion.
2. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-418**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	shell fragments, moderate HCl reaction, HCl reaction limited to shell fragments.	ML			60	5+10+5 N =15 REC =18"		
62.0	SILTY SAND, fine to medium grained, moist, gray, 0-10% fine to medium shell fragments, weak HCl reaction, HCl reaction localized to shell fragments.	SM	-18.3		65	6+9+14 N =23 REC =18"	w=32.1% *	
67.0	SANDY LEAN CLAY with silt, fine to medium, moist, greenish gray, 10-20% fine to medium shell fragments, weak HCl reaction, HCl reaction localized to shell fragments.	CL	-23.3		70	5+9+9 N =18 REC =18"		
72.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, 0-10% fine to medium shell fragments, weak HCl reaction.	SC	-28.3		75	6+8+15 N =23 REC =18"	w=41.7% *	
	10-20% fine to medium shell fragments, moderate HCl reaction				80	5+6+8 N =14 REC =18"		
82.0	SILTY SAND, fine to medium grained, moist, greenish gray, 10-20% fine to medium shell fragments, moderate HCl reaction.	SM	-38.3		85	10+13+10 N =23 REC =18"		
87.0	SANDY ELASTIC SILT with clay, fine to medium, moist, greenish gray, 10-20% fine to medium shell fragments, moderate HCl reaction.	MH	-43.3		90	4+8+9 N =17 REC =18"	w=49.8% LL=76 PL=49 *	
<i>continued on next page</i>								

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

**Comments:**

1. Observation Well OW-418B installed upon completion.
2. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground Water Observation Well OW-418A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-418**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	With sand, trace decayed organic matter.	MH			95	4+6+9 N=15 REC=18"		
97.0	LEAN CLAY, fine to medium, moist, greenish gray, 10-20% fine to medium shell fragments, moderate HCl reaction.	CL	-53.3		100	4+6+9 N=15 REC=18"	w=36.7% LL=46 PL=25 *	
					105	7+7+9 N=16 REC=18"		
107.0	SANDY ELASTIC SILT, fine to medium, moist, greenish gray.	MH	-63.3		110	5+7+9 N=16 REC=18"	w=39.8% LL=55 PL=38 *	
112.0	FAT CLAY with sand, moist, greenish gray.	CH	-68.3		115	7+8+10 N=18 REC=18"		
					120	5+8+11 N=19 REC=18"		
						5+7+10	w=56.4%	
<i>continued on next page</i>								

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

**Comments:**

1. Observation Well OW-418B installed upon completion.
2. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-418**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	0-10% fine to medium shell fragments, weak HCl reaction.	CH			125	N = 17 REC = 18"	LL=106 PL=41 *	
					130	8+11+12 N = 23 REC = 18"		
135.0	ELASTIC SILT with sand, moist, greenish gray, 0-10% fine to medium shell fragments, weak HCl reaction.	MH	-91.3		135	8+8+11 N = 19 REC = 6"		
					140	10+12+14 N = 26 REC = 18"	w=64.4% LL=103 PL=63 *	140'- Start drilling on 6/29/06
145.0	FAT CLAY, moist, no shell fragments.	CH	-101.3		145	4+7+9 N = 16 REC = 18"		
					150	5+8+8 N = 16 REC = 18"	w=52.6% LL=69 PL=27 *	
152.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, 10-20% fine to medium shell fragments, weak HCl reaction.	SC	-108.3		155	7+13+21 N = 34 REC = 14"		
<i>continued on next page</i>								

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

**Comments:**

1. Observation Well OW-418B installed upon completion.
2. Downhole geophysical logging performed on 6/29/06.
3. \* = See Appendix I for additional lab testing data.
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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-418**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC						
162.0	SANDY ELASTIC SILT, fine to medium, moist, greenish gray.	MH	-118.3		160	4+8+16 N =24 REC =18"		
	With sand.				165	4+8+15 N =23 REC =18"		
	fine to medium, moist, greenish gray.				170	3+6+9 N =15 REC =18"	w=57.3% LL=76 PL=49 *	
	With sand, 0-10% fine to medium shell fragments, weak HCl reaction.				175	7+9+15 N =24 REC =18"		
	No shell fragments.				180	8+10+13 N =23 REC =18"		
					185	6+9+11 N =20 REC =18"	w=56.7% LL=100 PL=60 *	
					190	7+9+13 N =22 REC =18"		

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

*continued on next page*

**Comments:**

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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-418**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
					195	5+6+10 N =16 REC =18"		
200.0	BOTTOM OF BORING @ 200.0 FT.		-156.3		200	6+7+9 N =16 REC =18"	w=66.5% LL=109 PL=71 *	

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

**Comments:**

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**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-419**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 6/5/06 **Finished:** 6/6/06  
**Location:** Northing: 216267.83 ft  
Easting: 961895.6 ft  
**Ground Surface Elevation:** 55.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/5	---	15.0'	20.0'	---
<b>Start of Day</b>	6/6	---	30.0'	20.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Crushed Stone	FILL	54.8			5+8+5 N =13 REC =6"		0-20' Hollow stem augers
2.0	Clayey sand FILL, fine to coarse grained, moist, yellow, with gravel.	FILL	53.3			2+1+WOH N =1 REC =4"		
	Lean clay FILL, moist, orange, with sand.	FILL			5	WOH/18" N = WOH/18" REC =0"		
8.3	fine to coarse sandy, wet.		47.0			1+WOH+2 N =2 REC =12"		
	Clayey Sand PROBABLE FILL, fine to coarse grained, moist, gray, contains wood fragments.	FILL			10	2+2+3 N =5 REC =18"		
11.6	Sandy lean clay PROBABLE FILL, moist, gray, contains wood fragments.	FILL	43.7			3+3+5 N =8 REC =18"		
13.5	SANDY LEAN CLAY, fine to coarse, moist, gray.	CL	41.8		15			
17.0	POORLY GRADED SAND, fine to medium grained, moist, orange and gray, 1/8-1/4" color changes.	SP	38.3			10+20+12 N =32 REC =18"		
	wet, yellowish gray.				20	7+1+1 N =2 REC =6"		
	<i>continued on next page</i>				25			

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-419**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP						
32.0	SILTY SAND, fine to coarse grained, moist, grayish green, with fine to coarse shell fragments, contains cemented sand, strong HCl reaction, 35-45% shell frag.	SM	23.3			50/0" N =50/0" REC =0"		28.5' Harder drilling 28.5'-100' 4 1/4" roller bit
	green					17+20+13 N =33 REC =18"		
	fine to medium grained, wet, contains cemented sand.					4+7+9 N =16 REC =18"		
	trace fine to medium shell fragments, moderate HCl reaction, 0-10% shell frag.					32+12+7 N =19 REC =14"		
						4+4+6 N =10 REC =18"		
								53.5' Pushed tube
	<i>continued on next page</i>							

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

**Comments:**

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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-419**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	moist, greenish white, with fine to coarse shell fragments, contains cemented sand, strong HCl reaction, 35-45% shell frag.	SM			60	11+10+43 N =53 REC =18"		63' Rig chatter
					65	8+13+21 N =34 REC =18"		
	25-30% shell frag.				70	6+7+12 N =19 REC =18"		
					75	4+5+9 N =14 REC =18"		
77.0	SANDY SILT, fine to medium, moist, green, trace fine to medium shell fragments, strong HCl reaction, 0-5% shell frag.	ML	-21.7		80	6+9+13 N =22 REC =18"		
	with clay, weak HCl reaction, 0-5% shell frag.				85	5+8+8 N =16 REC =18"		
	moderate HCl reaction, 0-10% shell frag.				90	5+8+12 N =20 REC =18"		
	<i>continued on next page</i>							

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

**Comments:**

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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-419**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 35-45% shell frag.	ML	-36.7					
		SM						
						95	6+11+13 N =24 REC =18"	
							4+6+9 N =15 REC =18"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-44.7			100		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-420**  
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 (Truck)  
**Schnabel Representative:** K. Megginson / B. Bradfield  
**Dates Started:** 6/6/06 **Finished:** 6/7/06  
**Location:** Northing: 216213.53 ft  
Easting: 961670.44 ft  
**Ground Surface Elevation:** 62.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/6	---	24.0'	---	---
<b>Start of day</b>	6/7	---	15.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	Crushed stone FILL, moist, brown and dark gray, contains fine to coarse sandy silt pockets.	FILL	62.1			7+4+7 N =11 REC =6"	w=17.2% LL=52 PL=21 *		
2.0	Fat clay PROBABLE FILL, moist, yellowish brown and light gray, with fine to medium sand, trace mica, contains root fragments.	CH	60.6			2+3+3 N =6 REC =16"	w=28.6% LL=68 PL=23 *		
	SANDY FAT CLAY, moist, stratified orangeish brown and light gray, trace fine to medium sand, contains iron oxide stained pockets (1/8 inch) and root fragments.				5		2+3+4 N =7 REC =18"	w=29.7% LL=64 PL=22 *	
	light gray and dark yellowish brown.						2+2+3 N =5 REC =18"	w=38.3% LL=71 PL=19 *	
	light gray, dark yellowish brown and dark orangeish brown				10		3+4+7 N =11 REC =18"		
	gray, trace mica and organic matter (±1%) below 11 ft.								
	contains fine to medium sandy fat clay pockets.					4+5+8 N =13 REC =18"	w=42.1% LL=74 PL=31 *		
	gray and dark gray, contains fat clay with sand pockets.					7+8+9 N =17 REC =18"	w=28.6% *		
22.0	SANDY SILT, fine to medium grained, moist, yellowish brown and dark orangeish brown, contains moderately cemented sand pockets.	ML	40.6						
24.0	POORLY GRADED SAND WITH SILT, <i>continued on next page</i>	SP-SM	38.6	▽		5+17+37 N =54 REC =16"	w=24.4% LL=NP PL=NP		

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-420**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to medium grained, wet, brown and yellowish brown, contains black particles.	SP-SM					*	
	contains iron oxidized zone from 28.5 to 28.6 ft					50 REC =5"		
32.0	SILTY SAND, fine to medium grained, wet, dark gray.	SM	30.6			26+31+22 N =53 REC =16"	w=24.2% *	
37.0	LEAN CLAY with sand, fine to medium grained, moist, gray, trace fine to medium shell fragments (±5%), weak HCl reaction.  wet, gray and light gray, trace fine to coarse shell fragments (±5%), contains sandy lean clay pockets, moderate HCl reaction below 39.3 ft	CL	25.6			13+15+50/3" N =65/9" REC =16"	w=20% LL=30 PL=19 *	*Very to extremely difficult rotary advancement from 37 to 38.5 ft (slow rotary advancement). Difficult rotary advancement may be in part be due to using drag bit. *Difficult to very difficult rotary advancement from 38.5 to 39.5 ft.
43.5	SILTY SAND, fine to medium grained, wet, gray, trace fine to coarse shell fragments (±5%), weak HCl reaction.	SM	19.1			5+8+11 N =19 REC =18"	w=26.5% *	*Difficult to very difficult rotary advancement from 42.5 to 43.5 ft (slight to moderate rig chatter).
	dark gray, little fine to coarse shell fragments (±15%).					10+12+12 N =24 REC =18"	w=28.4% *	
	gray, trace fine to coarse shell fragments (±5%), very weak HCl reaction.					5+5+8 N =13 REC =18"	w=28.0% *	
	<i>continued on next page</i>							

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

**Comments:**

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**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-420**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	trace fine to medium shell fragments ( $\pm < 5\%$ ).	SM	0.6		60	3+4+5 N=9 REC=18"	w=34.9% *	
67.0	CLAYEY SAND, few fine to coarse shell fragments ( $\pm 10\%$ ), strong HCl reaction, moist, olive gray.	SC			65	REC=24"	w=28.3% LL=49 PL=11 *	*Osterberg sampler tube push  *Slight to moderate rotary resistance from 66 to 68.5 ft.
	SILTY SAND, light greenish gray, mostly fine to coarse shell fragments ( $\pm 50\%$ ), contains strongly cemented sand pockets (1 inch), clayey sand pockets and shark teeth.	SM	-4.4		70	20+20+32 N=52 REC=18"	w=16.8% *	
	gray, trace fine to coarse shell fragments ( $\pm 5\%$ ). fine to medium grained, wet, gray, trace fine to medium shell fragments ( $\pm 1\%$ ) and mica, moderate HCl reaction.				75	5+11+12 N=23 REC=16"	w=24.4% *	
	moist, gray and light greenish gray, trace fine to coarse shell fragments ( $\pm 5\%$ ), weak HCl reaction.				80	10+14+16 N=30 REC=18"	w=26.2% LL=48 PL=32 *	**Resumed drilling at 7:00 AM on 6/7/06.
83.5	SANDY ELASTIC SILT, trace fine to medium shell fragments ( $\pm < 5\%$ ), dark green.	MH	-20.9		85	5+9+13 N=22 REC=18"	w=47.3% LL=60 PL=39 *	
87.0	FAT CLAY, moist, light greenish gray, trace fine to medium sand and mica, and fine to medium shell fragments ( $\pm 1\%$ ), weak HCl reaction.	CH	-24.4		90	7+10+12 N=22 REC=18"	w=55.3% LL=90 PL=35 *	
<i>continued on next page</i>								

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

**Comments:**

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- \* = See Appendix I for additional lab testing data.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-420**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
	fine to medium sandy, gray, very weak HCl reaction (high percentage of sand).	CH				95	7+12+19 N=31 REC=12"	w=39.4% *	
98.5	SANDY SILT, wet, trace fine to medium shell fragments (±5%), weak HCl reaction.	ML	-35.9			100	5+7+12 N=19 REC=18"	w=34.8% LL=49 PL=30 *	
103.5	SILTY SAND, moist, gray, trace fine to coarse shell fragments (±5%), moderate HCl reaction.	SM	-40.9			105	6+10+19 N=29 REC=18"	w=38.5% LL=57 PL=42 *	
108.5	SANDY ELASTIC SILT, with shells, gray	MH	-45.9			110	7+10+14 N=24 REC=18"	w=46.4% LL=80 PL=51 *	
113.5	FAT CLAY, greenish gray and gray, trace fine to medium sand, contains indurated lean clay pockets.	CH	-50.9			115	7+8+12 N=20 REC=18"	w=64.9% LL=118 PL=38 *	
118.5	SANDY ELASTIC SILT, dark gray, with fine to medium sand, moderate HCl reaction.	MH	-55.9			120	7+9+15 N=24 REC=18"	w=41.6% LL=65 PL=40 *	
123.5	SANDY FAT CLAY, dark greenish gray, <i>continued on next page</i>	CH	-60.9				5+7+10	w=47.5%	

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

**Comments:**

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- \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-420**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
127.0	very weak HCl reaction.	CH	-64.4		125	N = 17 REC = 18"	LL=83 PL=29 *	*Osterberg sampler tube push from 128.5 to 130.3 ft
	SANDY ORGANIC SILT, weak HCl reaction.	OH			130	REC = 22"	w=39.0% LL=59 PL=34 PP=4.00 tsf *	
133.5	ELASTIC SILT, moist, dark greenish gray, trace fine to medium sand, and mica.	MH	-70.9		135	7+9+11 N = 20 REC = 18"	w=73.4% LL=147 PL=75 *	
					140	7+9+11 N = 20 REC = 18"	w=78.8% LL=145 PL=76 *	
					145	7+8+11 N = 19 REC = 18"	w=58.9% LL=107 PL=56 *	
150.0	fine to medium shell fragments, moderate HCl reaction.		-87.4		150	7+12+12 N = 24 REC = 18"	w=74.2% LL=127 PL=100 *	
	weak HCl reaction, blocky.				BOTTOM OF BORING @ 150.0 FT.			

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-421**  
Contract Number: 06120048  
Sheet: 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/10/06 **Finished:** 5/11/06  
**Location:** Northing: 216497.56 ft  
Easting: 961019.77 ft  
**Ground Surface Elevation:** 115.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/10	---	33.8'	3.5'	---
<b>Start of day</b>	5/11	---	11.5'	3.5'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	ROOTMAT AND TOPSOIL.	SP-SM	115.3			1+3+2 N=5 REC=10"	w=11.6% *	
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brown, contains root fragments.					1+3+3 N=6 REC=14"	w=14.8% *	
4.5	CLAYEY SAND, fine to medium grained, moist, brown.	SC	111.1		5	1+2+2 N=4 REC=12"	w=11.9% *	
7.0	SILTY SAND, fine to medium grained, moist, yellowish brown.	SM	108.6			2+2+2 N=4 REC=12"	w=7.6% *	
10.5	POORLY GRADED SAND, trace silt, tan yellow	SP	105.1		10	7+7+7 N=14 REC=16"	w=11.8% LL=NP PL=NP *	
	fine to coarse grained.				15	16+10+18 N=28 REC=12"	w=9.2% *	
18.5	WELL GRADED SAND WITH SILT, trace gravel, light brown, contains 1/8" thick clay lenses.	SW-SM	97.1		20	5+8+8 N=16 REC=12"	w=9.4% *	
23.5	SILTY SAND, light brown	SM	92.1		25	8+13+14 N=27 REC=14"	w=11.0% LL=NP PL=NP	

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

*continued on next page*

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-421**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
27.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, orange.  wet.	SM	88.6	▽			*			
		SP-SM								
						30	10+14+15 N =29 REC =10"	w=15.6% *		
						35	2+1+1 N =2 REC =18"			
					40	4+6+5 N =11 REC =14"	w=17.3% *			
42.0	SANDY ELASTIC SILT, moist, mottled white and orange.	MH	73.6							
						45	WOH+WOH +1 N =1 REC =18"	w=31.5% *		
47.0	SANDY FAT CLAY, moist, dark gray.	CH	68.6							
						50	REC =24"	w=28.8% LL=50 PL=18 *		
						55	3+3+4 N =7 REC =18"	w=29.6% PP=1.00 tsf *		
continued on next page										

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-421**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH				REC =24"	w=34.2% LL=78 PL=32 PP=1.50 tsf *	
						3+4+5 N=9 REC =18"	w=28.6% PP=2.50 tsf *	
67.0	SILTY SAND, fine to medium grained, moist, greenish gray.	SM	48.6			4+5+5 N=10 REC =18"	w=22.2% *	
						50/4" N=50/4" REC =6"	w=24.9% *	
						11+11+45 N=56 REC =14"	w=19.7% *	
	with fine to medium shell fragments (10%).					50/4" N=50/4" REC =4"	w=20.5% *	
	wet, greenish white, with fine to coarse shell fragments (25-30%), HCl reaction.					22+26+29 N=55 REC =18"	w=26% *	
	<i>continued on next page</i>							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-421**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, greenish gray, with fine to medium shell fragments (20-30%), HCl reaction.  contains cemented sand, with fine to medium shell fragments (10-20%), HCl reaction.	SM	23.6		95	6+8+50 N =58 REC =18"	w=20.7% LL=NP PL=NP *	
		SP-SC						
97.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, with fine to coarse shell fragments (10-20%).	SP-SM	18.6		100	6+6+8 N =14 REC =18"	w=28.4% *	
102.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments (25-40%), HCl reaction.	SM	13.6		105	10+8+8 N =16 REC =18"	w=26% *	
					110	6+6+7 N =13 REC =18"	w=26.1% LL=NP PL=NP *	
					115	3+3+5 N =8 REC =18"	w=31.7% *	
					120	10+8+9 N =17 REC =18"	w=27.8% LL=NP PL=NP *	
118.5	SANDY SILT, green, with fine to coarse shell fragments (20-30%), HCl reaction.	ML	-2.9		50/4"			
<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-421**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML				N =50/4" REC =0"		
						10+11+13 N =24 REC =18"	w=22.0% *	
133.5	SILTY SAND, dark green, trace fine to coarse shell fragments (0-5%).	SM	-17.9			7+13+14 N =27 REC =18"	w=29.0% *	
138.5	SANDY FAT CLAY, dark gray	CH	-22.9			4+6+8 N =14 REC =18"	w=38.5% LL=53 PL=25 *	
142.0	SILTY SAND, fine to medium grained, moist, dark green, trace fine to medium shell fragments (0-5%), HCl reaction.	SM	-26.4			6+7+8 N =15 REC =18"	w=46.8% *	
150.0	BOTTOM OF BORING @ 150.0 FT.		-34.4			6+6+8 N =14 REC =18"	w=47.4% *	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-422**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 5/4/06 **Finished:** 5/4/06  
**Location:** Northing: 216478.23 ft  
Easting: 960915.01 ft  
**Ground Surface Elevation:** 104.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/4	---	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	TOPSOIL.	SM	103.7					
2.5	SILTY SAND, fine to coarse grained, moist, brown and orangeish brown, trace root fragments.	CL	101.5			1+2+1 N=3 REC=14"		
	LEAN CLAY with sand, moist, brown, trace root fragments, trace wood fragments.					2+1+2 N=3 REC=14"		
	yellowish brown, trace root fragments.				5	2+3+4 N=7 REC=18"		
7.5	SILTY SAND, fine to coarse grained, moist, yellowish brown, trace root fragments.	SM	96.5			6+6+8 N=14 REC=18"		
					10	5+7+9 N=16 REC=13"		
13.5	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, orange and brownish white, trace gravel.	SP-SC	90.5			6+8+9 N=17 REC=14"		
					15			
						5+4+5 N=9 REC=13"		
					20			
						3+2+2 N=4 REC=16"		
					25			
	<i>continued on next page</i>							

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.









**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-422**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
					95	6+7+10 N =17 REC =18"		
98.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and brownish gray, trace fine to medium shell fragments, weak HCl reaction. BOTTOM OF BORING @ 100.0 FT.	SP-SM	5.5					1/4 inch shell lense
100.0			4.0		100	5+6+8 N =14 REC =18"		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-423**  
**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:** 6/8/06 **Finished:** 6/14/06  
**Location:** Northing: 216331.76 ft  
Easting: 960850.21 ft  
**Ground Surface Elevation:** 110.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/8	---	10.5'	---	---
<b>Start of day</b>	6/12	---	30.0'	---	---
<b>Start of day</b>	6/13	---	4.0'	---	---
<b>Start of day</b>	6/14	---	0.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	SILTY SAND, fine to medium grained, moist, brown, trace organic matter (±1%).	SM				2+3+3 N =6 REC =10"	w=4.9% *	*5.4" O.D. Drag bit from 0 to 20 feet.
	brown and light brown.					2+2+3 N =5 REC =11"		
	contains clayey sand pockets.				5	5+10+8 N =18 REC =14"		
	brown.					4+5+6 N =11 REC =8"		
	fine to coarse grained, wet, brown and light brown, contains poorly graded sand with silt lenses.				10	4+4+6 N =10 REC =7"		
	yellowish brown.				15	5+6+8 N =14 REC =6"		
				10		2+5+12 N =17 REC =8"	w=10.4% *	*4-3/4" O.D. Drag bit used below 20 ft.
23.5	POORLY GRADED SAND WITH SILT, fine to medium grained.	SP-SM	86.6			13+13+16 N =29 REC =10"	w=16.6% *	

*continued on next page*

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/14/06.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-423 installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-423**  
Contract Number: 06120048  
Sheet: 2 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	stratified light brown and yellowish brown below 24.5 ft .	SP-SM						
28.5	SILTY SAND, yellowish brown and light brown.	SM	81.6		30	4+5+8 N =13 REC =7"	w=17.4% *	
	yellowish brown.				35	8+11+11 N =22 REC =10"	w=13.6% LL=NP PL=NP *	
37.0	CLAYEY SAND, wet, yellowish brown and light grayish brown, contains clayey sand lenses.	SC	73.1					
39.5	SILTY SAND, fine to coarse grained, wet, yellowish brown.	SM	70.6		40	4+3+8 N =11 REC =12"	w=43.9% LL=43 PL=15 *	
42.0	FAT CLAY, moist, gray, with fine to medium sand, trace mica.	CH	68.1		45	2+3+4 N =7 REC =18"	w=30.9% LL=55 PL=20 *	
	gray and light greenish gray, trace fine to medium sand, contains organic matter pocket.				50	3+3+4 N =7 REC =18"	w=36.6% LL=61 PL=16 *	
	trace mica and organic matter (±1%).				55	4+4+6 N =10 REC =18"	w=38.1% LL=80 PL=34 *	
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/14/06.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-423 installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-423**  
Contract Number: 06120048  
Sheet: 3 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.5	ELASTIC SILT, gray	MH	51.6		60	6+7+10 N=17 REC=18"	w=33.8% LL=78 PL=45 *	
63.5	SANDY SILT, gray	ML	46.6		65	4+7+7 N=14 REC=18"	w=21.9% LL=37 PL=27 *	
68.5	SILTY SAND, trace fine to medium sand and organic matter ( $\pm 1\%$ ), mostly indurated lean clay layers ( $\pm 100\%$ ).	SM	41.6		70	34+50/2" N=50/2" REC=8"	w=25.4% LL=NP PL=NP *	*Switched to 5" O.D. Tri-cone roller bit below 69 ft.
					75	50 REC=5"	w=22.8% *	*Moderately difficult rotary advancement from 69.5 to 72 ft (slow rotary advancement).
78.5	SANDY SILT, wet, mostly fine to coarse shell fragments ( $\pm 70\%$ ), strong HCl reaction.	ML	31.6		80	16+18+21 N=39 REC=12"	w=21.9% *	
83.5	SILTY SAND, gray and light greenish gray, contains strongly cemented sand pockets.	SM	26.6		85	9+8+17 N=25 REC=14"	w=25.6% *	*Switched to 4-3/4" O.D. Drag bit below 83.5 ft.
	little fine to coarse shell fragments ( $\pm 15\%$ ), contains black particles (1/16 inch).				90	25+11+12 N=23 REC=18"	w=23.1% *	*Extreme difficulty in rotary advancement from 85.5 to 88.5 ft (moderate rig chatter, slow advancement). *Switched to 5" O.D. Tri-cone roller bit below 88.5 ft.

continued on next page

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/14/06.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-423 installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-423**  
Contract Number: 06120048  
Sheet: 4 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
100.0	gray and dark gray, trace fine to medium shell fragments ( $\pm 5\%$ ), weak HCl reaction.	SM	10.1		95	5+6+10 N=16 REC=18"	w=29.8% *	*Very difficult rotary advancement from 88.5 to 92 ft (strong rig chatter).
	light greenish gray and gray, few fine to coarse shell fragments ( $\pm 10\%$ ).				100	13+13+18 N=31 REC=18"	w=27.4% *	
117.0	POORLY GRADED SAND WITH CLAY, gray, trace fine to medium shell fragments ( $\pm 5\%$ ), moderate HCl reaction.	SP-SC	-6.9		105	REC=21"	w=23.1% LL=24 PL=18 *	*Osterberg sampler tube push from 103.5 to 105.3 ft
	greenish gray and blueish gray, trace fine to medium shell fragments ( $\pm 1\%$ ), very weak HCl reaction.				110	4+8+9 N=17 REC=18"	w=30.8% *	
					115	REC=0"		
	SILTY SAND, fine to medium grained, wet, gray and light greenish gray, mostly fine to coarse shell fragments ( $\pm 70\%$ ), strong HCl reaction.	SM			120	6+16+50/4" N=66/10" REC=18"	w=26.2% LL=NP PL=NP *	
	gray and greenish gray, weak HCl <i>continued on next page</i>					4+11+19	w=33.9%	

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/14/06.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-423 installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-423**  
Contract Number: 06120048  
Sheet: 5 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	reaction.	SM				125	N =30 REC =18"	*
						130	11+17+20 N =37 REC =18"	w=31.9% *
132.0	SANDY SILT, fine to medium, moist, greenish gray, trace fine to coarse shell fragments (±5%), contains indurated silt pockets, very weak HCl reaction.  trace fine to medium shell fragments (±1%) below 134.5 ft.	ML	-21.9			135	6+12+18 N =30 REC =18"	w=37.1% *
137.0	SILTY SAND, moist, greenish gray, trace fine to medium shell fragments (±5%), very weak HCl reaction.	SM	-26.9			140	8+10+14 N =24 REC =18"	w=45.1% *
	dark greenish gray, few fine to coarse shell fragments (±10%), trace organic matter (±1%), contains clayey sand layers (high percentage of sand).  strong HCl reaction					145	7+9+17 N =26 REC =18"	w=38.9% *
						150	7+18+15 N =33 REC =18"	w=32.8% *
152.0	SANDY LEAN CLAY, fine to medium, moist, dark greenish gray, trace fine to coarse shell fragments (±<5%), strong HCl reaction.	CL	-41.9			155	5+9+13 N =22 REC =18"	w=44.9% *
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/14/06.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-423 installed at a nearby location





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-423**  
Contract Number: 06120048  
Sheet: 6 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
158.5	ORGANIC CLAY, trace fine to coarse shell fragments (±5%) and mica, contains indurated lean clay pockets, weak HCl reaction.	OH	-48.4		160	REC = 19"	w=44.9% LL=74 PL=18 PP=>4.5 tsf *	*Osterberg sampler tube push from 158.5 to 160.0 ft
162.0	ELASTIC SILT, moist, dark greenish gray, trace fine to medium sand and mica, weak HCl reaction.	MH	-51.9		165	8+10+14 N = 24 REC = 18"	w=59.7% *	
167.0	SILT, moist, dark greenish gray, with fine to medium sand, trace fine to coarse shell fragments (±5%), moderate HCl reaction.	ML	-56.9		170	4+7+11 N = 18 REC = 18"	w=41.0% *	
172.0	SILTY SAND, moist, gray	SM	-61.9		175	8+8+12 N = 20 REC = 18"	w=49.7% *	
	contains indurated elastic silt pockets.				180	REC = 16"	w=41.5% LL=64 PL=34 PP=>4.5 tsf *	*Osterberg sampler tube push from 178.5 to 179.5 ft *Switched to 5" O.D. Tri-cone roller bit below 178.5 ft.
	greenish gray, very weak HCl reaction.				185	6+8+11 N = 19 REC = 18"	w=73.3% *	**Resumed drilling at 7:00 AM on 6/13/06.
185.0	ELASTIC SILT, moist, dark greenish gray, trace fine to medium sand and mica, weak HCl reaction.	MH	-74.9		190	REC = 8"	w=72.4% LL=111 PL=70	*Osterberg sampler tube push from 188.5 to 190.0
	trace fine sand, mostly indurated elastic silt layers.							

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

*continued on next page*

**Comments:**

- Boring backfilled with cement/bentonite grout via tremie pipe upon completion.
- Downhole geophysical logging performed on 6/14/06.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-423 installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-423**  
Contract Number: 06120048  
Sheet: 7 of 7

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH					*	ft
	contains indurated elastic silt pockets, weak HCl reaction.				195	5+10+14 N =24 REC =18"	w=71% *	
199.0	LEAN CLAY, moist, greenish gray and dark greenish gray, with fine to medium sand, trace mica, weak HCl reaction.	CL	-88.9		200	6+9+15 N =24 REC =18"	w=45.3% *	**Resumed grouting at 7:00 AM on 6/14/06.
201.5	BOTTOM OF BORING @ 201.5 FT.		-91.4					

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 6/14/06.
3. \* = See Appendix I for additional lab testing data.
4. Ground Water Observation Well OW-423 installed at a nearby location



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-424**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-750  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 4/27/06 **Finished:** 4/28/06  
**Location:** Northing: 216263.3 ft  
Easting: 960818.6 ft  
**Ground Surface Elevation:** 118.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	4/27	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	ROOTMAT AND TOPSOIL.	SM	118.6			1+2+3 N=5 REC=15"		
2.5	SILTY SAND, fine to medium grained, moist, light brown, contains root fragments.	CL	116.4			1+2+3 N=5 REC=13"		
	SANDY LEAN CLAY, fine to medium, moist, orangeish brown.				5	2+2+4 N=6 REC=2"		
7.0	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, brownish orange, w/ iron staining.	SP-SM	111.9			2+1+3 N=4 REC=12"		
	orangeish brown, no iron staining.				10	2+5+4 N=9 REC=12"		
	yellowish brown, trace gravel, w/ slt. iron staining.				15	5+7+8 N=15 REC=12"		
17.0	SILTY SAND, medium to coarse grained, moist, orangeish brown, trace fine to medium gravel.	SM	101.9			10+10+9 N=19 REC=13"		
22.0	POORLY GRADED SAND WITH SILT, fine and coarse grained, wet, orangeish brown and gray, trace fine to medium gravel. moist, orangeish brown and gray.	SP-SM	96.9			6+13+12 N=25 REC=14"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-424**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	brownish orange and gray.  fine to medium grained.	SP-SM						
					30	6+9+15 N =24 REC =14"		
	orangeish brown and brown, <1/2 " clay lenses.							
					35	9+14+17 N =31 REC =14"		
	brownish orange and gray.							
					40	3+4+5 N =9 REC =15"		1/4" clay lense
	brownish orange and mottled gray, <1/8" clay lenses .							
44.8	CLAYEY SAND, fine to medium grained, moist, brownish orange and gray.	SC	74.1		45	6+5+4 N =9		
48.5	POORLY GRADED SAND WITH SILT, medium to coarse grained, wet, orange brown, trace gravel.	SP-SM	70.4		50	9+11+16 N =27 REC =16"		
52.0	LEAN CLAY with sand, moist, dark gray.	CL	66.9					
					55	1+5+6 N =11 REC =18"		
57.0	FAT CLAY with sand, moist, dark gray.	CH	61.9					
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-424**

Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
					60	WOH+5+7 N=12 REC=18"	PP=1.25 tsf	
64.5	CLAYEY SAND, fine to medium grained, moist, dark gray.	SC	54.4		65	WOH+4+5 N=9 REC=18"	PP=2.50 tsf	
67.0	FAT CLAY with sand, moist, gray.	CH	51.9					
					70	3+6+9 N=15 REC=18"	PP=3.00 tsf	
72.0	CLAYEY SAND, fine to medium grained, moist, gray.	SC	46.9					
					75	4+6+7 N=13 REC=18"		
77.0	POORLY GRADED SAND, fine to medium grained, wet, dark greenish gray, trace clay, glauconite cementation.	SP	41.9					
					80	33+50/3" N=50/3" REC=6"		
					85	50/2" N=50/2" REC=2"		
					90	50/4" N=50/4"		
	with fine to medium shell fragments, strong HCl reaction.							
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-424**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	CLAYEY SAND, fine and coarse grained, moist, gray and white, with fine to coarse shell fragments, strong HCl reaction.  gray and brownish white, trace gravel.	SP	26.9					
		SC						
						95	9+9+17 N =26 REC =18"	
								Hard drilling
100.0	BOTTOM OF BORING @ 100.0 FT.		18.9			100	4+19+27 N =46 REC =18"	

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-425**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 4/28/06 **Finished:** 5/1/06  
**Location:** Northing: 216247.5 ft  
Easting: 961274.7 ft  
**Ground Surface Elevation:** 118.4 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	4/28	---	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, reddish brown, trace organic matter.	SP-SM				2+6+8 N = 14 REC = 18"	w=13.7% *	
					5	3+3+4 N = 7 REC = 13"	w=7.3% *	
						3+4+3 N = 7 REC = 18"	w=2.5% *	
	brown.				10	2+2+3 N = 5 REC = 14"	w=10.8% *	
						3+3+4 N = 7 REC = 14"	w=14.2% *	
					15	6+5+6 N = 11 REC = 14"	w=16.4% *	
	fine to medium grained, moist, brown, trace fine gravel.				20	8+9+9 N = 18 REC = 15"	w=11.1% *	
					25			
	<i>continued on next page</i>							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-425**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	orangeish brown.	SP-SM				15+19+14 N=33 REC=18"	w=11.6% *	
					30	13+14+15 N=29 REC=13"	w=15.2% *	
					35	13+13+14 N=27 REC=13"	w=12% *	
41.5	WELL GRADED SAND WITH SILT, medium grained, wet, orangeish brown.	SW-SM	76.9		40	14+17+19 N=36 REC=12"	w=14.9% *	
	dark brown, with fine gravel.				45	17+17+19 N=36 REC=16"	w=13.7% *	
51.5	SANDY LEAN CLAY, fine to medium grained, wet, orange.	CL	66.9		50	11+14+14 N=28 REC=14"	w=12.1% LL=28 PL=17 *	
57.0	FAT CLAY, with sand, wet, gray.	CH	61.4		55	3+3+4 N=7 REC=18"	w=28.2% LL=46 PL=19 *	
	<i>continued on next page</i>					REC=24"	w=31.2% LL=55	

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-425**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH					PL=25*	
					60	3+3+4 N=7 REC=18"	w=35.1% LL=63 PL=21*	
					65	REC=24"	w=39.5% LL=69 PL=28*	
70.0	ELASTIC SILT, gray	MH	48.4		70	6+6+9 N=15 REC=18"	w=38.4% LL=77 PL=42*	
75.0	CLAYEY SAND, dark gray	SC	43.4		75	REC=24"	w=21.8% LL=41 PL=20*	
81.0	SILTY SAND, fine grained, moist, dark reddish brown, with fine to coarse shell fragments.  POORLY GRADED SAND, fine to medium grained, wet, dark gray, with shell fragments.	SM	37.4		80	22+35+50/4" N=85/10" REC=18"	w=31.7%*	
81.5		SP	36.9					
					85	7+10+24 N=34 REC=16"	w=19%*	
					90	29+19+17 N=36	w=20.5%*	
<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-425**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP				☒ REC =18"		
96.5	SILTY SAND, fine to medium grained, wet, light gray, with fine gravel	SM	21.9		95	☒ 50/4" N =50/4" REC =4"	w=17.9% *	
101.5	BOTTOM OF BORING @ 101.5 FT.		16.9		100	50/0.5" N =50/0.5" REC =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. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-426**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** W. Wolf  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell / K. Megginson  
**Dates Started:** 7/28/06 **Finished:** 8/3/06  
**Location:** Northing: 216193.04 ft  
Easting: 961386.57 ft  
**Ground Surface Elevation:** 83.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/28	---	9.0'	---	---
<b>Start of day</b>	7/31	---	11.5'	---	---
<b>Start of day</b>	8/1	---	43.5'	---	---
<b>Start of day</b>	8/2	---	43.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
12.0	POORLY GRADED WITH SILT, fine and coarse grained, moist, brown, trace root fragments.	SP-SM	71.7	▽	3+3+3	N=6 REC=14"		AWJ rods used
	yellowish brown, trace gravel.				2+3+4	N=7 REC=16"		
					4+4+4	N=8 REC=16"		
	wet, yellowish brown and orangeish brown.				2+2+3	N=5 REC=12"		
	moist, orangeish brown and reddish brown.				3+4+5	N=9 REC=12"		
17.0	CLAYEY SAND, fine to coarse grained, wet, yellowish brown and orangeish brown.	SC	66.7		3+2+3	N=5 REC=17"		*4-1/4" I.D. Hollow Stem Augers used from 0 to 13.5 ft. *Switched to 3-7/8" O.D. Tri-cone roller bit below 13.5 ft.
	SILTY SAND, fine to coarse grained, wet, yellowish brown, trace fine grave.	SM	66.7		3+2+1	N=3 REC=0"		
22.0	FAT CLAY, wet, grayish brown and orangeish brown, trace fine to medium sand.	CH	61.7		1+2+3	N=5 REC=18"		*Slight to moderate rig chatter at 22.5 ft.
	gray and dark gray, trace mica, contains clayey sand and silty sand pockets <i>continued on next page</i>							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-426**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	below 24 ft.	CH						
27.0	ELASTIC SILT, moist, gray and dark gray, trace fine to medium sand, mica, and organic matter (±1%), contains clayey sand lenses	MH	56.7					
	gray.							
					30	3+3+3 N=6 REC=18"		
					35	3+3+5 N=8 REC=18"		
37.0	SANDY LEAN CLAY, fine to medium, moist, gray, trace mica, contains light gray clayey sand pockets, contains indurated sandy lean clay pockets.	CL	46.7					
					40	3+4+5 N=9 REC=18"		
42.0	CLAYEY SAND, fine to medium grained, moist, gray, mostly indurated clayey sand layers (±100%) .	SC	41.7					
44.0	SILTY SAND, fine to medium grained, moist, dark orangeish brown, dark yellowish brown and light brown, contains poorly graded sand trace silt layers and pockets, and dark reddish brown lense (oxidized) from 44 to 44.1 ft.	SM	39.7					
	wet, gray.							
					45	8+13+43 N=56 REC=18"		*Slight to moderate rig chatter at 43 ft.
					50	7+5+3 N=8 REC=15"		*Lost ~80 gal of mud from 48.5 to 53.5 ft. Thickened mud. *Lost another 160 gal of mud (2 batches).
	few fine to coarse shell fragments (±10%), contains shell bed layer from 54 to 54.3 ft, strong HCl reaction.				55	19+36+50 N=86 REC=18"		*Rotary bit became frictionally seized at 47 ft (presumaedly by running sands). Ran 4-1/4" I.D. HSA to 53.5 ft to free rod. *Switched to 3-7/8" O.D. Tri-cone roller
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-426**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	moist, mostly strongly cemented sand layers (±90%), few fine to coarse shell fragments (±10%).	SM	21.7		60	50/5" N =50/5" REC =2"		bit below 53.5 ft. *Slight to moderate difficulty in rotary advancement from 53.5 to 57.5 ft (slight rig chatter). *Very to extremely difficult rotary/auger advancement from 57.5 to 58.5 ft. *Lost additional 80 gal of mud between 53.5 to 58.5 ft. With rig off, can hear mud quickly draining into formation. *Ran 4-1/4" I.D. HSA to 58.5 ft. *Sampler refusal at 58.9 ft. **Resumed drilling at 7:20 AM on 8/1/06. *Due to significant mud loss, attempted to run augers to 63.5 ft in order to socket augers in a low permeable strata. However, augers became sand-locked overnight due to running sands. Augers successfully un-sand-locked with considerable effort. **Resumed drilling at 12:40 PM on 8/2/06. *Moderate to very difficult rotary advancement from 59 to 60.5 ft (moderate to strong rig chatter). *Moderate to difficult rotary advancement from 60.5 to 62
	CLAYEY SAND, fine to medium grained, moist, gray and oliveish gray, contains strongly cemented sand pockets, trace fine to coarse shell fragments (±5%).	SC		65	6+50 N =50 REC =14"			
67.0	SILTY SAND, fine to medium grained, wet, gray, little fine to coarse shell fragments (±15%), moderate HCl reaction.	SM	16.7	70	6+7+11 N =18 REC =18"			
72.0	CLAYEY SAND, fine to medium grained, wet, gray and greenish gray, trace fine to coarse shell fragments (±5%), contains sandy silt pockets, weak HCl reaction.	SC	11.7	75	5+5+9 N =14 REC =18"			
77.0	SILTY SAND, fine to medium grained, wet, gray and light greenish gray, trace fine to medium shell fragments (±<5%), very weak HCl reaction.	SM	6.7	80	4+5+8 N =13 REC =18"			
82.0	CLAYEY SAND, fine to medium grained, wet, gray and light greenish gray, trace fine to medium shell fragments (±5%), contains black particles (1/16 inch), very weak HCl reaction.	SC	1.7	85	4+4+7 N =11 REC =18"			
	light greenish gray and greenish gray, mostly fine to coarse shell fragments (±70%), contains moderately cemented sand pockets, strong HCl reaction.			90	18+7+9 N =16 REC =18"			
	light greenish gray, some fine to coarse <i>continued on next page</i>							

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-426**  
**Contract Number:** 06120048  
**Sheet:** 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	shell fragments ( $\pm 30\%$ ) below 89 ft.	SC	-8.3					ft. *Ran 4-1/4" I.D. HSA to 63.5 ft. *More mud loss. *Moderate to difficult rotary advancement from 88 to 88.5 ft (moderate to strong rig chatter).
	SILTY SAND, fine to medium grained, wet, gray and greenish gray, few fine to coarse shell fragments ( $\pm 10\%$ ), weak HCl reaction.	SM				95	6+8+10 N =18 REC =18"	
97.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments ( $\pm 1\%$ ), moderate HCl reaction.	SC	-13.3					
100.0	BOTTOM OF BORING @ 100.0 FT.		-16.3			100	7+11+18 N =29 REC =18"	

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-427**  
Contract Number: 06120048  
Sheet: 1 of 5

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/2/06 **Finished:** 5/2/06  
**Location:** Northing: 216164.05 ft  
Easting: 961272.73 ft  
**Ground Surface Elevation:** 116.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/2	---	44.0'	3.5'	---
<b>Start of day</b>	5/3	---	17.0'	5.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	ROOTMAT AND TOPSOIL. SILTY SAND, fine to medium grained, moist, orangeish brown.	SM	116.0			1+5+4 N=9 REC=16"	PP=4.50 tsf	Hollow stem auger
						3+3+3 N=6 REC=14"	w=9.4% *	Mud rotary
					5	1+2+2 N=4 REC=14"		
7.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orange	SP-SM	109.3			4+5+7 N=12 REC=18"	w=7.9% *	
					10	3+3+3 N=6 REC=18"		
						4+4+4 N=8 REC=15"		
					15			
17.0	SILTY SAND, fine to medium grained, moist, orange	SM	99.3			4+4+5 N=9 REC=18"	w=8.2% *	
					20			
22.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orange.	SP-SM	94.3			9+13+14 N=27 REC=15"		
					25			
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-427**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
					30	7+9+7 N =16 REC =10"	w=12.2% *	
33.5	POORLY GRADED SAND, fine to coarse grained, moist, orangeish white, with fine gravel.	SP	82.8		35	11+12+12 N =24 REC =14"		
	orange.				40	10+15+13 N =28 REC =18"	w=13.6% *	
43.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, orange.	SP-SM	72.8	▽	45	10+12+13 N =25 REC =15"		
					50	10+12+13 N =25 REC =15"	w=18.6% *	
53.5	SILTY SAND, fine grained, moist, mottled orange and white.	SM	62.8		55	5+9+15 N =24 REC =15"		
	<i>continued on next page</i>							

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-427**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.5	LEAN CLAY, moist, dark gray, with sand.	CL	57.8		60	4+5+7 N =12 REC =18"		
63.5	SANDY, ORGANIC CLAY, moist, dark gray.  trace sand.	OH	52.8		65	REC =24"	w=32.8% LL=56 PL=18 PP=2.50 tsf *	
73.5	CLAYEY SAND, fine grained, moist, dark gray.	SC	42.8		75	REC =16"		
78.5	SILTY SAND, fine to medium grained, moist, dark brownish orange.  trace fine to medium shell fragments, weak HCl reaction.	SM	37.8		80	44+50/3" N =50/3" REC =10"	w=23.1% *	
					85	50/4" N =50/4" REC =4"		
					90	50/2" N =50/2" REC =2"		

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-427**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
						50/4" N =50/4" REC =3"	w=12.0% *	Rig chatter
	fine to medium grained, moist, grayish green, trace fine to medium shell fragments, weak HCl reaction.					5+7+8 N =15 REC =18"		
103.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish green, with fine to coarse shell fragments, weak HCl reaction.	SP-SM	12.8			8+12+13 N =25 REC =16"	w=24.8% *	
108.5	SILTY SAND, fine to medium grained, moist, grayish green, trace fine to coarse shell fragments, moderate HCl reaction.	SM	7.8			7+9+11 N =20 REC =18"		
113.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish green, trace fine to coarse shell fragments, weak HCl reaction.	SP-SM	2.8			9+9+8 N =17 REC =13"		
118.5	SILTY SAND, fine to medium grained, moist, grayish green, trace fine to coarse shell fragments, moderate HCl reaction.	SM	-2.2			3+3+4 N =7 REC =18"	w=29.2% *	
	greenish white, with medium to coarse <i>continued on next page</i>					6+11+14		

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-427**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	shell fragments, contains cemented sand, moderate HCl reaction.	SM				125	N =25 REC =18"	
						130	9+11+14 N =25 REC =18"	w=31.4% *
						135	7+8+8 N =16 REC =12"	
						140	5+4+9 N =13 REC =18"	w=38.5% *
	with sand, trace fine to medium shell fragments, moderate HCl reaction.					145	7+5+8 N =13 REC =18"	PP=3.00 tsf
	fine to medium grained, moist, green.					150	5+6+9 N =15 REC =18"	w=44.3% *
150.0	BOTTOM OF BORING @ 150.0 FT.		-33.7					

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-428**  
**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 (Truck)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/2/06 **Finished:** 5/3/06  
**Location:** Northing: 216109.19 ft  
Easting: 961210.06 ft  
**Ground Surface Elevation:** 114.1 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/2	---	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL	CL	113.7			3+4+4 N=8 REC=14"		
	LEAN CLAY, fine to medium grained, moist, reddish brown.							
4.0	CLAYEY SAND, fine to medium grained, moist, reddish brown.	SC	110.1			3+3+3 N=6 REC=16"		
6.5	SILTY SAND, fine to medium grained, moist, reddish brown.	SM	107.6		5	2+3+3 N=6 REC=18"		
	light reddish brown.							1+2+2 N=4 REC=16"
12.0	POORLY GRADED SAND, fine to medium grained, moist, light brown, trace fine gravel.	SP	102.1			3+4+4 N=8 REC=16"		
15.0	CLAYEY SAND, fine to medium grained, moist, reddish brown.	SC	99.1		15	5+6+7 N=13 REC=15"		
								15+15+12 N=27 REC=18"
20.0	SILTY SAND, fine to medium grained, moist, light orangeish brown.	SM	94.1			14+14+16 N=30 REC=14"		
	<i>continued on next page</i>				25			

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-428A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-428**  
Contract Number: 06120048  
Sheet: 2 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	medium to coarse grained.	SM						
					30	11+13+16 N =29 REC =13"		
	fine to medium grained, dark reddish brown, with fine gravel fine to medium grained, wet, light brown.				35	24+16+10 N =26 REC =4"		
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, light brown.	SP-SM	77.1					
40.0	CLAYEY SAND, fine to medium grained, moist, orangeish brown and black, trace fine rock fragments.	SC	74.1		40	11+13+11 N =24 REC =15"		
	orange, no rock fragments.				45	16+9+10 N =19 REC =13"		
50.0	FAT CLAY, moist, gray.	CH	64.1		50	6+9+6 N =15 REC =18"		
					55	4+3+5 N =8 REC =18"		
						REC =21"	PP=1.00 tsf	
	<i>continued on next page</i>							

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.
3. Ground Water Observation Well OW-428A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-428**  
Contract Number: 06120048  
Sheet: 3 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
59.0	FAT CLAY, moist, gray, with sand.	CH	55.1				w=37.1% LL=61 PL=17 PP=2.00 tsf * PP=2.00 tsf		
		CH			60	REC =24"			
						REC =24"			
						REC =20"			
						REC =24"			
							PP=2.50 tsf		
71.0	CLAYEY SAND, fine to medium grained, moist, dark gray.  with fine rock fragments.	SC	43.1				PP=1.50 tsf		
						75			9+10+12 N =22 REC =18"
									50/4" N =50/4" REC =4"
									50/3" N =50/3" REC =0"
85.0	SILTY SAND, fine grained, moist, gray, with fine to coarse shell fragments, moderate HCl reaction.	SM	29.1						
									50/4" N =50/4" REC =4"

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

*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.
3. Ground Water Observation Well OW-428A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-428**  
Contract Number: 06120048  
Sheet: 4 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
					95	7+13+50/2" N =63/8" REC =19"		
					100	7+8+8 N =16 REC =18"		
105.0	POORLY GRADED SAND, fine to medium grained, moist, gray.	SP	9.1		105	14+15+19 N =34 REC =18"		
					110	19+24+30 N =54 REC =18"		
115.0	trace fine to medium shell fragments.  CLAYEY SAND, fine to coarse grained, moist, greenish gray, with fine to coarse shell fragments, strong HCl reaction.	SC	-0.9		115	4+5+10 N =15 REC =18"		
					120	10+18+25 N =43 REC =18"		
						30+47+36		
	<i>continued on next page</i>							

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.
3. Ground Water Observation Well OW-428A installed at a nearby location



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-428**  
Contract Number: 06120048  
Sheet: 5 of 5

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to coarse shell fragments, moderate HCl reaction.	SC				125	N =83 REC =17"	
						130	8+10+17 N =17 REC =18"	
						135	11+17+22 N =39 REC =18"	
						140	10+13+18 N =31 REC =18"	
	with fine to coarse shell fragments, moderate HCl reaction.					145	7+12+17 N =29 REC =18"	
150.0	BOTTOM OF BORING @ 150.0 FT.		-35.9			150	6+8+13 N =21 REC =18"	

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.
3. Ground Water Observation Well OW-428A installed at a nearby location







**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-429**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to coarse grained, yellowish brown, no gravel.	SP-SM				7+11+12 N =23 REC =12"		
32.0	POORLY GRADED SAND, medium to coarse grained, wet, light orangeish brown and yellowish brown, trace gravel, trace silt.	SP	71.7			10+10+10 N =20 REC =12"		
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brownish orange and gray.	SP-SM	66.7			5+4+6 N =10 REC =18"		
42.0	FAT CLAY with sand, moist, gray, contains mica.	CH	61.7			3+4+5 N =9 REC =18" REC =24"	PP=2.00 tsf	
49.5	SANDY ELASTIC SILT, wet, gray.	MH	54.2			2+2+3 N =5 REC =18"		
52.0	FAT CLAY, moist, gray, trace sand.	CH	51.7			REC =0"		
57.0	CLAYEY SAND, fine to medium grained, moist, dark greenish gray. <i>continued on next page</i>	SC	46.7			3+6+8 N =14 REC =18"	PP=3.50 tsf	

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-429**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC				REC = 18"		
						11+16+28 N = 44 REC = 18"		
67.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray.	SP-SM	36.7			50/3" N = 50/3" REC = 4"		Hard drilling
72.0	POORLY GRADED SAND, fine to medium grained, wet, gray.	SP	31.7			21+20+19 N = 39 REC = 18"		
77.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, gray and white, with fine to coarse shell fragments, strong HCl reaction.	SP-SM	26.7			20+19+14 N = 33 REC = 16"		Resumed drilling on 5/2/06 Augers grinding/scraping Changed to roller bit
82.0	CLAYEY SAND, fine to medium grained, moist, gray, trace fine to medium shell fragments, weak HCl reaction.	SC	21.7			17+11+15 N = 26 REC = 18"		
87.0	POORLY GRADED SAND, fine to medium grained, wet, gray and white, trace silt, with fine to coarse shell fragments, moderate HCl reaction.	SP	16.7			5+8+8 N = 16 REC = 18"		
<i>continued on next page</i>								

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-429**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP						
97.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, gray, trace fine to coarse shell fragments, weak HCl reaction.	SP-SM	6.7		95	8+12+12 N =24 REC =17"		
100.0	BOTTOM OF BORING @ 100.0 FT.		3.7		100	5+7+9 N =16 REC =18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-430**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/1/06 **Finished:** 5/1/06  
**Location:** Northing: 216006.88 ft  
Easting: 961193.12 ft  
**Ground Surface Elevation:** 102.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/1	---	10.5'	---	---
<b>Start of Day</b>	5/2	---	17.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.	ML	102.0			2+3+3 N=6 REC=11"	PP=1.00 tsf	
	SANDY SILT, fine to medium, moist, brown, contains root fragments.							
2.0	CLAYEY SAND, fine to coarse grained, moist, brown.	SC	100.5			3+2+2 N=4 REC=14"		
4.5	POORLY GRADED SAND WITH SILT, trace gravel, fine to coarse grained, moist, brown and light brown.	SP-SM	98.0	5		3+5+4 N=9 REC=11"		
7.0					CLAYEY SAND, fine to coarse grained, moist, brown.	SC	95.5	
	wet.				10	6+6+7 N=13 REC=11"		
12.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light brown and light yellowish brown.	SP-SM	90.5			7+6+8 N=14 REC=10"		*Switched to 3-7/8" O.D. Tri-cone roller bit below 13.5 ft.
						11+12+19 N=31 REC=8"		
						6+8+8 N=16 REC=9"		
	light brown.				25			

continued on next page

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-430**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
27.0	SANDY SILT, fine to medium, wet, light yellowish brown.	ML	75.5					
	gray.				30	1+1+2 N=3 REC=16" REC=10"	PP=1.50 tsf	
32.0	LEAN CLAY, wet, gray, trace sand, contains mica.	CL	70.5					
34.5	CLAYEY SAND, fine to coarse grained, wet, gray, contains mica, and lean clay pockets.	SC	68.0		35	1+2+3 N=5 REC=18"		
						REC=5"	PP=NM tsf	
39.7	LEAN CLAY, wet, dark gray, trace sand, contains clayey sand lenses and mica.	CL	62.8		40	6+6+7 N=13 REC=18"		
42.0	ELASTIC SILT, moist, gray, trace sand, contains mica.	MH	60.5					
					45	3+3+4 N=7 REC=18"		
						REC=18"	PP=2.50 tsf	
50.2	LEAN CLAY, moist, gray and light greenish gray, trace sand, contains mica.	CL	52.3		50	3+3+4 N=7 REC=18"		
52.0	FAT CLAY, moist, light greenish gray, trace sand, contains mica.	CH	50.5					
					55	4+4+7 N=11 REC=18"		
57.0	SANDY SILT, fine to medium, moist, gray.	ML	45.5					

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-430**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML				REC = 17"	PP=4.50 tsf	
62.0	SILTY SAND, fine to coarse grained, moist, dark gray, trace gravel, trace fine to medium shell fragments, moderate HCl reaction.	SM	40.5			24+15+15 N = 30 REC = 12"		*Switched to 2-15/16" Tri-cone roller bit below 65 ft.
67.0	POORLY GRADED SAND, fine grained, wet, gray, with silt, with fine to medium shell fragments, moderate HCl reaction.	SP-SM	35.5			45+43+12/1" N = 55/7" REC = 10"		
72.0	SILTY SAND, fine to coarse grained, wet, gray, with fine to coarse shell fragments, strong HCl reaction.	SM	30.5			11+12+14 N = 26 REC = 11"		
77.0	CLAYEY SAND, fine to coarse grained, wet, light gray, trace fine to medium shell fragments, moderate HCl reaction.	SC	25.5			12+7+6 N = 13 REC = 14"		
	oliveish gray and grayish brown, trace fine to medium shell fragments, moderate HCl reaction.					26+9+23 N = 32 REC = 16"		
	fine to medium grained, trace fine to coarse shell fragments, strong HCl reaction.					6+5+9 N = 14 REC = 0"		**Resumed drilling at 7:00 AM on 5/2/06.
	<i>continued on next page</i>							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-430**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	few fine to medium shell fragments, strong HCl reaction.	SC						
	trace fine to medium shell fragments, strong HCl reaction.							
100.0	BOTTOM OF BORING @ 100.0 FT.		2.5					
						15+7+8 N =15 REC =17"		
						7+8+12 N =20 REC =18"		

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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-431**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 4/27/06 **Finished:** 4/28/06  
**Location:** Northing: 216271.1 ft  
Easting: 961177.3 ft  
**Ground Surface Elevation:** 118.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	4/27	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
1.5	CLAYEY SAND, fine to coarse grained, moist, orangeish brown	SC	116.9			1+4+5 N=9 REC=10"	PP=1.00 tsf	
	SANDY LEAN CLAY, fine to medium grained, moist, orangeish brown.	CL				2+3+3 N=6 REC=16"		
6.0	CLAYEY SAND, fine to medium grained, moist, orangeish brown.	SC	112.4		5	2+2+2 N=4 REC=12"		
	orangeish brown and brown.				10	3+4+4 N=8 REC=11"		
	fine to coarse grained, orangeish brown and yellowish brown.					5+7+8 N=15 REC=11"		
13.5	POORLY GRADED SAND WITH SILT and gravel, fine to coarse grained, wet, orangeish brown and white.	SP-SM	104.9	▽	15	5+7+11 N=18 REC=12"		
20.5	SILTY SAND, fine to coarse grained, moist, orangeish brown.	SM	97.9		20	10+14+18 N=32 REC=12"		
	<i>continued on next page</i>				25			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-431**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				10+14+19 N = 33 REC = 11"		
31.5	POORLY GRADED SAND WITH SILT, fine gravel, fine to medium grained, wet, orangeish brown and brown.	SP-SM	86.9		30	11+14+20 N = 34 REC = 9"		
	yellowish brown.				35	18+13+30 N = 43 REC = 13"		
40.0	POORLY GRADED GRAVEL, fine to medium grained, with sand, trace silt, wet, yellowish brown and white.	GP	78.4		40	10+10+10 N = 20 REC = 12"		
40.5	CLAYEY SAND, fine to coarse grained, trace fine gravel, moist, orangeish brown and yellowish brown.	SC	77.9		45	12+14+15 N = 29 REC = 12"		
	no gravel, wet.				50	2+4+6 N = 10 REC = 18"		
50.0	SANDY ELASTIC SILT, fine to medium grained, moist, orangeish brown and gray.	MH	68.4		55	3+3+5 N = 8 REC = 18"		
55.0	FAT CLAY with sand, moist, c. mica, gray.	CH	63.4					
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-431**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
	sandy				60	4+3+6 N=9 REC=18"		
					65	4+4+6 N=10 REC=18"		
70.0	LEAN CLAY with sand, c. mica, moist, greenish gray.	CL	48.4		70	5+7+10 N=17 REC=18"		
	sandy				75	4+5+7 N=12 REC=18"		
80.0	CLAYEY SAND, fine to medium grained, wet, orangeish brown and gray.	SC	38.4		80	13+50/5" N=50/5" REC=11"		
85.0	SANDY ELASTIC SILT, medium to coarse grained, wet, gray.	MH	33.4		85	50/4" N=50/4" REC=4"		
86.5	SILTY SAND, fine to medium grained, moist, light gray, with shell fragments, trace rock fragments.	SM	31.9		90	13+11+31 N=42		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-431**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				12	REC = 12"	
96.5	with fine to coarse shell fragments, strong HCl reaction.		21.9		95	17+50/2"	N = 50/2" REC = 8"	
	CLAYEY SAND, fine to medium grained, moist, light gray, with shell fragments, trace rock fragments.	SC						
101.5	trace fine to medium shell fragments, moderate HCl reaction.		16.9		100	10+32+16	N = 48 REC = 18"	
	BOTTOM OF BORING @ 101.5 FT.							

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-432**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75  
**Schnabel Representative:** M. Arles  
**Dates Started:** 4/27/06 **Finished:** 4/28/06  
**Location:** Northing: 216399 ft  
Easting: 961139.1 ft  
**Ground Surface Elevation:** 118.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	4/27	---	29.0'	---	---
<b>Start of day</b>	4/28	---	12.7'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	TOPSOIL.	FILL	118.3			WOH+2+2 N=4 REC=14"		
	Poorly graded sand FILL, moist, brown, with clay.							
2.5	SILTY SAND, fine and coarse grained, moist, brownish orange.	SM	116.1			5+3+4 N=7 REC=18"		
5.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish orange.	SP-SM	113.6		5	2+3+4 N=7 REC=18"		
	white.					3+4+5 N=9 REC=14"		
	orange.				10	4+5+7 N=12 REC=18"		
	orangeish white layering 1/4" thick.				15	4+5+7 N=12 REC=16"		Switch to mud rotary at 15' using 2 15/16" bit
					20	9+9+10 N=19 REC=10"		
	fine to coarse grained, orange, layering.				25	12+13+13 N=26 REC=12"		
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-432**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	wet.	SP-SM						
				▽				
	yellow, trace gravel.				30	10+12+12 N =24 REC =10"		
					35	19+18+21 N =39 REC =13"		
38.5	SILTY SAND, fine to medium grained, wet, light brownish orange.	SM	80.1		40	7+8+8 N =16 REC =13"		
	orange.				45	5+7+7 N =14 REC =13"		
48.5	SILT, moist, dark orange, with sand.	ML	70.1		50	2+2+1 N =3 REC =18"		
49.3	LEAN CLAY, moist, dark gray, with sand.	CL	69.3		55	3+3+4 N =7 REC =18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-432**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	greenish gray.	CL			60	3+3+4 N=7 REC=18"		
63.5	FAT CLAY, wet, dark gray.	CH	55.1		65	3+3+3 N=6		
					70	4+6+4 N=10 REC=5"		
73.5	CLAYEY SAND, fine grained, moist, dark greenish gray.	SC	45.1		75	4+5+5 N=10 REC=18"		
78.5	SILTY SAND, fine grained, moist, reddish brown.	SM	40.1		80	34+50/4" N=50/4" REC=10"		
83.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, grayish green, contains shell fragments, strong HCl reaction.	SP-SM	35.1		85	6+8+30 N=38 REC=17"		
	moist, greenish white.				90	48+27+29 N=56 REC=18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-432**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SP-SM						
93.5	POORLY GRADED SAND WITH CLAY, fine to coarse grained, wet, green.	SP-SC	25.1			7+12+50/5" N =62/11" REC =18"		
94.5		SC	24.1		95			
	CLAYEY SAND, fine to medium grained, moist, green, contains shell fragments.							
	wet.							
100.0	BOTTOM OF BORING @ 100.0 FT.		18.6		100	50/3" N =50/3" REC =2"		

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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-433**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/16/06 **Finished:** 5/17/06  
**Location:** Northing: 215963.8 ft  
Easting: 961107.5 ft  
**Ground Surface Elevation:** 97.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/17	---	33.5'	4.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		97.0			WOH+1+1 N=2 REC=15"		0-4' Hollow stem auger
2.0	CLAYEY SAND, fine to medium grained, moist, brown, contains root fragments.	SC	95.5			2+2+3 N=5 REC=18"		4-48.5'- 3 7/8" roller bit Start of drilling for the day
	SANDY SILT, moist, orangeish brown, contains root fragments.	ML			5	4+3+2 N=5 REC=18"	w=27% *	
6.3	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, brown.	SP-SM	91.2			2+2+2 N=4 REC=16"		
7.0	SANDY SILT, fine to medium, moist, brown.	ML	90.5			5+5+5 N=10 REC=15"	w=5.8% *	
9.5	WELL GRADED SAND WITH SILT, fine to coarse grained, moist, brown.	SW-SM	88.0		10	8+12+10 N=22 REC=16"		
	brownish orange, with gravel.				15	6+8+8 N=16 REC=12"		
	orange.				20	5+8+5 N=13 REC=18"	w=14.4% *	
	brownish orange.				25			

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-433**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, moist, orange.	SW-SM	70.5		30	1+2+2 N=4 REC=18"		
		SM						
32.0	SANDY ELASTIC SILT, fine to medium, wet, orange.	MH	65.5	▽	35	4+4+5 N=9 REC=18"	w=23.3% *	
34.5	SILTY SAND, fine to medium grained, moist, grayish orange	SM	63.0					
36.5	SANDY FAT CLAY, moist, dark gray, with sand.	CH	61.0		40	REC=24"	w=33.5% LL=61 PL=14 PP=2.50 tsf *	
					45	3+4+5 N=9 REC=18"	w=33.5% LL=59 PL=22 *	
					50	REC=24"	w=33.6% LL=64 PL=23 PP=4.00 tsf *	48.5-100' - 2 15/16" roller bit
52.0	SANDY LEAN CLAY, fine to medium grained, moist, dark gray.	CL	45.5					
57.0	SILTY SAND, fine to medium grained, moist, dark greenish gray. <i>continued on next page</i>	SM	40.5		55	5+7+8 N=15 REC=18"	w=21% LL=45 PL=18 *	

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-433**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM			60	7+13+19 N=32 REC=18"	w=29.3% LL=44 PL=35 *	
62.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, gray.	SP-SM	35.5		65	50/5" N=50/5" REC=4"		
67.0	WELL GRADED SAND WITH SILT, fine to medium grained, moist, greenish gray, with fine to coarse 20-30% shell fragments, strong HCl reaction.	SW-SM	30.5		70	23+19+32 N=51 REC=16"		
	50-70% shell fragments.				75	6+8+14 N=22 REC=18"	w=23.7% *	
	25-30% shell fragments.				80	11+8+8 N=16 REC=18"		
	20-25% shell fragments.				85	6+9+11 N=20 REC=18"		
87.0	SANDY SILT, fine to medium grained, moist, dark green, with fine to coarse 15-20% shell fragments, strong HCl reaction.	ML	10.5		90	9+9+9 N=18 REC=18"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-433**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	weak HCl reaction, 0-5% shell fragments.	ML			95	5+6+8 N =14 REC =18"	w=31.5% *	
100.0	BOTTOM OF BORING @ 100.0 FT.		-2.5		100	5+4+5 N =9 REC =18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-434**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/9/06 **Finished:** 5/10/06  
**Location:** Northing: 215827.1 ft  
Easting: 961244.3 ft  
**Ground Surface Elevation:** 105.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/9	---	28.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	CLAYEY SAND, fine to medium grained, moist, orangeish brown and reddish brown, trace root fragments, trace wood fragments.	SC SM	104.7			3+4+4 N=8 REC=18"		
	SILTY SAND, fine to medium grained, moist, orangeish brown, trace root fragments.					3+4+5 N=9 REC=18"		
	orangeish brown and grayish brown.				5	2+4+6 N=10 REC=18"		
7.0	POORLY SAND SAND WITH SILT, trace gravel, fine to coarse grained, moist, orangeish brown and yellowish brown.	SP-SM	98.2			3+6+7 N=13 REC=15"	w=11.8% *	
9.5	SILTY SAND, fine to coarse grained, moist, orangeish brown.	SM	95.7		10	4+7+8 N=15 REC=11"		
						9+9+9 N=18 REC=9"	w=7.0% *	
14.8	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown and orange.	SP-SM	90.4		15	5+8+11 N=19 REC=10"	w=10.6% *	
22.0	SILTY SAND, medium to coarse grained, moist, orangeish brown and yellowish brown.	SM	83.2		25	2+4+3 N=7 REC=12"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-434**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	wet, orangeish brown and gray.	SM				3+2+2 N=4 REC=18"	w=21.9% *	
						2+2+2 N=4 REC=18"	w=26.6% *	
						2+1+1 N=2 REC=18"	w=27.4% LL=NP PL=NP *	
						REC=7"	PP=1.50 tsf	
47.0	FAT CLAY, trace sand, moist, gray and greenish gray.	CH	58.2			2+3+5 N=8 REC=18"	w=38.2% LL=73 PL=24 *	
						REC=18"	w=87.8% LL=56 PL=23 PP=2.50 tsf *	

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

continued on next page

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-434**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	SILTY SAND, fine to medium grained, moist, greenish gray and white, trace fine to medium shell fragments, HCl reaction moderate, weakly cemented.  HCl reaction weak.	CH	43.2		60	5+5+8 N =13 REC =18"	w=36.6% LL=86 PL=22 PP=2.75 tsf *	Resumed drilling on 5/10/06 @ 7:30 am
		SM			65	REC =19"	w=23.7% LL=NP PL=NP PP=2.00 tsf *	
					70	20+100/5" N =100/5" REC =10"	w=25% *	
					75	48+50 N =50 REC =13"	w=22.6% *	
					80	36+29+49 N =78 REC =17"	w=15.6% *	
82.0	SANDY LEAN CLAY, moist, light gray, trace fine to coarse shell fragments, HCl reaction moderate.	CL	23.2		85	50 REC =6"	w=19.8% LL=30 PL=22 PP=1.00 tsf *	
87.0	SILTY SAND, fine to medium grained, moist, gray and greenish gray, with fine to coarse shell fragments, HCl reaction strong.	SM	18.2		90	8+28+21 N =49 REC =18"	w=15.6% *	
<i>continued on next page</i>								

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-434**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	POORLY GRADED SAND, trace silt, wet, gray and white, trace fine to coarse shell fragments, HCl reaction moderate.	SM	13.2				w=31.2% LL=NP PL=NP *	
		SP						
97.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, trace fine to coarse shell fragments, HCl reaction strong.	SM	8.2				w=25.6% *	
100.0	BOTTOM OF BORING @ 100.0 FT.		5.2			100	11+7+11 N =18 REC =18"	

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

**Comments:**

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





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-435**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/2/06 **Finished:** 5/3/06  
**Location:** Northing: 216020.06 ft  
Easting: 961404.74 ft  
**Ground Surface Elevation:** 107.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/2	---	7.5'	---	---
<b>Start of Day</b>	5/3	---	9.7'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Forest litter, rootmat and topsoil.	SC	107.3			1+1+2 N=3 REC=10"		
2.0	CLAYEY SAND, fine to medium grained, moist, brown, contains root fragments.	SM	105.7			2+2+2 N=4 REC=13"		
	SILTY SAND, fine to medium grained, moist, brown, contains root fragments.							
	fine to coarse grained.				5	3+4+4 N=8 REC=12"		
7.0	CLAYEY SAND, fine to coarse grained, wet, brown.	SC	100.7	▽		3+5+6 N=11 REC=12"		
9.5	SILTY SAND, fine to medium grained, wet, brown.	SM	98.2		10	6+5+6 N=11 REC=11"		
	light yellowish brown.				15	6+6+8 N=14 REC=10"		
	light brown.				20	5+7+8 N=15 REC=8"		
	fine to coarse grained, brown and light brown.				25	5+9+10 N=19 REC=10"		
	<i>continued on next page</i>							

\*Used hollow stem augers to depth of 9 ft.  
\*3-7/8" Tri-cone roller bit below 9 ft.

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

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-435**  
Contract Number: 06120048  
Sheet: 2 of 4

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

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	brown.	SM				2+10+12 N =22 REC =7"		
32.0	CLAYEY SAND, fine to medium grained, wet, brown.	SC	75.7			3+2+2 N =4 REC =13"		*Switched to 2-15/16" Tri-cone roller bit below 33.5 ft.
37.0	SANDY SILT, fine, wet, yellowish brown and light gray, contains mica.	ML	70.7			WOH/18" N = WOH/18" REC =18"		
42.0	SILTY SAND, fine to medium grained, wet, gray, contains mica.	SM	65.7			2+4+5 N =9 REC =18"		
47.0	FAT CLAY, moist, gray and dark gray, trace sand, contains mica.	CH	60.7			2+2+4 N =6 REC =18"	PP=1.00 tsf	**Resumed drilling at 6:50 AM on 5/3/06.
	gray and light greenish gray, trace sand, contains mica and organic matter.					2+5+5 N =10 REC =14"	PP=1.75 tsf	
	gray, trace sand, contains mica.							*Switched to 3-7/8" Tri-cone
	<i>continued on next page</i>							

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-435**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						roller bit below 58.5 ft because smaller roller bit was clogged with sediment.
62.0	LEAN CLAY, moist, gray, with sand, contains mica.	CL	45.7		60	3+4+6 N =10 REC =18"		
					65	3+6+6 N =12 REC =18"		*Switched to 2-15/16" Tri-cone roller bit below 33.5 ft.
67.0	SANDY SILT, fine to medium, moist, orangeish brown and grayish brown, contains fine to coarse silty sand pockets gray below 69 ft.	ML	40.7		70	7+13+33 N =46 REC =18"		
72.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray.	SP-SM	35.7		75	7+6+7 N =13 REC =12"		
77.0	SILTY SAND, fine to medium grained, wet, gray, with fine to coarse shell fragments, strong HCl reaction.	SM	30.7		80	23+25+40 N =65 REC =14"		
82.0	CLAYEY SAND, fine to medium grained, wet, light gray, mostly fine to coarse shell fragments (±60%), strong HCl reaction  gray and oliveish gray, little fine to coarse shell fragments.	SC	25.7		85	17+23+29 N =52 REC =18"		
					90	6+46+19 N =65 REC =18"		

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-435**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	gray.	SC						
97.0	SILTY SAND, fine to medium grained, wet, gray, little fine to coarse shell fragments, strong HCl reaction.	SM	10.7		95	5+4+5 N=9 REC=18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		7.7		100	7+10+10 N=20 REC=18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-436**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** Mud Rotary  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/5/06 **Finished:** 5/9/06  
**Location:** Northing: 515923.92 ft  
Easting: 961441.55 ft  
**Ground Surface Elevation:** 108.3 (feet)

**Groundwater Observations**

Encountered	Date	Time	Depth	Casing	Caved
	5/9	---	37.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	ROOTMAT AND TOPSOIL.	SM	108.0			1+2+4 N=6 REC=13"		
	SILTY SAND, fine to medium grained, moist, orangeish brown and reddish brown.							
	orangeish brown and yellowish brown.				5	3+2+2 N=4 REC=20"		
						3+2+3 N=5 REC=15"		
7.0	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, orangeish brown and brown.	SP-SM	101.3			2+3+4 N=7 REC=14"	w=3.3% *	
9.5	SILTY SAND, medium to coarse grained, moist, orangeish brown and yellowish brown.	SM	98.8		10	4+5+6 N=11 REC=12"		
12.0	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, yellowish brown and orange.	SP-SM	96.3		15	5+6+8 N=14 REC=14"		
17.0	SILTY SAND, fine to coarse grained, moist, yellowish brown and orange.	SM	91.3		20	5+7+9 N=16 REC=11"		
22.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown, trace gravel.	SP-SM	86.3		25	7+7+10 N=17 REC=12"	w=11.1% *	
	<i>continued on next page</i>							

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

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground Water Observation Well OW-436A installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-436**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	CLAYEY SAND, fine to coarse grained, moist, orangeish brown and black, trace gravel.  4 inch orange and white fat clay layer below 29.6 ft.	SP-SM SC	81.3			3+4+8 N =12 REC =15"		
32.0	SILTY SAND, fine to medium grained, moist, orangeish brown and reddish white.	SM	76.3			2+2+2 N =4 REC =17"	w=25.2% *	
37.0	CLAYEY SAND, fine to medium grained, wet, orangeish brown and gray.	SC	71.3	▽				
39.4	SANDY LEAN CLAY, wet, gray.  moist	CL	68.9			2+2+2 N =4 REC =20"		
						1+2+3 N =5 REC =19"		
						REC =24"		
52.0	FAT CLAY with sand, moist, gray.	CH	56.3			4+4+6 N =10 REC =20"		drilling resumed 5/9/06 @7:00 am

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

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.
3. Ground Water Observation Well OW-436A installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-436**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	light gray and greenish gray.	CH			60	3+5+5 N=10 REC=20"		
					65	5+7+11 N=18 REC=19"		
67.0	SANDY LEAN CLAY, moist, gray and greenish gray.	CL	41.3		70	5+7+11 N=18 REC=20"		
72.0	SILTY SAND, fine to medium grained, moist, light gray.	SM	36.3		75	35+67+100/4" N=167/10" REC=14"		
	wet, light gray and white, with shell fragments, HCl reaction strong.				80	88+100/4" N=100/4" REC=11"		
	fine to coarse grained, gray and white.				85	100 REC=6"		
87.0	CLAYEY SAND, fine to coarse grained, wet, oliveish gray and reddish white, trace fine to coarse shell fragments, HCl reaction strong.	SC	21.3		90	50+10+11 N=21 REC=20"		
	<i>continued on next page</i>							

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.
3. Ground Water Observation Well OW-436A installed at a nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-436**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	oliveish gray and white.	SC			95	7+6+6 N =12 REC =18"		
	light gray and white.					8+10+17 N =27 REC =18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		8.3		100			

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.
3. Ground Water Observation Well OW-436A installed at a nearby location.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-437**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 7/10/06 **Finished:** 7/11/06  
**Location:** Northing: 216521.76 ft  
Easting: 960968.8 ft  
**Ground Surface Elevation:** 110.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/10	---	18.5'	---	---
<b>Start of day</b>	7/11	---	20.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	Rootmat and topsoil	FILL	110.4			3+3+6 N=9 REC=10"		
2.0	Silty Sand PROBABLE FILL fine to coarse grained, moist, brown, trace coarse gravel, contains root fragments and fine to coarse sandy fat clay layer from 0.2 to 0.4 ft.	SC	108.6			2+2+1 N=3 REC=18"		
4.5	CLAYEY SAND, fine to coarse grained, moist, brown.	CL	106.1		5	WOH+1+1 N=2 REC=14"		
	LEAN CLAY, moist, brown, trace fine to medium sand.					3+5+7 N=12 REC=18"		
	trace organic matter (±1%).					4+7+8 N=15 REC=18"		
9.5	CLAYEY SAND, fine to medium grained, moist, brown and light brown, trace organic matter (±1%), contains sandy lean clay pockets.	SC	101.1		10	REC=23"	w=7.2% LL=NP PL=NP PP=NP tsf *	*Osterberg sampler tube push from 13.5 to 15.5 ft
12.0	brown and grayish brown below 11 ft.	SP-SM	98.6		15			
	POORLY GRADED SAND, with silt, fine to coarse grained, moist, brown, trace fine gravel, contains clayey sand pockets.					7+17+12 N=29 REC=12"		*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.
	fine to medium grained, wet, brown.					5+5+8 N=13 REC=13"		
	fine to coarse grained, moist, yellowish brown and dark reddish brown, contains strongly cemented sand pockets and lenses below 19 ft.				20			
	wet, contains clayey sand lenses.				25			
	<i>continued on next page</i>							

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-437**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to medium grained, mottled light gray and yellowish brown.	SP-SM			30	2+1+1 N=2 REC=18"		
	brown, yellowish brown, and light gray.				35	7+12+12 N=24 REC=10"		
37.0	LEAN CLAY, wet, yellowish brown and light gray, trace fine to medium sand.	CL	73.6					
39.5	SILTY SAND, fine to medium grained, wet, stratified brown and orangeish brown.	SM	71.1		40	1+3+6 N=9 REC=18"		
42.0	LEAN CLAY, wet, light grayish brown and yellowish brown, trace fine to medium sand, contains cemented sand fragments, contains silty sand layer from 43.8 to 44 ft.	CL	68.6					
44.0	FAT CLAY, moist, gray, trace fine to medium sand and mica.	CH	66.6		45	4+4+5 N=9 REC=18"		
	gray and dark gray, contains silty sand pockets.				50	2+3+4 N=7 REC=18"		
	gray, contains silty sand layers from 54.1 to 54.2 ft and from 54.8 to 55 ft.				55	2+3+4 N=7 REC=18"		
57.0	ELASTIC SILT, moist, gray, trace fine sand and mica. <i>continued on next page</i>	MH	53.6					

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-437**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
62.0	CLAYEY SAND, fine to medium grained, moist, gray, contains light gray to white clayey sand pockets, trace organic matter (±1%).	SC	48.6		60	4+5+9 N =14 REC =18"		
					65	4+5+7 N =12 REC =18"		
67.0	SANDY SILT, fine to medium, moist, dark gray, contains clayey sand pockets and indurated silt pockets.	ML	43.6		70	27+50/5" N =50/5" REC =11"		
72.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, gray.	SP-SM	38.6		75	22+50/4" N =50/4" REC =10"		
	weak HCl reaction.				80	50/4" N =50/4" REC =3"		
82.0	SILTY SAND, fine to medium grained, wet, gray, mostly fine to coarse shell fragments (±80%), strong HCl reaction.	SM	28.6		85	12+16+18 N =34 REC =14"		
	oliveish gray, trace fine to medium sand				90	9+11+25 N =36 REC =18"		
	few fine to coarse shell fragments (±10%), contains weakly cemented							
	<i>continued on next page</i>							
								*Extremely difficult rotary advancement from 86.5 to 88.5 ft (strong to very strong rig chatter). *Switched to 5" O.D. Tri-cone roller bit below 87 ft. *Moderate to

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-437**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
100.5	sand pockets, moderate HCl reaction below 89.8 ft.	SM	10.1		95		6+9+13 N =22 REC =18"	PP=NP tsf	difficult rotary advancement from 88.8 to 93.5 ft (slight to moderate rig chatter).  *Osterberg sampler tube push from 98.5 to 100.5 ft  **Resumed grouting at 7:00 AM on 7/11/06.
	gray, strong HCl reaction.								
	some fine to coarse shell fragments (±30%), moderate HCl reaction.				100				
	BOTTOM OF BORING @ 100.5 FT.								

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

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-438**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**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:** 7/6/06 **Finished:** 7/6/06  
**Location:** Northing: 216414.91 ft  
Easting: 960848.9 ft  
**Ground Surface Elevation:** 106.6 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	6/7	5:00	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	Rootmat and topsoil.	FILL	106.4			2+2+2 N =4 REC =16"		
2.0	Clayey Sand FILL, fine to medium grained, moist, mottled light orangeish brown and grayish brown, contains root fragments.	FILL	104.6			2+1+2 N =3 REC =14"		
6.5	Lean Clay FILL, moist, mottled light orangeish brown and grayish brown, contains root fragments and organic matter (±1%). fine to coarse, mottled yellowish brown, grayish brown, and orangeish brown. contains cement fragments at 6 ft. BOTTOM OF BORING @ 6.5 FT.		100.1		5	1+1+12 N =13 REC =14"		*Advancing rotary bit was deflected by a considerable angle at a depth from 6 to 6.5 ft.

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

- Comments:**
- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - \* = See Appendix I for additional lab testing data.
  - Obstruction encountered at 6.5 feet. Boring offset B-438A



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-438A**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 7/7/06 **Finished:** 7/7/06  
**Location:** Northing: 216411.98 ft  
Easting: 960867.31 ft  
**Ground Surface Elevation:** 106.0 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	7/7	---	18.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
7.5	Rotary probe to 7.5 ft; see B-438 alt for strata description.							
	SILTY SAND, fine to coarse grained, moist, brown.	SM	98.5			5+8+8 N =16 REC =11"		
	fine to medium grained, stratified yellowish brown and light brown, contains poorly graded sand with silt lenses.					4+7+8 N =15 REC =12"		
	fine to coarse grained, stratified yellowish brown, orangeish brown, and light brown.					3+6+7 N =13 REC =10"		
	wet, light orangeish brown.			▽		5+6+7 N =13 REC =8"		*5.4" O.D. Drag bit used from 0 to 18.5 ft. *4-3/4" O.D. Drag bit below 18.5 ft.
	fine to medium grained, light orangeish brown and light grayish brown.					3+4+4 N =8 REC =10"		
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-438A**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	yellowish brown and light brownish gray, trace coarse gravel.	SM			30	3+3+3 N=6 REC=11"		
32.0	CLAYEY SAND, fine to medium grained, wet, light orangeish brown and light gray.	SC	74.0					
33.8	SILTY SAND, fine to coarse grained, wet, yellowish brown, contains clayey sand pockets (coarse sand is subangular to subrounded).	SM	72.2		35	3+4+4 N=8 REC=11"		
37.0	FAT CLAY, wet, gray, with fine to medium sand, trace mica.	CH	69.0		40	1+3+3 N=6 REC=18"		
	moist, dark oliveish gray and dark gray, trace fine to medium sand.				45	2+3+3 N=6 REC=18"		
	gray and light greenish gray, trace organic matter ( $\pm$ <1%), contains sandy fat clay pockets and elastic silt lenses (elastic silt lenses based on contrasting texture and appearance).				50	3+5+6 N=11 REC=18"		
52.0	ELASTIC SILT, moist, gray and light greenish gray, trace fine to medium sand and mica, (soil may lab classify as CH).	MH	54.0		55	4+6+9 N=15 REC=18"		
57.0	FINE TO MEDIUM SANDY LEAN CLAY, moist, gray, contains light gray to <i>continued on next page</i>	CL	49.0					

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. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-438A**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	whiteish clayey sand pockets, trace mica.	CL	44.0		60	4+6+8 N =14 REC =18"		*Slight to moderately difficult rotary advancement from 64 to 66.5 ft (slow rotary advancement).  *5" O.D. Tri-cone roller bit below 68.5 ft.  *Moderately difficult rotary advancement from 82.5 to 83.5 ft (slow rotary advancement). *Very to extremely difficult rotary advancement from 83.5 to 87.5 ft (strong to very strong rig chatter).
	SILTY SAND, fine to medium grained, moist, dark gray, trace mica, weak cementation, (no visible HCl reaction).	SM		65	24+50 N =50 REC =12"			
	gray.			70	50/3" N =50/3" REC =4"			
	wet, few fine to medium shell fragments (±10%), contains greenish gray lean clay lenses and black particles (1/16 inch), strong HCl reaction.			75	33+38+26 N =64 REC =11"			
	mostly fine to medium shell fragments (±50%) below 74 ft.							
	mostly fine to coarse shell fragments (±70%), contains silt pockets.			80	8+15+14 N =29 REC =18"			
	moist, mostly cemented sand (±100%), trace fine to medium shell fragments (±5%).			85	50/2" N =50/2" REC =1"			
wet, dark oliveish gray, trace fine to coarse shell fragments (±5%), (soil fines exhibit low cohesion - used as basis for potential successful tube push).		90	7+10+12 N =22 REC =18"					
<i>continued on next page</i>								

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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-438A**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	gray, few fine to coarse shell fragments (±10%), (shell fragment approximately 2 inches in diameter and 1/4 inch thick).	SM				REC = 14"	PP=NP tsf	
	trace fine to medium shell fragments (±1%), very weak HCl reaction.					8+13+17 N = 30 REC = 18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		6.0					

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. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-439**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**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:** 7/5/06 **Finished:** 7/6/06  
**Location:** Northing: 216340.49 ft  
Easting: 960948.68 ft  
**Ground Surface Elevation:** 113.8 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/5	---	18.5'	---	---
<b>Start of day</b>	7/6	---	14.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Crushed Stone FILL, moist, dark gray, contains root fragments, and silty gravel pockets.	FILL FILL	113.3			6+6+6 N =12 REC =10"		
2.0	Lean Clay PROBABLE FILL, moist, brown, trace fine to medium sand. CLAYEY SAND, fine to medium grained, moist, brown, trace organic matter (±1%).	SC	111.8			2+3+4 N =7 REC =14"		
4.5	SILTY SAND, fine to medium grained, moist, brown.  fine to coarse grained.	SM	109.3		5	2+2+3 N =5 REC =11"		
						3+4+6 N =10 REC =11"		
					10	4+5+8 N =13 REC =10"		
12.0	stratified brown and light brown below 11.5 ft. POORLY GRADED SAND WITH SILT, fine to medium grained, moist, stratified light brown and orangeish brown.	SP-SM	101.8		15	4+6+10 N =16 REC =6"		
17.0	SILTY SAND, fine to medium grained, wet, brown.	SM	96.8			5+8+11 N =19 REC =6"		*Switched to 4-3/4" O.D. Drag bit below 18.5 ft.
22.0	SILTY GRAVEL, fine grained, wet, dark gray and brown, trace fine to coarse sand.	GM	91.8			WOH+3+9 N =12 REC =5"		
24.8	<i>continued on next page</i>		89.0		25			

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

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-439**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED GRAVEL WITH SILT, wet, dark gray and brown, fine to medium sand.	GP-GM	86.8					
	SILTY GRAVEL, fine to coarse grained, wet, dark gray and brown, trace fine to medium sand.	GM						
	trace fine to coarse sand							
39.0	dark gray, brown and red brown. SILTY SAND, fine to medium grained, wet, brown, trace coarse gravel, contains clayey sand layer from 39 to 39.1 ft.	SM	74.8					
42.0	SANDY LEAN CLAY, fine to medium, wet, mottled yellowish brown and light gray, trace mica, contains sandy fat clay pockets.	CL	71.8					
47.0	FAT CLAY, moist, light brownish gray and gray, trace fine to medium sand and mica, contains clayey sand pockets.	CH	66.8					
	gray and dark gray .							
	light greenish gray and gray, trace organic matter (±1%).							
	<i>continued on next page</i>							

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-439**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	gray, contains 2 inch thick dark gray clayey sand layer from 59.3 to 59.5 ft. gray and oliveish gray below 59.5 ft.	CH				3+3+6 N =9 REC =18"		
62.0	ELASTIC SILT, moist, gray and dark gray, trace fine to medium sand and mica, contains clayey sand lenses.	MH	51.8			6+8+11 N =19 REC =18"		
67.0	LEAN CLAY, moist, gray, dark gray and light greenish gray, with fine to medium sand, contains silty sand lenses and light gray to white clayey sand pockets.	CL	46.8			5+6+11 N =17 REC =18"		
72.0	POORLY GRADED SAND, fine to medium grained, moist, dark gray, trace silt, contains indurated silty sand pockets.  very weak HCl reaction.	SP	41.8			37+50 N =50 REC =12"		*Perceptible increase in rotary resistance from 73 to 73.5 ft.
						50/5" N =50/5" REC =4"		**Resumed drilling at 10:30 AM on 7/6/05.
82.0	SILTY SAND, fine to medium grained, wet, gray, mostly fine to coarse shell fragments (±70%), strong HCl reaction.	SM	31.8			16+15+16 N =31 REC =12"		*Switched to 5" O.D. Tri-cone roller bit below 78.5 ft. *Moderately difficult rotary advancement from 78.5 to 83.5 ft (slow rotary advancement).
88.0	SANDY SILT, fine to medium, moist, gray, moderate HCl reaction. strongly cemented sand layer from 88.7 to 88.8 ft.	ML	25.8			50/4" N =50/4" REC =4"		*Very difficult rotary advancement from 88 to 88.5 ft (strong rig chatter). *Extremely difficult rotary advancement

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

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-439**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
93.5	SILTY SAND, fine to medium grained, wet, gray and oliveish gray, few fine to coarse shell fragments (±10%), contains black particles .	ML	20.3		95	7+7+12 N =19 REC =18"		from 88.5 to 93.5 ft (very strong rig chatter).
		SM						
97.0	CLAYEY SAND, fine to medium grained, wet, gray, trace fine to coarse shell fragments (±5%).	SC	16.8					
100.0	BOTTOM OF BORING @ 100.0 FT.		13.8		100	4+7+14 N =21 REC =18"		

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-440**  
Contract Number: 06120048  
Sheet: 1 of 4

**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:** 6/6/06 **Finished:** 6/7/06  
**Location:** Northing: 216349.47 ft  
Easting: 961813.66 ft  
**Ground Surface Elevation:** 56.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/6	---	18.5'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Crushed Stone.	FILL	55.8			8+8+4 N =12		0-30' 4-1/4" drag bit
2.0	Sandy lean clay FILL, fine to coarse, moist, grayish orange.	FILL	54.3			5+6+4 N =10 REC =9"	w=8.6% *	
4.0	Clayey Sand FILL with gravel, fine to coarse grained, wet, orange.	FILL	52.3			3+3+4 N =7 REC =10"		
	Poorly graded sand FILL with gravel, medium to coarse grained, moist, gray.	FILL			5	2+3+2 N =5 REC =0"		
9.0	Clayey Sand FILL, fine to coarse grained, wet, gray, trace gravel, contains root fragments, contains wood fragments.	FILL	47.3			1+1+1 N =2 REC =8"		
	with gravel, PROBABLE FILL.				15	5+4+5 N =9 REC =6"	w=16.1% *	
17.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, gray.	SP-SM	39.3			9+15+35 N =50 REC =18"		
	dark gray.				20	16+27+30 N =57 REC =12"	w=22.1% *	
	<i>continued on next page</i>				25			

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-440**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY SILT, fine to medium, moist, greenish gray, contains cemented sand.	ML	29.3			50/5" N =50/5"		30-100 4-1/4" tri-cone roller bit
32.0	SILTY SAND, fine to coarse grained, wet, gray and white, with fine to coarse shell fragments, strong HCl reaction, 70-80% shell frag.	SM	24.3			13+24+36 N =60 REC =18"	w=20.1% *	
	moist, green, 35-45% shell frag.					5+3+4 N =7 REC =14"		
	25-35% shell frag.					7+11+30 N =41 REC =18"	w=27.1% *	
47.0	CLAYEY SAND, fine to medium grained, dark green, trace fine to coarse shell fragments, weak HCl reaction, 0-5% shell frag.	SC	9.3			4+3+6 N =9 REC =18"		
	green, no shells.					REC =24"	w=30.0% LL=30 PL=21 *	51' tube pushed
53.5	SILTY SAND, wet, trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.	SM	2.8			3+4+4 N =8 REC =18"		
<i>continued on next page</i>								

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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-440**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				REC = 0"		58.5' pushed tube 60-63' rig chatter
	fine to coarse grained, green and white, with fine to coarse shell fragments, contains cemented sand, strong HCl reaction, 60-75% shell frag.					35+20+15 N = 35 REC = 18"	w=19.4% *	
	20-30% shell frag.					4+10+16 N = 26 REC = 18"		69.6' shell layer 1" thick
						5+10+15 N = 25 REC = 18"		
	sandy, moderate HCl reaction, 10-15% shell frag.					6+7+9 N = 16 REC = 18"	w=41.0% *	
82.0	LEAN CLAY, moist, green, trace fine to medium shell fragments, with silt, 0-5% shell frag.	CL	-25.7			6+9+10 N = 19 REC = 18"		
87.0	SANDY SILT, fine to medium, moist, green, with fine to coarse shell fragments, moderate HCl reaction, 10-20% shell frag.	ML	-30.7			6+7+9 N = 16 REC = 18"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 300 & 400.GPJ SCHNABEL.GDT 3/16/08

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-440**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.  moderate HCl reaction, 10-20% shell frag.	ML	-35.7					
		SM						
						95	4+5+9 N =14 REC =18"	
							7+7+9 N =16 REC =12"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-43.7			100		

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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-701**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 6/28/06 **Finished:** 6/29/06  
**Location:** Northing: 219485.54 ft  
Easting: 960507.6 ft  
**Ground Surface Elevation:** 8.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/28	---	7.5'	7.5'	---
<b>Start of Day</b>	6/29	---	7.0'	24.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS			
					DEPTH	DATA					
0.5	CRUSHED STONE.	FILL	8.2		4+6+7 N =13 REC =16"						
2.0	Poorly graded sand, PROBABLE FILL, with gravel, fine to coarse grained, moist, orange.		6.7		4+5+7 N =12 REC =16"						
5.5	POORLY GRADED SAND WITH CLAY, trace gravel, fine to coarse grained, moist, orange.	SM	3.2		5			6+6+7 N =13 REC =18"			
	SILTY SAND, fine to medium grained, moist, brownish orange.							1+3+6 N =9 REC =12"			
10.0	WELL GRADED SAND WITH SILT	SW-SM	-1.3		10			3+6+5 N =11 REC =12"	w=15.9% *	7.5' switched to mud rotary from hollow stem augers 8'-16' grinding	
13.0	SILTY SAND, fine to medium grained, moist, green and white, with fine to coarse shell fragments, strong HCl reaction, 70-90% shell frag.	SM	-4.3		15			1+5+10 N =15 REC =2"	w=12.4% *		
	fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, contains cemented sand, 30-40% shell frag.							20	4+10+13 N =23 REC =18"		w=28.2% *
	fine to medium grained, wet, green, contains fine to coarse shell fragments, strong HCl reaction.							25	19+17+11 N =28 REC =2"		
	<i>continued on next page</i>										

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-701**  
Contract Number: 06120048  
Sheet: 2 of 3

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
					30	37+11+12 N =23 REC =18"	w=37.3% *	
					35	5+6+8 N =14 REC =18"		
37.0	ELASTIC SILT, with clay, moist, green, trace fine to coarse shell fragments, moderate HCl reaction, 0-5% shell frag.	MH	-28.3		40	5+8+7 N =15 REC =18"		
	contains fine to medium shell fragments.				45	REC =17"	w=37.3% LL=54 PL=33 PP=4.00 tsf *	
47.0	SILTY SAND, fine to medium grained, moist, oliveish green, with fine to coarse shell fragments, strong HCl reaction, 40-60% shell frag.	SM	-38.3		50	5+6+8 N =14 REC =18"	w=33.1% *	
52.0	SANDY SILT, fine to medium, moist, green, contains fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	ML	-43.3		55	5+6+9 N =15 REC =18"	w=42.5% *	
57.0	ELASTIC SILT, with clay, moist, oliveish green, moderate HCl reaction. <i>continued on next page</i>	MH	-48.3					

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-701**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH						
62.0	SANDY SILT, fine to medium grained, moist, oliveish green, with fine to coarse shell fragments, strong HCl reaction, 20-40% shell frag.	ML	-53.3		60	6+7+9 N=16 REC=18"	w=55.7% *	
67.0	ELASTIC SILT, with clay, moist, oliveish green, with clay, moderate HCl reaction.	MH	-58.3		65	4.+5+6 N=11 REC=18"	w=40.4% *	
75.0	BOTTOM OF BORING @ 75.0 FT.		-66.3		70	5+7+4 N=11 REC=18"	w=48% *	
					75	4+6+8 N=14 REC=18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-702**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** D. Reese

**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)

**Drilling Equipment:** CME-75 (Truck)

**Schnabel Representative:** M Arles

**Dates Started:** 6/29/06 **Finished:** 6/29/06

**Location:** Northing: 218980.62 ft  
Easting: 961183.23 ft

**Ground Surface Elevation:** 10.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/29	---	10.5'	8.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	ROOTMAT AND TOPSOIL.		9.8			1+4+4 N=8 REC=14"		0-24' hollow stem auger advanced to 24' to prevent mud loss and hole cave in from gravel and loose soils, mud rotary drilling 24'-50'
2.0	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, orange.	SP-SC	8.3			5+5+6 N=11 REC=14"		
5.5	SILTY SAND, fine to coarse grained, moist, green, with fine to medium shell fragments, moderate HCl reaction, 10-20% shell frag.	SM	4.8		5	8+11+15 N=26 REC=18"		
6.0	POORLY GRADED SAND WITH CLAY, with gravel, fine to coarse grained, moist, orange.	SP-SC	4.3			6+8+10 N=18 REC=18"		
	POORLY GRADED SAND, fine to coarse grained, moist, orangeish white. with gravel, contains clay, contains 1/8-1/4" clay lenses, yellowish orange.	SP				4+4+5 N=9 REC=18"		
	wet.				10	5+3+5 N=8 REC=18"		
14.0	grayish black, contains cemented sand, with fine to coarse shell fragments, shells are black, no HCl reaction.	SM	-3.7		15	4+9+5 N=14 REC=18"		
17.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-40% shell frag.		-6.7			3+3+6 N=9 REC=18"		
	CLAYEY SAND, fine to coarse grained, wet, green, contains cemented sand, with fine to coarse shell fragments, strong HCl reaction, 70-90% shell frag. fine to medium grained, moist, 30-40% shell frag.	SC			20			
22.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SM	-11.7		25			
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-702**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to coarse shell fragments, weak HCl reaction, 0-5% shell frag.	SM			30	4+6+5 N = 11 REC = 18"		
	with fine to coarse shell fragments, strong HCl reaction, 20-35% shell frag.				35	5+7+7 N = 14 REC = 18"		
					40	4+5+7 N = 12 REC = 18"		
42.0	SANDY SILT, fine to medium grained, moist, green, trace fine to medium shell fragments, strong HCl reaction, 0-10% shell frag.	ML	-31.7		45	5+6+7 N = 13 REC = 18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		-39.7		50	5+6+7 N = 13 REC = 18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-703**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** CME-550 (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 7/7/06 **Finished:** 7/10/06  
**Location:** Northing: 218171 ft  
Easting: 960957.01 ft  
**Ground Surface Elevation:** 45.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/7	---	23.5'	---	---
<b>Start of day</b>	7/10	---	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.7	ROOTMAT AND TOPSOIL.		44.7					
2.5	CLAYEY SAND, fine to medium grained, moist, brown and yellowish brown.	SC	42.9			WOH+WOH +1 N = 1 REC = 8"		
	SANDY LEAN CLAY, trace roots and wood fragments, moist, brown and orangeish brown.	CL				2+2+3 N = 5 REC = 10"		
	iron staining				5	2+3+5 N = 8 REC = 16"		
	weak cementation					3+4+4 N = 8 REC = 18"		
10.0	ORGANIC CLAY WITH SAND, moist, gray and orangeish brown.	OH	35.4			2+3+4 N = 7 REC = 18"		
	iron staining					3+2+2 N = 4 REC = 18"		
						REC = 19"	w=45.1% PP=>4.5 tsf *	
22.0	SILTY SAND, fine to coarse grained, wet, reddish brown, contains fine to coarse shell fragments, 10-20%, weak cementation, HCl reaction strong.	SM	23.4			WOH+2+2 N = 4 REC = 10"		Harder drilling
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation wells OW-703A and OW-703B installed at nearby locations.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-703**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	ELASTIC SILT, moist, gray and yellowish brown.	MH	18.4		30	WOH/18" N = WOH/18" REC = 10"		total fluid loss in mud tub  resumed drilling on 7/10/06 @ 9:00am
33.0	SILTY SAND, fine to medium grained, wet, gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction strong.  greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction moderate	SM	12.4		35	4+4+7 N = 11 REC = 16"		furthest advancement of hollow stem augers  Rig chatter
47.0	SANDY LEAN CLAY, wet, greenish gray and white, contains fine to coarse shell fragments, 30-40%, HCl reaction strong.	CL	-1.6		40	4+4+6 N = 10 REC = 18"		
					45	3+3+6 N = 9 REC = 18"		
52.0	SILTY SAND, fine to medium grained, wet, gray and white, with fine to coarse shell fragments, 50-60%, strong cementation, HCl reaction strong.	SM	-6.6		50	3+5+7 N = 12 REC = 18"		
					55	8+11+7 N = 18 REC = 18"		Rig chatter
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation wells OW-703A and OW-703B installed at nearby locations.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-703**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	greenish gray and white, contains fine to medium shell fragments, 20-30%, HCl reaction moderate	SM			60	5+7+10 N = 17 REC = 16"		
62.0	SANDY SILT, wet, gray and white, contains fine to coarse shell fragments, 20-30%, strong cementation, HCl reaction strong.	ML	-16.6		65	11+23+50/4" N = 73/10" REC = 16"		Rig chatter
67.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.	SM	-21.6		70	5+8+12 N = 20 REC = 18"		
					75	REC = 10"		
77.0	SANDY SILT, moist, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction moderate.	ML	-31.6		80	6+7+10 N = 17 REC = 18"		
82.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments, 2-5%, HCl reaction moderate.	SC	-36.6		85	5+7+9 N = 16 REC = 18"		
	contains fine to coarse shell fragments, 20-30%, HCl reaction strong				90	7+15+15 N = 30 REC = 18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation wells OW-703A and OW-703B installed at nearby locations.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-703**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SANDY SILT, fine to medium grained, wet, greenish gray, trace fine to coarse shell fragments, 2-5%, HCl reaction moderate .	SC	-46.6					
		ML						
						95	5+7+12 N =19 REC =18"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-54.6			100	7+10+12 N =22 REC =18"	

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation wells OW-703A and OW-703B installed at nearby locations.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-704**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** CME-550 (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 7/6/06 **Finished:** 7/7/06  
**Location:** Northing: 217991.06 ft  
Easting: 960926.05 ft  
**Ground Surface Elevation:** 39.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/6	---	23.5'	---	---
<b>Start of Day</b>	7/7	---	23.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	ROOTMAT AND TOPSOIL.		39.0					
	CLAYEY SAND, trace roots and wood fragments, fine to medium grained, moist, reddish brown.	SC				woh+1+2 N =3 REC =7"		
2.5	SANDY LEAN CLAY, trace wood fragments, moist, reddish brown and orangeish brown.	CL	37.1			2+2+3 N =5 REC =6"		
	iron staining, weak cementation.				5	2+2+2 N =4 REC =15"		
						2+4+4 N =8 REC =15"		
10.0	SANDY FAT CLAY, trace root fragments, moist, reddish brown and orangeish brown, iron staining, weak cementation.	CH	29.6		10	2+2+2 N =4 REC =16"		start of mud rotary drilling
13.0	SANDY SILT, moist, blueish gray.	ML	26.6		15	3+4+5 N =9 REC =18"		
17.0	SILTY SAND, fine to medium grained, moist, gray and white, contains fine to coarse shell fragments, 30-40%, strong cementation, HCl reaction strong.	SM	22.6		20	40+29+16 N =45 REC =18"		Rig chatter
						4+8+6 N =14 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-704**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
32.0	contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.	SM				5+7+7 N=14 REC=18"		resumed drilling on 7/7/06 @ 7:30am Rig chatter
	CLAYEY SAND, fine to medium grained, wet, blueish gray, trace fine to coarse shell fragments, 2-5%, HCl reaction weak.	SC	7.6			3+3+5 N=8 REC=18"		
						3+3+4 N=7 REC=18"		
42.0	SANDY FAT CLAY, wet, gray and white, contains fine to coarse shell fragments, 20-30%, HCl reaction moderate.	CH	-2.4			2+3+6 N=9 REC=18"		
47.0	SILTY SAND, fine to medium grained, wet, white and gray, contains fine to coarse shell fragments, 20-30%, strong cementation, HCl reaction strong.	SM	-7.4			14+16+11 N=27 REC=18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		-10.4					Rig chatter

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-705**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** W. Wolfe  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 6/26/06 **Finished:** 6/27/06  
**Location:** Northing: 217581.3 ft  
Easting: 960917.9 ft  
**Ground Surface Elevation:** 46.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/27	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	ROOTMAT AND TOPSOIL.		46.2					
	CLAYEY SAND, trace wood and root fragments, fine to medium grained, moist, orangeish brown.	SC				2+3+2 N =5 REC =5"		
2.5	SANDY FAT CLAY, trace root fragments, moist, orangeish brown and gray.	CH	44.3			3+3+5 N =8 REC =5"		
4.5	CLAYEY SAND, trace root fragments, fine to medium grained, moist, gray and orangeish brown.	SC	42.3		5	3+3+5 N =8 REC =16"		
7.0	SILTY SAND, fine to medium grained, moist, gray and orangeish brown, with yellow sand lenses.	SM	39.8			4+5+6 N =11 REC =18"		
	gray and reddish brown, weak cementation, iron staining				10	2+5+16 N =21 REC =11"		
13.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, yellowish brown and gray.	SP-SC	33.8	▽		5+12+8 N =20 REC =10"		
17.0	SILTY SAND, fine to medium grained, wet, gray and white, contains fine to medium shell fragments, 20-30%, HCl reaction moderate.	SM	29.8			15+14+10 N =24 REC =15"		
22.0	SANDY ELASTIC SILT, moist, gray, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	MH	24.8			3+3+4 N =7 REC =18"		
	<i>continued on next page</i>							

resumed drilling on 6/27/06 @ 7:30am

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

- Comments:**
- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - \* = See Appendix I for additional lab testing data.
  - Ground water observation well OW-705 installed at nearby location.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-706**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/15/06 **Finished:** 5/16/06  
**Location:** Northing: 217140.14 ft  
Easting: 961339.74 ft  
**Ground Surface Elevation:** 77.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/15	---	5.0'	---	---
<b>Start of day</b>	5/16	---	0.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Rootmat and topsoil.	SM	77.1			1+5+3 N=8 REC=17"		*NWJ rods used.
	SILTY SAND, fine to coarse grained, moist, brown, contains root fragments.					2+4+6 N=10 REC=11"		
4.5	CLAYEY SAND, fine to medium grained, wet, brown, trace organic matter (±1%).	SC	72.9	▽	5	2+2+1 N=3 REC=14"		
7.0	SANDY LEAN CLAY, fine to medium grained, moist, yellowish brown and light gray.	CL	70.4			2+2+1 N=3 REC=18"		
9.5	FAT CLAY, with fine to medium sand, trace mica, moist, mottled yellowish brown and grayish brown. trace fine to medium sand, gray.	CH	67.9		10	2+2+2 N=4 REC=18"		
	trace fine sand.				15	1+4+4 N=8 REC=0"		
17.0	ELASTIC SILT, trace fine to medium sand and mica, moist, light greenish gray and dark gray. trace fine sand, light greenish gray and light gray. <i>continued on next page</i>	MH	60.4		20	2+4+4 N=8 REC=18"		
					25	3+6+6 N=12 REC=18"		

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-706**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY LEAN CLAY, trace mica, fine to medium grained, moist, gray.	MH	50.4					
		CL						
					30	8+9+12 N =21 REC =18"		
34.0	CLAYEY SAND, trace mica, fine to medium grained, moist, dark orangeish brown and light brown, (shell impressions observed in soil sample).	SC	43.4					
					35	9+9+18 N =27 REC =18"		
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light brown.  light brown and orangeish brown.	SP-SM	40.4					
					40	50 REC =6"		
					45	50 REC =5"		
47.0	SANDY LEAN CLAY, trace mica, fine to medium grained, moist, light greenish gray, trace fine to medium shell fragments (±5%), weak HCl reaction.	CL	30.4					
					50	WOH+3+4 N =7 REC =18"	PP=2.00 tsf	**Resumed grouting at 7:10 AM on 5/16/06.
50.0	BOTTOM OF BORING @ 50.0 FT.		27.4		50			

TEST BORING LOG: 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-707**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" OD Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 5/2/06 **Finished:** 5/2/06  
**Location:** Northing: 217396.98 ft  
Easting: 961481.84 ft  
**Ground Surface Elevation:** 67.4 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	5/2	---	25.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.3	TOPSOIL.	CL	67.1			2+3+4 N=7 REC=18"			
2.5	SANDY LEAN CLAY, moist, orangeish brown and gray.	CH	64.9			4+6+4 N=10 REC=18"	w=27.3% *		
	with sand.					5	4+4+5 N=9 REC=18"		
	fine to medium sandy, greenish gray and dark gray.						3+3+4 N=7 REC=18"	w=32.8% LL=59 PL=21 *	
	with sand, gray.					10	2+5+5 N=10 REC=18"		
						15	4+6+8 N=14 REC=18"	w=32.7% *	
						20	3+7+9 N=16 REC=18"		
22.0	CLAYEY SAND, fine to medium grained, moist, dark gray, contains mica.	SC	45.4						
24.6			42.8	▽		25	6+6+9 N=15 REC=18"	w=29.5% *	
	<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-707**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	CLAYEY SAND, trace gravel, wet, orangeish brown and yellowish brown, limonitic cementation & Fe oxide staining.	SC	40.4					
	ELASTIC SILT with sand, moist, gray, contains mica.	MH						
	organic odor.							
	brown, contains organic matter.							
42.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, gray and brownish white, with fine to coarse shell fragments, strong HCl reaction.	SP-SM	25.4					
	brownish white, with fine to coarse shell fragments, strong HCl reaction.							
50.0	BOTTOM OF BORING @ 50.0 FT.		17.4					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-708**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/8/06 **Finished:** 5/9/06  
**Location:** Northing: 217585.84 ft  
Easting: 961810.64 ft  
**Ground Surface Elevation:** 37.4 (feet)

Groundwater Observations						
	Date	Time	Depth	Casing	Caved	
<b>Encountered</b>	5/8	---	5.0'	---	---	
<b>Start of day</b>	5/9	---	0.5'	---	---	

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Rootmat and topsoil.	SC	37.0			1+3+4 N=7 REC=14"		
2.0	CLAYEY SAND, fine to coarse grained, moist, brown, contains root fragments.	SM	35.4			2+2+1 N=3 REC=12"		
4.5	SILT, wet, dark brown, with fine to medium sand, trace mica.	ML	32.9	▽	5	WOH/18" N=WOH/18" REC=11"		
7.0	CLAYEY SAND, fine to coarse grained, moist, brown, (coarse sand is angular to subangular).	SC	30.4			1+3+3 N=6 REC=12"		
9.5	SILTY SAND, fine to coarse grained, wet, reddish brown and light orangeish brown, (coarse sand is subrounded to rounded).	SM	27.9		10	10+10+13 N=23 REC=10"		
12.0	SILTY GRAVEL, fine to coarse grained, wet, orangeish brown and brown, (maximum dimension of subangular to subrounded fine gravel is 3/4 inch).	GM	25.4			20+9+3 N=12 REC=9"		
14.0	SILTY SAND, fine to medium grained, wet, dark orangeish brown, contains cemented sand pockets, (no observed HCL reaction with cemented sand pockets).	SM	23.4		15	WOH+2+3 N=5 REC=18"		
17.0	CLAYEY SAND, fine to medium grained, wet, light brown, few fine to coarse shell fragments (±10%), contains silty sand pockets, strong HCL reaction.	SC	20.4		20	5+19+18 N=37 REC=14"		
22.0	SILTY SAND, fine to medium grained, wet, gray, little fine to medium shell fragments (±20%), strong HCL reaction.	SM	15.4		25			
	light gray, mostly fine to coarse shell <i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-708A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-708**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fragments ( $\pm > 50\%$ ), contains strongly cemented sand lense (1/4 inch thick) at 24.9 ft, strong HCl reaction, (maximum dimension of shell fragment is 1/2 inch). trace fine to medium shell fragments ( $\pm 5\%$ ), weak HCl reaction.	SM				30	4+4+5 N = 9 REC = 18"	
32.0	CLAYEY SAND, fine to medium grained, wet, gray, trace fine to medium shell fragments ( $\pm 5\%$ ), weak HCl reaction.	SC	5.4			35	3+2+4 N = 6 REC = 18"	
37.0	SILTY SAND, fine to medium grained, wet, gray, little fine to coarse shell fragments ( $\pm 20\%$ ), strong HCl reaction.	SM	0.4			40	6+9+16 N = 25 REC = 18"	
	light gray and light oliveish gray, mostly fine to coarse shell fragments ( $\pm 70\%$ ), contains strongly cemented sand pockets, (maximum dimension of cemented sand pockets is 1-1/2 inches).					45	7+14+14 N = 28 REC = 12"	
	light greenish gray, few fine to coarse shell fragments ( $\pm 10\%$ ).					50	7+11+26 N = 37 REC = 16"	
52.0	SANDY SILT, fine to medium, moist, light greenish gray, trace fine to medium shell fragments ( $\pm 5\%$ ), moderate HCl reaction.	ML	-14.7			55	5+9+14 N = 23 REC = 10"	
57.0	SILTY SAND, fine to medium grained, wet, gray, few fine to medium shell <i>continued on next page</i>	SM	-19.7					

\*Very difficult rotary advancement at 41 ft; moderate difficulty in rotary advancement below 42 ft.

\*Relative difficulty in rotary advancement below 51 ft.  
\*Switched to 3-7/8" O.D. Tri-cone roller bit below 53.5 ft.

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-708A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-708**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fragments (±10%), strong HCl reaction.	SM						
62.0	SANDY SILT, fine to medium, moist, gray, trace fine to coarse shell fragments (±5%), strong HCl reaction, (shell fragments easily crumble and roll with slight finger pressure).	ML	-24.7			11+11+11 N =22 REC =18"		
	trace fine to medium shell fragments (±1%).					6+8+12 N =20 REC =18"		
72.0	SANDY LEAN CLAY, fine to medium, moist, light greenish gray, trace fine to coarse shell fragments (±5%), contains dark brownish particles (< 1/8 inch), (dark brownish particles may be fish scales).	CL	-34.7			6+6+9 N =15 REC =18"		
77.0	SILTY SAND, fine to medium grained, wet, gray, little fine to coarse shell fragments (±20%), contains subrounded to rounded black particles (1/16 inch), strong HCl reaction.	SM	-39.7			8+6+13 N =19 REC =18"		
82.0	SILT, moist, greenish gray, with fine to medium sand, trace mica and fine to medium shell fragments (±5%), weak HCl reaction.	ML	-44.7			REC =12"		**Resumed drilling at 6:55 AM on 5/9/06. *Slight to moderate rig chatter from 75 to 76 ft.
87.0	LEAN CLAY, moist, greenish gray, trace fine to medium sand and mica, weak HCl reaction.	CL	-49.7			6+7+13 N =20 REC =18"		
						8+7+11 N =18 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-708A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-708**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with fine to medium sand, trace fine to medium shell fragments ( $\pm 5\%$ ), moderate HCl reaction.	CL			95	4+5+7 N = 12 REC = 18"		
	dark greenish gray, weak HCl reaction.					6+7+9 N = 16 REC = 18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		-62.7		-100			

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-708A installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-709**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/9/06 **Finished:** 5/9/06  
**Location:** Northing: 217642.82 ft  
Easting: 961978.18 ft  
**Ground Surface Elevation:** 31.3 (feet)

Groundwater Observations					
Encountered	Date	Time	Depth	Casing	Caved
	5/9	---	7.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Rootmat and topsoil.	SM	30.9			WOH+2+2 N=4 REC=14"		*NWJ rods used.
2.0	SILTY SAND, fine to coarse grained, moist, brown, contains root fragments and clayey sand pockets.	CL	29.3			2+3+2 N=5 REC=8"		
4.5	LEAN CLAY, moist, orangeish brown and grayish brown, with fine to medium sand.		26.8			3+2+3 N=5 REC=12"		
7.0	SILTY SAND, moist, fine to medium grained, dark orangeish brown.	SM	24.3	▽		WOH/18" N=WOH/18" REC=12"	w=27.3% *	
9.5	CLAYEY SAND, fine to coarse grained, wet, mottled dark orangeish brown and grayish brown (high percentage of fines).	SC	21.8			2+2+3 N=5 REC=13"		
11.7	SANDY SILT, fine to medium, wet, dark orangeish brown.	ML	19.6			WOH+WOH+1 N=1 REC=12"	w=29.1% *	
	moist, light gray, mostly fine to medium strongly cemented sand (±100%), strong HCl reaction.					19+4+1 N=5 REC=10"		
	wet, gray, trace fine to medium shell fragments (±5%) below 19.5 ft.							
22.0	CLAYEY SAND, fine to medium grained, wet, gray, weak HCl reaction.	SC	9.3			3+3+3 N=6 REC=18"	w=30.4% *	
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-709**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium shell fragments (±5%), contains black particles (1/16 inch).	SC				30	2+4+4 N =8 REC =18"	
32.0	SANDY SILT, fine to medium, wet, gray and light gray, mostly fine to coarse shell fragments (±50%), strong HCl reaction.	ML	-0.8			35	5+5+11 N =16 REC =18"	w=33.8% *
37.0	SILTY SAND, fine to medium grained, wet, gray and light gray, some fine to coarse shell fragments (±40%), contains clayey sand lenses (1/4 inch thick) and black particles (1/16 inch), strong HCl reaction.	SM	-5.8			40	13+15+17 N =32 REC =10"	
	light gray, trace fine to coarse shell fragments (±5%), contains strongly cemented sand pockets, moderate HCl reaction.					45	11+28+23 N =51 REC =13"	
47.0	SANDY LEAN CLAY, fine to medium, moist, gray, few fine to coarse shell fragments (±10%), contains black particles (< 1/8 in), strong HCl reaction, (some shell fragments are orange brown).	CL	-15.8					
50.0	contains moderately cemented sand lense below 49.8 ft. BOTTOM OF BORING @ 50.0 FT.		-18.8			50	8+11+30 N =41 REC =18"	w=23% *

TEST BORING LOG 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-710**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/9/06 **Finished:** 5/10/06  
**Location:** Northing: 217542.51 ft  
Easting: 962136.88 ft  
**Ground Surface Elevation:** 48.0 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/10	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.	FILL	47.5			2+4+3 N =7 REC =6"		*NWJ rods used.
2.0	Clayey sand PROBABLE FILL, fine to medium grained, moist, brown, contains root fragments and fine to medium silty sand pockets.	FILL	46.0			3+2+3 N =5 REC =10"		
	Fat Clay PROBABLE FILL, moist, light yellowish brown and light grayish brown, with fine to medium sand, contains silty sand lenses.				5	2+2+2 N =4 REC =6"		
	trace fine sand, contains root fragments, mostly mottled light yellowish brown and light grayish brown.					2+2+2 N =4 REC =8"		
9.5	mottled yellowish brown, light brownish gray and orangeish brown, contains leaf fragments, trace organic matter (±1%).	CL	38.5		10	3+3+4 N =7 REC =10"		*Continued water loss as rotary advanced to 10.5 ft.
	LEAN CLAY, moist, brown, with fine to medium sand.					2+4+5 N =9 REC =16"		*Boring grouted from depth of 15 ft to ground surface due to continued mud loss from 7.5 to 15 ft.
17.0	light brown and light orangeish brown (mostly transecting curvilinear laminations), trace fine sand and mica.	CH	31.0		20	7+5+3 N =8 REC =6"		
	FAT CLAY, moist, brown, trace fine sand (NOTE: hydrated bentonite observed in top of spoon, dry bentonite observed in shoe of spoon).							
	contains fine to medium cemented sand pockets below 19.5 ft (no observed HCl reaction with cemented sand pockets).							
22.0	SANDY LEAN CLAY, fine to medium, wet, dark orangeish brown and dark reddish brown, trace organic matter (±1%).	CL	26.0		25	7+5+3 N =8 REC =7"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-710**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, wet, light orangeish brown and grayish brown.	SM	21.0		30	WOR/18" N = WOR/18" REC = 12"		
	brown and light gray, trace fine to medium shell fragments (±5%), strong HCl reaction, (shell fragments easily crumble and roll with slight finger pressure).				35	6+7+7 N = 14 REC = 12"		
37.0	gray, few fine to coarse shell fragments (±10%), strong HCl reaction below 34.5 ft (shell fragments are rigid).	CL	11.0					
39.0	LEAN CLAY, wet, light brown and orangeish brown, with fine sand, trace mica.	SM	9.0		40	WOH+10+8 N = 18 REC = 10"		
	SILTY SAND, fine to medium grained, moist, gray, mostly fine to medium strongly cemented sand (±>50%), trace fine to medium shell fragments (±5%), strong HCl reaction.				45	3+3+5 N = 8 REC = 18"		
	wet, trace fine to medium shell fragments (±5%), weak HCl reaction.				50	3+4+8 N = 12 REC = 18"		
47.0	LEAN CLAY, moist, gray, with fine to medium sand, few fine to coarse shell fragments (±10%), strong HCl reaction.	ML	1.0					
52.0	CLAYEY SAND, fine to medium grained, moist, gray and light gray, some fine to coarse shell fragments (±40%), strong HCl reaction.	SC	-4.0		55	23+15+7 N = 22 REC = 18"		
57.0	SANDY LEAN CLAY, fine to medium, moist, light greenish gray and gray, <i>continued on next page</i>	CL	-9.0					

\*No return of rotary cuttings below 40 ft. Hollow stem augers used to 40 ft in order to case borehole and prevent significant mud loss.

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-710**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
59.5	trace fine to medium shell fragments (±5%) and mica, strong HCl reaction.	CL	-11.5		60	5+5+13 N =18 REC =18"		
62.0	CLAYEY SAND, fine to medium grained, moist, light greenish gray and gray, trace fine to medium shell fragments (±5%) and mica, strong HCl reaction.	SC						
67.0	SANDY SILT, fine to medium, moist, light greenish gray, trace fine to coarse shell fragments (±5%), contains dark brownish particles (1/16 inch), strong HCl reaction.	ML	-14.0		65	6+16+36 N =52 REC =18"		
72.0	LEAN CLAY, moist, greenish gray, with fine to medium sand, few fine to coarse shell fragments (±10%), strong HCl reaction, (some shell fragments are dark reddish brown).	CL	-19.0		70	8+7+16 N =23 REC =18"		
75.0	SANDY SILT, fine to medium, moist, greenish gray, trace fine to medium shell fragments (±5%), weak HCl reaction.	ML	-24.0		75	5+7+13 N =20 REC =18"		
	BOTTOM OF BORING @ 75.0 FT.		-27.0					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-711  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/11/06 **Finished:** 5/11/06  
**Location:** Northing: 216755.7 ft  
Easting: 961743.5 ft  
**Ground Surface Elevation:** 53.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/11	---	28.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Rootmat and topsoil.	SC	52.7			3+2+3 N=5 REC=12"		*NWJ rods used.
2.0	CLAYEY SAND, fine to coarse grained, moist, light brown and brown, contains root fragments.	CH	51.0			4+5+6 N=11 REC=14"		
4.5	FAT CLAY, moist, light orangeish brown and light gray, trace fine sand.	MH	48.5	5		4+4+7 N=11 REC=18"		
7.0	ELASTIC SILT, moist, mottled orangeish brown and light gray, trace fine sand, (orangeish brown particles appear to be weathered shell fragments based on shape) .	ML	46.0			4+4+5 N=9 REC=18"		
9.5	SANDY SILT, fine to medium, moist, orangeish brown and light grayish brown, trace mica (high percentage of sand).	SC	43.5	10		3+6+5 N=11 REC=16"		
12.0	light brown and dark reddish brown, contains fine to medium weakly cemented sand pockets, trace fine to medium shell fragments (±5%), below 11.5 ft (shell fragments are stained dark orangeish brown due to oxidation).	SM	41.0			32+50 N=50 REC=12"		
	SILTY SAND, fine to medium grained, moist, dark orangeish brown and dark reddish brown, (oxidized).			15				
17.0	LEAN CLAY, moist, gray, trace fine to medium sand and mica.	CL	36.0			5+3+5 N=8 REC=14"		
	with fine to medium sand.			20				
				25		3+3+2 N=5 REC=18"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*continued on next page*

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-711 installed at nearby location.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-712**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 2-15/16" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/22/06 **Finished:** 5/22/06  
**Location:** Northing: 216506.16 ft  
Easting: 961997.56 ft  
**Ground Surface Elevation:** 42.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/22	---	19.0'	9.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	ROOTMAT AND TOPSOIL.	SM	42.2			1+3+2 N=5 REC=14"		0-9' hollow stem auger
2.0	SILTY SAND, fine to medium grained, moist, brown, contains root fragments.	ML	40.4			2+3+3 N=6 REC=10"		9-50' 2-15/1" mud rotary
	mottled brownish orange.				5	3+3+4 N=7 REC=18"		
	orangeish gray.					2+3+4 N=7 REC=18"		
	mottled grayish orange. gray.				10	3+3+4 N=7 REC=18"		
13.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, grayish green, with fine to coarse shell fragments, strong HCl reaction, 10-15% shell frag.	SP-SM	29.4			2+3+5 N=8 REC=18"		
17.5	SILTY SAND, fine to medium grained, wet, green, with fine to coarse shell fragments, strong HCl reaction, 25-35% shell frag.	SM	24.9		▽	4+5+50/5" N=55/11" REC=17"		
22.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SP-SM	19.9			2+3+4 N=7 REC=18"		

*continued on next page*

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-712**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	15-25% shell frag.	SP-SM			30	4+4+4 N=8 REC=18"		
					35	2+2+3 N=5 REC=18"		
					40	2+3+4 N=7 REC=18"		
43.0	SILTY SAND, fine to medium grained, moist, green and white, with fine to coarse shell fragments, strong HCl reaction, 60-70% shell frag.	SM	-0.6		45	28+16+21 N=37 REC=18"		
	30-40% shell frag.				50	9+7+6 N=13 REC=18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		-7.6					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-713**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/11/06 **Finished:** 5/11/06  
**Location:** Northing: 216117.68 ft  
Easting: 962283.16 ft  
**Ground Surface Elevation:** 58.0 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/11	---	33.5'	---	---
<b>Start of day</b>	5/12	---	17.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
2.0	silty sand FILL, fine to coarse grained, moist, brown, contains crushed stone.	FILL	56.0			2+3+4 N =7 REC =7"		*NWJ rods used.
4.5	LEAN CLAY, moist, brown, with fine to medium sand, contains root fragments.	CL				2+3+4 N =7 REC =10"		
	FAT CLAY, moist, orangeish brown and light gray, trace fine to medium sand, contains fine to coarse sandy fat clay layers.	CH	53.5		5	7+3+4 N =7 REC =11"		
	yellowish brown and light grayish brown (dark orangeish brown soil appears to be weathered shell fragments). light grayish brown, light orangeish brown and gray below 8.5 ft.					3+3+4 N =7 REC =18"		
	fine sandy, gray, trace mica.				10	4+5+7 N =12 REC =18"		
12.0	ELASTIC SILT, moist, light blueish gray and dark gray, trace fine sand.	MH	46.0			5+5+8 N =13 REC =18"		
					15			
17.0	SANDY SILT, fine to medium, moist, gray, trace mica.	ML	41.0			4+3+5 N =8 REC =18"		
					20			
22.0	LEAN CLAY, moist, gray, trace fine to medium sand and mica.	CL	36.0			4+3+5 N =8 REC =18"		
					25			
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-713**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	light greenish gray and gray, with fine to medium sand, weak HCl reaction.	CL				5+4+5 N=9 REC=18"		
	wet, gray, trace fine to medium sand, strong HCl reaction, contains fine to medium strongly cemented sand layer from 35.6 to 35.7 ft (strong HCL reaction on cemented sand only).			▽		50/2" N=50/2" REC=2"		
37.0	CLAYEY SAND, fine to medium grained, wet, light gray, some fine to coarse shell fragments (±30%), contains fine to medium strongly cemented sand pockets, strong HCl reaction.	SC	21.0			7+50/5" N=50/5" REC=11"		*Moderate difficulty in rotary advancement below 39 ft.
	dark gray, trace fine to coarse shell fragments (±5%), contains black particles (1/16 inch), moderate HCl reaction.					3+5+7 N=12 REC=18"		
47.0	SILTY SAND, fine to medium grained, wet, dark gray, trace fine to coarse shell fragments (±5%), weak HCl reaction.	SM	11.0			4+5+8 N=13 REC=18"		**Resumed grouting at 7:00 AM on 5/12/06.
50.0	BOTTOM OF BORING @ 50.0 FT.		8.0					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-714**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 4-1/4" ID Hollow Stem Auger  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/27/06 **Finished:** 6/27/06  
**Location:** Northing: 215705.73 ft  
Easting: 962034.37 ft  
**Ground Surface Elevation:** 116.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/27	---	Dry	---	---
<b>Water Reading</b>	7/25	---	44.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	TOPSOIL.		115.5					
2.0	SILTY SAND, fine to medium grained, moist, yellowish brown, contains root fragments.	SM	114.0			2+2+4 N=6 REC =18"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown.	SP-SM				2+3+2 N=5 REC =18"		
	Light orangeish brown.				5	3+3+4 N=7 REC =18"		
	Med. - coarse sand.					3+4+6 N=10 REC =18"		
	Contains root fragments.				10	4+6+6 N=12 REC =18"		
	No root fragments.					4+5+6 N=11 REC =18"		
	Light orangeish white.					3+4+6 N=10 REC =18"		
	Fine - med. sand.					4+5+7 N=12 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

- Comments:**
- Ground water observation well OW-714 installed in boring upon completion.
  - \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-714**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Light orangeish brown, Med. - coarse sand.	SP-SM			30	6+7+10 N =17 REC =18"		
	Yellowish orange, Fine - med. sand.				35	7+7+9 N =16 REC =18"		
	Orangeish brown.				40	12+13+16 N =29 REC =18"		
42.0	CLAYEY SAND, fine to medium grained, moist, mottled grayish orange.	SC	74.0		45	7+1+2 N =3 REC =18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		66.0		50	REC =24"	PP=1.50 tsf	

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-714 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-715  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/1/06 **Finished:** 6/1/06  
**Location:** Northing: 214951.76 ft  
Easting: 962639.59 ft  
**Ground Surface Elevation:** 86.3 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	6/1	---	10.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
0.5	TOPSOIL.	SM	85.8			1+1+2 N=3 REC=12"				
	SILTY SAND, fine to medium grained, moist, dark brown, with organic matter, and root fragments.  Dark orangeish brown, trace root fragments.						3+3+3 N=6 REC=17"			
6.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light orangeish brown.	SP-SM	80.3	▽	5	3+3+2 N=5 REC=18"				
							2+3+3 N=6 REC=18"			
	Wet, orangeish brown.						10	6+7+10 N=17 REC=11"		Change from hollow stem auger to mud rotary drilling
							15	9+10+13 N=23 REC=17"		
	Reddish brown.						20	10+12+13 N=25 REC=16"		
	Dark reddish brown, contains organic matter.				25	9+6+5 N=11 REC=18"		Brown return water		
	<i>continued on next page</i>									

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-715**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
26.0	LEAN CLAY, moist, mottled grayish orange, with sand.  Gray.	SP-SM	60.3						
		CL							
							30	4+3+4 N = 7 REC = 18"	
							35	2+3+4 N = 7 REC = 18"	
							40	2+4+5 N = 9 REC = 18"	
					45	4+5+6 N = 11 REC = 18"			
50.0	BOTTOM OF BORING @ 50.0 FT.		36.3		50	5+7+9 N = 16 REC = 18"			

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-716**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** T. Chew

**Drilling Method:** 3-7/8" O.D. Tri-cone roller bit (Mud Rotary)

**Drilling Equipment:** Diedrich D-50 Turbo (Track)

**Schnabel Representative:** K. Megginson

**Dates Started:** 7/20/06 **Finished:** 7/20/06

**Location:** Northing: 215003.21 ft  
Easting: 961364.57 ft

**Ground Surface Elevation:** 82.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/20	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Forest litter, rootmat and topsoil.	ML	82.1			1+1+2 N=3 REC=18"		*AWJ rods used.
	SILT, moist, brown, trace fine to medium sand, contains root fragments.					2+5+6 N=11 REC=18"		
	light brown and brown, trace organic matter (±1%).							
	brown and dark brown.				5	5+6+7 N=13 REC=18"		*4-1/4" I.D. Hollow Stem Augers used from 0 to 5 ft. *Switched to 3-7/8" O.D. Tri-cone roller bit below 5 ft.
7.0	LEAN CLAY, moist, mottled orangeish brown and light gray, with fine to medium sand.	CL	75.4			8+10+11 N=21 REC=18"		
9.5	SILTY SAND, fine to coarse grained, moist, orangeish brown and grayish brown, contains moderately cemented sand pockets, trace fine gravel, (coarse sand and fine gravel is subangular to subrounded; maximum dimension of fine gravel is 1/4 inch).	SM	72.9			8+11+12 N=23 REC=14"		
	wet, dark yellowish brown, light gray, and light grayish brown.					15	2+1+2 N=3 REC=12"	
17.0	FAT CLAY, wet, gray, with fine to medium sand, trace mica.	CH	65.4			3+2+3 N=5 REC=18"		
	moist, gray and dark gray, trace fine to medium sand, contains clayey sand and sandy fat clay lenses. <i>continued on next page</i>					20	3+3+3 N=6 REC=18"	

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-716**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	gray, trace organic matter ( $\pm 1\%$ ), contains light grayish sandy fat clay and clayey sand pockets.	CH				30	4+4+5 N=9 REC=18"	
34.3	ELASTIC SILT, moist, gray, trace fine to medium sand and mica.	MH	48.1			35	3+5+6 N=11 REC=18"	
37.0	SANDY LEAN CLAY, moist, gray and light gray, contains light grayish clayey sand pockets.	CL	45.4			40	5+7+10 N=17 REC=18"	
42.0	SILTY SAND, fine to medium grained, moist, dark gray, trace fine to medium shell fragments ( $\pm 5\%$ ), mostly cemented sand layers ( $\pm 95\%$ ), (no observable HCl reaction with cemented sand layers).	SM	40.4			45	38+50/3" N=50/3" REC=10"	
49.0	wet, gray, mostly fine to medium shell fragments ( $\pm 80\%$ ), strong HCl reaction.	SP-SM	33.4				12+50 N=50 REC=12"	*Moderate to difficult rotary advancement from 44 to 48.5 ft (slow advancement).
49.5	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray, few fine to medium shell fragments ( $\pm 10\%$ ), moderate HCl reaction. BOTTOM OF BORING @ 49.5 FT.		32.9					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-717**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 4-1/4" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 7/14/06 **Finished:** 7/14/06  
**Location:** Northing: 214302.45 ft  
Easting: 962349.27 ft  
**Ground Surface Elevation:** 90.7 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	7/14	---	13.5'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	TOPSOIL		90.2			WOH+WOH +1 N=1 REC =18"		
2.0	SILTY SAND, fine to coarse grained, moist, brown, contains root fragments.	SM	88.7			WOH+2+4 N=6 REC =14"		
4.5	SANDY LEAN CLAY, fine to medium, moist, brown, contains root fragments.	CL	86.2		5	9+10+9 N=19 REC =17"		
7.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown.	SP-SM	83.7			8+13+13 N=26 REC =18"		
10.0	POORLY GRADED SAND, with gravel, fine to coarse grained, moist, orange.	SP	80.7		10	4+7+7 N=14 REC =16"		
12.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, reddish orange.	SP-SM	78.7			6+5+6 N=11 REC =16"		
	SILTY SAND, fine to coarse grained, wet, orange.	SM		▽	15	WOH+WOH +1 N=1 REC =18"		
					20	WOH+WOH +4 N=4		
					25			

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*continued on next page*

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-717**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
27.0	SANDY SILT, fine to medium, moist, gray.	SM	63.7			REC =18"			
		ML			30	1+2+2 N =4 REC =18"			
32.0	SILTY SAND, fine to medium grained, moist, gray.	SM	58.7						
						35	1+2+3 N =5 REC =18"		
						40	3+3+7 N =10 REC =18"		
42.0	FAT CLAY, moist, gray, with silt.	CH	48.7						
						45	2+4+5 N =9 REC =18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		40.7						
						50	4+5+6 N =11 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-718**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Wet.	SP-SM			30	11+15+17 N =32 REC =16"		
	Moist, light orangeish brown.				35	11+13+13 N =26 REC =17"		
	Dark reddish brown, Fine - med. sand.				40	7+10+12 N =22 REC =18"		
42.0	CLAYEY SAND, fine to medium grained, moist, mottled grayish orange.	SC	75.5		45	2+1+2 N =3 REC =18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		67.5		50	2+1+2 N =3 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-718 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-719**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 6/15/06 **Finished:** 6/16/06  
**Location:** Northing: 213978.69 ft  
Easting: 961500.2 ft  
**Ground Surface Elevation:** 75.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/15	---	10.5'	---	---
<b>Start of day</b>	6/16	---	5.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	FL, R AND TOPSOIL.	ML	75.0					0-9'- Advanced 4-1/4" HSA
2.0	SANDY SILT, fine to medium, moist, brown and light brown, contains wood fragments, contains root fragments.	SM	73.2			2+2+2 N =4 REC =7"		
4.5	SILTY SAND, fine to medium grained, moist, light orangeish brown and yellowish brown, trace root fragments, slightly mottled.	ML	70.7			3+5+6 N =11 REC =18"		
7.0	SANDY SILT, fine to medium, moist, light orangeish brown and yellowish brown, slight layering <1/2" thick.	ML	68.2		5	4+7+9 N =16 REC =13"		
10.0	CLAYEY SAND, fine to medium grained, moist, grayish white and light yellowish brown.	SC	65.2			4+5+5 N =10 REC =12"		9'- Changed to mud rotary with 3-7/8" tri-cone roller bit
	SILTY SAND, fine to medium grained, wet, light orangeish brown and light gray. 1" layer of moderately cemented sand, dark orangeish brown .  mottled orangeish brown and light gray.	SM		▽	10	3+6+5 N =11 REC =13"		
					15	1+2+1 N =3 REC =14"		
					20	2+1+2 N =3 REC =16"		17'- Color change in mud return from light brown to orangeish brown
22.0	LEAN CLAY with sand, moist, gray, contains mica.	CL	53.2			2+3+4 N =7 REC =18"		22'- mud return from orangeish brown to gray
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-719**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	FAT CLAY with sand, moist, gray, contains mica.	CH	48.2		30	2+4+5 N =9 REC =18"		
32.0	SANDY ELASTIC SILT, fine to medium, moist, dark gray, contains mica.	MH	43.2		35	3+4+6 N =10 REC =18"		35'- Start of day on 6/16/06
37.0	SANDY LEAN CLAY, fine to medium, with sand, moist, gray and dark gray, contains mica.	CL	38.2		40	5+7+8 N =15 REC =18"		
42.0	CLAYEY SAND, fine to coarse grained, moist, dark gray, contains mica, moderate cementation.	SC	33.2		45	7+11+21 N =32 REC =18"		45-48.5'- Harder drilling
47.0	POORLY GRADED SAND WITH CLAY, wet, dark gray and brownish white, 50-60% fine to medium shell fragments, contains mica, strong HCl reaction.	SP-SC	28.2					47.5'- Rig chatter
49.4	BOTTOM OF BORING @ 49.4 FT.		25.8			37+50/5" N =50/5"		

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-720  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 4-1/4" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 7/17/06 **Finished:** 7/18/06  
**Location:** Northing: 215674.48 ft  
Easting: 962378.47 ft  
**Ground Surface Elevation:** 73.5 (feet)

Groundwater Observations					
Encountered	Date	Time	Depth	Casing	Caved
	7/17	---	11.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	FL, R AND TOPSOIL.	SP	73.2			1+2+1 N=3 REC=18"		
2.0	POORLY GRADED SAND, fine to coarse grained, moist, brown, contains root fragments.	SP-SC	71.5			3+3+5 N=8 REC=18"		
4.5	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, yellowish white.		69.0			2+2+4 N=6 REC=16"		
	CLAYEY SAND, fine to coarse grained, moist, yellowish orange.	SC			5	2+2+3 N=5 REC=17"		
7.0	SANDY LEAN CLAY, fine to coarse, moist, yellowish gray.	CL	66.5			1+1+1 N=2 REC=18"		
10.0	FAT CLAY, wet, brownish gray, with sand.	CH	63.5	▽	10	4+3+2 N=5 REC=10"		
13.0	POORLY GRADED SAND, fine to coarse grained, wet, orangeish white.	SP	60.5		15	WOH+2+3 N=5 REC=18"		
17.0	FAT CLAY, moist, gray, with sand.	CH	56.5		20	2+2+3 N=5 REC=18"		
					25			

continued on next page

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-720**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
	fine to medium sandy				30	3+4+7 N = 11 REC = 18"		
					35	4+7+8 N = 15 REC = 18"		
37.0	ELASTIC SILT, moist, gray, with sand.	MH	36.5					
	fine to medium sandy, greenish gray.				40	4+4+6 N = 10 REC = 18"		
					45	4+4+8 N = 12 REC = 18"		
	with sand.				50	5+6+10 N = 16 REC = 18"		
52.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 10-20% shell frag.	SM	21.5					
					55	4+7+12 N = 19 REC = 18"		
57.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, green, with <i>continued on next page</i>	SP-SM	16.5					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-720**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to coarse shell fragments, strong HCl reaction, 20-40% shell frag.	SP-SM						
	10-30% shell frag.							
67.0	SILTY SAND, fine to medium grained, wet, green, with fine to coarse shell fragments, strong HCl reaction, 5-15% shell frag.	SM	6.5					
	0-5% shell frag.							
75.0	BOTTOM OF BORING @ 75.0 FT.		-1.5					

TEST BORING LOG: 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-721  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 4-1/4" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 7/18/06 **Finished:** 7/19/06  
**Location:** Northing: 215545.8 ft  
Easting: 962462.1 ft  
**Ground Surface Elevation:** 101.3 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/18	---	33.5'	0.0'	---
<b>Start of day</b>	7/19	---	8.0'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
4.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brown.	SP-SM	96.8		1+1+1	N =2 REC =6"		
	orangeish brown.				4+4+5	N =9 REC =14"		
7.0	POORLY GRADED SAND, with gravel, fine to coarse grained, moist, orange.	SP	94.3		5	3+3+4 N =7 REC =14"		
	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, orange, trace gravel.	SP-SC			7+12+15	N =27 REC =16"		
13.0	POORLY GRADED SAND, fine to coarse grained, moist, yellowish white, trace gravel.	SP	88.3		10	4+5+8 N =13 REC =14"		
					15	5+8+12 N =20 REC =12"		
					20	5+8+12 N =20 REC =10"		
	no gravel.				25	6+8+10 N =18 REC =9"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-721**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	orange.	SP				6+8+7 N =15 REC =9"		
	wet.			▽		4+6+6 N =12 REC =14"		
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, orange.	SP-SM	64.3			2+9+9 N =18 REC =16"		
42.0	SILT, wet, reddish orange, with sand, with clay.	ML	59.3			5+3+4 N =7 REC =12"		
45.0	SANDY FAT CLAY, fine to medium, moist, gray.	CH	56.3			2+4+4 N =8 REC =18"		
	trace sand, with silt.					4+5+5 N =10 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-721**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH			60	3+6+7 N=13 REC=18"		
62.0	SILTY SAND, fine to medium grained, moist, dark grayish green.	SM	39.3		65	2+4+5 N=9 REC=18"		
67.0	ELASTIC SILT, moist, gray, with sand.	MH	34.3		70	2+4+5 N=9 REC=18"		
	fine sandy, greenish gray.				75	3+4+6 N=10 REC=18"		
77.0	SILTY SAND, fine to medium grained, moist, greenish gray, contains cemented sand, with fine to coarse shell fragments, strong HCl reaction, 80-100% shell frag.	SM	24.3		80	50/1" N=50/1" REC=1"		
	wet, green, 40-60% shell frag.				85	20+11+9 N=20 REC=18"		
	20-40% shell frag.				90	5+10+14 N=24 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-721**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SM	9.3					
		SP-SM						
						95	6+9+15 N =24 REC =16"	
							6+12+19 N =31 REC =12"	
100.0	BOTTOM OF BORING @ 100.0 FT.		1.3			100		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-722**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 4-1/4" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 7/18/06 **Finished:** 7/18/06  
**Location:** Northing: 215386.1 ft  
Easting: 962467 ft  
**Ground Surface Elevation:** 99.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/18	---	28.5'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
4.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brownish gray, contains root fragments.	SP-SM	95.3			WOH+1+2 N=3 REC=18"	w=3.5% *	
	fine to coarse grained, orangeish brown, trace gravel.					3+3+2 N=5 REC=16"		
7.0	POORLY GRADED SAND, fine to coarse grained, moist, orange, with gravel.	SP	92.8		5	5+6+10 N=16 REC=15"		
10.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orange, trace gravel, with silt.	SP-SM	89.8			5+8+12 N=20 REC=12"	w=12.4% *	
	POORLY GRADED SAND, fine to coarse grained, moist, yellowish orange, with gravel.	SP				6+8+11 N=19 REC=12"		
22.0	SANDY SILT, fine to medium, moist, reddish orange, with clay.	ML	77.8		15	4+9+9 N=18 REC=10"	w=21.1% *	
					20	6+12+16 N=28 REC=12"		
24.5	POORLY GRADED SAND WITH SILT, <i>continued on next page</i>	SP-SM	75.3		25	3+8+9 N=17 REC=16"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-722**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to medium sandy	CH			60	3+5+5 N=10 REC=18"		
					65	3+3+4 N=7 REC=7"	w=47.5% *	
					70	3+4+6 N=10 REC=18"		
72.0	SILTY SAND, fine to medium grained, wet, greenish gray, contains cemented sand, with fine to coarse shell fragments, moderate HCl reaction, 70-90% shell frag/cemented sand.  BOTTOM OF BORING @ 75.0 FT.	SM	27.8					
73.9			25.9			75	50/5" N=50/5" REC=5"	w=18.8% *

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-723**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/1/06 **Finished:** 6/1/06  
**Location:** Northing: 215108 ft  
Easting: 963000.8 ft  
**Ground Surface Elevation:** 90.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/1	---	6.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FOREST LITTER, ROOTMAT AND TOPSOIL. POORLY GRADED SAND WITH SILT, fine to medium grained, moist, dark brown. Light brown, trace root fragments.	SP-SM	89.5			1+1+1 N=2 REC=16"		Change from hollow stem auger to mud rotary drilling
						3+4+6 N=10 REC=18"		
5.0	POORLY GRADED SAND, Wet, light brown.	SP	85.0	▽	5	2+3+5 N=8 REC=12"		
7.5	POORLY GRADED SAND WITH SILT, Reddish brown.  Light orange.  Moist, orangeish brown, Mottles of gray clay.	SP-SM	82.5			10+14+20 N=34 REC=18"		
					10	10+16+21 N=37 REC=18"		
					15	9+8+7 N=15 REC=18"		
18.5	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, mottled grayish orange.  Contains mica.  <i>continued on next page</i>	SP-SC	71.5			w.o.h.+1+2 N=3 REC=18"		
					20			
					25	2+2+2 N=4 REC=18"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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







**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-723**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM			60	3+3+6 N =9 REC =18"		
	With cemented sand, moderate HCl reaction.				65	50/3" N =50/3" REC =4"		Drilling penetration rate slower
	Greenish gray, strong HCl reaction, 15% med. - coarse shell fragments.				70	9+14+50/5" N =64/11" REC =17"		
	25% shell fragments.				75	4+5+10 N =15 REC =18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		15.0					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-724  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/2/06 **Finished:** 6/5/06  
**Location:** Northing: 214780 ft  
Easting: 963106.2 ft  
**Ground Surface Elevation:** 97.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/2	---	10.5'	---	---
<b>Start of day</b>	6/5	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.	SP-SM	96.5			woh+2+1 N=3 REC=18"		Change from hollow stem auger to mud rotary drilling
	POORLY GRADED SAND WITH SILT, fine to medium grained, dry, orangeish brown, contains organic matter.					3+4+4 N=8 REC=18"		
	Moist.							
	Med. - coarse sand.				5	3+6+7 N=13 REC=18"		
	Light orangeish brown.					5+6+6 N=12 REC=18"		
	Wet.				10	4+6+6 N=12 REC=16"		
	Moist, yellowish brown.				15	5+9+11 N=20 REC=16"		
	Wet, light orangeish brown, Fine - med. sand.	20	9+12+13 N=25 REC=14"					
22.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, mottled grayish orange.	SP-SC	75.0			7+5+4 N=9 REC=18"		

*continued on next page*

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-724**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS			
					DEPTH	DATA					
26.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, mottled orangeish gray.	SP-SC	71.0								
		SP-SM									
						30	2+6+6 N =12 REC =17"				
						35	2+2+2 N =4 REC =18"				
36.0	SILTY SAND, fine to medium grained, moist, gray, contains mica.	SM	61.0								
										40	3+4+4 N =8 REC =18"
										45	3+6+6 N =12 REC =18"
46.0	LEAN CLAY, moist, gray, with sand, contains mica.	CL	51.0								
										50	woh+3+4 N =7 REC =18"
						55	3+4+5 N =9 REC =18"				
<i>continued on next page</i>											

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-724**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CL				3+5+5 N=10 REC=18"		
						4+6+8 N=14 REC=18"		
66.0	SILTY SAND, fine to medium grained, moist, dark greenish gray, contains mica.	SM	31.0			4+5+5 N=10 REC=18"		
73.5	SANDY ORGANIC CLAY, moist, greenish gray	OL	23.5			REC=22"	w=31.9% LL=45 PL=24 PP=4.00 tsf *	
78.5	LEAN CLAY with cemented sand, weak HCl reaction, 3% med. coarse shell fragments.	CL	18.5			15+45+39 N=84 REC=18"		
	Light greenish gray, strong HCl reaction, 40% med. - coarse fragmented shell.					18+50/5" N=50/5" REC=11"		
	Greenish gray.					5+5+12 N=17 REC=18"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-724**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Weak HCl reaction, 5% med. - coarse shell.	CL				95	11+8+9 N =17 REC =18"	
100.0	BOTTOM OF BORING @ 100.0 FT.		-3.0			100	6+9+12 N =21 REC =18"	

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-725**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND

**Boring Foreman:** T. Connelly

**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit

**Drilling Equipment:** Diedrich D-50 (ATC)

**Schnabel Representative:** R. Vinzant

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

**Location:** Northing: 214664.3 ft  
Easting: 963219.4 ft

**Ground Surface Elevation:** 59.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/5	---	8.0'	---	---
<b>Start of day</b>	6/6	---	9.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.		58.5					
	SILT, moist, light brown, with sand, and organic matter.	ML				1+2+2 N=4 REC=13"		
2.0	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, yellowish brown.	SP-SM	57.0			2+3+2 N=5 REC=18"		
					5	3+3+3 N=6 REC=18"		
7.0	CLAYEY SAND, medium to coarse grained, wet, mottled grayish brown, contains gravel.	SC	52.0	▽		1+2+4 N=6 REC=18"		
10.0	SILTY SAND, fine to medium grained, wet, reddish brown.	SM	49.0		10	3+6+5 N=11 REC=13"		Change from hollow stem auger to mud rotary drilling Start of drilling for the day
13.0	LEAN CLAY, moist, gray, with sand, Fine - med. sand.	CL	46.0		15	2+4+4 N=8 REC=18"		
					20	3+4+6 N=10 REC=18"		
					25	3+4+6 N=10 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

- Comments:**
- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - \* = See Appendix I for additional lab testing data.
  - Ground water observation well OW-725 installed in nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-725**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Greenish gray.	CL						
					30	4+7+8 N =15 REC =18"		
					35	3+4+6 N =10 REC =18"		
38.0	SANDY SILT, fine to medium, moist, dark greenish gray.	ML	21.0		40	3+6+50/3" N =56/9" REC =19"		
42.0	SILTY SAND, fine to medium grained, moist, dark greenish gray, 25% med. - coarse shell fragments.	SM	17.0		45	5+9+14 N =23 REC =18"		
48.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, greenish gray, 25% medium to coarse shell fragments.	SP-SM	11.0		50	7+6+6 N =12 REC =18"		
					55	7+8+13 N =21 REC =18"		
57.0	SILTY SAND, fine to medium grained, moist, greenish gray, 5% medium to <i>continued on next page</i>	SM	2.0					

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-725 installed in nearby location.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-725**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	coarse shell fragments, weak HCl reaction.	SM				5+5+7 N =12 REC =18"		
						REC =18"	PP=2.50 tsf	
						3+6+5 N =11 REC =18"		
	strong HCl reaction.					8+14+11 N =25 REC =18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		-16.0					

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-725 installed in nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-726**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** 2-15/16" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 8/1/06 **Finished:** 8/1/06  
**Location:** Northing: 215564.67 ft  
Easting: 961709.57 ft  
**Ground Surface Elevation:** 78.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	8/1	---	4.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	FL, R AND TOPSOIL.	SM	78.0			1+2+2 N=4 REC=15"		0'- 4 1/4" HSA drilled to 4 feet
2.5	SILTY SAND, fine to coarse grained, moist, light brown and orangeish brown, some iron staining.	SP-SM	75.8			4+5+6 N=11 REC=18"		4'- Begin mud rotary with 3 7/8" tri-cone roller bit
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, light brown and orangeish brown, trace gravel.	SM	73.8		5	4+7+4 N=11 REC=18"		
7.0	SILTY SAND, fine to coarse grained, wet, light brownish orange and brown.	ML	71.3			1+2+1 N=3 REC=14"		
	SANDY SILT, fine to medium, wet, light orangeish brown and dark reddish brown, contains mica, gray lenses <1/16" throughout sample.				10	REC=0"		
13.0	SILTY SAND, fine to medium grained, wet, gray and light oliveish gray, contains mica.	SM	65.3			15	1+2+3 N=5 REC=15"	
17.0	SANDY ELASTIC SILT, moist, gray, contains mica.	MH	61.3			20	2+2+3 N=5 REC=15"	
22.0	FAT CLAY, moist, gray, trace sand, contains mica.	CH	56.3			25	REC=19"	w=35.7% LL=69 PL=22
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-726**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	LEAN CLAY with sand, moist, gray, contains mica.	CH	51.3				*	
		CL						
					30	3+4+5. N =9 REC =18"		
					35	4+6+8 N =14 REC =18"		
37.0	CLAYEY SAND, fine to medium grained, wet, dark gray, trace mica.  Weak cementation, some 1/4-1/2" pockets of lean clay.	SC	41.3					
					40	4+5+5 N =10 REC =18"		
					45	7+20+48 N =68 REC =18"		
47.0	POORLY GRADED SAND, fine to medium grained, wet, dark gray, trace clay, contains mica.  Gray and brownish white, 30-40% fine to medium shell fragments, strong HCl reaction.	SP	31.3					
					50	8+10+12 N =22 REC =14"		
					55	4+6+8 N =14 REC =14"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-726**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.0	POORLY GRADED GRAVEL, fine to medium grained, wet, gray, trace sand, trace clay, strong HCl reaction, strong cementation, gravel is actually cemented sand fragments.	GP	20.3			50/2" N =50/2" REC =2"		
62.0	SILTY SAND, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, strong HCl reaction.	SM	16.3			5+8+9 N =17 REC =16"		
67.0	CLAYEY SAND, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, strong HCl reaction.	SC	11.3			7+7+9 N =16 REC =18"		
72.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, gray and brownish white, 0-10% fine to coarse shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments.	SP-SC	6.3			6+7+11 N =18 REC =18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		3.3					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-727**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/11/06 **Finished:** 5/11/06  
**Location:** Northing: 215300.85 ft  
Easting: 961884.98 ft  
**Ground Surface Elevation:** 104.9 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/10	---	23.5'	---	---
<b>Start of Day</b>	5/11	---	36.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	ROOTMAT AND TOPSOIL.		104.3					
2.0	CLAYEY SAND, fine to medium grained, moist, orangeish brown and brown, trace wood and root fragments.	SC	102.9			1+2+5 N = 7 REC = 18"		
4.5	LEAN CLAY with sand, moist, orangeish brown and gray, trace root fragments.	CL	100.4			4+2+3 N = 5 REC = 18"		
7.0	SILTY SAND, fine to coarse grained, moist, orangeish brown and yellowish brown.	SM	97.9		5	1+5+6 N = 11 REC = 14"		
9.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish brown and orange.	SP-SM	95.4			5+7+7 N = 14 REC = 15"		
	SILTY SAND, fine to medium grained, moist, orangeish brown and reddish brown.	SM			10	5+6+6 N = 12 REC = 11"		
	fine to coarse grained, orangeish brown and yellowish brown.				15	3+6+9 N = 15 REC = 15"		
17.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown and yellowish brown.	SP-SM	87.9			6+9+12 N = 21 REC = 10"		
	wet.					6+8+12 N = 20 REC = 9"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-727**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY ELASTIC SILT, wet, orangeish brown and gray.  reddish brown. gray.	SP-SM	77.9					
		MH						
					30	2+2+2 N =4 REC =15"		
					35	2+2+5 N =7 REC =18"		
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, yellowish brown.	SP-SM	67.9					
					40	4+5+8 N =13 REC =12"		
42.0	FAT CLAY with sand, wet, gray.	CH	62.9					
					45	3+3+4 N =7 REC =20"		
					50	REC =22"	PP=2.50 tsf	
	moist.							
54.9	SILTY SAND, fine to medium grained, wet, gray.	SM	50.0					
					55	3+5+7 N =12 REC =18"		Resumed drilling on 5/11/06 at 7:30 am
57.0	FAT CLAY with sand, moist, gray.	CH	47.9					
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-727**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH				2+3+5 N =8 REC =19"		
						REC =20"	PP=>4.5 tsf	
67.0	SILTY SAND, fine to medium grained, moist, light gray and oliveish gray.	SM	37.9			28+27+50/5" N =77/11" REC =20"		
72.0	CLAYEY SAND, fine to medium grained, moist, light gray and white.	SC	32.9			50/5" N =50/5" REC =5"		
77.0	SILTY SAND, fine to medium grained, wet, gray and white, with fine to coarse shell fragments, HCl reaction strong.	SM	27.9			4+9+11 N =20 REC =14"		
82.0	CLAYEY SAND, fine to medium grained, wet, greenish gray and white, with fine to coarse shell fragments, HCl reaction strong.	SC	22.9			9+8+6 N =14 REC =16"		
87.0	SILTY SAND, fine to medium grained, wet, greenish gray and white, trace fine to coarse shell fragments, HCl reaction moderate.	SM	17.9			6+6+7 N =13 REC =20"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-727**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	contains fine to coarse shell fragments.	SM				95	6+8+9 N =17 REC =18"	
100.0	light gray and greenish gray, trace fine to medium shell fragments, HCl reaction weak. BOTTOM OF BORING @ 100.0 FT.		4.9			100	6+8+12 N =20 REC =20"	

TEST BORING LOG: 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-728**  
Contract Number: 06120048  
Sheet: 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Bender  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-550X (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 5/11/06 **Finished:** 5/12/06  
**Location:** Northing: 215163.63 ft  
Easting: 961910.05 ft  
**Ground Surface Elevation:** 112.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/11	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL.	CL	111.9			3+3+3 N=6 REC=18"		
2.0	SANDY LEAN CLAY, moist, brown and orangeish brown, trace root and wood fragments.	SC	110.3			3+6+5 N=11 REC=18"		
4.5	CLAYEY SAND, fine to medium grained, moist, reddish brown and orangeish brown, trace root fragments.	SM	107.8			4+3+4 N=7 REC=17"		
	SILTY SAND, fine to medium grained, moist, orangeish brown and reddish brown.				5	3+3+7 N=10 REC=11"		
	fine to coarse grained, orangeish brown and white.				10	3+4+5 N=9 REC=11"		
	fine to medium grained, wet, orangeish brown and yellowish brown.				15	5+5+5 N=10 REC=10"		
17.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, orangeish brown and yellowish brown.	SP-SM	95.3			5+6+10 N=16 REC=12"		
	fine to medium grained.				20	8+10+12 N=22 REC=9"		
					25			

*continued on next page*

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-728**  
Contract Number: 06120048  
Sheet: 2 of 3

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	orangeish brown and reddish brown.	SP-SM						
32.0	SILTY SAND, fine to medium grained, wet, orangeish brown and reddish gray, (color change at 39.9 feet).	SM	80.3		30	5+7+9 N =16 REC =9"		
37.0	SANDY LEAN CLAY, wet, gray and greenish gray.	CL	75.3		35	5+3+4 N =7 REC =14"		
42.0	SILTY SAND, fine to medium grained, wet, orangeish brown and gray.	SM	70.3		40	3+2+3 N =5 REC =18"		
47.0	FAT CLAY with sand, wet, orangeish brown and gray.  gray, trace sand.	CH	65.3		45	2+2+10 N =12 REC =16"		
					50	2+3+2 N =5 REC =19"		
					55	REC =23"	PP=2.50 tsf	
57.0	ELASTIC SILT, moist, greenish gray, trace sand.  <i>continued on next page</i>	MH	55.3					

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-728**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		MH			60	2+4+4 N=8 REC=18"		
					65	REC=23"	PP=>4.5 tsf	
67.0	FAT CLAY with sand, moist, light gray and greenish gray.	CH	45.3		70	5+7+5 N=12 REC=18"		
	gray and greenish gray, cemented 2/16ths inch silt lense.				75	8+10+16 N=26 REC=18"		Harder drilling
75.0	BOTTOM OF BORING @ 75.0 FT.		37.3					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-729**  
Contract Number: 06120048  
Sheet: 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/18/06 **Finished:** 5/19/06  
**Location:** Northing: 214861.87 ft  
Easting: 962454.6 ft  
**Ground Surface Elevation:** 117.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/18	---	Dry	---	---
<b>Start of day</b>	5/19	---	15.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil. CLAYEY SAND, fine to medium grained, moist, brown, contains root fragments. mottled brownish red.	SC	116.8			1+1+2 N=3 REC=16"		4-1/4 in. hollow stem auger advanced to 4 ft.
						4+7+7 N=14 REC=18"	w=16% *	4 ft.-switched to 3 7/8" tri-cone roller bit
					5	2+5+5 N=10 REC=14"		
7.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, reddish orange.	SP-SM	110.3			5+8+8 N=16 REC=13"	w=13.5% *	
9.5	POORLY GRADED SAND, fine to coarse grained, moist, yellowish orange, trace silt, with fine gravel.	SP	107.8		10	8+14+16 N=30 REC=13"		
12.0	SILTY SAND, fine to coarse grained, wet, orange, trace gravel.	SM	105.3			7+5+4 N=9 REC=16"		
14.7	SANDY FAT CLAY, fine to medium, moist, orange.	CH	102.6		15			
17.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish orange.	SP-SM	100.3			5+7+8 N=15 REC=12"	w=14.2% *	
					20	11+14+20 N=34 REC=12"		
					25			

continued on next page

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-729 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-729**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with gravel.	SP-SM			30	12+17+17 N =34 REC =14"	w=12.5% *	
32.0	POORLY GRADED SAND, fine to coarse grained, moist, yellowish orange, trace silt and gravel.	SP	85.3		35	4+14+15 N =29 REC =18"		
37.0	SILTY SAND, fine to coarse grained, moist, orange.	SM	80.3		40	2+2+6 N =8 REC =12"	w=18.4% *	
42.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, reddish orange, with silt.	SP-SM	75.3		45	16+21+24 N =45 REC =14"		
47.0	SANDY SILT, fine to medium, moist, grayish orange.	ML	70.3		50	WOH+1+1 N =2 REC =18"	w=28.2% *	
52.0	SILTY SAND, fine to medium grained, wet, orangeish brown and gray, slight layering, almost mottled.	SM	65.3		55	3+1+1 N =2 REC =14"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-729 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-729**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM				6+5+6 N=11 REC=6"	w=28.8% *	
62.0	ORGANIC CLAY, fine to medium, moist, gray, contains mica.	OH	55.3			1+3+4 N=7 REC=18"		
	with sand.					REC=24"	w=32.8% LL=56 PL=18 *	
72.0	LEAN CLAY with sand, moist, gray, contains mica.	CL	45.3			2+4+4 N=8 REC=18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		42.3					

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-729 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-730**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/17/06 **Finished:** 5/18/06  
**Location:** Northing: 214728.5 ft  
Easting: 962523.84 ft  
**Ground Surface Elevation:** 115.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/22	1:32	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	ROOTMAT AND TOPSOIL.	SM	114.9			1+2+3 N =5 REC =18"		0-4' hollow stem auger	
	SILTY SAND, fine to coarse grained, moist, brown, contains root fragments.								
2.5	POORLY GRADED SAND WITH SILT and gravel, fine to coarse grained, moist, brown and red.	SP-SM	112.9			5+7+5 N =12 REC =18"		4-75' 3 7/8" roller bit, mud rotary drilling Start of day 5/18/06	
5.0	POORLY GRADED SAND, fine to coarse grained, moist, reddish brown, trace silt and gravel.  yellowish orange, with gravel.	SP	110.4	5		3+5+6 N =11 REC =15"			
9.5	SILTY SAND, fine to medium grained, moist, orange, trace gravel.	SM	105.9	10		6+11+13 N =24 REC =12"			
						4+5+6 N =11 REC =15"			
13.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orange and red.  orange, with gravel.	SP-SM	102.4	15		6+7+7 N =14 REC =14"			
									10+13+13 N =26 REC =14"
	trace gravel.					20		9+15+17 N =32 REC =15"	
				25					

continued on next page

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-730**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED SAND, fine to coarse grained, moist, yellow, trace silt, with gravel.	SP-SM	88.4					
		SP						
					30	8+11+13 N =24 REC =14"		
					35	9+7+10 N =17 REC =13"		
37.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, reddish orange.  fine to coarse grained (small 1/16" lenses of clay).	SP-SM	78.4					
		SP-SM						
					40	9+13+9 N =22 REC =14"		
					45	5+11+18 N =29 REC =14"		
44.8	SILTY SAND, fine to medium grained, moist, reddish orange.	SM	70.6					
46.5	SANDY SILT, fine to medium, moist, orange.	ML	68.9					
		ML						
					50	1+2+2 N =4 REC =0"		
53.0	SILTY SAND, fine to medium grained, moist, orange.	SM	62.4					
					55	REC =0"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-730**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
62.0	FAT CLAY, moist, dark gray, with sand.	CH	53.4		60	10+9+8 N =17 REC =12"		
					65	1+2+4 N =6 REC =18"		
	trace sand.				70	REC =24"	PP=2.50 tsf	
71.0	LEAN CLAY, moist, dark gray, with sand.	CL	44.4					
75.0	BOTTOM OF BORING @ 75.0 FT.		40.4		75	3+4+6 N =10 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-731**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/31/06 **Finished:** 5/31/06  
**Location:** Northing: 214546.48 ft  
Easting: 962547.88 ft  
**Ground Surface Elevation:** 115.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/31	---	14.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	FL, R AND TOPSOIL.	ML	115.2			1+3+3 N =6 REC =9"		Change from hollow stem auger to mud rotary drilling	
2.5	SANDY SILT, moist, dark oliveish brown, with organic matter, and root fragments, Fine - med. sand.		SM	113.2			5+9+13 N =22 REC =18"		
	SILTY SAND, fine to medium grained, moist, light orangeish brown.					2+4+11 N =15 REC =18"			
	Reddish brown.					5+7+9 N =16 REC =18"			
10.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, mottled grayish orange.	SP-SM		105.2			7+7+7 N =14 REC =18"		
	Wet, light orangeish brown.				▽	8+9+9 N =18 REC =15"			
	Moist.					10+12+16 N =28 REC =18"			
	Wet, Med. - coarse sand.					4+8+11 N =19 REC =14"			
	<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-731**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Moist.	SP-SM			30	9+12+15 N =27 REC =18"		
	Wet, light yellowish brown.				35	20+20+20 N =40 REC =18"		
	Light orangeish brown.				40	17+23+26 N =49 REC =18"		
43.5	SILTY SAND, fine to medium grained, moist, dark gray, contains mica.	SM	72.2		45	3+5+5 N =10 REC =18"		
	Oliveish gray.				50	3+4+4 N =8 REC =18"		
					55	1+3+4 N =7 REC =18"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-731**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	SILTY SAND, fine to medium grained, moist, oliveish gray, contains mica.	SM				REC =24"	PP=1.50 tsf	
63.5	CLAYEY SAND, fine to medium grained, moist, mottled grayish orange.	SC	52.2			3+2+10 N =12 REC =18"		
68.5	LEAN CLAY, greenish gray, moist, with fine to medium grained sand, contains mica.	CL	47.2			3+3+5 N =8 REC =18"		
						3+5+6 N =11 REC =18"		
						3+5+7 N =12 REC =18"		
83.5	SILTY SAND, fine to medium grained, moist, oliveish gray, contains mica.	SM	32.2			5+6+8 N =14 REC =18"		
	Contains cemented sand.					23+25+50/5" N =75/11" REC =17"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-731**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
					95	11+17+14 N=31 REC=18"		
99.3	Shell fragments, weak HCl reaction, 5% shell. BOTTOM OF BORING @ 99.3 FT.		16.4			4+50/5" N=50/5" REC=11"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** B-732  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/8/06 **Finished:** 6/9/06  
**Location:** Northing: 215034.1 ft  
Easting: 961594.7 ft  
**Ground Surface Elevation:** 90.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/8	---	6.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.	SP-SM	90.2		1+1+2	N=3 REC=15"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown, with silt, trace organic matter, and root fragments. Light brown, no organic.				5+6+7	N=13 REC=18"		
	Wet, reddish brown, no root fragments.				2+3+3	N=6 REC=18"		
	Orangeish brown, med. - coarse sand.	SP-SC	81.7		3+5+6	N=11 REC=18"	w=23.1% LL=26 PL=19 PP=1.50 tsf *	Change from hollow stem auger to mud rotary drilling
9.0	POORLY GRADED SAND WITH CLAY, medium to coarse grained, wet, orangeish brown.				4+6+6	N=12 REC=13"		
12.0	CLAYEY SAND, fine to medium grained, moist, mottled grayish orange.	SC	78.7	15	3+3+4	N=7 REC=16" REC=24"		
20.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, orange.	SP-SC	70.7	20	1+2+2	N=4 REC=18"		
	<i>continued on next page</i>			25	1+2+5	N=7 REC=18"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-732**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
25.0	LEAN CLAY, moist, gray, with sand, contains mica.	CL	65.7					
					30	2+3+3 N =6 REC =18"		
					35	2+3+4 N =7 REC =18"		
					40	2+4+4 N =8 REC =18"		
					45	4+5+7 N =12 REC =18"		
50.0	SILTY SAND, fine to medium grained, moist, dark gray.	SM	40.7		50	4+6+6 N =12 REC =18"		
					55	50/4" N =50/4" REC =4"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

*continued on next page*

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-732**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Gray, moderate HCl reaction, 15% med. - coarse shell fragments.	SM				25+50/5" N =50/5" REC =11"		
	Light gray, strong HCl reaction, 25% med. - coarse shell fragments.					14+12+15 N =27 REC =18"		
	Greenish gray, trace cemented sand, moderate HCl reaction, 5% med. - coarse sand.					35+13+10 N =23 REC =18"		
71.0	LEAN CLAY, dark greenish gray, moderate HCl reaction, 15% med. - coarse shell fragments.	CL	19.7					
75.0	BOTTOM OF BORING @ 75.0 FT.		15.7			6+7+7 N =14 REC =18"		Drilling penetration rate slower

TEST BORING LOG: 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-733**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/7/06 **Finished:**  
**Location:** Northing: 214866.8 ft  
Easting: 961697.7 ft  
**Ground Surface Elevation:** 87.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/7	---	7.5'	---	---
<b>Start of day</b>	6/8	---	13.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.		87.4					
	SANDY SILT, fine to medium, moist, light yellowish brown, trace root fragments, and organic matter.	ML				2+1+2 N=3 REC=16"		
4.5	CLAYEY SAND, fine to medium grained, moist, mottled grayish orange.	SC	83.4		5	6+9+20 N=29 REC=18"		
7.0	POORLY GRADED SAND WITH SILT, medium to coarse grained, wet, reddish brown.	SP-SM	80.9	▽		6+9+20 N=29 REC=12"		
8.5	SANDY SILT, fine to medium, moist, light orangeish brown, contains gravel.	ML	79.4					
9.0	CLAYEY SAND, fine to medium grained, moist, mottled grayish orange.	SC	78.9		10	2+3+3 N=6 REC=18"		
	Mottled orangeish gray.				15	2+2+3 N=5 REC=18"		
18.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, mottled grayish orange, with clay.	SP-SC	69.9		20	2+1+2 N=3 REC=18"		
22.0	FAT CLAY, moist, oliveish gray, contains mica, and sand, fine to med. grained.	CH	65.9		25	REC=24"	w=33.2% LL=51 PL=15	Change from hollow stem auger drilling to mud rotary
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-733**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH					PP=2.00 tsf *	
					30	2+2+3 N =5 REC =18"		
					35	2+3+4 N =7 REC =18"		
					40	2+4+4 N =8 REC =18"		
42.0	SILTY SAND, fine to medium grained, moist, dark gray.	SM	45.9					
	Trace cemented sand, weak HCl reaction.				45	5+6+8 N =14 REC =18"		
					50	15+35+50/3" N =85/9" REC =16"		
	Light gray, strong HCl reaction, 35-45% med. - coarse shell fragments.				55	24+22+28 N =50 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-733**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Contains cemented sand, strong HCl reaction, 35-45% med. - coarse shell fragments.	SM				50 REC =6"		Drilling penetration rate slower
	And cemented sand, weak HCl reaction, <5% med. - coarse shell fragments.					50/4" N =50/4" REC =4"		
	Light greenish gray, strong HCl reaction, <5% med. - coarse shell fragments.					15+23+11 N =34 REC =18"		
	Weak HCl reaction, 10-20% med. - coarse shell fragments.					5+6+8 N =14		
	Moderate HCl reaction, 10-20% med. - coarse shell fragments.					20+9+8 N =17 REC =18"		Harder drilling
	Dark greenish gray, no shell fragments.					7+6+6 N =12 REC =18"		
	strong HCl reaction, 10-20% med. - coarse shell fragments.					REC =24"	PP=4.00 tsf	
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-733**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, light gray, with clay, strong HCl reaction, 35-45% med. - coarse shell fragments.	SM	-4.1					
		SP-SC						
96.0	SILTY SAND, fine to medium grained, moist, light greenish gray, strong HCl reaction, 20-30% med. - coarse shell fragments.	SM	-8.1					
100.0	BOTTOM OF BORING @ 100.0 FT.		-12.1					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-734**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/6/06 **Finished:** 6/7/06  
**Location:** Northing: 214589.6 ft  
Easting: 961812.5 ft  
**Ground Surface Elevation:** 105.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/6	---	8.0'	---	---
<b>Start of day</b>	6/7	---	15.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	FL, R AND TOPSOIL.	SM	105.2			1+1+1 N=2 REC=14"			
2.0	SILTY SAND, fine to medium grained, moist, light brown, contains organic matter, and root fragments.		SP-SM	103.7			5+5+5 N=10 REC=18"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light brown.						2+3+4 N=7 REC=18"		
	Light orangeish brown.						2+2+2 N=4 REC=18"		
	Wet, light reddish brown.				▽		2+3+4 N=7 REC=13"		
							2+4+6 N=10 REC=13"		Change from hollow stem auger to mud rotary drilling
							4+4+5 N=9 REC=12"		
							3+4+16 N=20 REC=11"		
	Med. - coarse sand.								
	Moist, dark reddish brown. <i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-734**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Wet, light orangeish brown.	SP-SM						
32.0	SANDY LEAN CLAY, fine to medium, moist, mottled grayish orange.	CL	73.7		30	7+10+7 N=17 REC=14"		
					35	4+3+2 N=5 REC=18"		
39.5	SILTY SAND, fine to medium grained, moist, gray, contains mica.	SM	66.2		40	2+1+3 N=4 REC=12"		
					45	3+4+4 N=8 REC=18"		
46.0	LEAN CLAY, moist, dark gray, contains mica.	CL	59.7		50	REC=24"	PP=3.00 tsf	Start of drilling for the day
					55	2+4+4 N=8 REC=18"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-734**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Dark greenish gray.	CL			60	3+5+5 N=10 REC=18"		
					65	3+5+6 N=11 REC=18"		
	Dark gray, with sand, Fine - med. sand.				70	5+7+9 N=16 REC=18"		
72.0	SILTY SAND, fine to medium grained, moist, light greenish gray, contains cemented sand, strong HCl reaction, 40% med. - coarse shell fragments.	SM	33.7					
75.0	BOTTOM OF BORING @ 75.0 FT.		30.7		75	25+15+30 N=45 REC=18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-735**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/28/06 **Finished:** 6/28/06  
**Location:** Northing: 214805.48 ft  
Easting: 961021.83 ft  
**Ground Surface Elevation:** 91.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/28	---	Dry	---	---
<b>Water Reading</b>	7/27	---	52.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.	SP-SM	90.7			1+1+3 N=4 REC=18"	w=7.6% *	
	POORLY GRADED SAND WITH SILT, medium to coarse grained, contains organic matter, moist, orangeish brown.  Fine - med. sand.					2+2+2 N=4 REC=18"		
	Yellowish orange, Med. - coarse sand, no organic matter.				5	2+4+7 N=11 REC=18"		
7.0	SILTY SAND, fine to medium grained, moist, yellowish brown, contains organic matter.	SM	84.2			3+5+4 N=9 REC=18"	w=13.5% *	
	No organic matter.				10	3+4+5 N=9 REC=18"		
	Mottled grayish orange, trace mica.				15	3+5+5 N=10 REC=18"		
					20	2+2+1 N=3 REC=18"		
	Mottled grayish orange.				25	3+4+2 N=6 REC=18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

*continued on next page*

**Comments:**

1. Ground water observation well OW-735 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.

Change from hollow stem auger to mud rotary drilling





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-735**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	FAT CLAY, moist, gray, with sand, contains mica, Fine - med. sand.	CH	64.2			REC =24"	w=32.3% LL=51 PL=16 PP=3.00 tsf *	
	Dark greenish gray.					3+3+4 N =7 REC =18"		
						4+3+5 N =8 REC =18"		
						4+7+8 N =15 REC =18"	w=39.6% LL=85 PL=30 *	
47.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, oliveish gray, contains mica.	SP-SM	44.2			4+5+7 N =12 REC =18"		
	Wet, mottled reddish orange.					22+50 N =50 REC =12"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-735 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-735**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Gray.	SP-SM			60	32+31+19 N =50 REC =18"	w=20.9% *	
63.0	SILTY SAND, medium to coarse grained, moist, light gray, 40% medium to coarse shell fragments, strong HCl reaction.	SM	28.2		65	10+12+11 N =23 REC =18"		
	greenish gray, fine - med. grained.				70	15+10+10 N =20 REC =18"		
75.0	Moderate HCl reaction, 15% med. - coarse shell fragments.				75	5+6+10 N =16 REC =18"	w=24.5% *	
	BOTTOM OF BORING @ 75.0 FT.		16.2					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

1. Ground water observation well OW-735 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-736**  
Contract Number: 06120048  
Sheet: 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** 3-7/8" O.D. Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** Diedrich D-50 Turbo (Track)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 7/18/06 **Finished:** 7/19/06  
**Location:** Northing: 214681.67 ft  
Easting: 961154.26 ft  
**Ground Surface Elevation:** 98.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/18	---	23.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Forest litter, rootmat and topsoil.	SC	97.9			1+2+2 N=4 REC=18"		*AWJ rods used. *4-1/4" I.D. Hollow Stem Augers used from 0 to 23.5 ft.
1.0	CLAYEY SAND, fine to medium grained, moist, brown, contains root fragments.	SM	97.3			2+1+2 N=3 REC=18"		
	SILTY SAND, fine to medium grained, moist, brown, contains root fragments. fine to coarse grained.					4+3+2 N=5 REC=14"		
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, stratified light orangeish brown and light brown, with silt, trace fine gravel	SP-SM	93.8		5	3+4+6 N=10 REC=16"		
	light brown and orangeish brown, dark orangeish/reddish brown weakly to moderately cemented sand layer at 8.5 ft.					6+10+14 N=24 REC=16"		
9.5	POORLY GRADED SAND, fine to coarse grained, moist, stratified light brown and light orangeish brown.	SP	88.8		10	4+8+10 N=18 REC=14"		
	stratified yellowish brown, orangeish brown, and light brown.					2+4+4 N=8 REC=18"		
17.0	SILTY SAND, fine to medium grained, moist, orangeish brown.	SM	81.3		20			
22.0	CLAYEY SAND, fine to medium grained, wet, yellowish gray and light gray.	SC	76.3		25			
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-736**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, wet, yellowish brown and light gray.	SM	71.3		30	3+2+2 N =4 REC =18"		ft.
34.0	dark yellowish brown and orangeish brown. SANDY LEAN CLAY, fine to medium, moist, gray, trace mica.	CL	64.3		35	3+1+3 N =4 REC =18"		
37.0	FAT CLAY, moist, gray, trace fine to medium sand and mica.	CH	61.3		40	2+3+4 N =7 REC =18"		
42.0	ELASTIC SILT, moist, gray, trace fine to medium sand, mica, and organic matter (±1%).  gray and dark gray.	MH	56.3		45	2+4+5 N =9 REC =18"		
					50	3+5+5 N =10 REC =18"		
					55	5+7+9 N =16 REC =18"		
57.0	fine to medium sandy, gray and light greenish gray below 54.5 ft. contains clayey sand and silty sand layers below 54.9 ft. CLAYEY SAND, fine to medium grained, moist, gray, trace mica, <i>continued on next page</i>	SC	41.3					

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-736**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
61.0	contains indurated clayey sand pockets.  dark gray below 59.5 ft.	SC			60	4+3+20 N =23 REC =18"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray, very weak HCl reaction.	SP-SM	37.3		65	13+26+33 N =59 REC =15"		
69.5	SILTY SAND, fine to medium grained, wet, gray, mostly fine to medium shell fragments (±50%), strong HCl reaction.	SM	28.8		70	4+3+9 N =12 REC =18"		
72.0	CLAYEY SAND, fine to medium grained, moist, gray and light greenish gray, trace fine to coarse shell fragments (±5%), weak HCl reaction.	SC	26.3					
74.5	SILTY SAND, fine to medium grained, moist, gray and oliveish gray, mostly strongly cemented sand (±70%), some fine to coarse shell fragments (±30%), strong HCl reaction.	SM	23.8		75	4+4+12 N =16 REC =18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		23.3					*Moderate to difficult rotary advancement from 73 to 73.3 ft (strong rig chatter).

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-737**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** 3-7/8" O.D. Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** Diedrich D-50 Turbo (Track)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 7/19/06 **Finished:** 7/20/06  
**Location:** Northing: 214511.91 ft  
Easting: 961147.4 ft  
**Ground Surface Elevation:** 63.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/19	---	7.5'	---	---
<b>Start of day</b>	7/20	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Forest litter, rootmat and topsoil.	SM	63.2			1+1/12" N = 1/12" REC = 17"		*AWJ rods used.
	SILTY SAND, fine to medium grained, moist, brown, contains root fragments.							
	fine to coarse grained, moist, brown.					3+3+3 N = 6 REC = 18"		
4.5	CLAYEY SAND, fine to coarse grained, moist, brown, trace fine gravel.	SC	59.0	5		2+1+3 N = 4 REC = 18"		
	wet, light grayish brown, orangeish brown, and yellowish brown.							
9.5	FAT CLAY, moist, light gray and orangeish brown, trace fine to medium sand.	CH	54.0	10		5+4+6 N = 10 REC = 18"	w=37.6% PP=1.50 tsf *	*4-1/4" I.D. hollow stem augers used from 0 to 13.5 ft. *Switched to 3-7/8" O.D. Tri-cone roller bit below 13.5 ft.
	light brown, grayish brown, and orangeish brown.							
14.5	SANDY LEAN CLAY, fine to medium, moist, gray, trace mica.	CL	49.0	15		3+4+5 N = 9 REC = 18"		
	FAT CLAY, moist, gray, trace fine to medium sand and mica.							
17.0		CH	46.5	20		3+4+6 N = 10 REC = 18"		
22.0	CLAYEY SAND, fine to medium grained, moist, gray, trace mica.	SC	41.5	25		3+4+9 N = 13 REC = 18"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*continued on next page*

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-737**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray, with silt.	SP-SM	36.5		30	6+15+18 N =33 REC =18"		*Moderate to difficult rotary advancement from 36 to 38.5 ft (slight rig chatter).
34.0	SILTY SAND, fine to medium grained, wet, gray, some fine to medium shell fragments (±30%), strong HCl reaction.	SM	29.5		35	1+6+9 N =15 REC =17"		
36.0	CLAYEY SAND, fine to medium grained, wet, oliveish gray, gray and light greenish gray, little fine to coarse shell fragments.	SC	27.5		40	5+19+19 N =38 REC =18"		
42.0	SILTY SAND, fine to medium grained, wet, gray, little fine to coarse shell fragments (±25%), strong HCl reaction.	SM	21.5		45	10+8+9 N =17 REC =18"		
	few fine to coarse shell fragments (±10%), weak HCl reaction.				50	4+5+9 N =14 REC =18"		
	trace fine to medium shell fragments (±5%).				55	4+6+8 N =14 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-737**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	trace fine to medium shell fragments (±1%), very weak HCl reaction.	SM				4+4+7 N =11 REC =18"		
62.0	CLAYEY SAND, fine to medium grained, moist, gray, little fine to coarse shell fragments (±20%), strong HCl reaction.	SC	1.5			6+6+30 N =36 REC =18"		*Moderate to difficult rotary advancement from 64.7 to 65.5 ft (moderate to strong rig chatter). *Difficult to very difficult rotary advancement from 65.5 to 66 ft (strong rig chatter). *Moderate to difficult rotary advancement from 67.5 to 68 ft (moderate rig chatter). *Intermittent moderate to difficult rotary advancement from 71.5 to 73.5 ft.
64.7	SILTY SAND, fine to medium grained, wet, gray, mostly fine to medium shell fragments (±50%), contains black particles (1/16 inch), strong HCl reaction.	SM	-1.2			10+13+17 N =30 REC =18"		
	some fine to coarse shell fragments (±40%). trace fine to medium shell fragments (±5%) below 69 ft.					13+20+27 N =47 REC =18"		
	oliveish gray and light greenish gray, contains moderately cemented sand pockets.					7+11+14 N =25 REC =18"		
77.0	CLAYEY SAND, fine to medium grained, wet, gray, little fine to coarse shell fragments (±20%), contains sandy silt lenses, strong HCl reaction.	SC	-13.5			14+17+24 N =41 REC =24"		
82.0	SILTY SAND, fine to medium grained, wet, gray and greenish gray, with silt, trace fine to coarse shell fragments (±5%), moderate HCl reaction, contains clayey sand pockets.	SM	-18.5			5+9+15 N =24 REC =18"		
87.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, trace fine to medium shell fragments (±1%), very weak HCl reaction.	SC	-23.5					

continued on next page

TEST BORING LOG 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-737**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SANDY SILT, fine to medium, moist, greenish gray, trace fine to medium shell fragments ( $\pm 1\%$ ), and mica, very weak HCl reaction.  trace fine to coarse shell fragments ( $\pm < 5\%$ ), contains black particles (1/16 inch), weak HCl reaction. BOTTOM OF BORING @ 100.0 FT.	SC	-28.5					
		ML						
						95	6+8+11 N = 19 REC = 18"	
100.0						100	7+12+13 N = 25 REC = 18"	

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-738**  
Contract Number: 06120048  
Sheet: 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 6/13/06 **Finished:** 6/13/06  
**Location:** Northing: 213826.3 ft  
Easting: 961679.62 ft  
**Ground Surface Elevation:** 87.3 (feet)

**Groundwater Observations**

Encountered	Date	Time	Depth	Casing	Caved
	6/13	---	10.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	Forest litter, rootmat and topsoil.	ML	87.1			1+2+2 N=4 REC=12"		0-9'- Drilled with 4 1/4" HSA  9'- Switched to mud rotary with 3 7/8" tri-cone roller bit
2.0	SANDY SILT, fine to medium, moist, yellowish brown, contains wood fragments.	SP-SM	85.3			6+7+8 N=15 REC=18"		
4.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown and yellowish brown.	SM	83.3			8+13+14 N=27 REC=18"	w=9% *	
6.0	SILTY SAND, fine to coarse grained, moist, orangeish brown and yellowish brown.	SP	81.3			6+8+11 N=19 REC=14"		
	POORLY GRADED SAND, fine to coarse grained, moist, grayish white and yellowish brown, trace gravel, 1 1/2" rounded piece of gravel in spoon shoe.					7+8+9 N=17 REC=14"	w=12.3% *	
12.0	wet, yellowish brown and orangeish brown, trace silt.	SM	75.3			5+6+6 N=12 REC=13"		
16.0	SILTY SAND, fine to medium grained, wet, dark orangeish brown and mottled yellowish brown, contains mica.	CH	71.3			2+2+2 N=4 REC=18"	w=24.2% *	
20.0	SANDY FAT CLAY, fine to medium, wet, orangeish brown and gray, strong layering, gray lenses 1/16" thick.	MH	67.3			1+2+2 N=4 REC=18"		
	SANDY ELASTIC SILT, fine to medium, wet, light orangeish brown and gray, layered, gray lenses <1/8" thick.							
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-738**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
30.0	CLAYEY SILTY SAND, fine to medium grained, wet, gray, contains mica.	SC-SM	57.3		30	2+2+4 N =6 REC =18"	w=28.4% *	
38.0	SANDY LEAN CLAY, fine to medium, moist, gray, contains mica.	CL	49.3		35	4+4+5 N =9 REC =18" REC =24" REC =24"	w=26.4% LL=26 PL=22 *	
46.0	FAT CLAY with sand, moist, gray, contains mica.	CH	41.3		40	4+5+5 N =10 REC =18"		
	with sand, moist, gray and light gray.				45	3+4+7 N =11 REC =18"		
52.0	LEAN CLAY with sand, moist, light gray and blackish gray, contains mica, blackish gray pockets <1" consist of sandy clay.	CL	35.3		50	5+6+7 N =13 REC =18"	w=32.1% *	
56.0	CLAYEY SAND, fine to medium grained, moist, gray, contains mica, weak HCl reaction, <5% fine shell fragments.	SC	31.3		55	4+7+8 N =15 REC =18"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-738**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC						
62.0	POORLY GRADED SAND, fine to coarse grained, wet, gray and brownish white, 60-70% fine to coarse shell fragments, trace silt, strong HCl reaction.	SP	25.3		60	7+11+18 N =29 REC =18"	w=28.7% *	62'- Harder drilling
					65	29+31+20 N =51 REC =16"		
67.0	SANDY LEAN CLAY, fine to medium, moist, gray, contains mica, weak HCl reaction, <5% shell fragments, HCl reaction limited to shell fragments.	CL	20.3		70	4+4+5 N =9 REC =18"	w=30.9% *	71-73.5'- Rig chatter
71.0	CLAYEY SAND, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, trace silt, moderate HCl reaction.	SC	16.3					
75.0	BOTTOM OF BORING @ 75.0 FT.		12.3		75	25+22+11 N =33 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-739**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 6/13/06 **Finished:** 6/15/06  
**Location:** Northing: 23719.6 ft  
Easting: 961793.32 ft  
**Ground Surface Elevation:** 100.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/13	---	23.5'	---	---
<b>Start of day</b>	6/14	---	16.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Forest litter, rootmat, and topsoil.	SM	100.0			2+1+3 N=4 REC=12"		0-9'- Drilled with 4 1/4" HSA 85'- Hard drilling with rig chatter  9'- Switched to mud rotary using 3 7/8" tri-cone roller bit
2.0	SILTY SAND, fine to medium grained, moist, light brown, contains root fragments.	SP-SM	98.4			11+12+10 N=22 REC=18"		
6.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light brown and orangeish brown.	SP	94.4		5	7+5+5 N=10 REC=18"		
	Moist, orangeish brown and yellowish brown.					4+4+6 N=10 REC=18"		
	POORLY GRADED SAND, fine to coarse grained, moist, orangeish brown and yellowish brown.				10	5+6+6 N=12 REC=18"		
	Orangeish brown and yellowish white, stratified into 1/2" to 1" lenses of alternating color.				15	4+5+6 N=11 REC=14"		
	Yellowish brown and gray, stratified into 1/2" to 1" lenses of alternating color.					8+10+9 N=19 REC=15"		
17.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown and yellowish gray, slight stratification, trace medium grained rounded gravel.	SP-SM	83.4					
22.0	SILTY SAND, fine to coarse grained, wet, orangeish brown and dark brown.	SM	78.4			10+15+16 N=31 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-739**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY SILT, fine to medium, wet, mottled orangeish brown and light gray.	SM	73.4					
		ML			30	3+2+3 N =5 REC =18"		
					35	2+2+2 N =4 REC =18"		
37.0	CLAYEY SAND, fine to medium grained, wet, mottled orangeish brown and gray.	SC	63.4					
					40	2+1+3 N =4 REC =18"		
42.0	SILTY SAND, fine to medium grained, wet, dark gray.  Contains mica.	SM	58.4					
					45	3+3+5 N =8 REC =17"		
50.5	CLAYEY SAND, fine to medium grained, wet, dark gray, trace mica.	SC	49.9					
					50	4+6+8 N =14 REC =15"		
53.0	FAT CLAY with sand, moist, light gray and dark gray, contains mica.	CH	47.4					
					55	2+4+4 N =8 REC =18"		
<i>continued on next page</i>								

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-739**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH						
62.0	SANDY LEAN CLAY, fine to medium, moist, dark gray, contains mica.  With sand.	CL	38.4		60	3+5+6 N =11 REC =18"		
					65	5+5+7 N =12 REC =18"		
					70	5+9+9 N =18 REC =18"		
72.0	CLAYEY SAND, fine to medium grained, moist, dark gray and brownish white, 10-20% fine to coarse shell fragments, contains mica, strong HCl reaction.	SC	28.4		75	14+31+50/4" N =81/10" REC =16"		
79.5	Wet, gray and brownish white, 70-80% fine to medium shell fragments, contains mica, strong HCl reaction. LEAN CLAY with sand, moist, gray, 0-10% fine to medium shell fragments, contains mica, weak HCl reaction.	CL	20.9		80	9+8+9 N =17		
84.0	fine to medium sandy, gray and brownish white, 10-20% fine to coarse shell fragments. POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, gray, 10-20% fine to coarse shell fragments, strong HCl reaction, strong cementation.	SP-SC	16.4		85	REC =5" 50/2" N =50/2" REC =2"		85'- Hard drilling with rig chatter
87.0	SILTY SAND, fine to coarse grained, wet, light gray and brownish white, 60-70% fine to medium shell fragments, strong HCl reaction, weak cementation.	SM	13.4		90	7+12+50/5" N =62/11" REC =18"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-739**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
91.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light gray and white, 60-70% fine to medium shell fragments, strong HCl reaction, moderate cementation. Wet, gray and brownish white, 30-40% fine to coarse shell fragments, HCl reaction limited to shell fragments.	SP-SM	9.3					
					95	11+10+10 N =20 REC =18"		
96.8	And, 20-30% fine to coarse shell fragments, HCl reaction limited to shell fragments.	SC	3.6			REC =10"		
	CLAYEY SAND, fine to medium grained, wet, gray and brownish white, 30-40% fine to medium shell fragments, strong HCl reaction.							
99.6		SP-SM	0.8			8+9+50/4" N =59/10" REC =15"		
99.8	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and brownish white, 30-40% fine to coarse shell fragments, HCl reaction limited to shell fragments. BOTTOM OF BORING @ 99.8 FT.		0.5					

TEST BORING LOG: 06120048 PLOG SPT 700.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.







**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-740**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	FAT CLAY, moist, gray, with fine sand, trace mica.	CH	47.3			3+4+5 N =9 REC =18"		**Resumed drilling at 7:00 AM on 7/21/06.
	gray and dark gray, trace fine to medium sand and organic matter (±1%).					4+5+7 N =12 REC =18"		
	with fine to medium sand, contains clayey sand lenses.					5+7+10 N =17 REC =18"		
42.0	ELASTIC SILT, moist, gray, trace fine to medium sand, mica, and organic matter (±1%).	MH	32.3			6+10+12 N =22 REC =18"		
47.0	CLAYEY SAND, fine to medium grained, moist, dark gray and dark brownish gray.	SC	27.3					
49.0	SILTY SAND, fine to medium grained, moist, dark gray, trace fine to medium shell fragments (±5%), contains weak to moderately cemented sand layers, strong HCl reaction.	SM	25.3			30+50/4" N =50/4" REC =10"		*Moderate to difficult rotary advancement from 49 to 50.5 ft (strong rig chatter).
52.0	SANDY LEAN CLAY, fine to medium, moist, gray, trace fine to medium shell fragments (±5%), moderate HCl reaction.	CL	22.3			4+5+6 N =11 REC =18"		*Moderate difficulty in rotary advancement
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-740**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	contains clayey sand pockets, moderate HCl reaction. oliveish gray below 59.8 ft.	CL	12.3		60	11+6+13 N =19 REC =18"		from 56.5 to 58 ft (slight rig chatter). *Intermittent moderate difficulty in rotary advancement from 58.5 to 63.5 ft (slight to moderate rig chatter). *Moderate to difficult rotary advancement from 63.5 to 64 ft (strong rig chatter). *Intermittent moderate difficulty in rotary advancement from 68.5 to 73.5 ft (slight to moderate rig chatter).
	CLAYEY SAND, fine to medium grained, oliveish gray and dark gray, mostly fine to medium shell fragments (±50%), strong HCl reaction.	SC			65	50/3" N =50/3" REC =2"		
67.0	SILTY SAND, fine to medium grained, wet, gray, few fine to coarse shell fragments (±10%), moderate HCl reaction.	SM	7.3		70	5+6+8 N =14 REC =18"		
75.0	trace fine to medium shell fragments (±5%), weak HCl reaction. BOTTOM OF BORING @ 75.0 FT.		-0.7		75	24+11+12 N =23 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-741**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	ELASTIC SILT, moist, gray.	ML	54.4					
		MH			30	1+2+3 N =5 REC =18"		
32.0	FAT CLAY, moist, gray.  with sand, contains cemented sand, small pods of sand and cemented sand.	CH	49.4					
					35	3+4+6 N =10 REC =18"		
					40	4+5+6 N =11 REC =18"		
					45	5+6+7 N =13 REC =18"		
47.0	SILTY SAND, fine to medium grained, moist, dark greenish gray, contains cemented sand.	SM	34.4					
					50	4+6+14 N =20 REC =18"		
52.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, dark green, with fine to coarse shell fragments, strong HCl reaction, 70-90% shell frag.	SP-SM	29.4	▽				
					55	16+19+21 N =40 REC =16"		
57.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell <i>continued on next page</i>	SM	24.4					

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-741**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fragments, moderate HCl reaction, 20-30% shell frag.	SM			60	4+5+7 N =12 REC =18"		
					65	13+21+15 N =36 REC =18"		64' grinding
67.0	SANDY SILT, fine to medium, moist, green, with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.	ML	14.4		70	6+50/3" N =50/3" REC =10"		71' grinding
72.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SM	9.4		75	5+6+9 N =15 REC =18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		6.4					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-742**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 4-1/4" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 7/11/06 **Finished:** 7/11/06  
**Location:** Northing: 213472.84 ft  
Easting: 961217.19 ft  
**Ground Surface Elevation:** 102.4 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	7/11	---	23.5'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.	ML	101.9			WOH+2+2 N=4 REC=14"		
2.0	SILT, moist, orangeish brown, with sand, contains root fragments.		100.4			3+2+3 N=5 REC=15"		
4.0	POORLY GRADED SAND, with gravel, fine to coarse grained, moist, orange.	SP	98.4	5		3+3+5 N=8 REC=12"		
7.0	POORLY GRADED SAND WITH CLAY and gravel, fine to coarse grained, moist, dark orange.	SP-SC	95.4			3+8+10 N=18 REC=14"		
				10		4+5+8 N=13 REC=14"		
13.0	POORLY GRADED SAND, fine to coarse grained, moist, orange.	SP	89.4			5+7+10 N=17 REC=14"		
	trace clay.			15		5+16+19 N=35 REC=14"		
	wet.					7+16+21 N=37 REC=10"		
				25				

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*continued on next page*

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-742**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, wet, orange.  moist, mottled grayish orange.	SP	75.4					
		SM						
					30	2+3+2 N =5 REC =14"		
					35	1+1+1 N =2 REC =18"		
37.0	SANDY SILT, fine to medium, wet, mottled grayish orange.	ML	65.4					
					40	WOH/18" N = WOH/18" REC =18"		
42.0	SILTY SAND, fine to medium grained, wet, gray.	SM	60.4					
					45	1+2+3 N =5 REC =18"		
					50	2+3+4 N =7 REC =18"		
52.0	SANDY LEAN CLAY, fine to medium, moist, gray.	CL	50.4					
					55	1+2+4 N =6 REC =18"		
57.0	FAT CLAY, moist, gray, trace sand.	CH	45.4					
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-742**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	with silt.	CH			60	2+5+7 N =12 REC =18"		
					65	4+7+8 N =15 REC =18"		
					70	5+7+7 N =14 REC =18"		
72.0	SILTY SAND, fine to medium grained, moist, dark grayish green, contains cemented sand, trace fine to medium shell fragments, moderate HCl reaction, 0-5% shell frag.	SM	30.4		75	6+18+30 N =48 REC =18"		
						REC =0"		
82.0	SANDY SILT, fine to medium, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-40% shell frag.	ML	20.4		85	4+4+5 N =9 REC =18"		82' Switched to roller bit
87.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 20-30% shell frag.	SM	15.4			REC =4"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-742**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	wet, 50-70% shell frag.	SM						
97.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, green, with fine to coarse shell fragments, moderate HCl reaction, 20-30% shell frag.	SP-SM	5.4					
100.0	BOTTOM OF BORING @ 100.0 FT.		2.4					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-743**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 4-1/4" Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 7/10/06 **Finished:** 7/10/06  
**Location:** Northing: 213315.7 ft  
Easting: 961232 ft  
**Ground Surface Elevation:** 103.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/10	---	28.5'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	FL, R AND TOPSOIL.	ML	103.3			WOH/18" N = WOH/18" REC =12"		
2.0	SILT, moist, orangeish brown, with sand, contains root fragments.	SP-SC	101.6			1+2+3 N =5 REC =14"		
4.5	POORLY GRADED SAND, fine to coarse grained, moist, brown, with clay.	SP	99.1		5	3+3+3 N =6 REC =12"		
	POORLY GRADED SAND, fine to coarse grained, moist, brownish yellow, with gravel.					6+7+12 N =19 REC =15"		
	brownish orange, with gravel, trace clay.					7+12+17 N =29 REC =14"		
	trace gravel.				10			
12.0	POORLY GRADED GRAVEL, moist, brownish orange, with sand.	GP	91.6			25+17+12 N =29 REC =16"		
14.0	POORLY GRADED SAND, with gravel, trace clay, fine to coarse grained, moist, dark orangeish brown.	SP	89.6		15			
	brownish orange.					4+10+5 N =15 REC =12"		
19.6	FAT CLAY, with silt, moist, orange.	CH	84.0		20			
22.0	LEAN CLAY, with fine to medium grained sand, moist, goldenish orange.	CL	81.6					
						REC =19"	w=21.1% LL=38 PL=13	
					25			

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

*continued on next page*

- Comments:**
- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - \* = See Appendix I for additional lab testing data.
  - Ground water observation well OW-743 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-743**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	POORLY GRADED SAND, fine to coarse grained, wet, yellowish orange.	CL	76.6	▽	30	12+18+11 N =29 REC =12"	*	
32.0	SILTY SAND, fine to medium grained, moist, mottled grayish orange.	SP	71.6		35	2+2+2 N =4 REC =18"		
					40	REC =0"		
	gray.				45	WOH+3+3 N =6 REC =18"		
47.0	POORLY GRADED SAND with silt, fine to medium grained, moist, gray.	SP-SM	56.6		50	3+5+4 N =9 REC =18"		
52.0	POORLY GRADED SAND, fine to medium grained, wet, gray.	SP	51.6		55	4+8+7 N =15 REC =12"		
57.0	FAT CLAY, moist, gray, trace sand.	CH	46.6					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

*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.
3. Ground water observation well OW-743 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-743**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CH			60	3+5+7 N=12 REC=18"		
					65	3+6+8 N=14 REC=10"		
					70	6+8+10 N=18 REC=18"		
74.0	CLAYEY SAND, fine to medium grained, moist, gray. BOTTOM OF BORING @ 75.0 FT.	SC	29.6			9+10+14 N=24 REC=18"		
75.0			28.6		75			

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-743 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-744**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/20/06 **Finished:** 6/21/06  
**Location:** Northing: 216377.3 ft  
Easting: 959963.38 ft  
**Ground Surface Elevation:** 113.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/20	---	18.5'	---	---
<b>Start of day</b>	6/21	---	20.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.		112.8					
2.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light brown.	SP-SM	111.3			3+5+7 N =12 REC =18"		
4.0	POORLY GRADED SAND, fine to medium grained, moist, light grayish white.	SP	109.3			5+8+9 N =17 REC =18"		
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, light orangeish brown.	SP-SM			5	4+6+6 N =12 REC =18"		
	Med. - coarse sand.					5+5+6 N =11 REC =18"		
	Light yellowish brown, Fine - med. sand.				10	4+4+6 N =10 REC =18"		
	Light orangeish brown, Med. - coarse sand.				15	3+3+3 N =6 REC =10"		Change from hollow stem auger to mud rotary drilling
	Wet, yellowish orange.				20	4+3+4 N =7 REC =18"		
	Orangeish brown, contains gravel.				25	4+2+2 N =4 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

- Comments:**
- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
  - \* = See Appendix I for additional lab testing data.
  - Ground water observation well OW-744 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-744**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	CLAYEY SAND, fine to medium grained, moist, dark greenish gray, contains mica.	SP-SM	86.3		30	2+2+2 N=4 REC=18"		
		SC						
31.0	SANDY LEAN CLAY, fine to medium, moist, dark greenish gray, contains mica.	CL	82.3		35	3+3+3 N=6 REC=18"		
		CL						
36.0	CLAYEY SAND, fine to medium grained, moist, dark greenish gray, contains mica.	SC	77.3		40	4+3+4 N=7 REC=18"		
		SC						
42.0	LEAN CLAY, moist, dark greenish gray, with sand, contains mica, Fine - med. sand.	CL	71.3		45	5+7+9 N=16 REC=18"		
		CL						
46.0	SILTY SAND, fine to medium grained, moist, dark greenish gray, contains mica.	SM	67.3		50	5+6+9 N=15 REC=18"		
		SM						
	Contains cemented sand.				55	13+30+30 N=60 REC=18"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-744 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-744**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Weak HCl reaction.	SM			60	4+6+7 N=13 REC=18"		
62.0	CLAYEY SAND, fine to medium grained, moist, dark greenish gray, weak HCl reaction, <5% med. - coarse shell fragments, no cemented sand.	SC	51.3		65	6+6+7 N=13 REC=18"		
	Strong HCl reaction, <10% shell fragments.				70	4+50/4" N=50/4" REC=10"		
72.0	SILTY SAND, fine to medium grained, moist, greenish gray, moderate HCl reaction, 10-20% shell fragments.	SM	41.3		75	8+11+35 N=46 REC=18"		
	Weak HCl reaction, 5-15% shell fragments.				80	7+7+9 N=16 REC=18"		
	Moderate HCl reaction.				85	10+13+13 N=26 REC=18"		
	Weak HCl reaction.				90	5+8+11 N=19 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-744 installed at nearby location.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-744**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	No shell fragments.	SM				5+8+11 N =19 REC =18"		
	Strong HCl reaction, 20-30% shell fragments.					9+14+25 N =39 REC =18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		13.3					

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-744 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-745**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 2-15/16" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/23/06 **Finished:** 5/24/06  
**Location:** Northing: 215971.2 ft  
Easting: 960529.02 ft  
**Ground Surface Elevation:** 111.7 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/23	---	Dry	---	---
<b>Start of day</b>	5/24	---	11.0'	4.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL.	CL	111.3			1+2+4 N=6 REC=15"		0-4' Hollow stem auger
2.0	SANDY LEAN CLAY, fine to coarse, moist, brown, contains root fragments.	SC	109.7			5+6+5 N=11 REC=18"		4-40' 2-15/16 tri-cone roller bit
3.5	CLAYEY SAND, fine to medium grained, moist, brown, contains root fragments.	SP-SC	108.2		5	2+2+2 N=4 REC=11"		
7.0	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, brown.	SP	104.7		10	3+3+4 N=7 REC=10"		
13.0	POORLY GRADED SAND with gravel, fine to coarse grained, moist, yellowish brown.	SP-SC	98.7		15	3+4+7 N=11 REC=11"		
	orange.				20	3+8+5 N=13 REC=10"		
22.5	POORLY GRADED SAND with gravel, fine to coarse grained, moist, orange.	SP	89.2		25	4+5+7 N=12 REC=12"		
						3+4+7 N=11 REC=3"		

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

*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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-745**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orange.	SP	84.2					
		SP-SM						
					30	7+9+11 N =20 REC =8"		
					35	4+8+8 N =16 REC =10"		
					40	4+4+5 N =9 REC =10"		
	trace gravel.				45	8+13+14 N =27 REC =18"		
47.0	SILTY GRAVEL, fine and coarse grained, wet, orange, with sand.	GM	64.7					
					50	3+8+6 N =14 REC =12"		
53.0	FAT CLAY, moist, dark gray, with sand.	CH	58.7					
					55	3+3+5 N =8 REC =18"		
56.0	LEAN CLAY, moist, dark gray, with sand.	CL	55.7					
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-745**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CL			60	3+3+4 N=7 REC=18"		
					65	5+6+7 N=13 REC=18"		
67.0	CLAYEY SAND, fine to medium grained, moist, greenish gray, with silt.	SC	44.7		70	3+4+6 N=10 REC=18"		
72.0	SILTY SAND, fine to medium grained, moist, greenish gray.	SM	39.7		75	7+15+35 N=50 REC=18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		36.7					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-746**  
Contract Number: 06120048  
Sheet: 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** 3-7/8" O.D. Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** Diedrich D-50 Turbo (Track)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 7/18/06 **Finished:** 7/18/06  
**Location:** Northing: 215743.35 ft  
Easting: 960721.36 ft  
**Ground Surface Elevation:** 82.8 (feet)

**Groundwater Observations**

Encountered	Date	Time	Depth	Casing	Caved
	7/18	---	7.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.3	Forest litter, rootmat and topsoil.	CL	82.5			1/12+2" N=2 REC=18"		*AWJ rods used. *4-1/4" I.D. Hollow Stem Augers used from 0 to 13.5 ft	
2.0	LEAN CLAY, moist, brown, with fine to medium sand, contains root fragments.	ML	80.8			3+5+9 N=14 REC=18"	w=14.4% *		
4.5	SILT, moist, yellowish brown and grayish brown, with fine to medium sand. fine sandy below 3.5 ft.	SC	78.3		5	5+9+11 N=20 REC=18"			
6.0	CLAYEY SAND, fine to coarse grained, moist, yellowish brown and grayish brown.	SM	76.8			2+2+1 N=3 REC=18"	w=25.1% *		
	SILTY SAND, fine to coarse grained, moist, orangeish brown, trace fine gravel.					2+2+1 N=3 REC=18"			
13.5	CLAYEY SILTY SAND, moist, orangeish brown	SC-SM	69.3			REC=24"	w=27.2% LL=25 PL=21 *		*Switched to 3-7/8" O.D. Tri-cone roller bit below 13.5 ft.
	orangeish brown below 19 ft.					4+4+3 N=7 REC=18"			
22.0	FAT CLAY, moist, gray, with fine to medium sand, contains clayey sand pockets and layers.	CH	60.8			3+4+4 N=8 REC=18"	w=30.8% LL=52 PL=17		
	<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-746**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	ELASTIC SILT, moist, gray and dark gray, trace fine to medium sand and mica, contains clayey sand pockets.	MH	55.8		30	4+4+6 N =10 REC =18"	*	
32.0	FAT CLAY, moist, gray and dark gray, trace fine to medium sand and mica.	CH	50.8				w=34.8% LL=64 PL=24 *	
34.5	contains silty sand layer from 34.2 to 34.5 ft, wet.	MH	48.3		35	3+3+6 N =9 REC =18"	*	
	ELASTIC SILT, moist, gray, trace fine to medium sand and mica.							
	light greenish gray, contains sandy elastic silt pockets.				40	6+8+9 N =17 REC =18"		
42.0	SANDY SILT, fine to medium, moist, gray, trace mica, contains clayey sand pockets and indurated lean clay pockets.	ML	40.8		45	4+6+7 N =13 REC =18"	w=29.2% LL=40 PL=34 *	
47.0	SILTY SAND, fine to medium grained, wet, dark gray, little fine to coarse shell fragments (±15%), contains black particles (1/16 inch), moderate HCl reaction, contains strongly cemented sand pockets. trace fine shell fragments (±1%) below 49.8 ft.	SM	35.8		50	20+21+35 N =56 REC =18"		*Perceptible increase in rotary resistance from 47 to 48.5 ft.
52.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray, trace fine to medium shell fragments (±1%), contains black particles (1/16 inch), weak HCl reaction.	SP-SM	30.8		55	42+50/3" N =50/3" REC =10"		*Increase in rotary resistance from 53.5 to 58.5 ft (slight intermittent rig chatter).
57.0	SILTY SAND, fine to medium grained, wet, gray, few fine to medium shell <i>continued on next page</i>	SM	25.8					

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-746**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fragments ( $\pm 10\%$ ), contains black particles (1/16 inch) and shell bed layers.	SM				44+40+27 N =67 REC =16"	w=17.9% *	*Moderate to difficult rotary advancement from 62 to 63.5 ft (slight to moderate rig chatter). *Difficult to very difficult rotary advancement from 63.5 to 65 ft and 66.5 to 67 ft (strong rig chatter).
62.0	CLAYEY SAND, fine to medium grained, moist, light greenish gray, few fine to coarse shell fragments ( $\pm 10\%$ ), contains moderately cemented sand pockets, strong HCl reaction.	SC	20.8			50/5" N =50/5" REC =5"		
67.0	SILTY SAND, fine to medium grained, wet, gray and greenish gray, few fine to coarse shell fragments ( $\pm 15\%$ ), contains black particles (1/16 inch), strong HCl reaction.	SM	15.8			5+7+9 N =16 REC =18"	w=24.8% *	
75.0	gray, little fine to coarse shell fragments ( $\pm 20\%$ ). BOTTOM OF BORING @ 75.0 FT.		7.8			7+12+15 N =27 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-747**  
Contract Number: 06120048  
Sheet: 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 7/13/06 **Finished:** 7/13/06  
**Location:** Northing: 216176.28 ft  
Easting: 959944.95 ft  
**Ground Surface Elevation:** 90.3 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/13	---	14.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.							
	SILTY SAND, fine to medium, moist, yellowish brown, contains root fragments, and organic matter.	SM	89.8			1+1+2 N=3 REC=18"		
						2+4+4 N=8 REC=18"	w=7.5% *	
4.0	SANDY SILT, few root fragments, dark orangeish brown.	ML	86.3		5	2+3+5 N=8 REC=18"	w=12.7% *	
7.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown.	SP-SM	83.3			5+7+8 N=15 REC=18"		
	Few root fragments.				10	1+2+2 N=4 REC=18"	w=20.3% *	
12.5	SILTY SAND, fine to coarse grained, wet, yellowish orange.	SM	77.8			3+2+2 N=4 REC=18"	w=26.6% *	
	Orange.				15	3+2+1 N=3 REC=18"	w=23.9% *	
22.0	Sandy SILT, fine to medium grained, moist, gray, contains mica.	ML	68.3			2+2+3 N=5 REC=18"	w=28.2% *	
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-747**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
32.0	FAT CLAY, fine to medium, moist, dark greenish gray, contains mica.	CH	58.3		30	3+3+3 N=6 REC=18"	w=32.6% *	
					35	4+4+6 N=10 REC=18"	w=34.2% *	
					40	5+7+8 N=15 REC=18"	w=32.6% *	
					45	4+5+7 N=12 REC=18"	w=27.5% *	
					50	6+5+6 N=11 REC=18"	w=39.4% *	
53.5	ELASTIC SILT, moist, dark greenish gray.	MH	36.8		55	3+6+6 N=12 REC=18"	w=48.6% LL=78 PL=47 *	
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-747**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
58.0	FAT CLAY, fine to medium, moist, dark greenish gray, contains mica.	CH	32.3			REC = 18"	* w=35% LL=53 PL=16	
60.0	CLAYEY SAND, greenish gray, moderate HCl reaction, moderate cementation, 15% med. - coarse shell fragments.	SC	30.3					
65.0	SILTY SAND, strong HCl reaction, strong cementation, 25% med. - coarse shell fragments.	SM	25.3			6+7+50/3" N =57/9" REC =16"	w=27.6% LL=43 PL=20 *	Strong cemented sand at bottom 3" of sample Harder drilling
70.0	POORLY GRADED SAND WITH SILT, weak HCl reaction, 15% med. - coarse shell fragments.	SP-SM	20.3			18+14+20 N =34 REC =18"	w=30.3% LL=NP PL=NP *	
75.0	BOTTOM OF BORING @ 75.0 FT.		15.3			7+9+13 N =22 REC =18"	w=28.1% LL=NP PL=NP *	

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-748**  
Contract Number: 06120048  
Sheet: 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" O.D. Drag Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 7/17/06 **Finished:** 7/17/06  
**Location:** Northing: 216039.74 ft  
Easting: 960288.74 ft  
**Ground Surface Elevation:** 82.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/17	---	8.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.		81.9					
	SANDY SILT, fine to medium, moist, light brown, contains organic matter.	ML				1+2+2 N=4 REC=16"		
	Mottled grayish orange, No organic.					4+5+9 N=14 REC=18"		
4.5	SILTY SAND, fine to medium grained, moist, mottled grayish orange, few root fragments.	SM	77.9		5	6+8+12 N=20 REC=18"		
7.0	POORLY GRADED SAND WITH CLAY, medium to coarse grained, wet, yellowish brown, with clay.	SP-SC	75.4			4+8+7 N=15 REC=18"		
9.5	CLAYEY SAND, medium to coarse grained, wet, orange.	SC	72.9		10	3+3+4 N=7 REC=18"		
13.0	SANDY SILT, fine to medium, moist, dark gray, contains mica.	ML	69.4		15	REC=24"		
17.0	SANDY LEAN CLAY, fine to medium, moist, dark gray, contains mica.	CL	65.4		20	1+1+3 N=4 REC=18"		
22.0	SANDY SILT, fine to medium, moist, dark greenish gray, contains mica.	ML	60.4		25	3+3+5 N=8 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-748**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
					30	3+4+5 N=9 REC=18"		
	Greenish gray, contains no sand.				35	5+7+8 N=15 REC=18"		
	With fine - med. sand.				40	4+5+7 N=12 REC=18"		
	Moist, dark greenish gray, weak HCl reaction, moderate cementation, 3% med. - coarse shell fragments.				45	12+24+5/3" N=29/9" REC=16"		
	5% med. - coarse shell fragments, no cemented sand.				50	7+6+8 N=14 REC=18"		
	3% med. - coarse shell fragments.				55	4+4+6 N=10 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-748**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
					60	18+13+11 N =24 REC =18"		Drilling penetration rate slower
	Greenish gray, moderate HCl reaction, moderate cementation, 15% med. - coarse shell fragments.				65	50/4" N =50/4" REC =4"		
	Dark greenish gray, no cemented sand.				70	5+6+13 N =19 REC =18"		
					75	7+7+9 N =16 REC =18"		
	Greenish gray, weak HCl reaction, 3% med. - coarse shell fragments.				80	7+8+9 N =17 REC =18"		
	Dark greenish gray.				85	3+5+6 N =11 REC =18"		
	Light greenish gray, strong HCl reaction, strong cementation, 40% med. - coarse shell fragments.				90	13+26+17 N =43 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-748**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Dark greenish gray, weak HCl reaction, 15% med. - coarse shell fragments.	ML			95	31+21+17 N =38 REC =18"		
	Weak HCl reaction, 3% med. - coarse shell fragments.					7+12+16 N =28 REC =18"		
100.0	BOTTOM OF BORING @ 100.0 FT.		-17.6		100			

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-749**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/23/06 **Finished:** 5/23/06  
**Location:** Northing: 215775.08 ft  
Easting: 960332.24 ft  
**Ground Surface Elevation:** 102.5 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/23	---	23.5'	4.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	ROOTMAT AND TOPSOIL.	SC	102.3			1+1+2 N=3 REC=14"		0-4' hollow stem auger
2.0	CLAYEY SAND, fine to medium grained, moist, brown, contains root fragments.	SP-SC	100.5			3+2+2 N=4 REC=16"		4-55' 3-7/8" mud rotary
	POORLY GRADED SAND WITH CLAY, fine to coarse grained, moist, brown.				5	WOH+3+3 N=6 REC=14"		
	orangeish brown.							
7.0	POORLY GRADED SAND, fine to coarse grained, moist, yellow, with gravel.	SP	95.5			3+4+5 N=9 REC=14"		
	orangeish yellow.				10	4+6+8 N=14 REC=18"		
13.0	POORLY GRADED SAND WITH SILT and gravel, fine to coarse grained, moist, yellowish orange.	SP-SM	89.5			5+8+10 N=18 REC=18"		
	brownish, orange.				15	6+12+12 N=24 REC=12"		
	wet, orange.				25	4+5+6 N=11 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-749**  
Contract Number: 06120048  
Sheet: 2 of 3

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	orangeish brown.	SP-SM				4+5+11 N =16 REC =14"		
32.0	SANDY SILT, fine to medium, moist, dark gray.	ML	70.5			1+2+2 N =4 REC =18"		
37.0	LEAN CLAY, moist, dark gray, with sand.	CL	65.5			1+3+3 N =6 REC =18"		
	fine to medium sandy					REC =24"		
47.0	SANDY SILT, fine to medium, moist, dark gray.	ML	55.5			3+4+5 N =9 REC =18"		
52.0	LEAN CLAY, moist, dark gray, with shell fragments, sand.	CL	50.5			3+4+5 N =9 REC =18"		
57.0	SILTY SAND, fine to medium grained, moist, dark gray. <i>continued on next page</i>	SM	45.5					2-15/16" mud rotary

**Comments:**

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





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-749**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
	contains cemented sand.				60	5+5+6 N=11 REC=18"		
					65	15+50 N=50 REC=12"		
67.0	SANDY SILT, fine to medium, moist, dark gray, trace fine to medium shell fragments, weak HCl reaction, 0-5% shell frag.	ML	35.5		70	3+3+4 N=7 REC=18"		
75.0	BOTTOM OF BORING @ 75.0 FT.		27.5		75	4+4+4 N=8 REC=18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-750**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 7/10/06 **Finished:** 7/10/06  
**Location:** Northing: 215849.16 ft  
Easting: 959930.06 ft  
**Ground Surface Elevation:** 72.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/10	---	43.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
4.5	SILTY SAND, fine to coarse grained, moist, yellowish brown.	SM	67.9		1+1+2	N = 3		Augered with 4-1/4" HSA to 9 ft.
	Dark orangeish brown.				3+3+3	N = 6 REC = 18"		
7.0	SANDY LEAN CLAY, fine to medium, moist, orangeish brown and light gray.	CL	65.4		2+3+4	N = 7 REC = 13"		9'- Started mud rotary with 3-7/8" tri-cone roller bit
	FAT CLAY with sand, moist, gray, contains mica.	CH			3+3+14	N = 17 REC = 18"		
10.0	ELASTIC SILT with sand, moist, gray, contains mica.	MH	62.4		1+2+3	N = 5 REC = 15"		
	Gray and dark gray, some pockets (<1/2") of sandy clay.				4+3+4	N = 7 REC = 18"		
17.0	FAT CLAY with silt and sand, moist, gray and dark gray, contains mica, some pockets (<1/2") of sandy clay.	CH	55.4		4+4+7	N = 11		
22.0	LEAN CLAY with silt and sand, moist, gray and dark gray, contains mica.	CL	50.4		7+9+10	N = 19 REC = 18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-750**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CL						
						REC = 20"		
	sandy					3+4+4 N = 8 REC = 18"		
37.0	SANDY SILT, fine, moist, greenish gray, contains mica.	ML	35.4			4+5+7 N = 12 REC = 18"		
42.0	CLAYEY SAND, fine to coarse grained, wet, gray and brownish white, 10-20% fine to medium shell fragments, contains mica, strong HCl reaction, weak cementation.	SC	30.4			6+8+15 N = 23 REC = 18"		
	Light gray and brownish white, 50-60% fine to coarse shell fragments, strong HCl reaction, moderate cementation.					REC = 11"		
52.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, strong HCl reaction, HCl reaction localized to shell fragments.	SP-SC	20.4			5+6+7 N = 13 REC = 18"		
	<i>continued on next page</i>							46-52'- Harder drilling

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-750**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
62.0	CLAYEY SAND, fine to medium grained, wet, greenish gray, 0-10% fine to medium shell fragments, contains mica, weak HCl reaction, HCl reaction localized to shell fragments.	SP-SC	10.4		60	7+8+9 N =17 REC =18"		
		SC			65	4+6+9 N =15 REC =18"		
						70	3+5+7 N =12 REC =18"	
73.9	BOTTOM OF BORING @ 73.9 FT.		-1.6			50/5" N =50/5" REC =0"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-751**  
**Contract Number:** 06120048  
**Sheet:** 1 of 3

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M. Arles  
**Dates Started:** 5/22/06 **Finished:** 5/22/06  
**Location:** Northing: 215588.86 ft  
Easting: 960146.2 ft  
**Ground Surface Elevation:** 92.2 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/22	---	13.5'	4.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	ROOTMAT AND TOPSOIL	SM	91.8			1+1+2 N=3 REC=9"		0-4' hollow stem auger
	SILTY SAND, fine to medium grained, moist, brown, contains root fragments.							
2.5	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, brown.	SP-SM	89.7			3+4+3 N=7 REC=18"		4-75' mud rotary
5.0	POORLY GRADED SAND, fine to coarse grained, moist, brown, trace gravel.  yellowish orange, with gravel.	SP	87.2		5	1+2+3 N=5 REC=12"  5+6+6 N=12 REC=18"		
10.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, yellowish orange.	SP-SM	82.2		10	5+7+8 N=15 REC=16"		
13.0	POORLY GRADED SAND with gravel, fine to coarse grained, moist, brownish orange.	SP	79.2	▽	15	7+10+10 N=20 REC=18"		
17.0	SILTY SAND, fine to coarse grained, wet, orange, trace gravel.  fine to medium grained, no gravel.	SM	75.2		20	3+3+2 N=5 REC=13"  2+1+1 N=2 REC=14"		
	<i>continued on next page</i>				25			

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-751**  
Contract Number: 06120048  
Sheet: 2 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
26.5	SANDY SILT, fine to medium, moist, reddish orange.	SM	65.7							
		ML								
29.0	SANDY LEAN CLAY, fine to medium, moist, gray.	CL	63.2		30	1+2+3 N=5 REC=16"				
							35		REC=24"	
							40	3+3+4 N=7 REC=18"		
					45		REC=24"			
47.0	CLAYEY SAND, fine to medium grained, moist, greenish gray.	SC	45.2		50	6+6+7 N=13 REC=18"				
							55	3+3+4 N=7 REC=18"		
57.0	SANDY SILT, fine to medium, moist, greenish gray. <i>continued on next page</i>	ML	35.2							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-751**  
Contract Number: 06120048  
Sheet: 3 of 3

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML						
62.0	SILTY SAND, fine to medium grained, moist, greenish gray, trace fine to coarse shell fragments, strong HCl reaction, 0-10% shell frag.	SM	30.2		60	3+4+3 N=7 REC=18"		
					65	5+6+7 N=13 REC=18"		
	with fine to coarse shell fragments, 15-20% shell frag..				70	11+16+22 N=38 REC=18"		
73.9	BOTTOM OF BORING @ 73.9 FT.		18.3			50/5" N=50/5" REC=5"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-752**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 7/5/06 **Finished:** 7/6/06  
**Location:** Northing: 215489.21 ft  
Easting: 960257.57 ft  
**Ground Surface Elevation:** 95.8 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	7/5	---	23.5'	---	---
Start of day	7/6	---	23.0'	---	---
Water Reading	7/27	---	58.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.	SM	95.3			wor+1+2 N=3 REC=14"		
1.5	SILTY SAND, fine to medium grained, moist, orangeish brown, contains root fragments.	SP-SM	94.3			2+2+2 N=4 REC=18"	w=5.9% *	
	POORLY GRADED SAND WITH SILT, medium to coarse grained, moist, orangeish brown.					1+3+3 N=6 REC=18"		
	Light yellowish orange, contains root fragments.					2+2+4 N=6 REC=18"		
	No root fragments.					2+2+5 N=7 REC=18"	w=6.7% *	
10.0	WELL GRADED SAND WITH SILT, fine to medium grained, moist, yellowish orange, trace organic matter.	SW-SM	85.8			3+5+13 N=18 REC=18"		
						2+5+6 N=11 REC=18"	w=12.7% *	
22.0	SILTY SAND, fine to medium grained, wet, mottled grayish orange, contains mica.	SM	73.8			3+3+2 N=5 REC=18"		Change from hollow stem auger to mud rotary drilling
	<b>Remarks</b> 23.5 ft: Change from hollow stem auger  <i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-752B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-752A installed at nearby location.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-752**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	to mud rotary drilling	SM						
31.0	Moist, gray.		64.8		30	2+1+2 N=3 REC=18"	w=29.0% *	
36.0	Sandy FAT CLAY, fine to medium grained, moist, dark greenish gray, contains mica.	CH			35	3+4+5 N=9 REC=18"	w=29.1% LL=52 PL=23 *	
36.0	ELASTIC SILT, moist, dark greenish gray, with sand, fine - med. sand.	MH	59.8		40	3+4+5 N=9 REC=18"	w=33.1% LL=63 PL=31 *	
45.0	Trace sand.				45	3+5+6 N=11 REC=18"	w=37.1% LL=71 PL=26 *	
45.0	FAT CLAY, moist, dark greenish gray	CH	50.8		50	5+6+8 N=14 REC=18"	w=40.3% LL=68 PL=24 *	
52.0	SILTY SAND, fine to medium grained, moist, dark greenish gray, contains mica.	SM	43.8		55	10+8+9 N=17 REC=18"	w=27.7% LL=40 PL=29 *	
56.0	ORGANIC CLAY, moist, dark greenish gray, contains mica.	OH	39.8					
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-752B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-752A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-752**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
60.0	ELASTIC SILT, moist, gray	OH	35.8			REC = 18"	w=45.3% LL=65 PL=17 *	Rig chatter	
		MH							
65.0	Sandy SILT, fine to medium grained, moist, dark greenish gray, weak HCl reaction, 3% medium - coarse shell fragments.	ML	30.8		4+5+5	N = 10 REC = 18"	w=37.0% LL=64 PL=43 *		
					5+6+7	N = 13 REC = 18"	w=34.6% *		
					25+15+25	N = 40 REC = 18"			
					50/5"	N = 50/5" REC = 5"			
80.0	POORLY GRADED SAND WITH SILT, weak HCl reaction, 5% medium - coarse shell fragments.	SP-SM	15.8						
					8+9+10	N = 19 REC = 18"	w=28.0% *		
					7+9+13	N = 22 REC = 18"			

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

**Remarks**  
73 ft: Rig chatter  
Strong HCl reaction, 15% medium - coarse shell.

Contains cemented sand, strong HCl reaction, 25% medium - coarse shell fragments.

POORLY GRADED SAND WITH SILT, weak HCl reaction, 5% medium - coarse shell fragments.

Weak HCl reaction, 3% medium - coarse shell fragments.

*continued on next page*

**Comments:**

1. Ground water observation well OW-752B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-752A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-752**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
95.0	Weak HCl reaction, 3% medium - coarse shell fragments.	SP-SM	0.8			5+7+9 N = 16 REC = 18"		
	CLAYEY SAND, greenish gray, strong HCl reaction, 25% medium - coarse shell fragments.	SC						
100.0	BOTTOM OF BORING @ 100.0 FT.		-4.2			17+20+16 N = 36 REC = 18"	w=31.6% *	

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-752B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-752A installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-753**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** CME-550 (ATV)  
**Schnabel Representative:** K. Bell  
**Dates Started:** 7/6/06 **Finished:** 7/6/06  
**Location:** Northing: 217831.2 ft  
Easting: 960648.86 ft  
**Ground Surface Elevation:** 48.8 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	7/6	---	13.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	ROOTMAT AND TOPSOIL.		48.2					
	CLAYEY SAND, fine to coarse grained, moist, yellowish brown, trace root fragments.	SC				2+6+10 N =16 REC =15"		
	yellowish brown and orangeish brown, Iron staining.					4+4+6 N =10 REC =16"		
	yellowish brown and gray.				5	2+4+5 N =9 REC =15"		
7.0	Sandy LEAN CLAY, moist, orangeish brown and gray, Iron staining.	CL	41.8			4+4+6 N =10 REC =18"		
10.0	CLAYEY SAND, fine to coarse grained, moist, orangeish brown and gray.	SC	38.8		10	4+5+6 N =11 REC =10"		Start of mud rotary drilling
13.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, yellowish brown and orangeish brown.	SP-SM	35.8	▽	15	9+11+9 N =20 REC =9"		
17.0	FAT CLAY, moist, gray, trace sand, trace fine to medium shell fragments, 2-5%, HCl reaction weak.	CH	31.8		20	2+4+4 N =8 REC =18"		
22.0	SANDY ELASTIC SILT, moist, gray and blueish gray.	MH	26.8		25	3+3+4 N =7 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT: 3/6/08

**Comments:**

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



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-753**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SILTY SAND, fine to medium grained, moist, gray, trace fine to medium shell fragments, 2-5%, strong cementation, HCl reaction strong.  wet, blueish gray, contains fine to coarse shell fragments, 30-40%.	MH	21.8					Harder drilling  Rig chatter
		SM						
						50/1" N =50/1" REC =1"		
						5+5+7 N =12 REC =18"		
40.0	BOTTOM OF BORING @ 40.0 FT.		8.8			5+9+9 N =18 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-754**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/16/06 **Finished:** 5/16/06  
**Location:** Northing: 217369.78 ft  
Easting: 960290.37 ft  
**Ground Surface Elevation:** 67.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/16	---	2.5'	---	---
<b>Water Reading</b>	7/26	---	29.4'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.  SILTY SAND, fine to coarse grained, moist, brown, contains root fragments.  wet, brown and dark brown.  fine to medium grained, brown.	SM	66.5			3+5+4 N=9 REC=13"		*NWJ rods used.
						2+1+3 N=4 REC=12"		
					5	4+7+9 N=16 REC=12"		
						6+6+4 N=10 REC=12"		
9.5	LEAN CLAY, moist, gray, with fine to medium sand, trace mica.	CL	57.5		10	WOH+2+3 N=5 REC=18"		
12.0	FAT CLAY, moist, gray, trace fine to medium sand and mica.	CH	55.0		15	WOH+2+3 N=5 REC=18"		
						3+4+6 N=10 REC=18"		
22.0	ELASTIC SILT, moist, light greenish gray and gray, trace fine to medium sand.	MH	45.0		25	5+8+10 N=18 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-754 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-754**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	gray, with fine to medium sand, trace organic matter (±1%).	MH			30	6+8+10 N =18 REC =18"		
32.0	SILTY SAND, fine to medium grained, wet, dark gray, little fine to coarse shell fragments (±15%), strong HCl reaction.	SM	35.0		35	25+43+26 N =69 REC =16"		
	light brown, mostly fine to coarse shell fragments (±80%). brown, some fine to coarse shell fragments (±40%) below 39.5 ft.				40	9+23+31 N =54 REC =15"		
41.0	LEAN CLAY, moist, greenish gray and gray, with fine to medium sand, trace fine to coarse shell fragments (±1%), weak HCl reaction.	CL	26.0		45	3+5+7 N =12 REC =18"		
	greenish gray, trace fine to medium sand and mica.				50	4+5+4 N =9 REC =18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		17.0					*Very slight rig chatter as rotary advanced from 38 to 41 ft.

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-754 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-755**  
Contract Number: 06120048  
Sheet: 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Chew  
**Drilling Method:** 2-15/16" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
**Location:** Northing: 215923.66 ft  
Easting: 961637.86 ft  
**Ground Surface Elevation:** 95.0 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	8/2	---	NE	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
7.0	POORLY GRADED SAND, fine to coarse grained, moist, light brown, trace silt.	SP	88.0		2+1+1	N =2 REC =6"		
					4+2+3	N =5 REC =10"		
					5	2+3+3	N =6 REC =12"	
13.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown.  No cemented sand.	SP-SM	82.0		5+5+5	N =10 REC =11"		
					10	3+5+5	N =10 REC =16"	
17.0	POORLY GRADED SAND, fine to coarse grained, moist, light brown and orangeish brown, trace silt.	SP	78.0		15	4+9+9 N =18 REC =13"		
22.0	SILTY SAND, fine to medium grained, moist, light brown and gray, alternating colors form layers <1/8" thick.	SM	73.0		20	2+3+5 N =8 REC =12"		
	SANDY SILT, fine to medium, moist, light brown and gray, alternating colors form layers 1/16-1/8" thick.	ML			25	2+2+1 N =3 REC =18"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.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.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-755**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
29.5	SILTY SAND, fine to medium grained, moist, dark gray.	ML	65.5		30	3+1+3 N=4 REC=18"		
32.0		SM						
37.0	SANDY FAT CLAY, moist, dark gray, contains mica.	CH	63.0		35	4+4+11 N=15 REC=18"		
40.0	SANDY LEAN CLAY, moist, dark gray, contains mica.	CL	58.0		40	2+3+6 N=9 REC=18"		
	BOTTOM OF BORING @ 40.0 FT.		55.0					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-756**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/25/06 **Finished:** 5/25/06  
**Location:** Northing: 215504.6 ft  
Easting: 961215.1 ft  
**Ground Surface Elevation:** 106.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/25	---	7.5'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
0.5	Forest litter, rootmat and topsoil.	CL	106.4			1+1+2 N=3 REC=18"		Change from hollow stem auger to mud rotary drilling		
	SANDY LEAN CLAY, fine to medium, moist, dark brown, with root fragments, and organic matter. orangeish brown.								3+2+3 N=5 REC=18"	
4.5	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, light brown.	SP-SM	102.4	▽	5	6+5+5 N=10 REC=13"				
	wet, light orangeish brown.								4+5+5 N=10 REC=15"	
						10	6+5+5 N=10 REC=13"			
									7+9+8 N=17 REC=16"	
						15				
									8+9+11 N=20 REC=13"	
						20				
									3+5+6 N=11 REC=15"	
			25							
	fine to medium grained, moist, reddish brown.									
	fine to coarse grained, wet, light grayish orange.									
	fine to medium grained, dark orangeish brown.									

*continued on next page*

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-756 installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-756**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	fine to coarse grained, reddish brown.	SP-SM				30	13+17+18 N =35 REC =16"	
	dark reddish orange (3" layer of white clay).					35	5+6+12 N =18 REC =17"	
36.0	CLAYEY SAND, fine to medium grained, wet, mottled grayish orange.	SC	70.9			40	1+2+1 N =3 REC =18"	
	greenish gray, contains mica.					45	1+2+1 N =3 REC =18"	
46.0	LEAN CLAY, moist, oliveish gray, with fine to medium sand, contains mica.	CL	60.9			50	3+3+3 N =6 REC =18"	
50.0	BOTTOM OF BORING @ 50.0 FT.		56.9					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT. 3/6/08

**Comments:**

- Boring backfilled with cement/bentonite grout through tremie pipe upon completion.
- \* = See Appendix I for additional lab testing data.
- Ground water observation well OW-756 installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-757**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/25/06 **Finished:** 5/25/06  
**Location:** Northing: 215135.13 ft  
Easting: 960760.6 ft  
**Ground Surface Elevation:** 106.9 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/25	---	11.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS		
					DEPTH	DATA				
0.5	Forest litter, rootmat and topsoil.	SM	106.4			1+1+1 N=2 REC=14"		Changed from hollow stem auger to mud rotary drilling		
2.0	SILTY SAND, fine to medium grained, moist, brown, contains root fragments, and organic matter.		SP-SM	104.9			4+4+3 N=7 REC=18"			
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, orangeish brown.						5		3+4+5 N=9 REC=18"	
	fine to medium grained.								7+8+8 N=16 REC=18"	
	light orangeish brown.								10	7+11+13 N=24 REC=15"
	wet, orangeish brown.				▽				15	5+8+8 N=16 REC=16"
										6+7+10 N=17 REC=14"
	light orangeish brown.								20	
	orangeish brown.								25	4+6+7 N=13 REC=15"
	<i>continued on next page</i>									

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-757**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
26.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, orangeish brown.  mottled grayish orange.	SP-SM	80.9					
		SP-SC						
					30	3+3+2 N =5 REC =18"		
					35	2+1+1 N =2 REC =18"		
40.0	BOTTOM OF BORING @ 40.0 FT.		66.9		40	2+2+2 N =4 REC =18"		

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-758**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** CME-75  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/24/06 **Finished:** 5/24/06  
**Location:** Northing: 215133.29 ft  
Easting: 960332.67 ft  
**Ground Surface Elevation:** 82.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	5/24	---	Dry	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	POORLY GRADED SAND WITH SILT, medium to coarse grained, organic matter, trace gravel, moist, light orangeish brown.	SP-SM				2+2+2 N =4 REC =16"		
	Reddish brown.					2+1+1 N =2 REC =17"		
	Orangeish brown, trace organic matter.				5	3+2+2 N =4 REC =18"		
	Light yellowish brown, trace gravel, and mica.					13+7+5 N =12		
	Light orangeish brown, fine - med. sand.				10	3+3+3 N =6 REC =18"		
			15	3+3+3 N =6 REC =18"				
17.0	CLAYEY SAND, fine to medium grained, wet, light orange.	SC	65.6			2+1+1 N =2 REC =18"		Start of mud rotary drilling
22.5	SANDY LEAN CLAY, fine to medium, moist, greenish gray, with mica.	CL	60.1			1+3+3 N =6 REC =18"		
	<i>continued on next page</i>					25		

TEST BORING LOG 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-758**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		CL						
					30	1+3+3 N=6 REC=18"		
					35	3+4+4 N=8 REC=18"		
					40	4+5+6 N=11 REC=18"		
40.0	BOTTOM OF BORING @ 40.0 FT.		42.6					

TEST BORING LOG: 06120048 PLOG SPT 700.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.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-759**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" OD Drag Bit  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** B. Bradfield  
**Dates Started:** 6/20/06 **Finished:** 6/21/06  
**Location:** Northing: 214526.25 ft  
Easting: 960025.32 ft  
**Ground Surface Elevation:** 98.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/20	---	10.5'	---	---
<b>Water Reading</b>	7/26	---	61.3'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.2	Forest litter, rootmat, and topsoil.	ML	98.2			3+3+3 N =6 REC =7"		1.5'-Begin mud-rotary with 3-7/8" drag bit
2.0	SILT with sand, moist, yellowish brown and brown, contains root fragments				96.4			
4.5	CLAYEY SAND, fine to medium grained, moist, orangeish brown, contains root fragments	SC	93.9	5		2+3+3 N =6 REC =14"		
7.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, moist, orangeish brown and brown	SP-SM	91.4			4+7+8 N =15 REC =10"		
	POORLY GRADED SAND, fine to coarse grained, trace gravel, trace silt, moist, orangeish brown.	SP		10		4+5+8 N =13 REC =10"		
	wet, yellowish brown		85.4			4+6+9 N =15 REC =6"		
13.0	POORLY GRADED SAND WITH SILT, fine to coarse grained, wet, yellowish brown	SP-SM		15		8+7+5 N =12 REC =6"		
17.0	SILTY SAND, fine to coarse grained, trace gravel, wet, orangeish brown and reddish brown.	SM	81.4			2+2+2 N =4 REC =15"		
22.0	CLAYEY SAND, fine to medium grained, wet, orangeish brown and light gray	SC	76.4	25				

*continued on next page*

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-759B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-759A installed at nearby location.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-759**  
Contract Number: 06120048  
Sheet: 2 of 4

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY ELASTIC SILT, fine to medium, wet, orangeish brown and mottled gray	SC	71.4		30	1+1+2 N=3 REC=15"		
		MH						
32.0	FAT CLAY with sand, moist, gray, contains mica	CH	66.4		35	2+3+2 N=5 REC=18"		
37.0	LEAN CLAY with sand, moist, gray, contains mica	CL	61.4		40	2+4+4 N=8 REC=18"		
42.0	FAT CLAY with sand, moist, gray, contains mica	CH	56.4					
44.5	POORLY GRADED SAND WITH CLAY, fine to medium grained, wet, dark gray, contains mica.	SP-SC	53.9		45	2+4+5 N=9 REC=18"		
47.0								
52.0	CLAYEY SAND, fine to medium grained, moist, dark gray, contains mica	SC	46.4		55	4+6+8 N=14 REC=18"		

continued on next page

57'-62'-Harder drilling

**Comments:**

1. Ground water observation well OW-759B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-759A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-759**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
59.5	fine to coarse grained, wet, gray and brownish white, 30-40% fine to coarse shell fragments, strong HCl reaction  SANDY LEAN CLAY, fine to coarse, wet, gray, 10-20% fine to medium shell fragments, moderate HCl reaction, moderate cementation	SC	38.9		60	12+14+21 N=35 REC=18"		
		CL						
65.5	moist, 0-10% fine to medium shell fragments, weak HCl reaction  SANDY FAT CLAY, fine to medium, moist, gray, 0-10% fine to medium shell fragments, contains mica, weak HCl reaction	CH	32.9		65	1+3+4 N=7 REC=18"		
68.5	SANDY SILT, fine to coarse, moist, gray, 20-30% fine to coarse shell fragments, moderate HCl reaction, moderate cementation, cemented sand up to 1" in diameter	ML	29.9		70	1+3+50/5" N=53/11" REC=8"		68'-Start of day 6/21/06
72.0	SILTY SAND, fine to medium grained, wet, gray and brownish white, 30-40% fine to medium shell fragments, strong HCl reaction	SM	26.4		75	4+6+10 N=16 REC=18"		70'-Intermittent moderate to hard drilling
77.0	POORLY GRADED SAND, fine to medium grained, wet, gray and brownish white, trace silt, 10-20% fine to medium shell fragments, strong HCl reaction, HCl reaction localized to shell fragments	SP	21.4		80	10+7+5 N=12 REC=15"		
82.0	POORLY GRADED SAND WITH SILT, fine to medium grained, wet, gray and brownish white, 20-30% fine to coarse shell fragments, strong HCl reaction, HCl reaction localized to shell fragments	SP-SM	16.4		85	6+7+8 N=15 REC=18"		
87.0	CLAYEY SAND, fine to medium grained, wet, gray, 0-10% fine to medium shell fragments, moderate HCl reaction, HCl reaction localized to shell fragments	SC	11.4		90	3+4+8 N=12 REC=18"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-759B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-759A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-759**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SC						
					95	4+5+8 N=13 REC=18"		
100.0	brownish white, 50-60% fine to coarse shell fragments, strong HCl reaction 30-40% fine to medium shell fragments, trace cemented sand, strong HCl reaction BOTTOM OF BORING @ 100.0 FT.		-1.7		100	REC=1" 7+11+13 N=24 REC=12"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-759B installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.
3. Ground water observation well OW-759A installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-765**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 7/11/06 **Finished:** 7/12/06  
**Location:** Northing: 216424.51 ft  
Easting: 959701.22 ft  
**Ground Surface Elevation:** 97.4 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	7/11	---	19.5'	---	---
Start of day	7/12	---	20.0'	---	---
Water Reading	7/27	---	19.4'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	FL, R AND TOPSOIL.	SP-SM	96.9			1+1+1 N=2 REC=18"		
	POORLY GRADED SAND WITH SILT, medium to coarse grained, trace organic matter, moist, dark yellowish brown. Orangeish brown, contains root fragments.					2+2+4 N=6 REC=18"		
	No root fragments.				5	2+4+4 N=8 REC=18"		
						3+3+8 N=11 REC=18"		
	Light yellowish brown.				10	3+4+6 N=10 REC=18"		
	Orangeish brown.				15	5+5+5 N=10 REC=18"		
	Wet, 4" section of light gray material .					2+2+5 N=7 REC=18"	▽	
	2" layer of dark reddish brown .				25	5+6+7 N=13 REC=18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

- Comments:**
1. Ground water observation well OW-765A installed in boring upon completion.
  2. \* = See Appendix C for additional lab testing data.
  3. Ground water observation well OW-765B installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-765**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	SANDY LEAN CLAY, fine to medium, moist, gray, contains mica.	SP-SM	70.4					
		CL						
					30	3+3+3 N=6 REC=18"		
					35	3+3+4 N=7 REC=18"		
37.0	SILTY SAND, fine to medium grained, moist, gray, contains mica.	SM	60.4		40	6+8+13 N=21 REC=18"		
42.0	SANDY LEAN CLAY, fine to medium, moist, gray, contains mica.	CL	55.4		45	5+9+10 N=19 REC=18"		
47.0	SANDY SILT, fine to medium, moist, dark greenish gray, contains mica.	ML	50.4		50	4+7+9 N=16 REC=18"		
52.0	LEAN CLAY, moist, dark greenish gray, with sand, contains mica, fine - med. sand.	CL	45.4		55	3+4+6 N=10 REC=18"		
57.0	SILT, moist, dark greenish gray, with sand, contains mica, fine - med. sand. <i>continued on next page</i>	ML	40.4					

TEST BORING LOG 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-765A installed in boring upon completion.
2. \* = See Appendix C for additional lab testing data.
3. Ground water observation well OW-765B installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-765**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		ML			60	5+5+6 N =11 REC =18"		
					65	7+8+13 N =21 REC =18"		Harder drilling
	Contains cemented sand, strong HCl reaction, weak cementation, 15% med. - coarse shell fragments. Strong HCl reaction, moderate cementation, 15% med. - coarse shell fragments.				70	9+50/5" N =50/5" REC =11" REC =8"		
73.0	SILTY SAND, fine to medium grained, moist, greenish gray, strong HCl reaction, moderate cementation, 25% med. - coarse shell fragments.	SM	24.4		75	14+12+50/5" N =62/11" REC =17"		Drilling penetration rate faster
	Dark greenish gray, moderate HCl reaction, weak cementation, 15% layered med. - coarse shell fragments.				80	6+7+11 N =18 REC =18"		
	Wet, weak HCl reaction, 5% med. - coarse shell fragments, no cementation.				85	6+8+12 N =20 REC =18"		
	3% med. - coarse shell fragments.				90	4+6+8 N =14 REC =18"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-765A installed in boring upon completion.
2. \* = See Appendix C for additional lab testing data.
3. Ground water observation well OW-765B installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-765**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Moist.	SM				95	4+6+6 N =12 REC =18"	
	Wet, light gray, strong HCl reaction, strong cementation, 50% med. - coarse shell fragments.					100	50 REC =6" REC =20"	*
102.0	BOTTOM OF BORING @ 102.0 FT.		-4.6					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-765A installed in boring upon completion.
2. \* = See Appendix C for additional lab testing data.
3. Ground water observation well OW-765B installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-766**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Evans  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** Failing-1500 (Truck)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 5/23/06 **Finished:** 5/23/06  
**Location:** Northing: 216932.89 ft  
Easting: 959791.5 ft  
**Ground Surface Elevation:** 108.9 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	5/23	---	0.0'	---	---
Water Reading	7/26	---	27.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	POORLY GRADED SAND WITH SILT, trace root fragments, fine to medium grained, wet, dark brown.	SP-SM				5+8+4 N =12 REC =18"		
	reddish brown.					2+1+2 N =3 REC =18"		
	orangeish brown.				5	2+3+3 N =6 REC =16"		
	moist.					3+3+4 N =7 REC =15"		
	wet, trace gravel, fine to coarse grained.				10	4+8+9 N =17 REC =18"		
						12+16+17 N =33 REC =18"		
					15			
						12+13+19 N =32 REC =18"		
					20			
	reddish brown.					10+15+20 N =35 REC =18"		
	<i>continued on next page</i>				25			

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

- Comments:**
1. Ground water observation well OW-766 installed in boring upon completion.
  2. \* = See Appendix I for additional lab testing data.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-766**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	light orangeish brown mottled of white.	SP-SM			30	5+4+5 N=9 REC=18"		
32.0	CLAYEY SAND, fine to medium grained, wet, orangeish brown, contains white clay.	SC	76.9		35	2+2+2 N=4 REC=18"		
	greenish gray, contains mica.				40	2+1+2 N=3 REC=18"		
					45	2+2+3 N=5 REC=18"		
50.0	BOTTOM OF BORING @ 50.0 FT.		58.9		50	2+3+4 N=7 REC=18"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-766 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-768**  
**Contract Number:** 06120048  
**Sheet:** 1 of 4

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** D. Reese  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit (Mud Rotary)  
**Drilling Equipment:** CME-75 (Truck)  
**Schnabel Representative:** M Arles  
**Dates Started:** 6/19/06 **Finished:** 6/20/06  
**Location:** Northing: 217116.03 ft  
Easting: 962242.98 ft  
**Ground Surface Elevation:** 48.4 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/20	---	23.5'	0.0'	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	FL, R AND TOPSOIL.	FILL	48.1			1+3+3 N =6 REC =12"		0-40' Hollow stem auger
	Sandy lean clay FILL, contains root fragments, fine to coarse, moist, brown.							
2.0	SILTY SAND, fine to medium grained, moist, brown.	SM	46.4			5+6+6 N =12 REC =18"		
					5	5+6+7 N =13 REC =18"		
7.0	LEAN CLAY, moist, brown and green.	CL	41.4			3+4+5 N =9 REC =12"		
	trace sand.				10	2+2+3 N =5 REC =14"		
13.0	ELASTIC SILT, moist, green and brown.	MH	35.4			1+3+3 N =6 REC =16"		
	with ironite layers.				20	1+3+4 N =7 REC =18"		
23.0	SILTY SAND, fine to medium grained, wet, brown.	SM	25.4	▽		WOH+1+1 N =2 REC =12"		
	<i>continued on next page</i>							

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-768A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-768**  
Contract Number: 06120048  
Sheet: 2 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
		SM						
	moist, green, with fine to coarse shell fragments, strong HCl reaction, 30-40% shell frag.				30	3+4+4 N =8 REC =18"		
	contains cemented sand, 40-50% shell frag.				35	3+5+5 N =10 REC =18"		
	fine grained, trace fine to medium shell fragments, moderate HCl reaction, 0-10% shell frag.				40	3+3+4 N =7 REC =18"		40-100' mud rotary, 3-7/8" roller bit
	fine to medium grained, weak HCl reaction.				45	REC =20"		
	with fine to coarse shell fragments, strong HCl reaction, 60-70% shell frag.				50	8+21+19 N =40 REC =18"		
	wet, green and white, contains cemented sand, 60-80% shell frag, 1/4" layers of cemented sand and shells.				55	31+11+18 N =29 REC =14"		53' rig chatter
	<i>continued on next page</i>							

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-768A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-768**  
Contract Number: 06120048  
Sheet: 3 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	green, moderate HCl reaction, 10-20% shell frag.	SM			60	5+17+23 N=40 REC=18"		
					65	5+7+12 N=19 REC=18"		
67.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, green, trace fine to medium shell fragments, moderate HCl reaction, 0-10% shell frag.	SP-SM	-18.6		70	5+8+10 N=18 REC=18"		
72.0	SILTY SAND, fine to medium grained, moist, green.	SM	-23.6		75	REC=13"		
77.0	SANDY SILT, fine to medium, moist, green, trace fine to medium shell fragments, moderate HCl reaction, 0-10% shell frag.	ML	-28.6		80	5+5+5 N=10 REC=18"		
82.0	SILTY SAND, fine to medium grained, moist, green, with fine to coarse shell fragments, strong HCl reaction, 40-60% shell frag.	SM	-33.6		85	4+13+9 N=22 REC=18"		
					90	5+12+12 N=24 REC=18"		
<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-768A installed at nearby location.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-768**  
Contract Number: 06120048  
Sheet: 4 of 4

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
92.0	SANDY SILT, fine to medium, moist, oliveish green, with fine to medium shell fragments, moderate HCl reaction, 10-15% shell frag.	SM	-43.6					
		ML						
97.0	ELASTIC SILT, moist, oliveish green, with sand, trace fine to medium shell fragments, moderate HCl reaction, 0-5% shell frag.	MH	-48.6					
100.0	BOTTOM OF BORING @ 100.0 FT.		-51.6					

TEST BORING LOG: 06120048 PLOG SPT 700.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.
3. Ground water observation well OW-768A installed at nearby location.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-769**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** UNI-TECH DRILLING  
MALAGA, NEW JERSEY  
**Boring Foreman:** J. Blemings  
**Drilling Method:** 3-7/8" O.D. Drag Bit (Mud Rotary)  
**Drilling Equipment:** CME-750 (ATV)  
**Schnabel Representative:** K. Megginson  
**Dates Started:** 5/11/06 **Finished:** 5/11/06  
**Location:** Northing: 216589.75 ft  
Easting: 962559.47 ft  
**Ground Surface Elevation:** 54.2 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	5/11	---	24.5'	---	---
Water Reading	7/25	---	24.3'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.7	Forest litter, rootmat and topsoil.	SM	53.5			1+1/12" N = 1/12" REC = 7"		*NWJ rods used.	
	SILTY SAND, fine to medium grained, moist, brown and dark brown, contains root fragments.  fine to coarse grained, light brown.								3+5+5 N = 10 REC = 15"
4.5	CLAYEY SAND, fine to coarse grained, moist, brown, (coarse sand is subangular to subrounded).	SC	49.7	5		3+4+6 N = 10 REC = 12"			
	orangeish brown and brown.								5+4+5 N = 9 REC = 16"
8.5	LEAN CLAY, moist, light orangeish brown and grayish brown, trace fine to medium sand.	CL	45.7	10		6+6+8 N = 14 REC = 16"			
	fine to medium sandy, light orangeish brown and light grayish brown, trace mica, contains clayey sand lenses, (bedding thickness 1/8 inch).								3+2+4 N = 6 REC = 18"
	grayish brown and light orangeish brown.								WOH+3+3 N = 6 REC = 18"
	orangeish brown and grayish brown, trace fine to medium sand, (soil structure exhibits vertical laminations - laminations no greater than 1/16 inch thick).								WOH+2+2 N = 4 REC = 18"
	orangeish brown and light brown, trace fine to medium sand.			25					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

*continued on next page*

- Comments:**
1. Ground water observation well OW-769 installed in boring upon completion.
  2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-769**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
27.0	wet, light brown and dark orangeish brown, with fine to medium sand.	CL	27.2					
	CLAYEY SAND, fine to medium grained, wet, brown and orangeish brown, (high percentage of fines).	SC						
	light gray and gray below 29.7 ft.							
32.0			22.2					
	SILTY SAND, fine to medium grained, wet, gray, trace fine to coarse shell fragments ( $\pm 5\%$ ), weak HCl reaction.	SM						
37.0			17.2					
	CLAYEY SAND, fine to medium grained, wet, gray, few fine to coarse shell fragments ( $\pm 10\%$ ), strong HCl reaction, contains fine to medium strongly cement sand layer from 38.5 to 39 ft.	SC						
	dark gray, weak HCl reaction.							
50.0	BOTTOM OF BORING @ 50.0 FT.		4.2					

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ - SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation wel OW-769 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.



**TEST BORING LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Boring Number:** **B-770**  
**Contract Number:** 06120048  
**Sheet:** 1 of 2

**Boring Contractor:** CONNELLY AND ASSOCIATES, INC.  
FREDERICK, MARYLAND  
**Boring Foreman:** T. Connelly  
**Drilling Method:** 3-7/8" OD Tri-cone Roller Bit  
**Drilling Equipment:** Diedrich D-50 (ATC)  
**Schnabel Representative:** R. Vinzant  
**Dates Started:** 6/22/06 **Finished:** 6/22/06  
**Location:** Northing: 215466.6 ft  
Easting: 962826.95 ft  
**Ground Surface Elevation:** 121.6 (feet)

**Groundwater Observations**

	Date	Time	Depth	Casing	Caved
<b>Encountered</b>	6/22	---	11.0'	---	---
<b>Water Reading</b>	7/25	---	DRY	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS	
					DEPTH	DATA			
0.5	FL, R AND TOPSOIL.	SP-SM	121.1			2+1+2 N=3 REC=18"			
	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, yellowish brown.  Moist, yellowish orange, trace root fragments.						6+8+6 N=14 REC=18"		
4.5	SANDY ELASTIC SILT, fine to medium, moist, yellowish orange, trace root fragments.	MH	117.1		5	3+4+5 N=9 REC=18"		Change from hollow stem auger to mud rotary drilling	
7.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, reddish brown.	SP-SM	114.6			7+10+12 N=22 REC=18"			
	Wet.					10	5+7+10 N=17 REC=18"		
	Yellowish orange, Med. - coarse sand.					15	5+5+8 N=13 REC=18"		
	Moist, reddish brown.					20	9+10+9 N=19 REC=18"		
	Orangeish brown.		25	9+13+12 N=25 REC=18"					
	<i>continued on next page</i>								

TEST BORING LOG 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT 3/6/08

**Comments:**

1. Ground water observation well OW-770 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.





**TEST BORING LOG**

Project: Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

Boring Number: **B-770**  
Contract Number: 06120048  
Sheet: 2 of 2

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	Wet, light yellowish brown.	SP-SM						
					30	10+11+13 N =24 REC =15"		
					35	9+12+14 N =26 REC =18"		
37.0	POORLY GRADED SAND WITH CLAY, fine to medium grained, moist, mottled grayish orange.	SP-SC	84.6					
					40	3+3+1 N =4 REC =14"		
44.0	Gray, contains organic matter. LEAN CLAY, moist, mottled orangeish gray, with sand, Fine - med. sand.	CL	77.6					
46.0	FAT CLAY, moist, mottled orangeish gray, with sand, Fine - med. sand.	CH	75.6					
49.5			72.1					
50.0	POORLY GRADED SAND WITH SILT, fine to medium grained, moist, reddish brown. BOTTOM OF BORING @ 50.0 FT.	SP-SM	71.6		50	2+8+8 N =16 REC =12"		

TEST BORING LOG: 06120048 PLOG SPT 700.GPJ SCHNABEL.GDT: 3/6/08

**Comments:**

1. Ground water observation well OW-770 installed in boring upon completion.
2. \* = See Appendix I for additional lab testing data.

**TEST PIT LOGS**



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B307**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/29/06 **Finished:** 7/29/06  
**Location:** Northing: 216957.53 ft  
Easting: 960690.62 ft  
**Ground Surface Elevation:** 119.4 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Rootmat and topsoil	ML	119.1					
	SILT (ML), trace fine to medium sand, contains root fragments, moist, brown. Fine to medium sandy below 1.5 ft.							
3.0	SILTY SAND (SM), fine to medium, contains poorly graded sand with silt lenses, moist, brown and light brown.	SM	116.4					
4.0		SP-SM	115.4					
	POORLY GRADED SAND WITH SILT (SP-SM), fine to coarse, contains clayey sand pockets, moist, light brown and yellowish brown.				5	Bulk Sample	w=2.3% *	Test Pit consistently caved-in at about 5.0 ft.
6.7	BOTTOM OF BORING @ 6.7 FT.		112.7					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

- Comments:**
1. Backfilled upon completion
  2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B314**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
**Location:** Northing: 217320.35 ft  
Easting: 960658.25 ft  
**Ground Surface Elevation:** 52.8 (feet)

Groundwater Observations						
	Date	Time	Depth	Casing	Caved	
<b>Encountered</b>	8/2	---	4.0'	---	---	
<b>Encountered</b>	8/2	---	6.5'	---	---	

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.8	Forest litter, rootmat and topsoil		52.0					
	SILTY SAND (SM), fine to medium, trace fine gravel, contains root fragments, moist, brown light brown below 1.5 ft.	SM						
4.0	FAT CLAY (CH), trace fine to medium sand, moist, light gray, orange-brown and yellow-brown.	CH	48.8	▽		Bulk Sample	w=37.0% LL=71 PL=24 *	Perched ground water from 4 to 4.5 ft.  Water infiltration from back sidewall at 6.5 ft.
8.0	ELASTIC SILT (MH), trace fine sand and mica, moist, gray.	MH	44.8	▽				
9.0	BOTTOM OF BORING @ 9.0 FT.		43.8					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B315**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
  
**Location:** Northing: 217182.5 ft  
Easting: 960563.12 ft  
  
**Ground Surface Elevation:** 65.8 (feet)

Groundwater Observations					
Date	Time	Depth	Casing	Caved	

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
1.0	Forest litter, rootmat and topsoil		64.8					
2.0	SILTY SAND (SM), fine to medium, contains root fragments, moist, light brown.	SM	63.8					
3.0	CLAYEY SAND (SC), fine to medium, contains silty sand pockets, moist, orange-brown.	SC	62.8					
5.0	SILTY SAND (SM), fine to medium, moist, stratified brown and yellow-brown.	SM	60.8		5			
	POORLY GRADED SAND WITH SILT (SP-SM), fine to coarse, contains silty sand lenses, moist, light brown and brown.	SP-SM				Bulk Sample	w=5.4% *	
8.5	BOTTOM OF BORING @ 8.5 FT.		57.3					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

- Comments:**
1. Backfilled upon completion
  2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B334**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
**Location:** Northing: 216515.64 ft  
Easting: 960560.94 ft  
**Ground Surface Elevation:** 87.0 (feet)

Groundwater Observations					
	Date	Time	Depth	Casing	Caved
Encountered	8/2	12:00	8.0'	---	---

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.7	Forest litter, rootmat and topsoil		86.3					
	SILTY SAND (SM), fine to medium, contains root fragments, moist, brown	SM						
	light brown below 2.5 ft.							
						Bulk Sample	w=7.4%*	
					5			
						Bulk Sample	w=14.5%*	
7.5	LEAN CLAY (CL), trace fine to medium sand and mica, moist, dark brown. wet below 8.0 ft.	CL	79.5	▽				Water infiltration as bucket advanced below 8 ft.
9.3			77.7					
10.0	POORLY GRADED SAND WITH SILT (SP-SM), fine to medium, wet, light gray and orangish-brown	SP-SM	77.0		10			
	BOTTOM OF BORING @ 10.0 FT.							

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B335**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/29/06 **Finished:** 7/29/06  
**Location:** Northing: 216730.79 ft  
Easting: 960706.97 ft  
**Ground Surface Elevation:** 99.6 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Forest litter, rootmat and topsoil.	SM	99.2					
2.0	SILTY SAND (SM), fine to medium, contains clayey sand pockets and root fragments, moist, brown.	CL	97.6			Bulk Sample	w=19.0% LL=30 PL=20 *	
5.0	SANDY LEAN CLAY (CL), fine to medium, contains root fragments, moist, brown.	SM	94.6		5	Bulk Sample	w=8.9% *	
8.0	BOTTOM OF BORING @ 8.0 FT.		91.6					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B407**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
**Location:** Northing: 216391.76 ft  
Easting: 961465.02 ft  
**Ground Surface Elevation:** 81.3 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	SILTY SAND (SM), fine to coarse, contains root fragments, moist, brown	SW-SM	80.9					
	WELL GRADED SAND WITH SILT (SW-SM), fine to coarse, trace fine and coarse gravel, moist, brown. Observed cobble at 5 ft. Contains fine to medium silty sand lenses from 5.5 to 5.7 ft. Light brown below 6.0 ft.							
					5	Bulk Sample	w=7.1% *	
7.0	BOTTOM OF BORING @ 7.0 FT.		74.3					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.





**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B414**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 216631.18 ft  
Easting: 961530.95 ft  
**Ground Surface Elevation:** 120.8 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Rootmat and topsoil	SM	120.5					
0.7	SILTY SAND (SM), fine to medium, contains root fragments, moist, yellowish brown and light orangish brown.	SP-SM	120.1					
	POORLY GRADED SAND WITH SILT (SP-SM), fine to medium, contains silty sand lenses and layers, moist, stratified brown and light orangish brown.				5			
7.0	BOTTOM OF BORING @ 6.5 FT.		113.8			Bulk Sample	w=6.0% *	

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B415**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
  
**Location:** Northing: 216490.91 ft  
Easting: 961298.37 ft  
  
**Ground Surface Elevation:** 118.9 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.4	Rootmat and topsoil.		118.5					
1.0	Clayey sand FILL, fine to medium, contains root fragments, moist, brown. Contains steel spun cable at 1.0 ft.	FILL SP	117.9					
	POORLY GRADED SAND, fine to medium, trace silt, contains silty sand lenses and layers, moist, stratified light brown and orangish-brown.					Bulk Sample	w=10.2% *	
6.5	BOTTOM OF BORING @ 6.5 FT.		112.4					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B423**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
  
**Location:** Northing: 216414.95 ft  
Easting: 960849.03 ft  
  
**Ground Surface Elevation:** 105.9 (feet)

Groundwater Observations					
Date	Time	Depth	Casing	Caved	

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Rootmat and topsoil	FILL	105.6					
1.0	Silty sand FILL, fine to medium, contains root fragments, moist, brown	FILL	104.9					
	Clayey sand FILL, fine to medium, moist, brown. Contains cement block, diamond-plated steel and asphalt fragments below 1.5 ft.	FILL						
	fine to coarse, contains root fragments. Contains rebar, bed frame and metal fragments below 2.5 ft.	FILL						
5.0	fine to coarse sand, trace coarse gravel, contains root fragments, brown, grayish-brown and orangish-brown, contains sandy silt pockets below 5 ft.	FILL	100.9		5	Bulk Sample	w=16% LL=24 PL=16 *	Top of cinder block wall and man made debris at 1.5 ft. Underground cinder block wall at least 10 ft wide (in an east-west direction) and 6 ft. deep. Structure appears to have been used as refuse depository.
8.0	sandy lean clay FILL, fine to coarse, trace coarse gravel, moist, brown. Contains cement fragments at 6 ft. BOTTOM OF BORING @ 8.0 FT.		97.9					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B434**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/29/06 **Finished:** 7/29/06  
**Location:** Northing: 215825.9 ft  
Easting: 961244.18 ft  
**Ground Surface Elevation:** 105.2 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil LEAN CLAY, trace fine to medium sand, contains root fragments, moist, brown.	CL	104.7			Bulk Sample	w=21% LL=25 PL=18 *	
7.0	SILTY SAND, fine to medium, moist, brown.	SM	98.2					
8.0	POORLY GRADED SAND WITH SILT, fine to coarse, trace fine gravel, contains weakly cemented sand pockets, moist, light brown. BOTTOM OF BORING @ 8.5 FT.	SP-SM	97.2					
8.5			96.7					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B435**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/29/06 **Finished:** 7/29/06  
**Location:** Northing: 216020.06 ft  
Easting: 961404.74 ft  
**Ground Surface Elevation:** 107.7 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.7	Forest litter, rootmat and topsoil.		107.0					
	CLAYEY SAND, fine to medium, contains root fragments, moist, brown.	SC						
2.5	SILTY SAND, fine to medium, contains root fragments, moist, orangish brown.	SM	105.2					
4.0	SILTY SAND, fine to coarse, moist, light brown and brown.	SM	103.7					
					5	Bulk Sample	w=6.0% *	
6.0	POORLY GRADED SAND WITH SILT, fine to coarse, trace silt, contains silty sand and poorly-graded sand with silt lenses, moist, brown and light brown trace cobbles (+/-1%) below 8 ft.	SP-SM	101.7			Bulk Sample	w=4.6% *	
9.0	CLAYEY SAND, fine to coarse, trace fine gravel, contains clayey sand pockets, moist, brown.	SC	98.7			Bulk Sample	w=6.7% LL=34 PL=17 *	
10.0	BOTTOM OF BORING @ 10.0 FT.		97.7		10			

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B715**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 214964.18 ft  
Easting: 962637.77 ft  
**Ground Surface Elevation:** 88.2 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.9	Forest litter, rootmat and topsoil		87.3					
	CLAYEY SAND, fine to coarse, contains root fragments, moist, brown	SC						
4.0	POORLY GRADED SAND WITH SILT, fine to coarse, trace fine to coarse gravel (+/- 5%) and cobbles (+/- 1%), contains root fragments, moist, brown and light brown. Contains weakly cemented sand pockets at 6 ft.	SP-SM	84.2		5	Bulk Sample	w=4.8% *	
8.5	BOTTOM OF BORING @ 8.5 FT.		79.7					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B716**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 214983.83 ft  
Easting: 961289.79 ft  
**Ground Surface Elevation:** 97.1 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.8	Forest litter, rootmat and topsoil.		96.3					
	SILTY SAND, fine to medium, contains root fragments, moist, brown, contains weakly bonded silty sand pockets.	SM						
5.5	POORLY GRADED SAND WITH SILT, fine to coarse, trace fine gravel, moist, stratified light brown and brown. Light grayish brown and yellowish brown below 6.5 ft.	SP-SM	91.6		5	Bulk Sample	w=3.8% *	
8.0			89.1					
8.8	SILTY SAND, fine to coarse, contains chert fragments, moist, yellowish brown. BOTTOM OF BORING @ 8.8 FT.	SM	88.3					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B717**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 214297.68 ft  
Easting: 962346.36 ft  
**Ground Surface Elevation:** 90.5 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
1.0	Forest litter, rootmat and topsoil.		89.5					
	SANDY SILT, fine to medium, contains root fragments, moist, brown.	ML						
5.0	SILTY SAND, fine to coarse, contains clayey sand pockets, moist, light brown.	SM	85.5		5			
7.0	POORLY GRADED SAND WITH SILT, fine to coarse, trace fine to coarse gravel (+/- 5%), moist, orangish brown, contains iron oxide cemented sand pockets at 7.5 ft. BOTTOM OF BORING @ 8.0 FT.	SP-SM	83.5			Bulk Sample	w=3.4% *	
8.0			82.5					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.





**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B719**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 213966.93 ft  
Easting: 261493.94 ft  
**Ground Surface Elevation:** 72.3 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.3	Forest litter, rootmat and topsoil	CL	72.0			Bulk Sample	w=23.9% LL=35 PL=22 *	
	LEAN CLAY, with fine to medium sand, contains root fragments, moist, brown and light brown							
3.2	SILT, with fine to medium sand, contains root fragments, moist, grayish brown.	ML	69.1					
4.8	SILTY SAND, fine to coarse, trace fine gravel, contains clayey sand pockets and poorly graded sand with silt lenses, moist, light brown and light grayish brown	SM	67.5					
8.0	Wet, light gray and yellowish brown below 7 ft. BOTTOM OF BORING @ 8.0 FT.		64.3			Bulk Sample	w=26.7% *	

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B727**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 215299.14 ft  
Easting: 961883.13 ft  
**Ground Surface Elevation:** 104.3 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.7	Forest litter, rootmat and topsoil		103.6					
	CLAYEY SAND, fine to coarse, contains root fragments, moist, brown, orangish brown, and light grayish brown	SC						
5.0	SILT, with fine to medium sand, moist, brown.	ML	99.3		5			
6.0	SILTY SAND, fine to medium, contains clayey sand pockets, moist, brown.	SM	98.3			Bulk Sample	w=10.3%*	
7.0	BOTTOM OF BORING @ 7.0 FT.		97.3					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

- Comments:**
1. Backfilled upon completion
  2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B744**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/29/06 **Finished:** 7/29/06  
  
**Location:** Northing: 316377.3 ft  
Easting: 959963.38 ft  
  
**Ground Surface Elevation:** 113.3 (feet)

Groundwater Observations					
Date	Time	Depth	Casing	Caved	

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.		112.8					
1.0	SILT, trace fine to medium sand, contains root fragments, moist, brown.	ML	112.3					
	SANDY LEAN CLAY (CL), fine to medium, contains root fragments, moist, brown.	CL				Bulk Sample	w=18% LL=25 PL=17 *	
3.5	SILTY SAND (SM), fine to medium, moist, brown.	SM	109.8					
5.0	POORLY GRADED SAND WITH SILT (SP-SM), fine to coarse, trace fine gravel, moist, light brown.	SP-SM	108.3		5			
6.5	BOTTOM OF BORING @ 6.5 FT.		106.8					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-B758**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/28/06 **Finished:** 7/28/06  
**Location:** Northing: 215133.29 ft  
Easting: 960332.67 ft  
**Ground Surface Elevation:** 82.6 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.6	Forest litter, rootmat and topsoil.		82.0					
	CLAYEY SAND, fine to medium, contains root fragments, moist, brown.	SC						
2.0	POORLY GRADED SAND WITH SILT, fine to coarse, trace fine gravel and cobbles, contains weakly bonded silty sand pockets, moist, brown, contains iron oxide cemented sand lenses and pockets.	SP-SM	80.6			Bulk Sample	w=6.0% *	
3.9		SM	78.7					
	SILTY SAND, fine to coarse, trace fine gravel, moist, light brown. Contains silty sand layers, stratified light brown and yellowish brown below 6 ft.				5			
						Bulk Sample	w=11.8% *	Test Pit consistently caved-in below 6 ft.
9.0	BOTTOM OF BORING @ 9.0 FT.		73.6					

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-C309**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 8/2/06 **Finished:** 8/2/06  
**Location:** Northing: 217020.05 ft  
Easting: 960105.24 ft  
**Ground Surface Elevation:** 108.5 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.	SP	108.0			Bulk Sample	w=4.3% *	Test Pit consistently caves-in between 5 and 6 ft.
6.0	POORLY GRADED SAND, fine to coarse, trace fine gravel, contains root fragments, moist, brown and orange-brown.		SP-SM					
8.0	POORLY GRADED SAND WITH SILT, fine to medium, trace silt, contains silty sand pockets and lenses moist, light grayish brown, blackish gray, and orangish brown.	100.5						
	BOTTOM OF BORING @ 8.0 FT.							

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.



**TEST  
PIT  
LOG**

**Project:** Calvert Cliffs Nuclear Power Plant  
Calvert County, Maryland

**Test Pit Number:** **TP-C723**  
**Contract Number:** 06120048  
**Sheet:** 1 of 1

**Boring Contractor:**  
**Boring Foreman:** Paul Schaffer  
**Excavation Equipment:** John Deere 410D (Rubber Tired)  
**Schnabel Representative:** K Megginson  
**Dates Started:** 7/29/06 **Finished:** 7/29/06  
**Location:** Northing: 215989.07 ft  
Easting: 959754.78 ft  
**Ground Surface Elevation:** 96.8 (feet)

**Groundwater Observations**

Date	Time	Depth	Casing	Caved

DEPTH (FT)	STRATA DESCRIPTION	CLASS.	ELEV. (FT)	WL	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.5	Forest litter, rootmat and topsoil.		96.3					
	SANDY SILT, fine to medium, contains root fragments, moist, brown.	ML						
2.0	CLAYEY SAND, fine to medium, contains root fragments, moist, brown.	SC	94.8			Bulk Sample	w=12% LL=30 PL=15 *	
4.0	SILTY SAND, fine to coarse, moist, brown.	SM	92.8					
5.0	POORLY GRADED SAND WITH SILT, fine to coarse, trace fine gravel, moist, brown and light brown.	SP-SM	91.8		5			
7.0	Contains poorly graded sand trace silt lenses below 6.0 ft. BOTTOM OF BORING @ 7.0 FT.		89.8			Bulk Sample	w=4.6% *	

TEST PIT LOG NEW TEST PITS 06120048.GPJ SCHNABEL.GDT 3/10/08

**Comments:**

1. Backfilled upon completion
2. \* See Appendix I for additional laboratory testing data.

**APPENDIX D**  
**GROUND WATER OBSERVATION WELLS**

- Well Construction Logs
- Field Permeability Test Data
- Well Sampling Records

**WELL CONSTRUCTION LOGS**



**WELL NO. : OW-301**

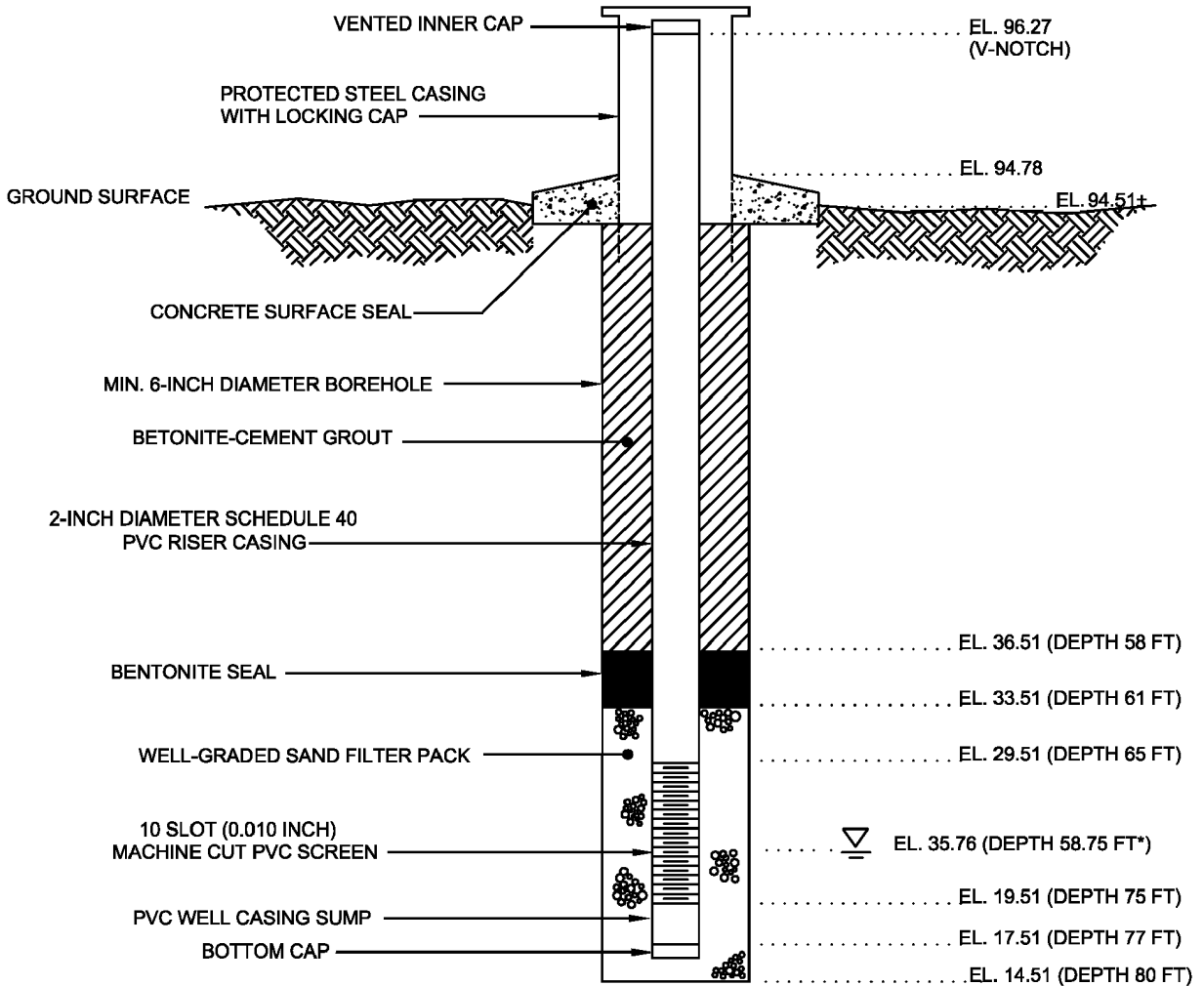
DATE COMPLETED : 07/07/2006

NORTHING: 217048.02

EASTING: 960814.47

GROUND SURFACE ELEVATION: 94.51

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	58.74	35.76



- NOTES:**
- 1) SEE B-301 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* = GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-301.DWG

**WELL NO. : OW-313A**

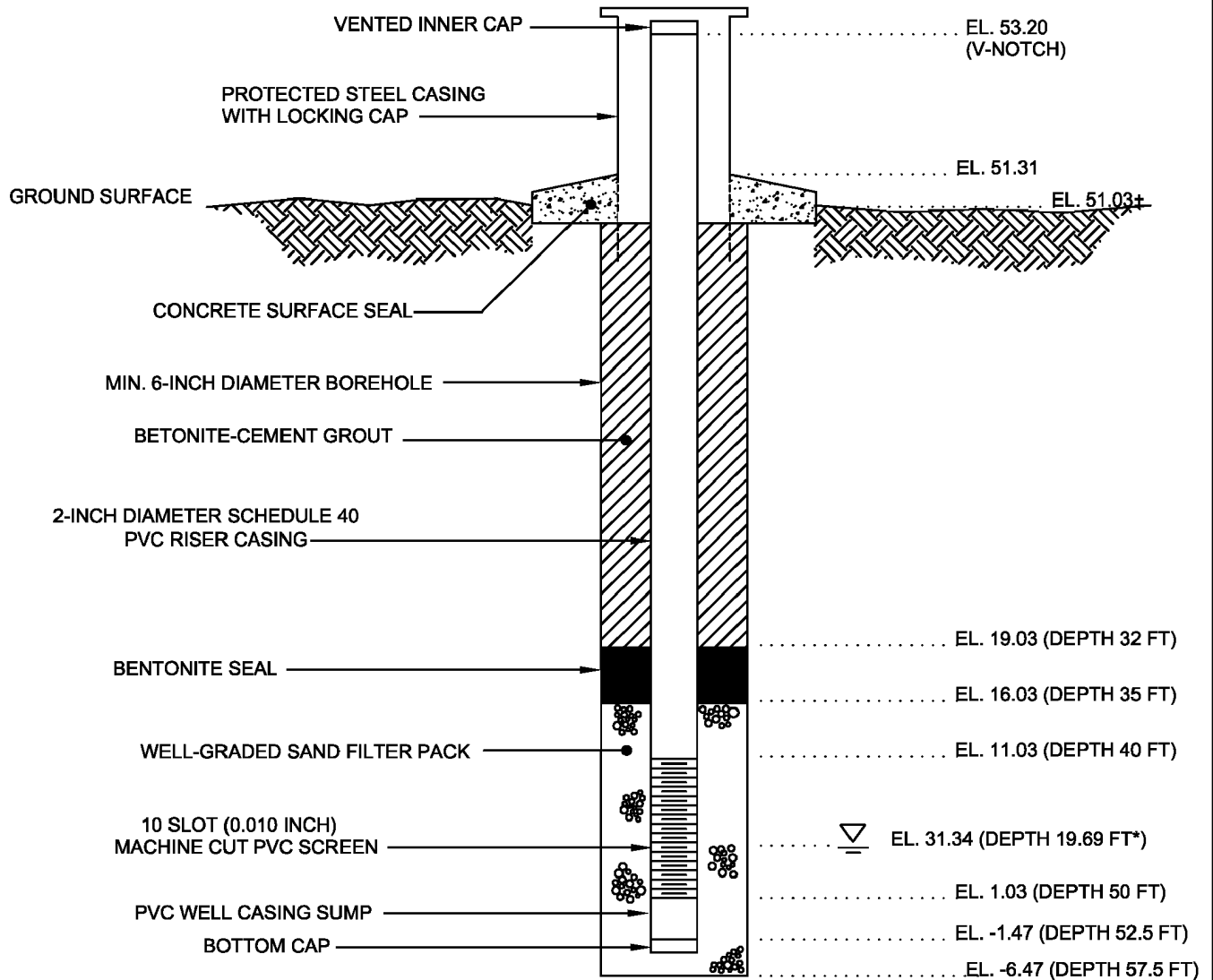
DATE COMPLETED : 05/24/2006

NORTHING: 217367.31

EASTING: 960705.30

GROUND SURFACE ELEVATION: 51.03

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	19.69	31.34



- NOTES:**
- 1) SEE B-313 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-313A.DWG

**WELL NO. : OW-313B**

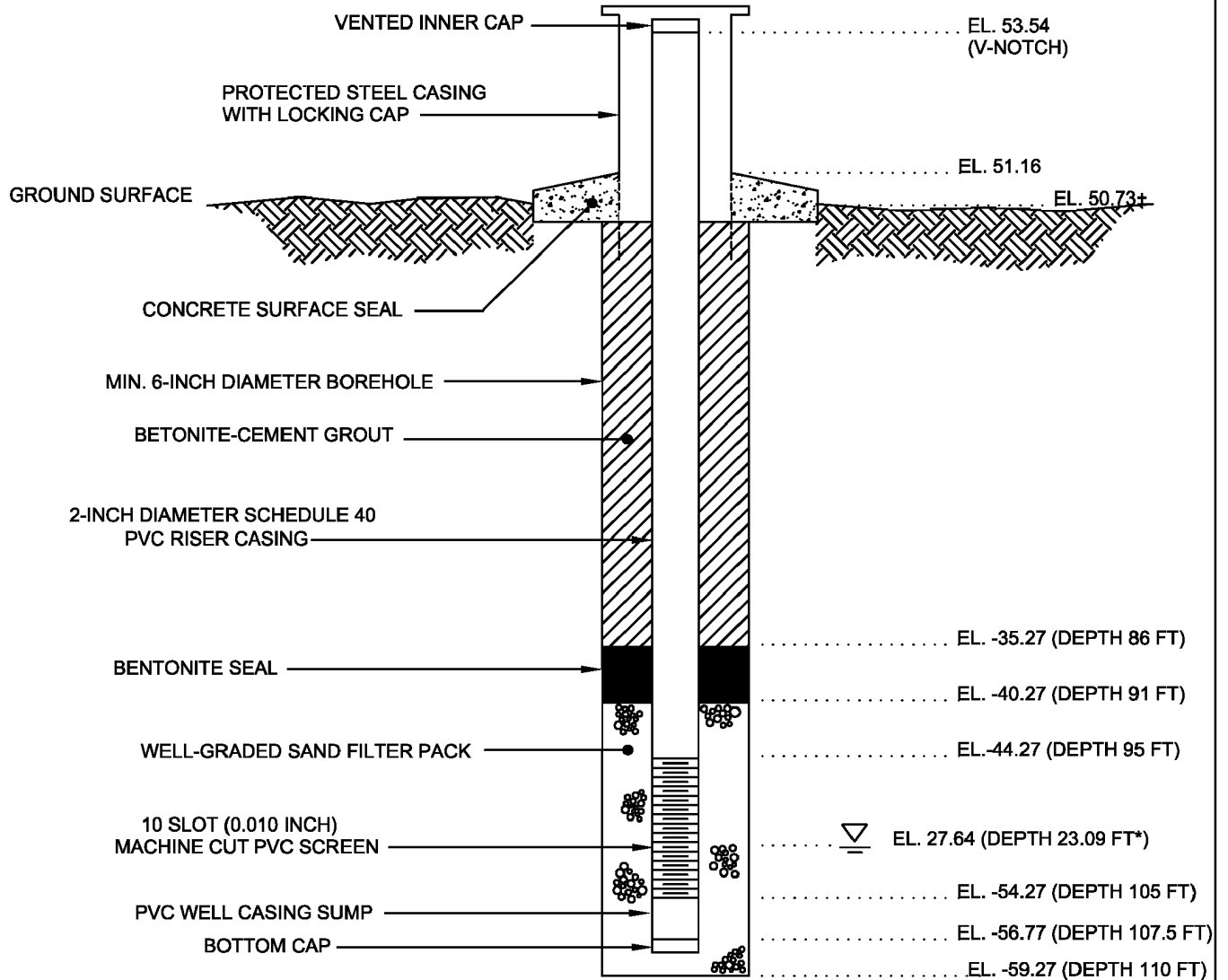
DATE COMPLETED : 05/23/2006

NORTHING: 217372.35

EASTING: 960713.67

GROUND SURFACE ELEVATION: 50.73

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	23.09	27.64



- NOTES:**
- 1) SEE B-313 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-313B.DWG

**WELL NO. : OW-319A**

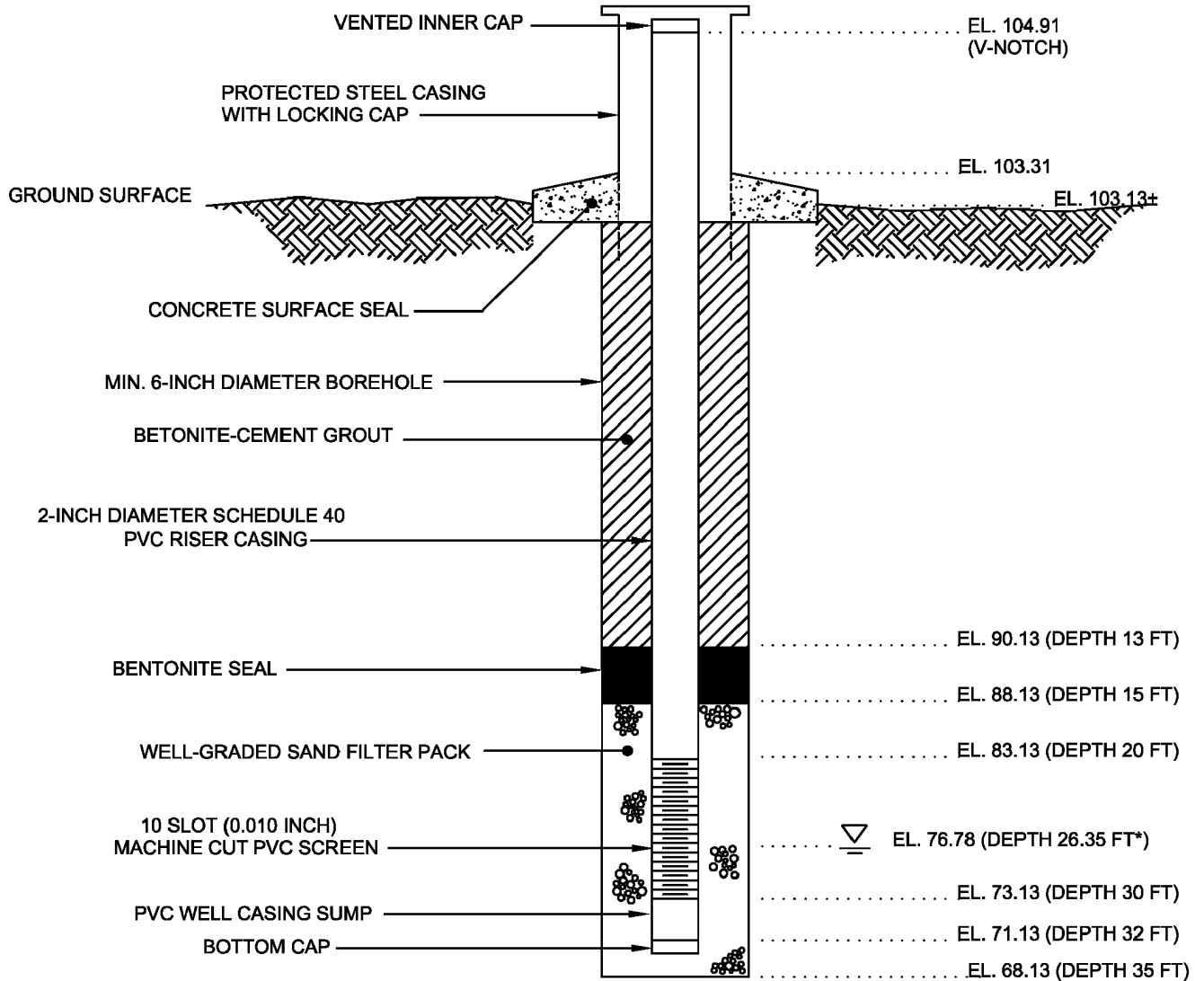
DATE COMPLETED : 05/18/2006

NORTHING: 216962.56

EASTING: 961116.12

GROUND SURFACE ELEVATION: 103.13

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-21-06	26.35	76.78



- NOTES:**
- 1) SEE B-319 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-319A.DWG

**WELL NO. : OW-319B**

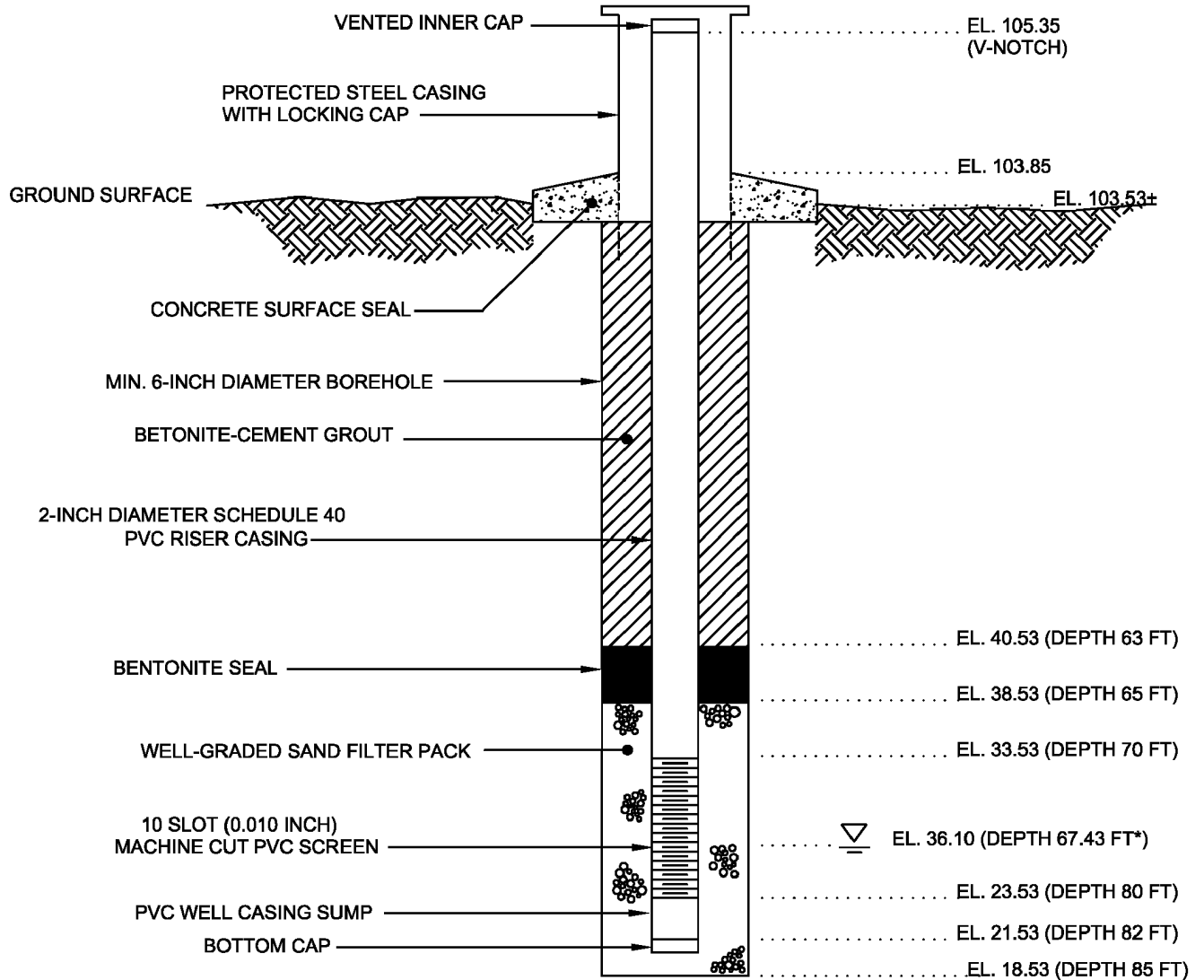
DATE COMPLETED : 05/18/2006

NORTHING: 216957.32

EASTING: 961125.02

GROUND SURFACE ELEVATION: 103.53

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-28-26	67.43	36.10



- NOTES:**
- 1) SEE B-319 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-319B.DWG

**WELL NO. : OW-323A**

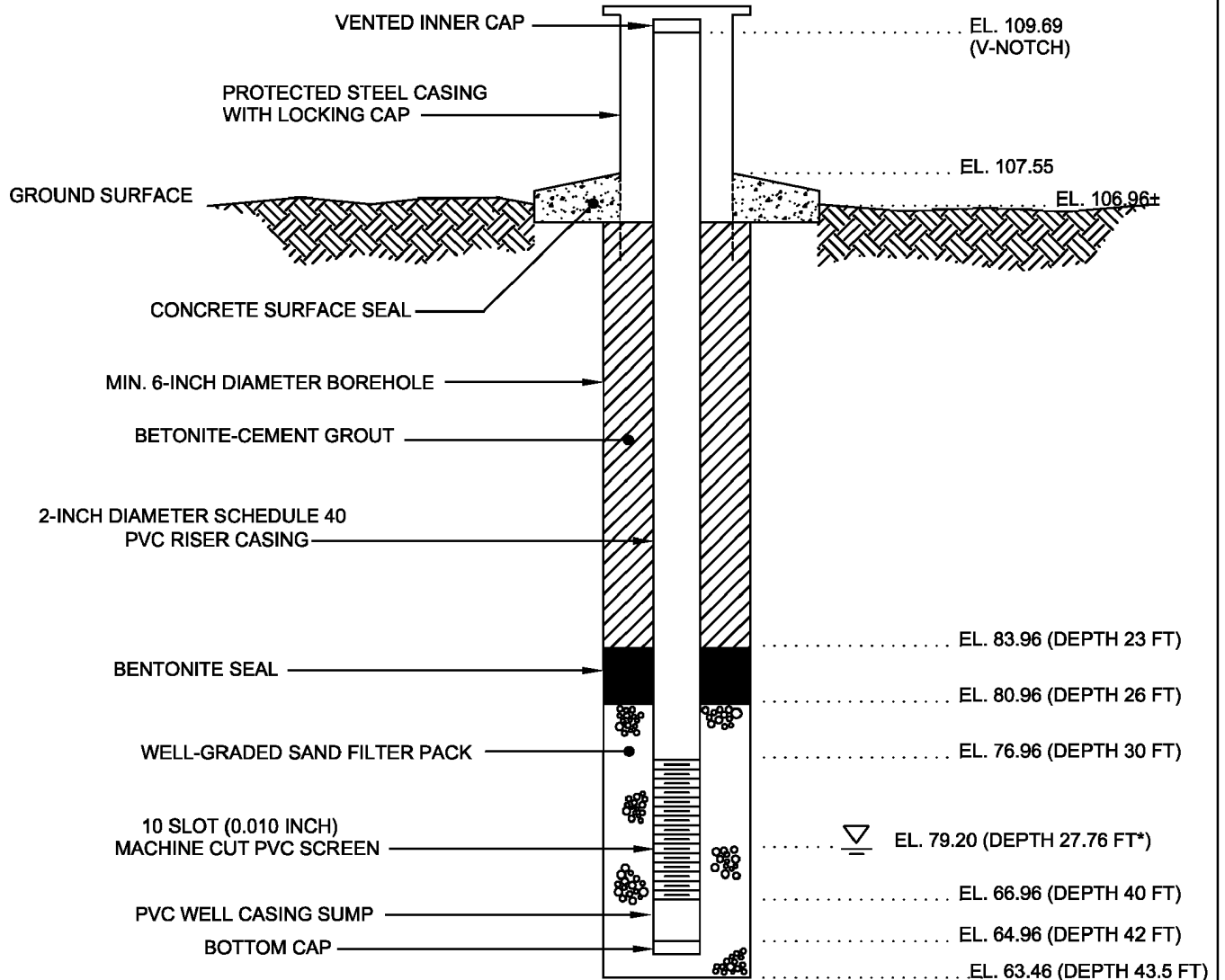
DATE COMPLETED : 07/17/2006

NORTHING: 217034.46

EASTING: 960057.07

GROUND SURFACE ELEVATION: 106.96

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	27.76	79.20



- NOTES:**
- 1) SEE B-323 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-323A.DWG

**WELL NO. : OW-328**

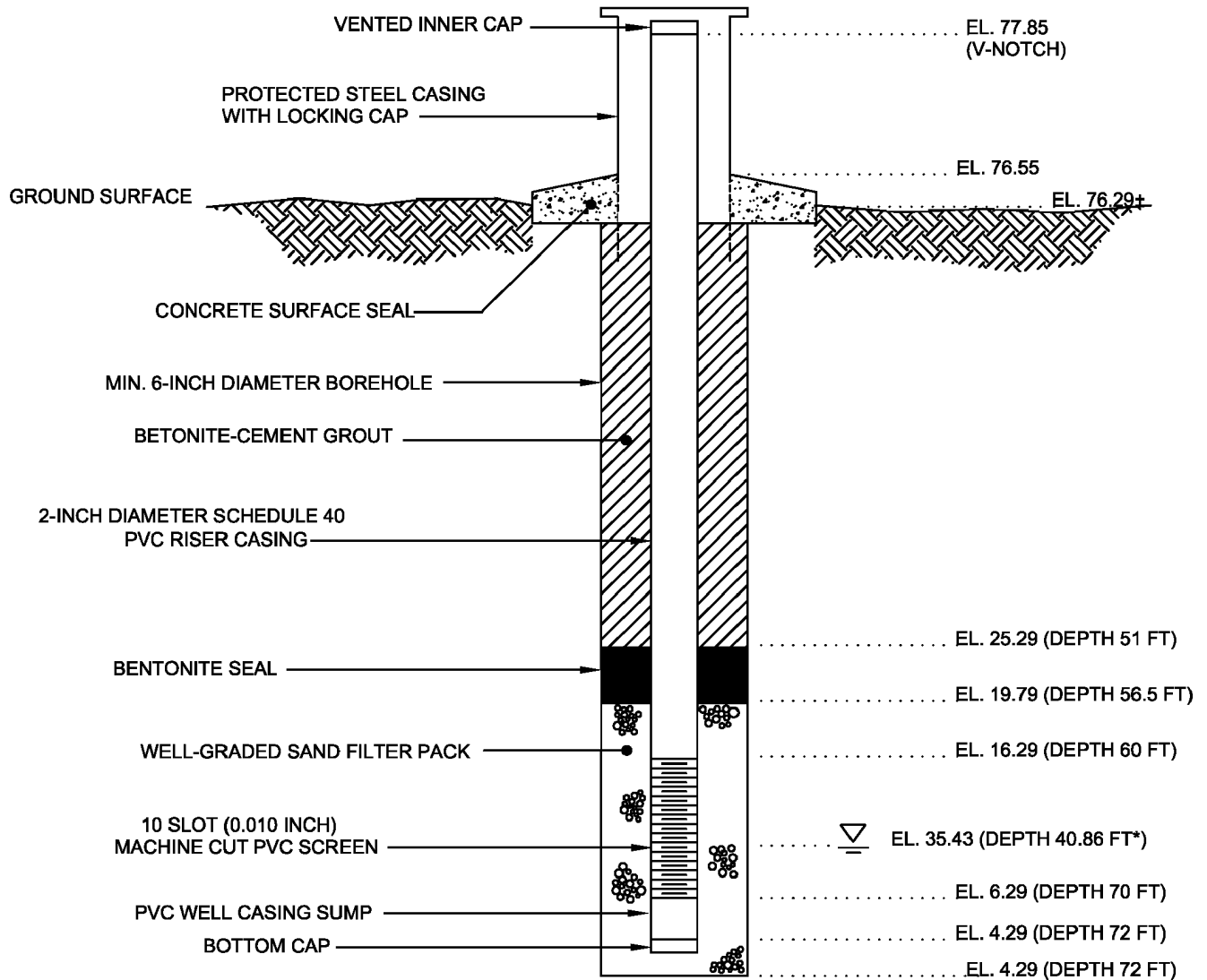
DATE COMPLETED : 06/29/2006

NORTHING: 216828.86

EASTING: 960493.21

GROUND SURFACE ELEVATION: 76.29

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	40.86	35.43



- NOTES:**
- 1) SEE B-328 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-328.DWG

**WELL NO. : OW-336**

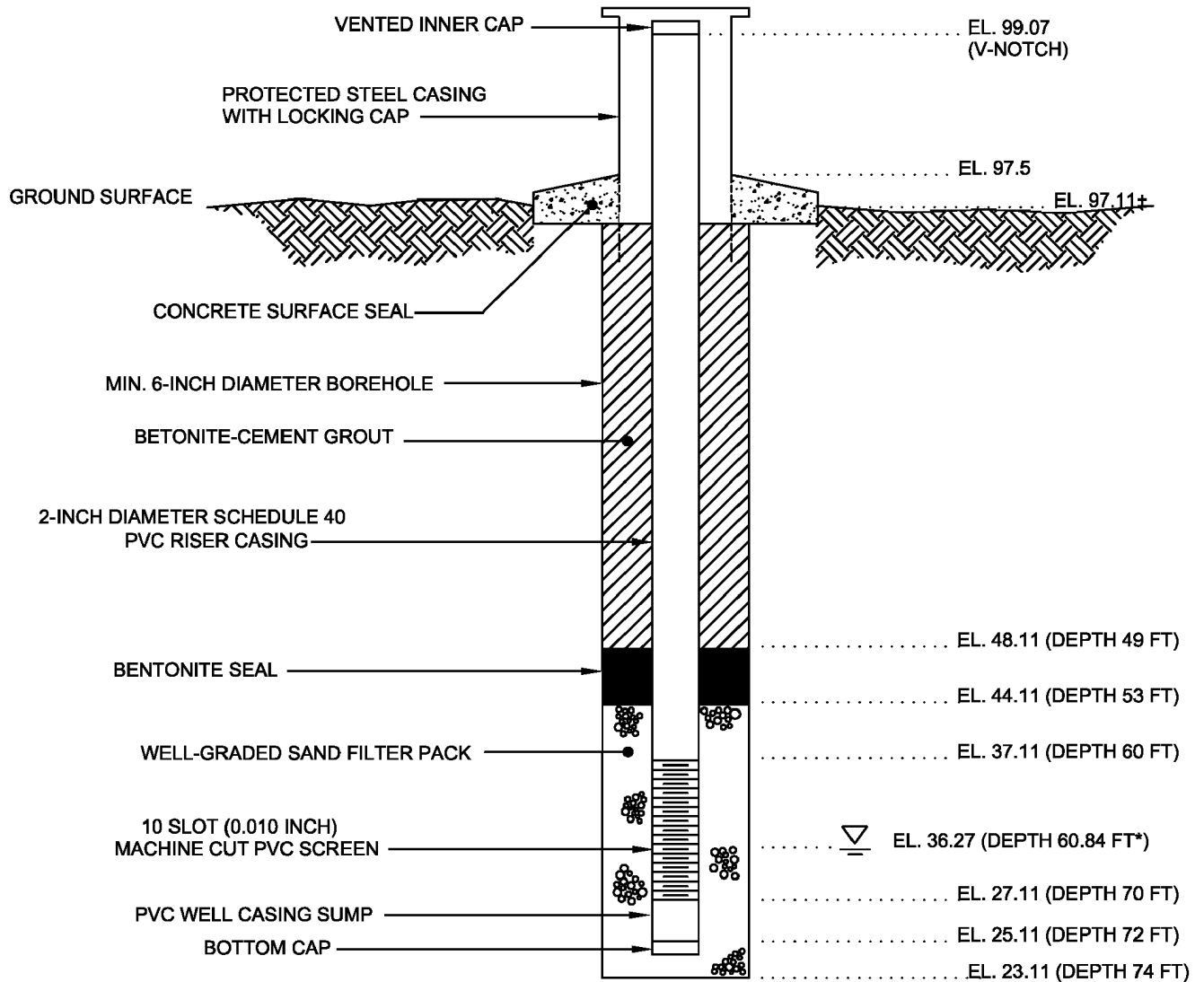
DATE COMPLETED : 06/30/2006

NORTHING: 216643.18

EASTING: 960746.61

GROUND SURFACE ELEVATION: 97.11

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-31-06	60.84	36.27



- NOTES:**
- 1) SEE B-336 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**

PROJECT NO. 06120048  
DWG NO. OW-336.DWG



**WELL NO. : OW-401**

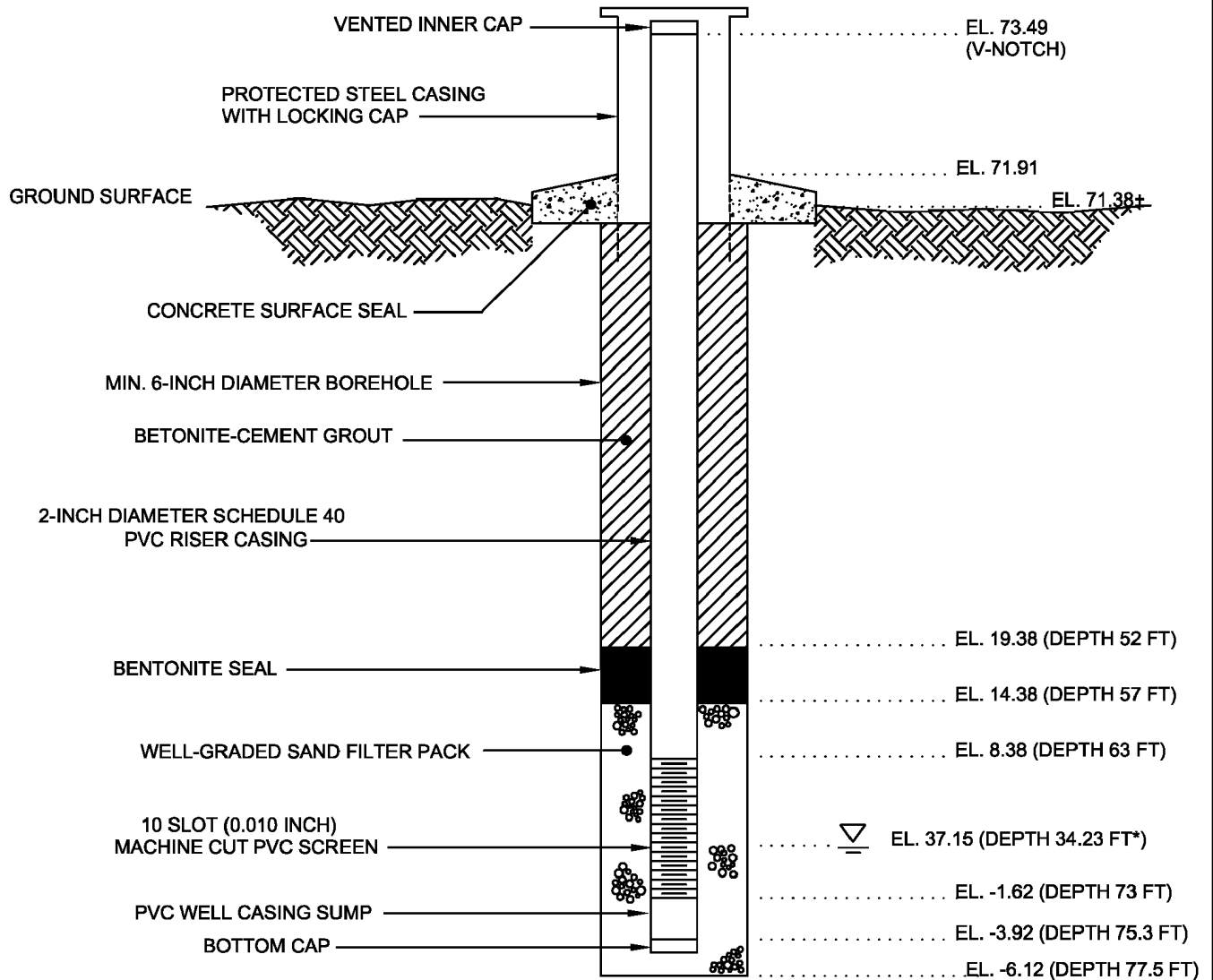
DATE COMPLETED : 06/30/2006

NORTHING: 216348.86

EASTING: 961530.99

GROUND SURFACE ELEVATION: 71.38

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-28-06	34.23	37.15



- NOTES:**
- 1) SEE B-401 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-401.DWG

**WELL NO. : OW-413A**

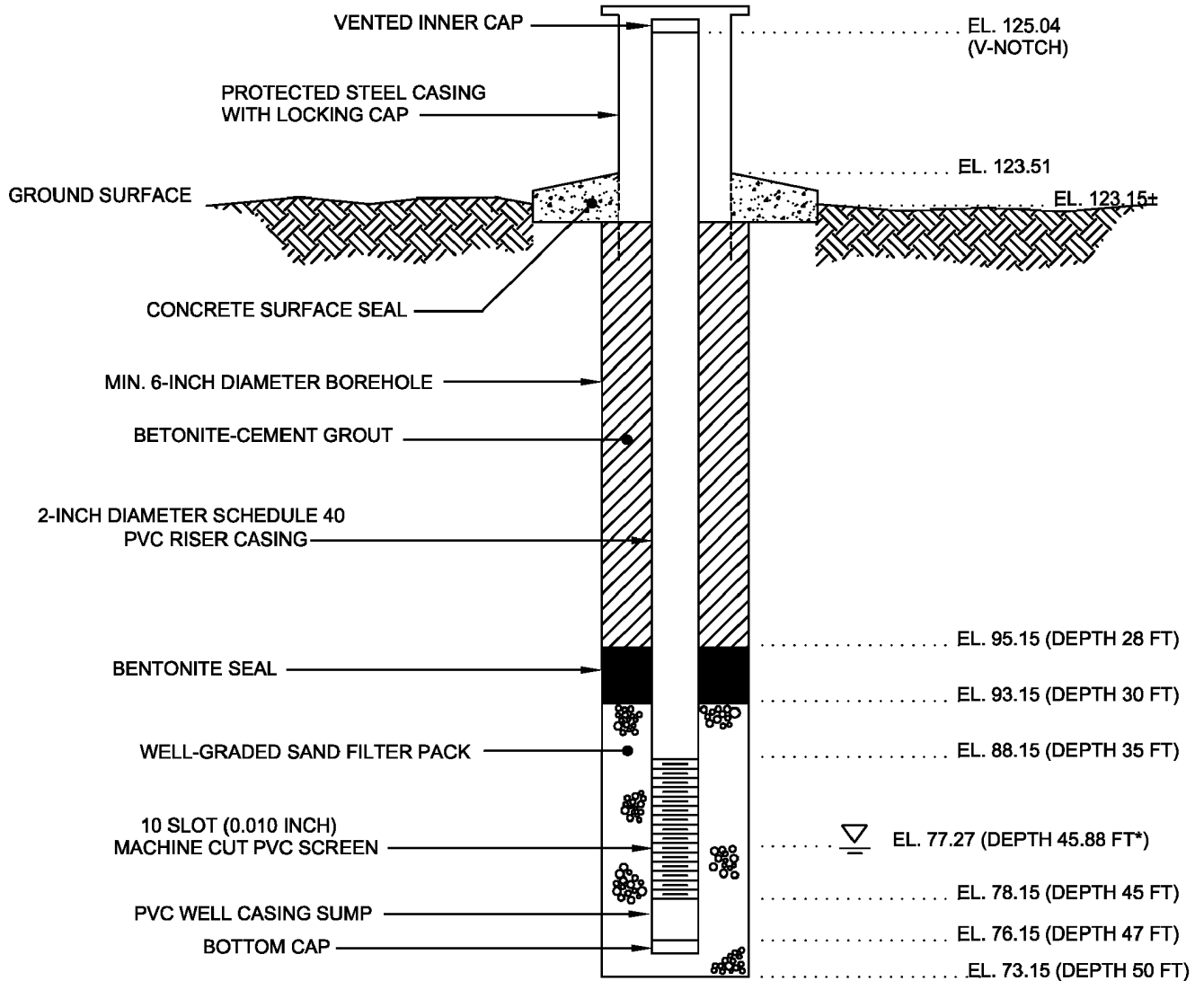
DATE COMPLETED : 05/16/2006

NORTHING: 216703.14

EASTING: 961418.81

GROUND SURFACE ELEVATION: 123.15

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-31-06	45.88	77.27



- NOTES:**
- 1) SEE B-413 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-413A.DWG

**WELL NO. : OW-413B**

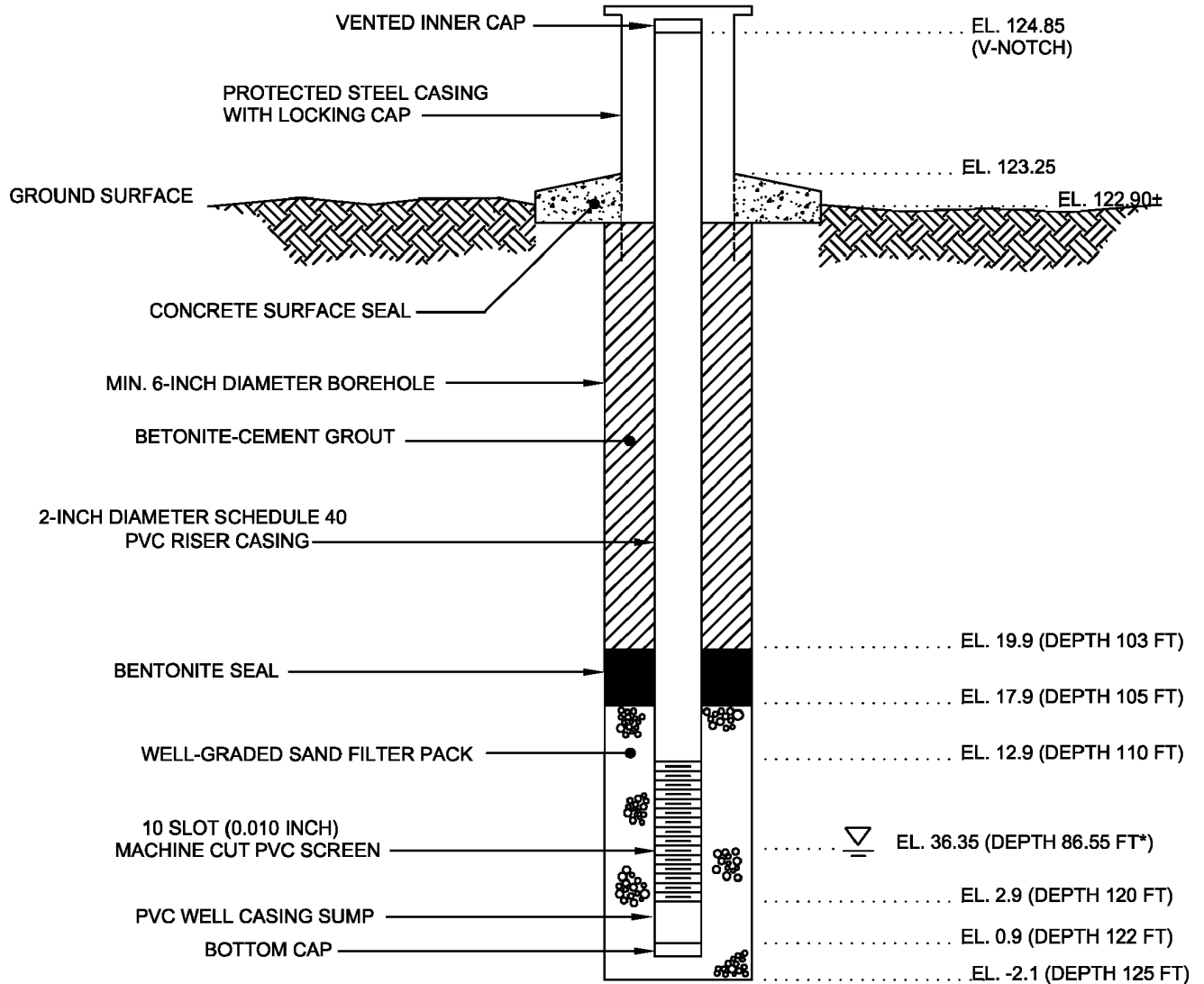
DATE COMPLETED : 05/16/2006

NORTHING: 216694.88

EASTING: 961413.25

GROUND SURFACE ELEVATION: 122.90

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-31-06	86.55	36.35



- NOTES:**
- 1) SEE B-413 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-413B.DWG

**WELL NO. : OW-418A**

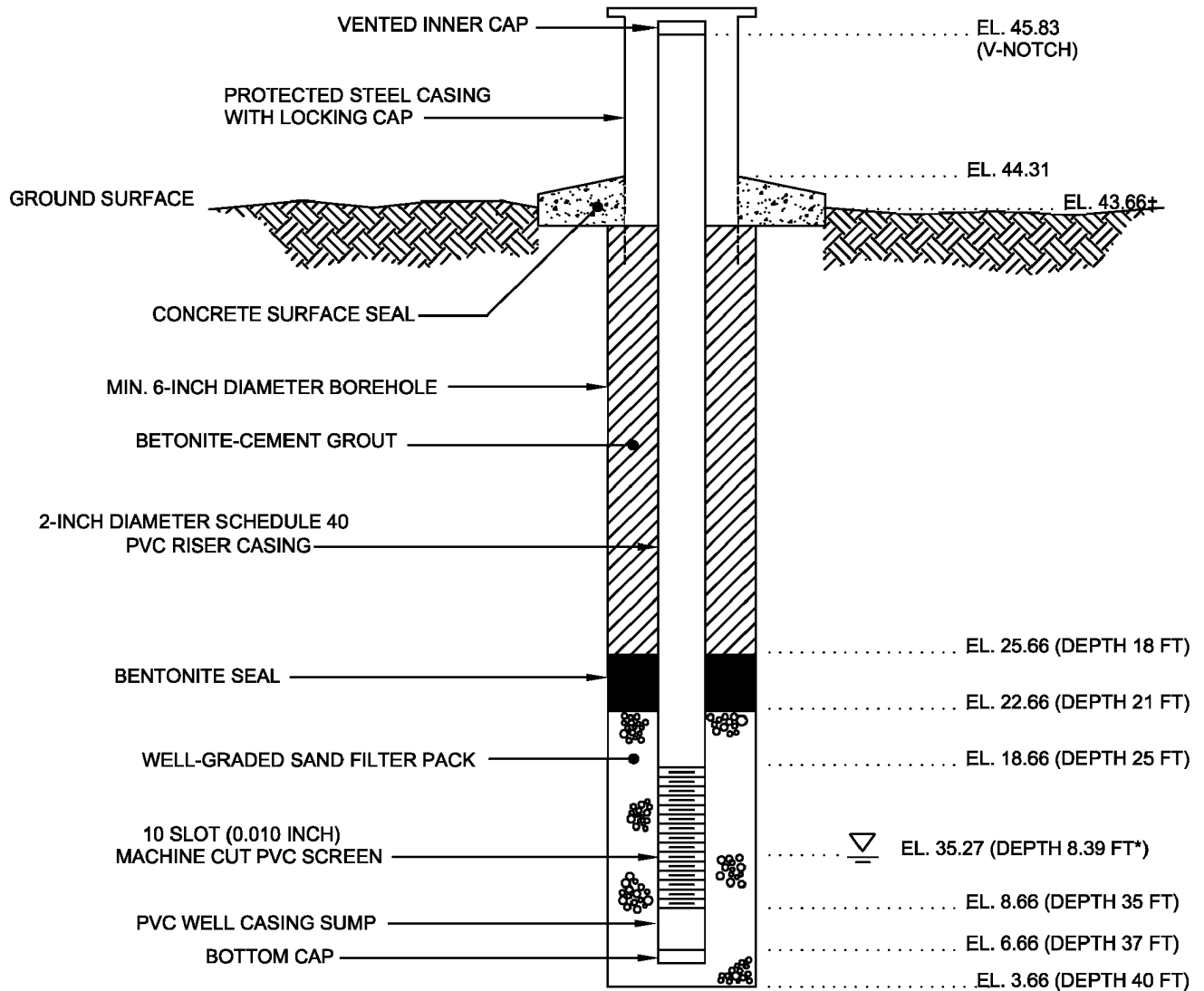
DATE COMPLETED : 07/06/2006

NORTHING: 216340.41

EASTING: 961966.46

GROUND SURFACE ELEVATION: 43.66

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-28-06	8.39	35.27



- NOTES:**
- 1) SEE B-418 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-418A.DWG

**WELL NO. : OW-418B**

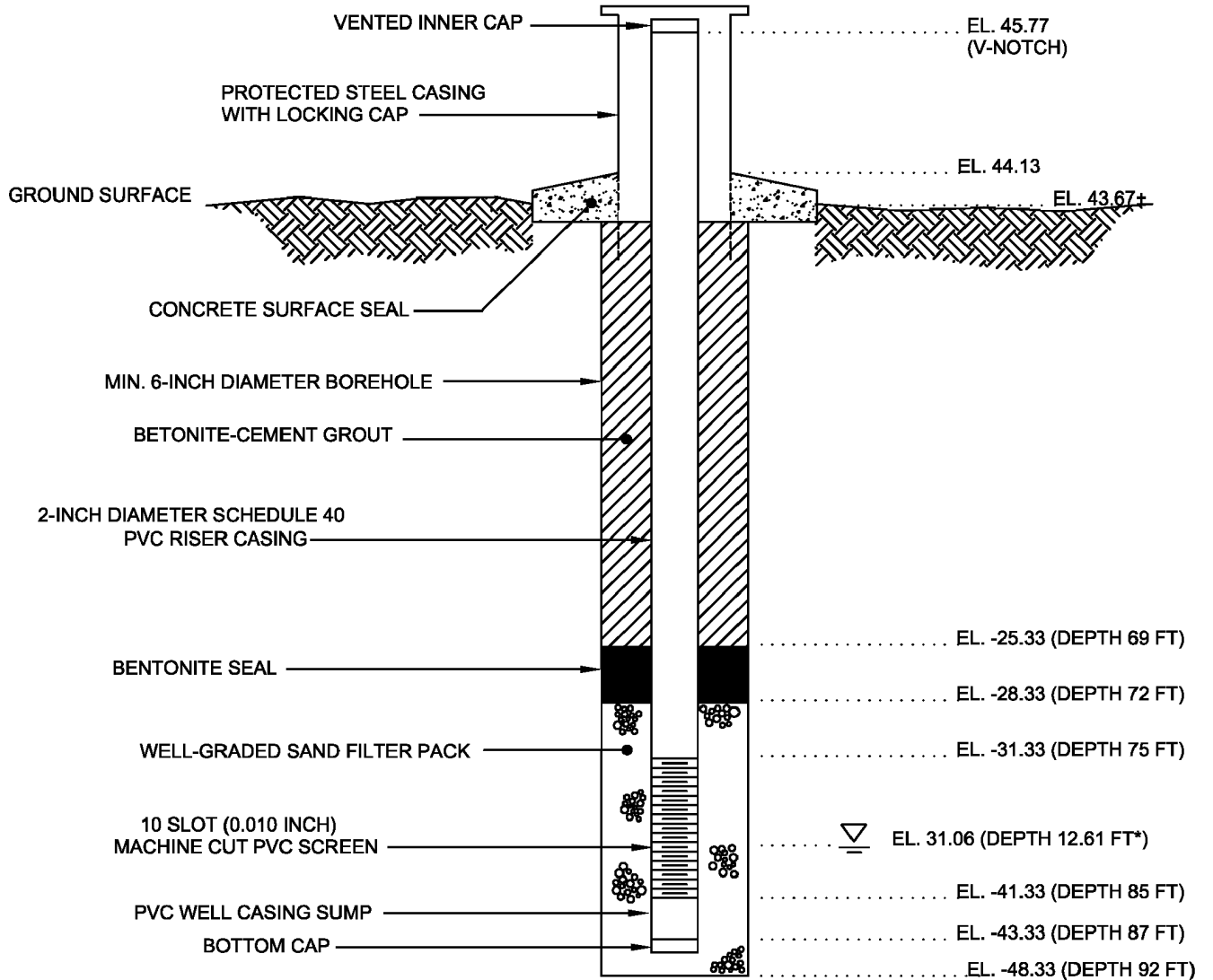
DATE COMPLETED : 07/06/2006

NORTHING: 216340.25

EASTING: 961976.71

GROUND SURFACE ELEVATION: 43.67

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-31-06	12.61	31.06



- NOTES:**
- 1) SEE B-418 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-418B.DWG

**WELL NO. : OW-423**

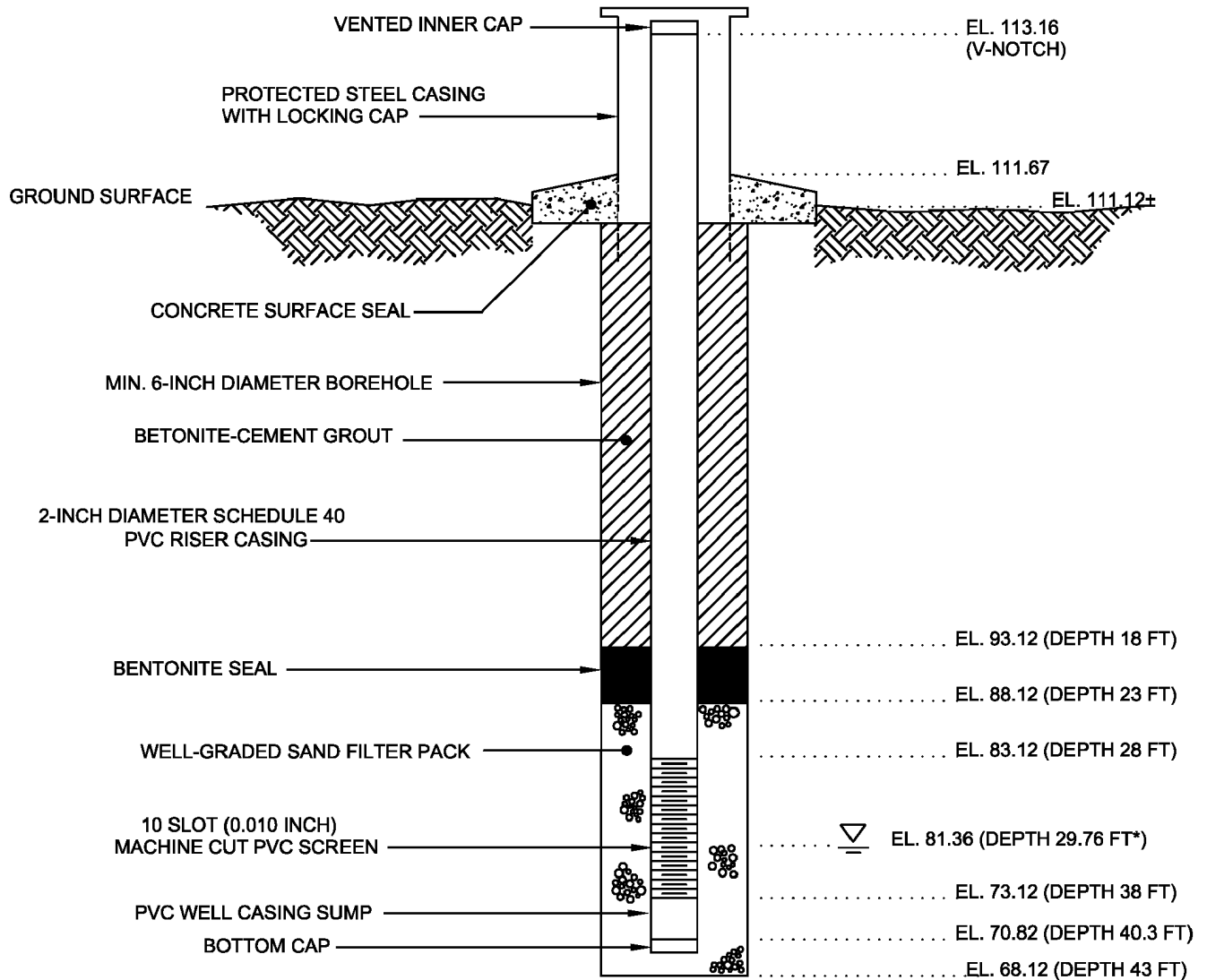
DATE COMPLETED : 07/06/2006

NORTHING: 216339.99

EASTING: 960882.24

GROUND SURFACE ELEVATION: 111.12

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-24-06	29.76	81.36



- NOTES:**
- 1) SEE B-423 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-423.DWG

**WELL NO. : OW-428**

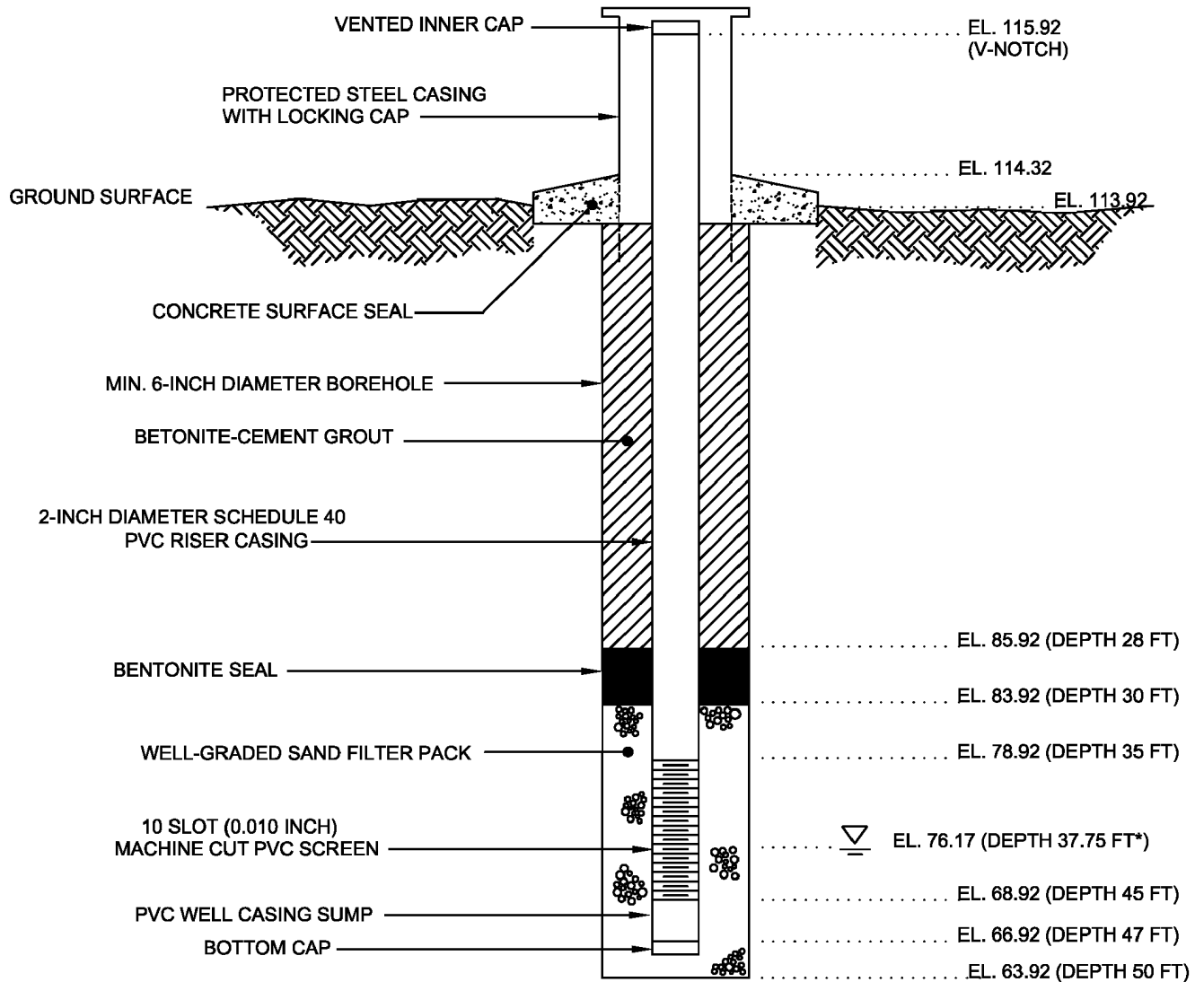
DATE COMPLETED : 05/19/2006

NORTHING: 216105.21

EASTING: 961212.38

GROUND SURFACE ELEVATION: 113.92

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-24-06	37.75	76.17



- NOTES:**
- 1) SEE B-428 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-428A.DWG

**WELL NO. : OW-436**

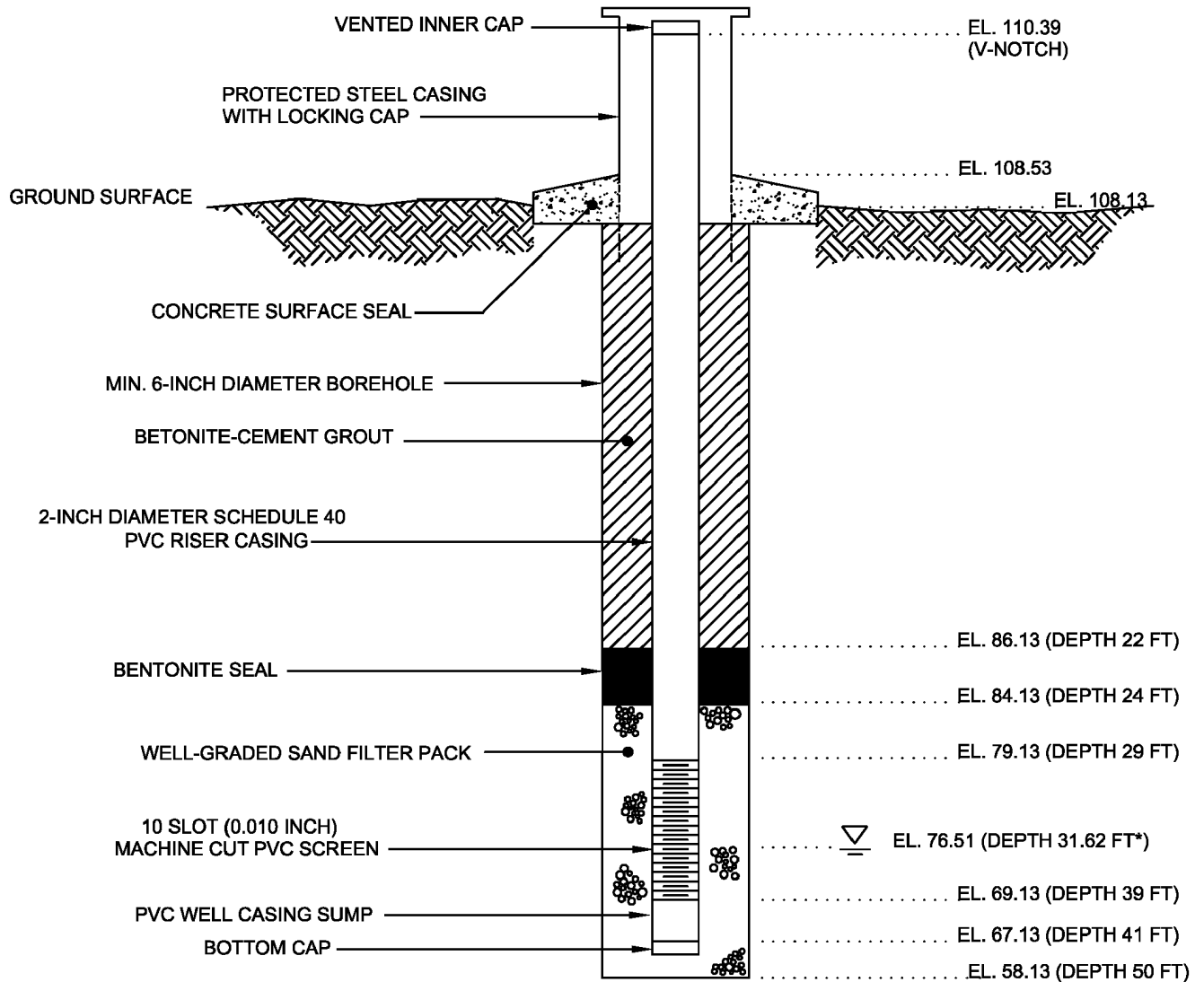
DATE COMPLETED : 05/22/2006

NORTHING: 215922.47

EASTING: 961446.87

GROUND SURFACE ELEVATION: 108.13

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	31.62	76.51



- NOTES:**
- 1) SEE B-436 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-436A.DWG



**WELL NO. : OW-703A**

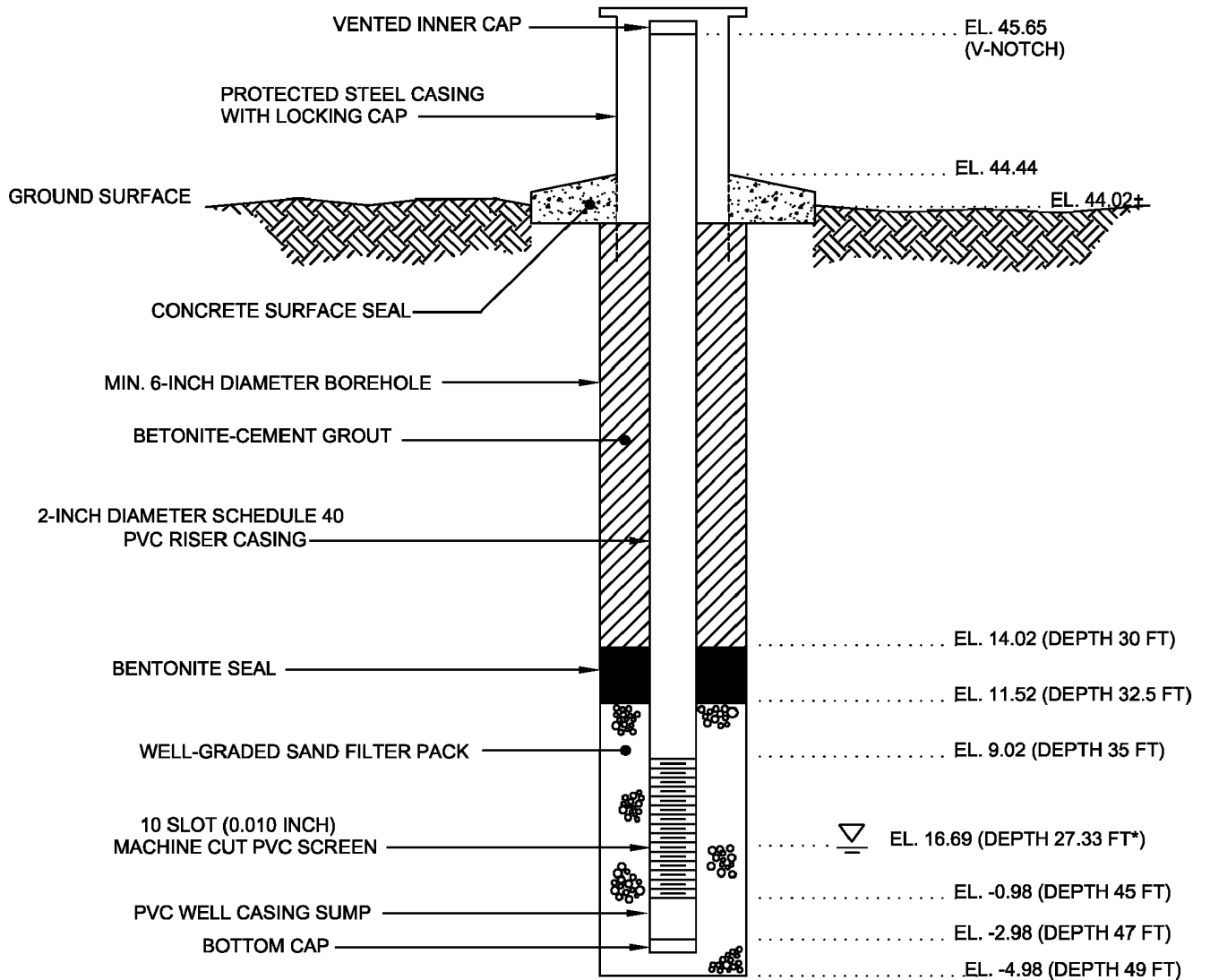
DATE COMPLETED : 07/12/2006

NORTHING: 218171.23

EASTING: 960967.72

GROUND SURFACE ELEVATION: 44.02

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	27.33	16.69



- NOTES:**
- 1) SEE B-703 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-703A.DWG

**WELL NO. : OW-703B**

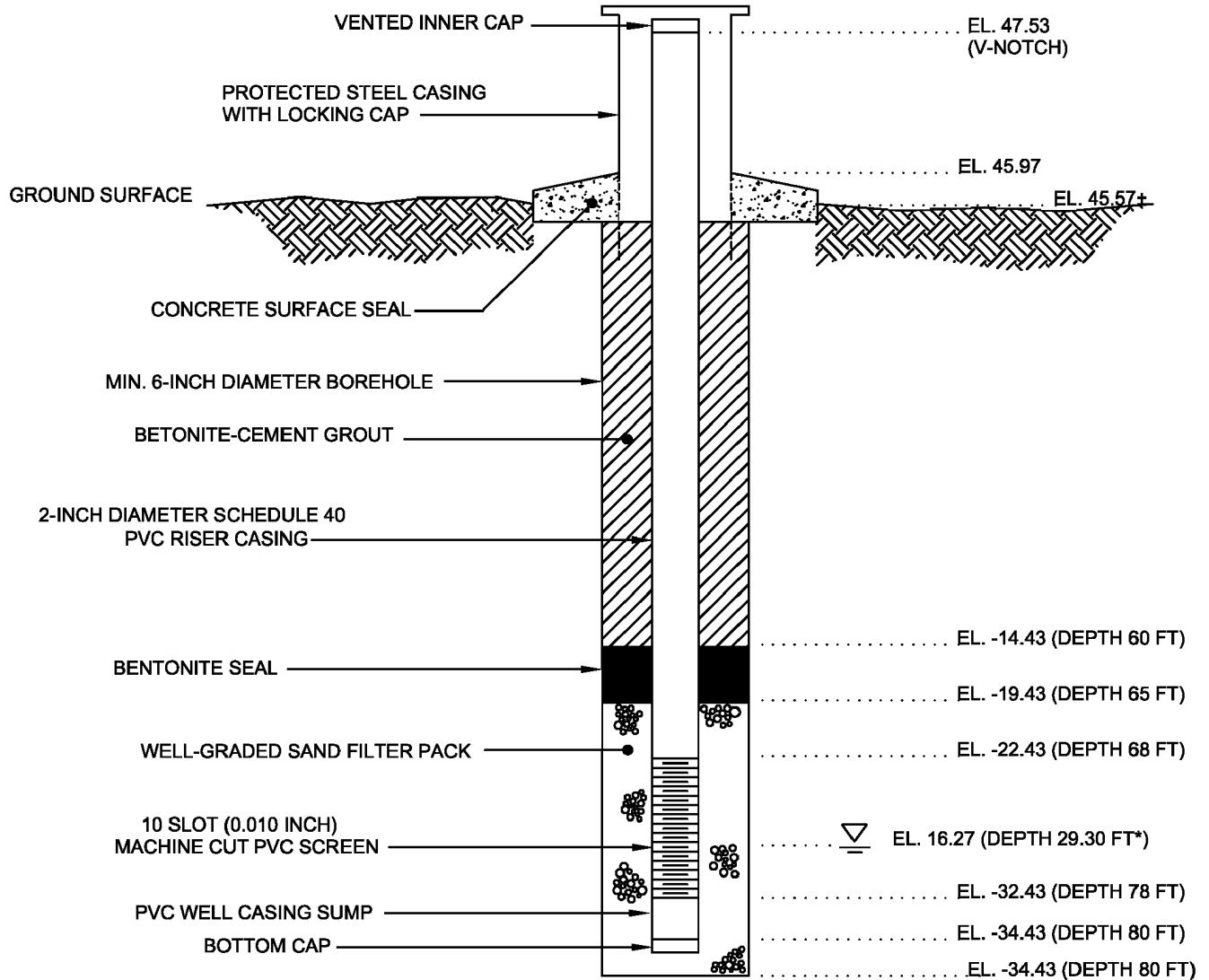
DATE COMPLETED : 07/12/2006

NORTHING: 218171.67

EASTING: 960958.91

GROUND SURFACE ELEVATION: 45.57

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	29.30	16.27



- NOTES:**
- 1) SEE B-703 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-703B.DWG

**WELL NO. : OW-705**

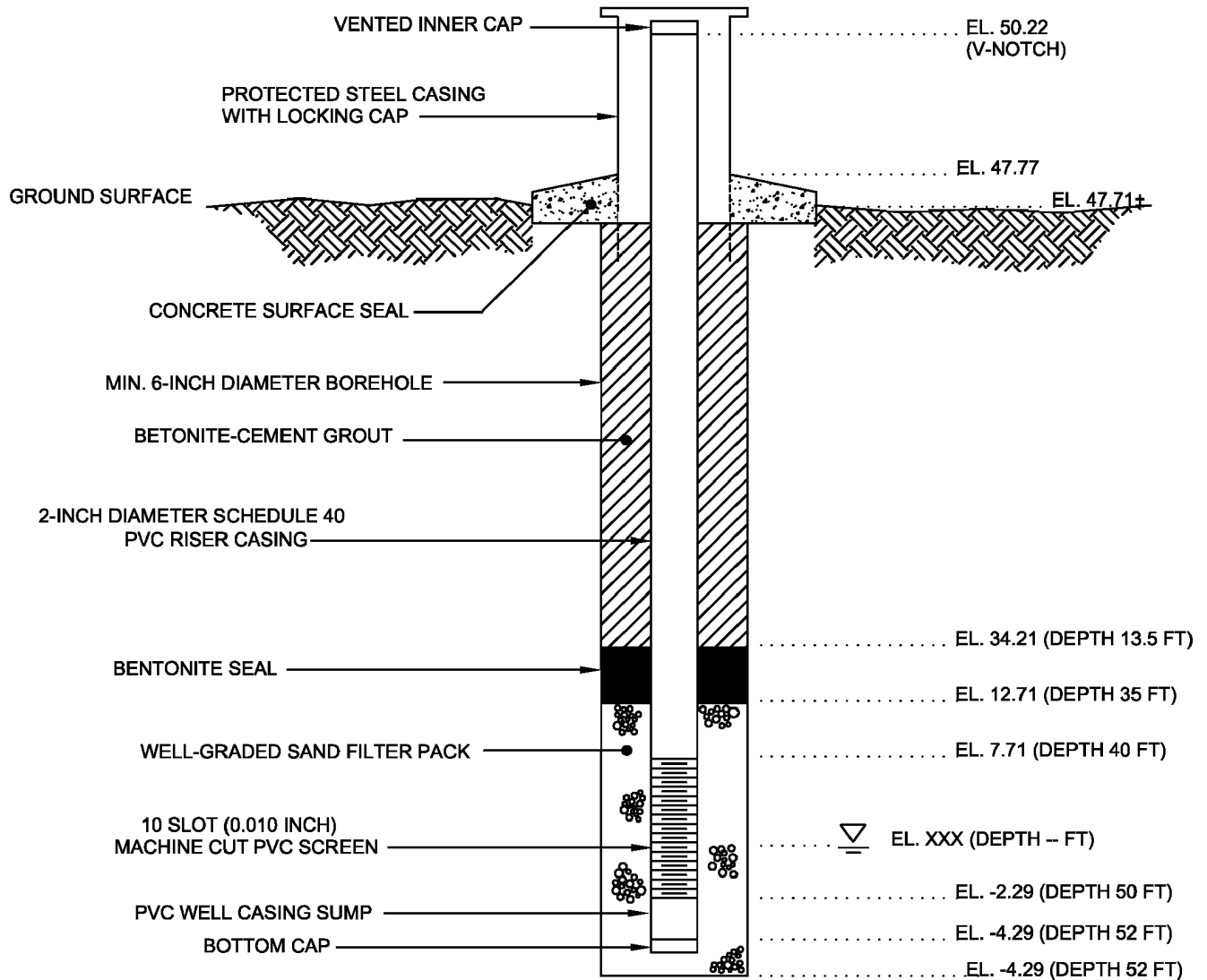
DATE COMPLETED : 06/28/2006

NORTHING: 217566.62

EASTING: 960917.18

GROUND SURFACE ELEVATION: 47.71

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT)	ELEVATION (FT)



- NOTES:**
- 1) SEE B-705 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-705.DWG

**WELL NO. : OW-708A**

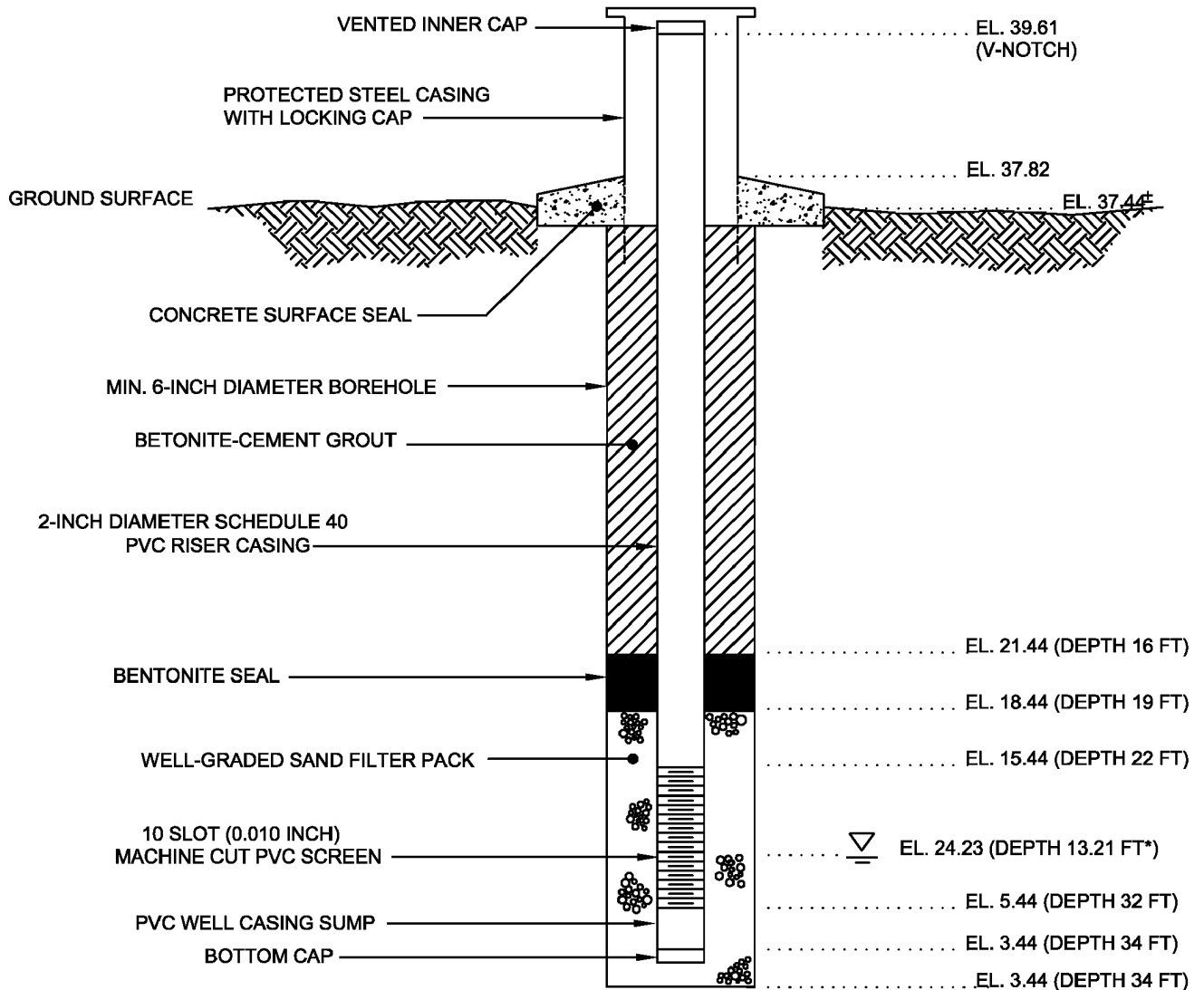
DATE COMPLETED : 06/21/2006

NORTHING: 217586.23

EASTING: 961803.52

GROUND SURFACE ELEVATION: 37.44

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-24-06	13.21	24.23



- NOTES:**
- 1) SEE B-708 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-708.DWG

**WELL NO. : OW-711**

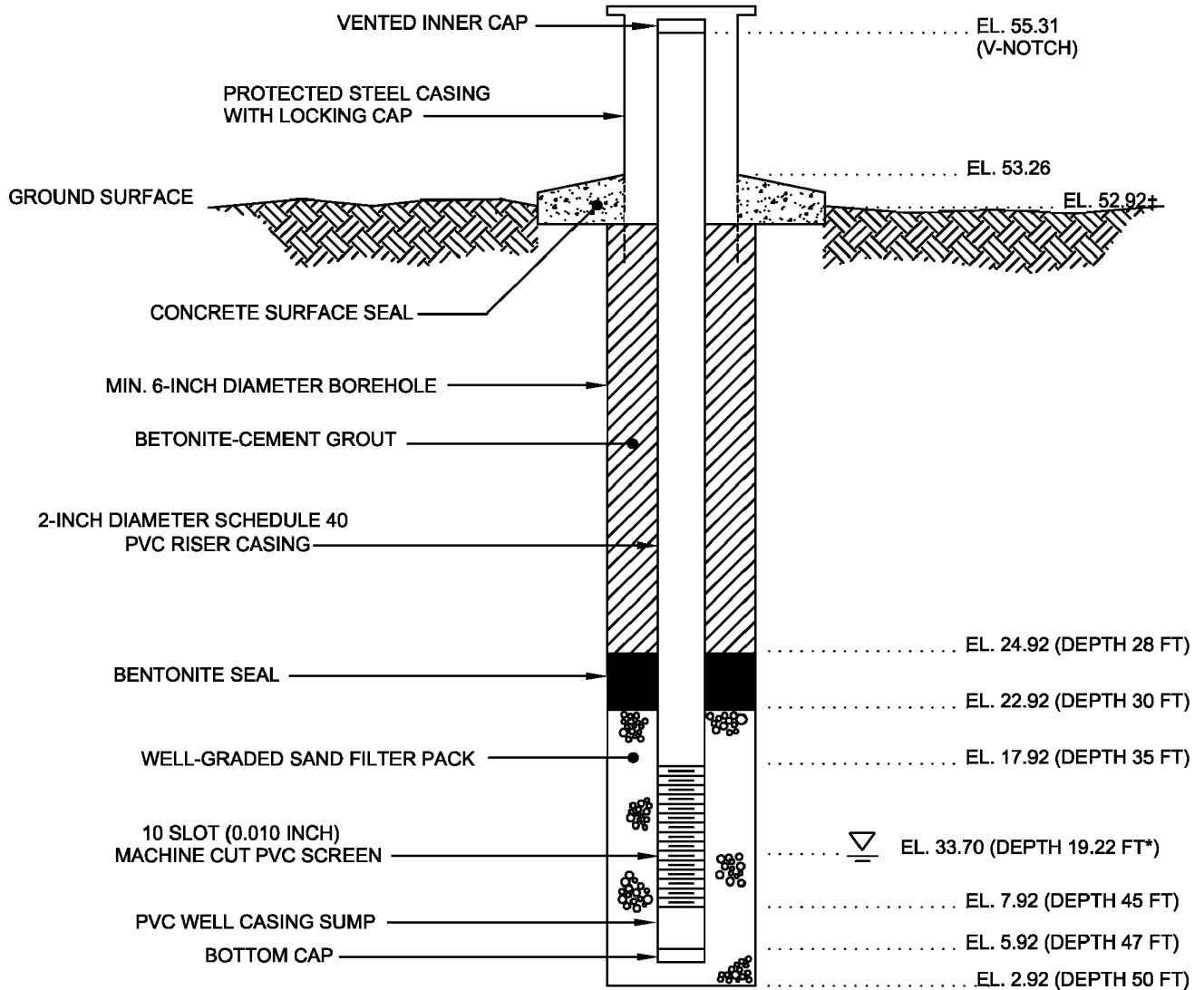
DATE COMPLETED : 05/22/2006

NORTHING: 216748.48

EASTING: 961741.61

GROUND SURFACE ELEVATION: 52.92

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-24-06	19.22	33.70



- NOTES:**
- 1) SEE B-711 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-711.DWG

**WELL NO. : OW-714**

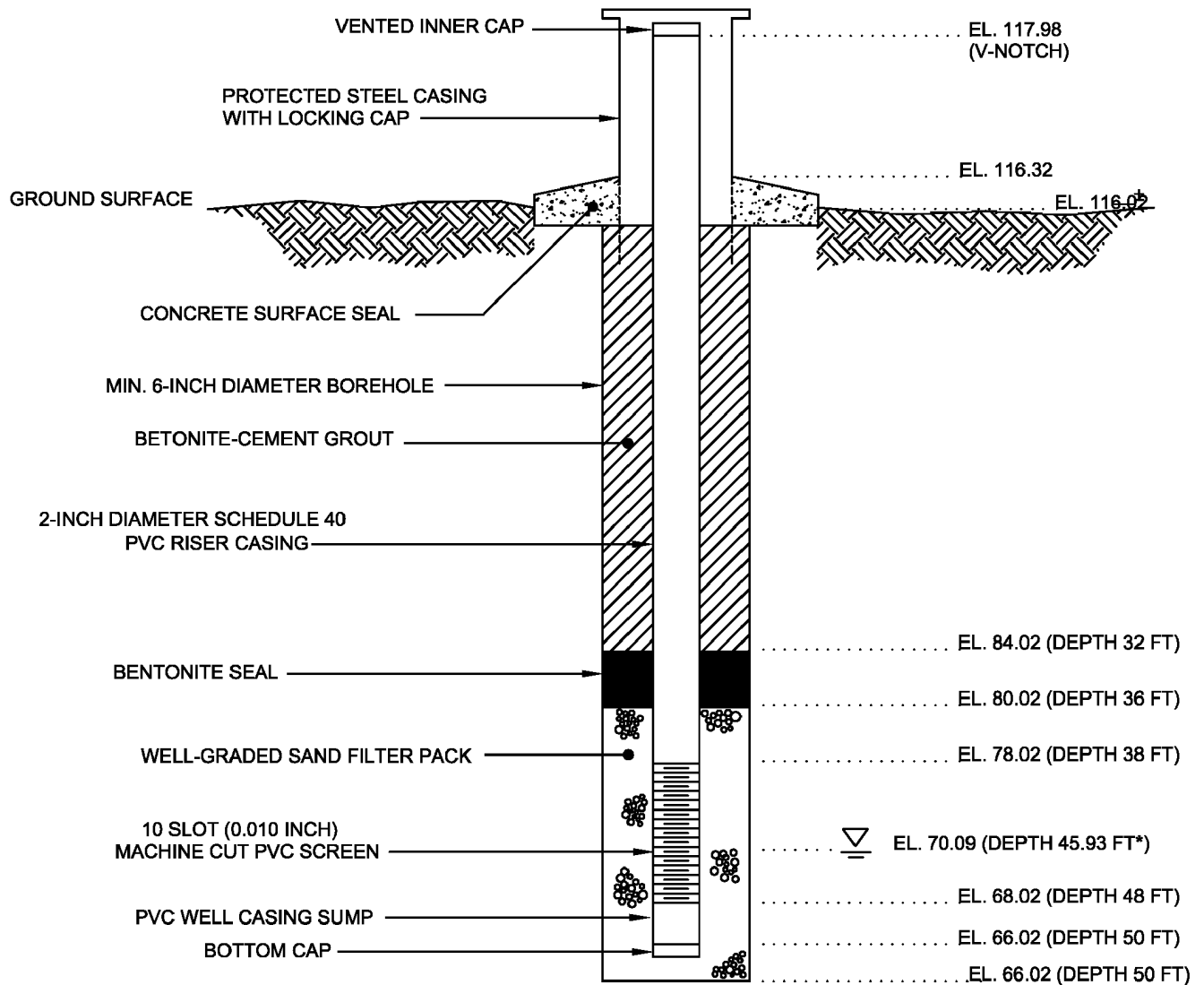
DATE COMPLETED : 06/27/2006

NORTHING: 215705.73

EASTING: 962034.37

GROUND SURFACE ELEVATION: 116.02

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	45.93	70.09



- NOTES:**
- 1) SEE B-714 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-714.DWG

**WELL NO. : OW-718**

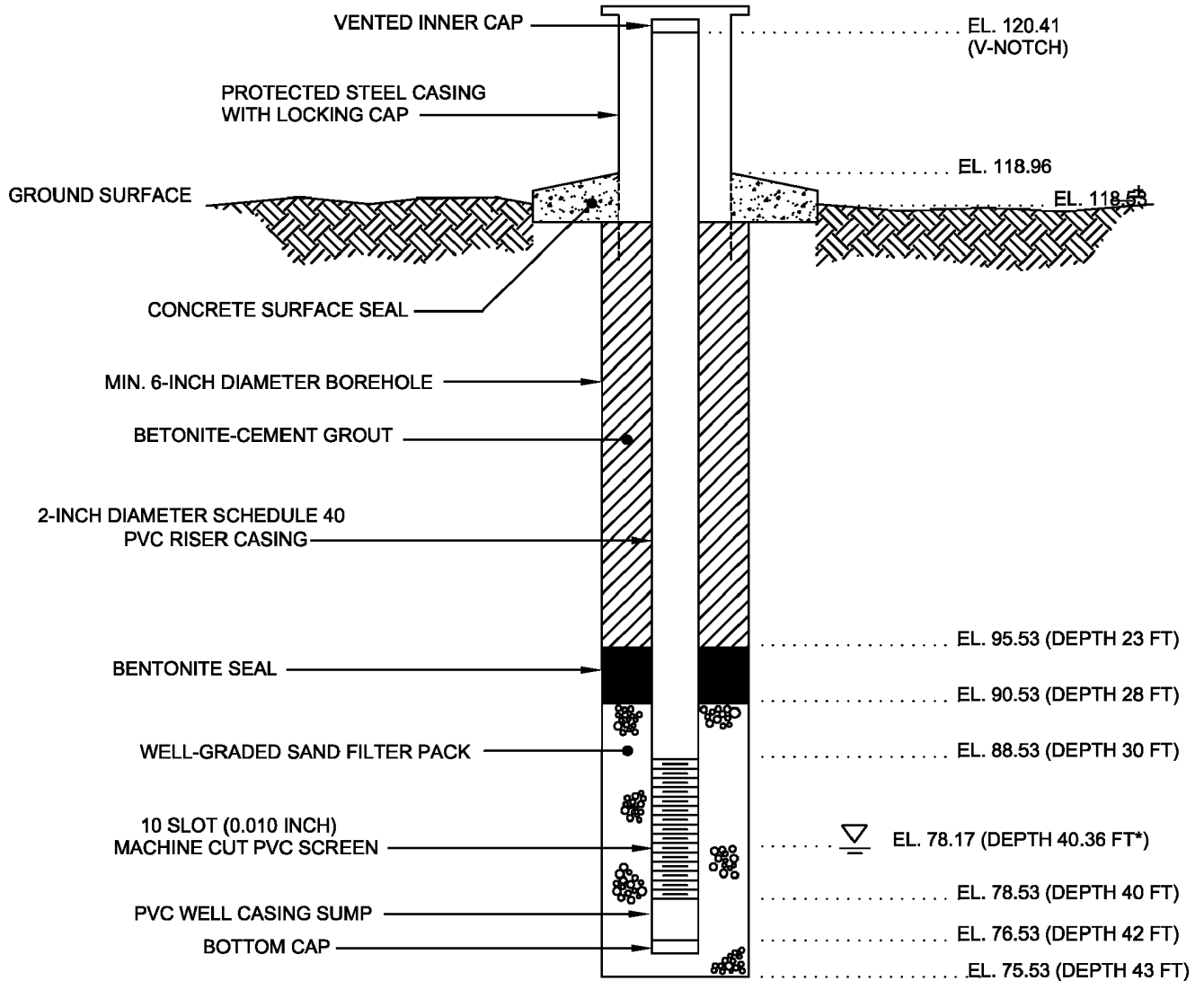
DATE COMPLETED : 06/21/2006

NORTHING: 214133.58

EASTING: 961924.87

GROUND SURFACE ELEVATION: 118.53

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	40.36	78.17



- NOTES:**
- 1) SEE B-718 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-718.DWG

**WELL NO. : OW-725**

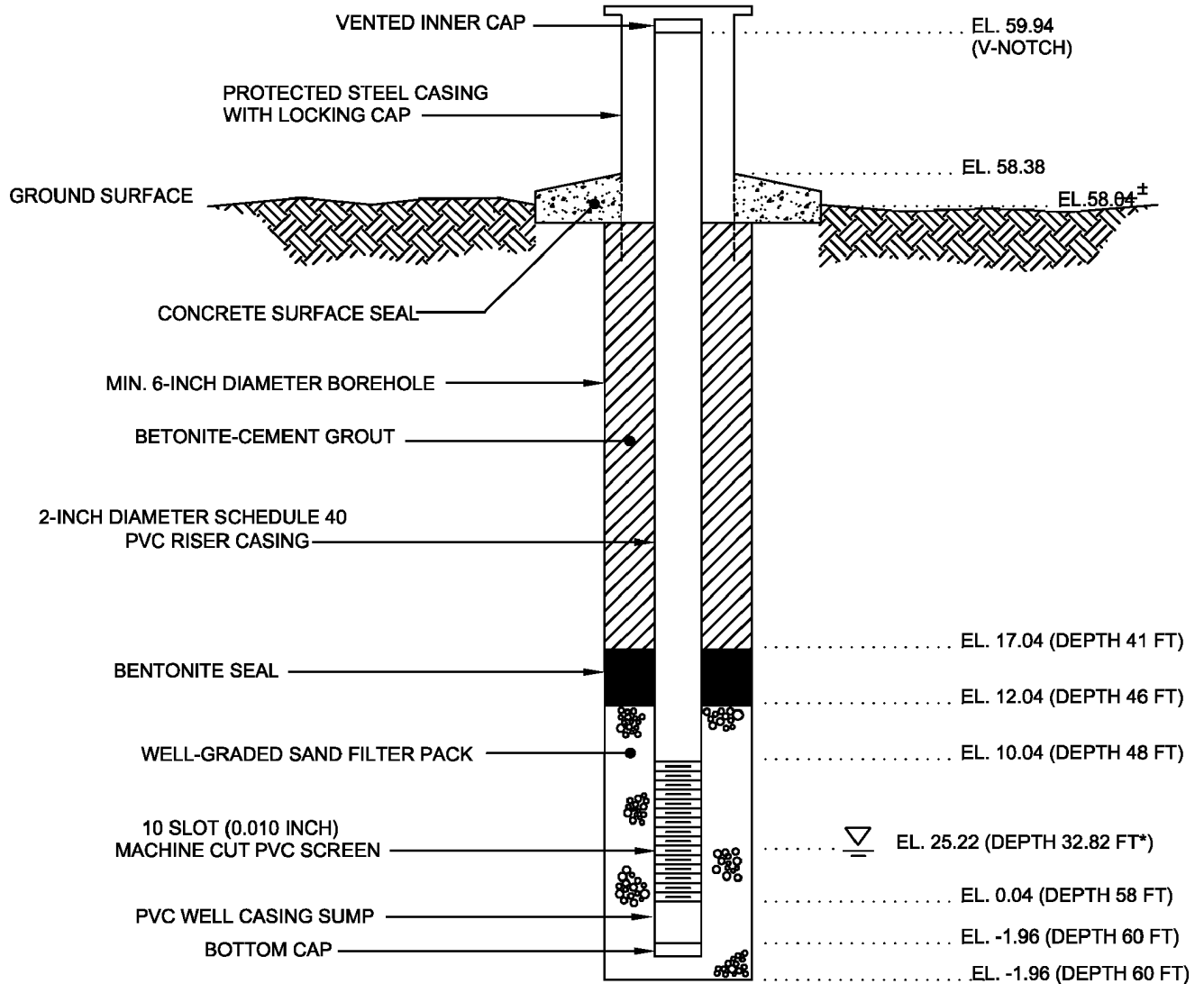
DATE COMPLETED : 06/272006

NORTHING: 214649.30

EASTING: 963212.73

GROUND SURFACE ELEVATION: 58.04

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	32.82	25.22



- NOTES:**
- 1) SEE B-725 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-725.DWG



**WELL NO. : OW-729**

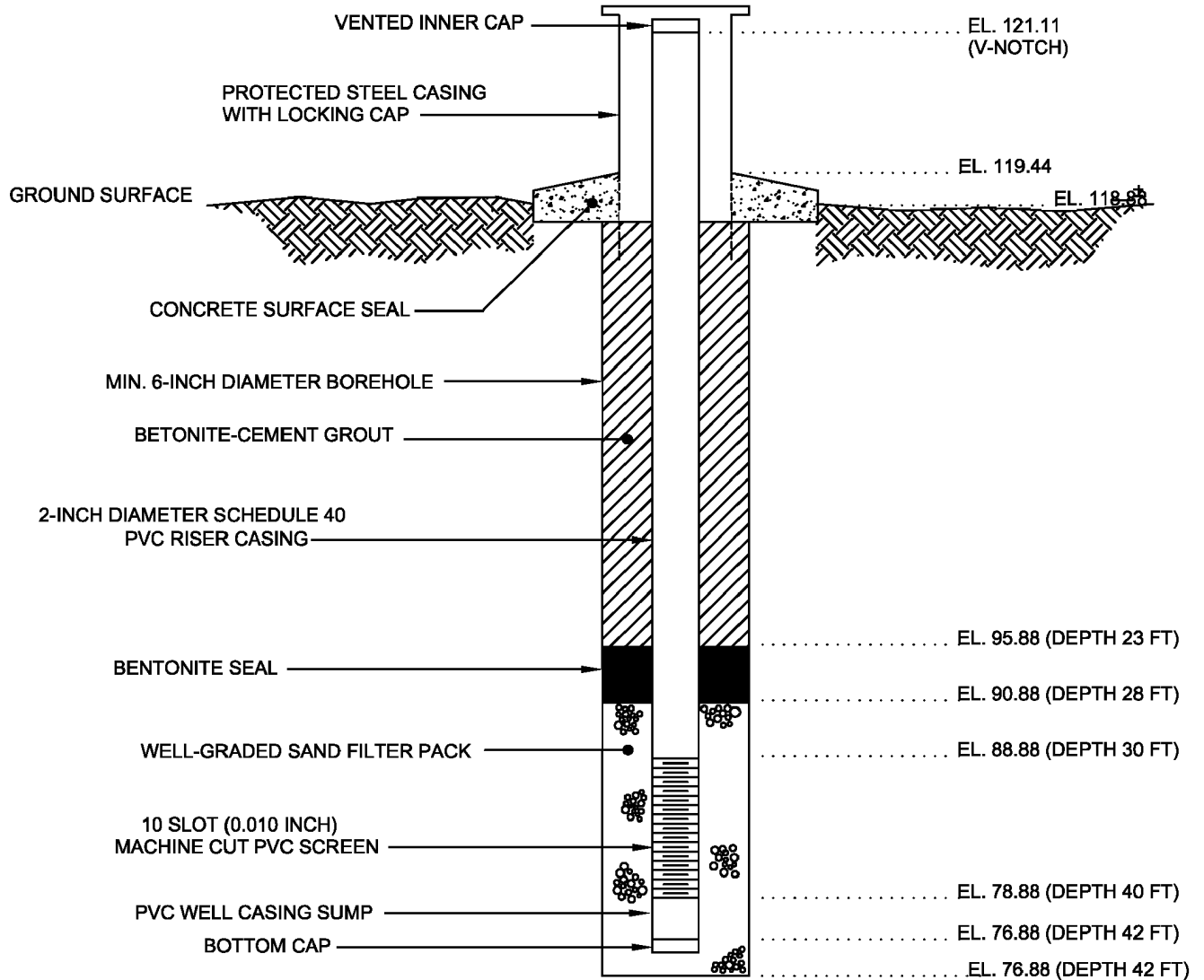
DATE COMPLETED : 06/23/2006

NORTHING: 214872.58

EASTING: 962445.93

GROUND SURFACE ELEVATION: 118.88

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	DRY	-----



- NOTES:**
- 1) SEE B-729 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-729.DWG

**WELL NO. : OW-735**

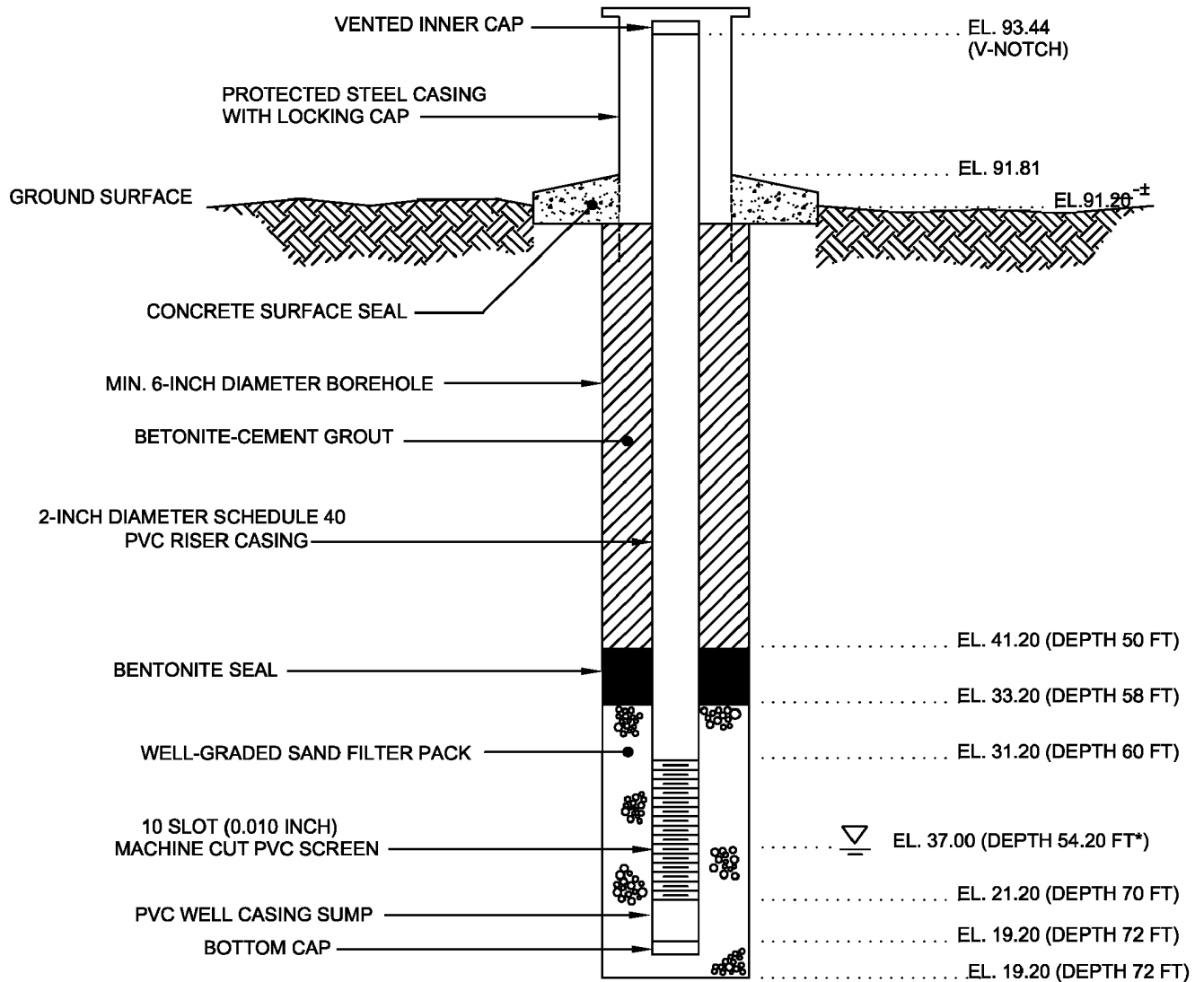
DATE COMPLETED : 06/29/2006

NORTHING: 214805.48

EASTING: 961021.83

GROUND SURFACE ELEVATION: 91.20

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	54.20	37.00



- NOTES:**
- 1) SEE B-735 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-735.DWG

**WELL NO. : OW-743**

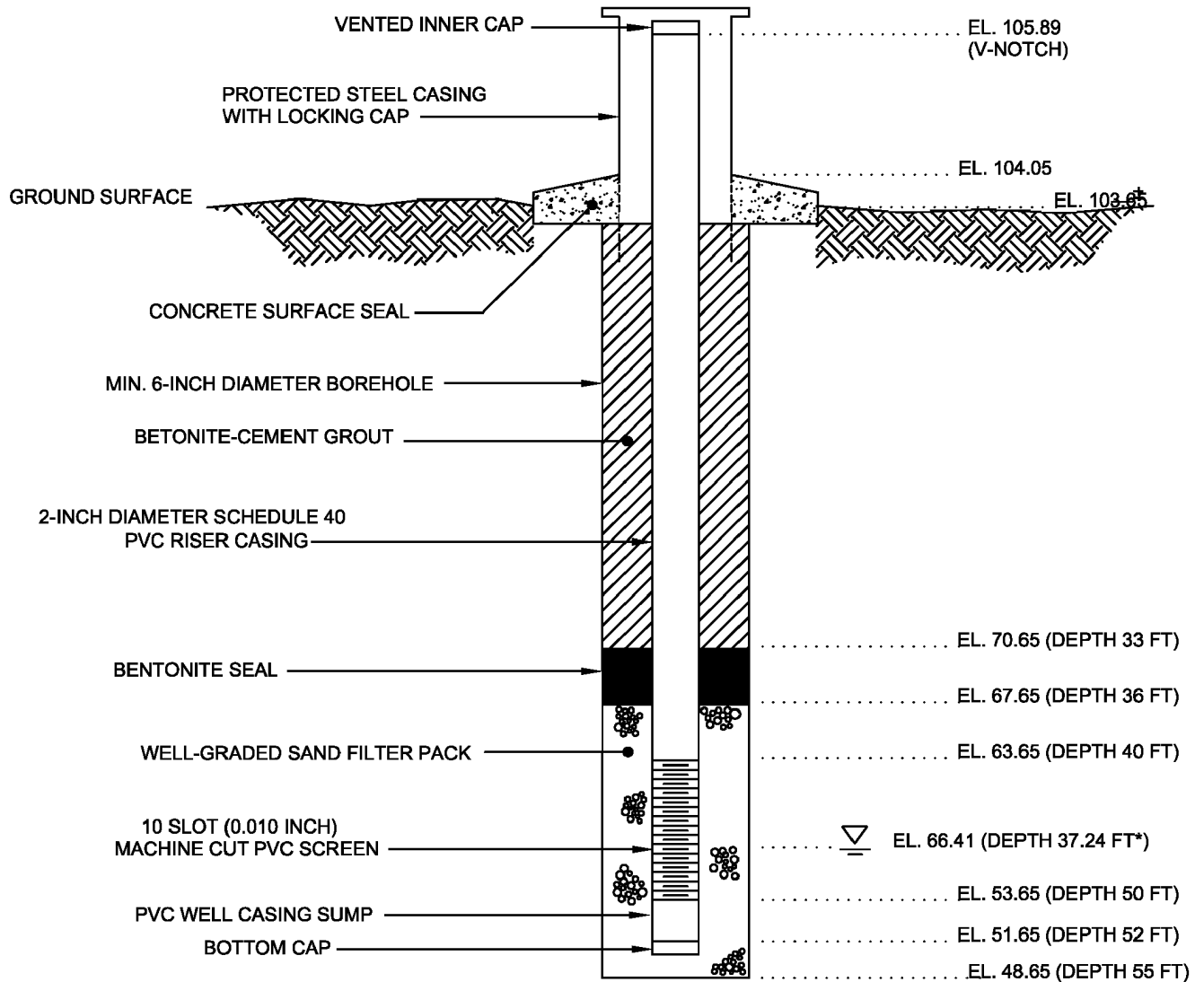
DATE COMPLETED : 07/11/2006

NORTHING: 213320.62

EASTING: 961234.01

GROUND SURFACE ELEVATION: 103.65

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	37.24	66.41



- NOTES:**
- 1) SEE B-743 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-743.DWG

**WELL NO. : OW-744**

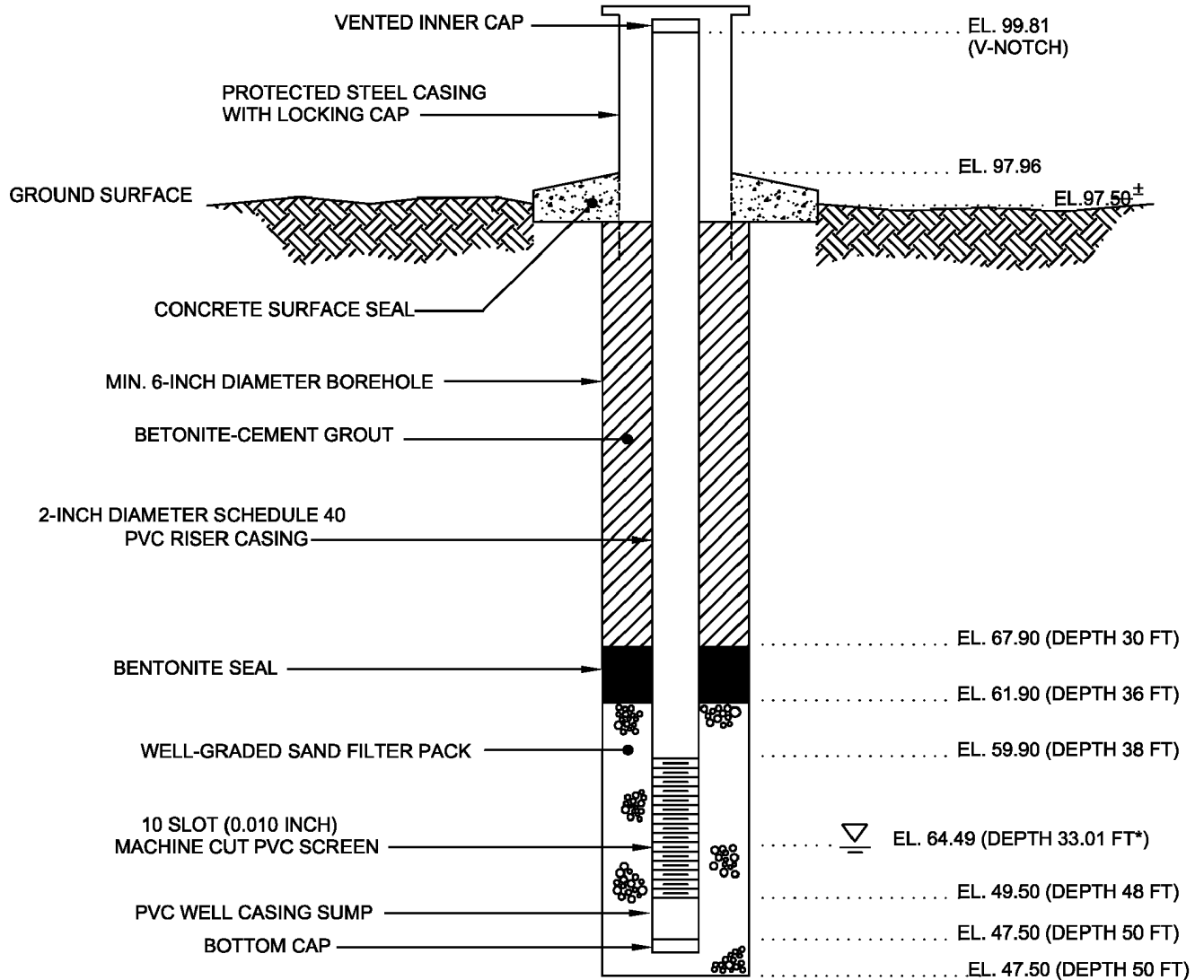
DATE COMPLETED : 06/21/2006

NORTHING: 216405.37

EASTING: 960089.41

GROUND SURFACE ELEVATION: 97.50

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	33.01	64.49



- NOTES:**
- 1) SEE B-744 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-744.DWG

**WELL NO. : OW-752A**

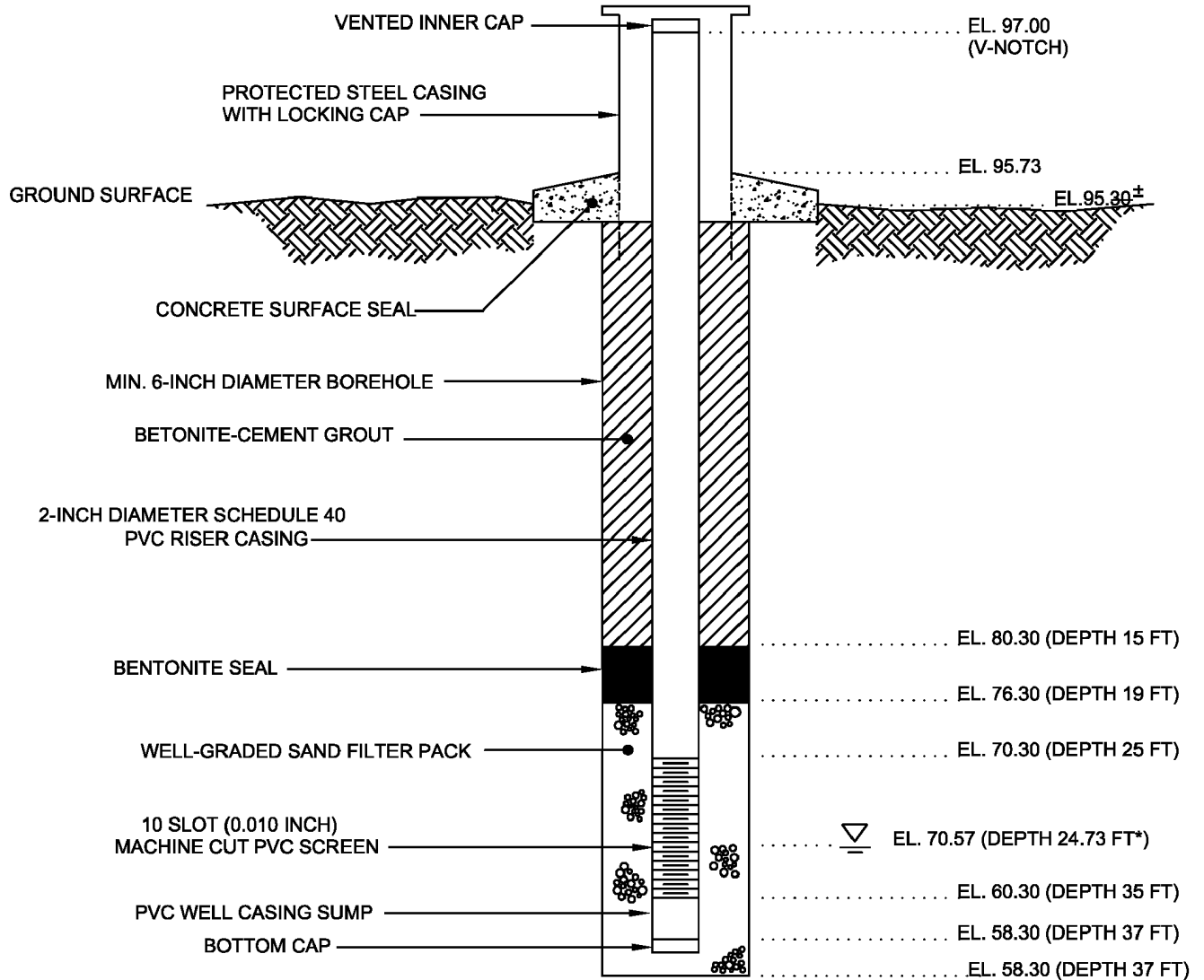
DATE COMPLETED : 07/07/2006

NORTHING: 215482.18

EASTING: 960250.12

GROUND SURFACE ELEVATION: 95.30

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	24.73	70.57



- NOTES:**
- 1) SEE B-752 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-752A.DWG

**WELL NO. : OW-752B**

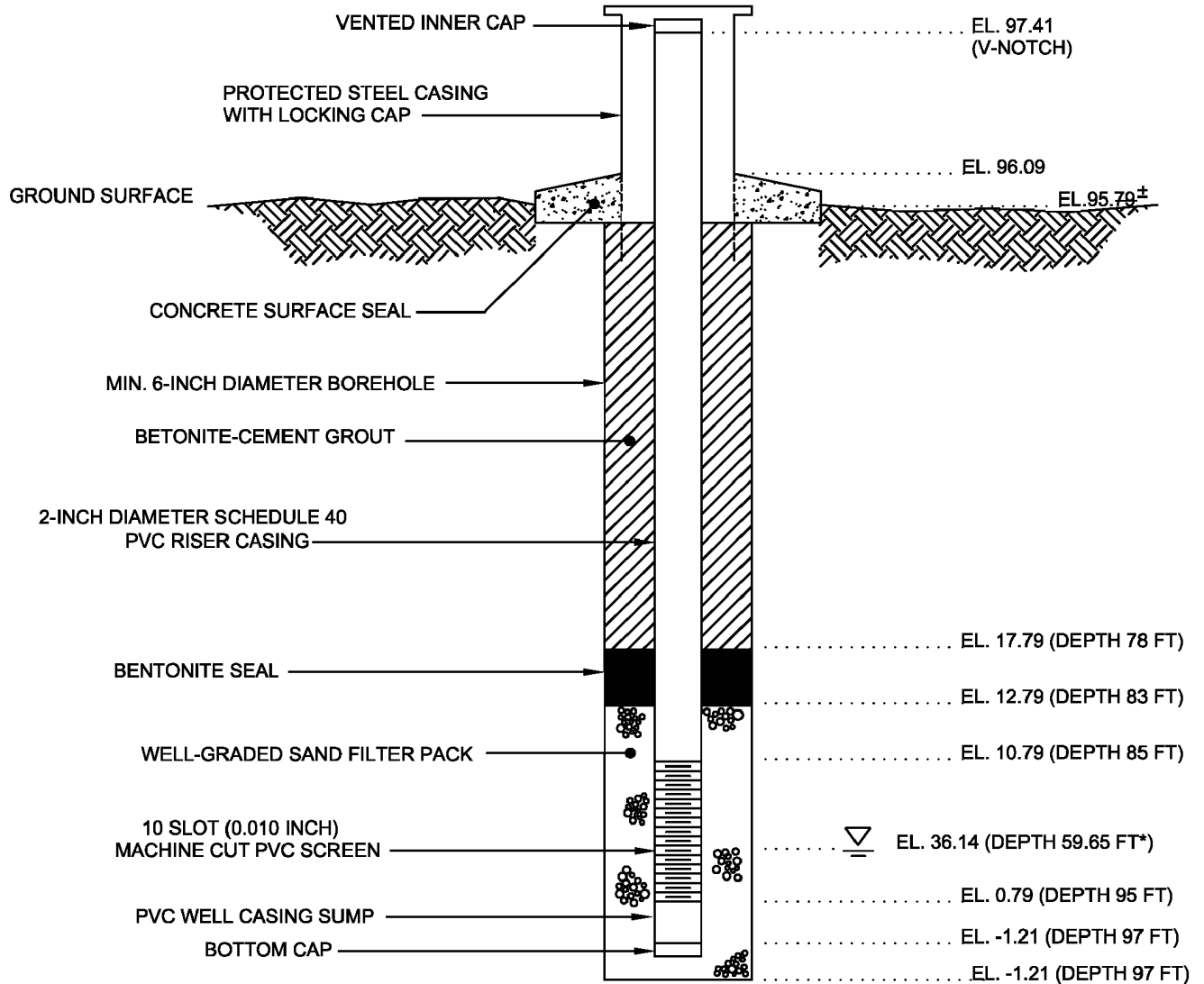
DATE COMPLETED : 07/07/2006

NORTHING: 215489.21

EASTING: 960257.57

GROUND SURFACE ELEVATION: 95.79

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	59.65	36.14



- NOTES:**
- 1) SEE B-752 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-752B.DWG

**WELL NO. : OW-754**

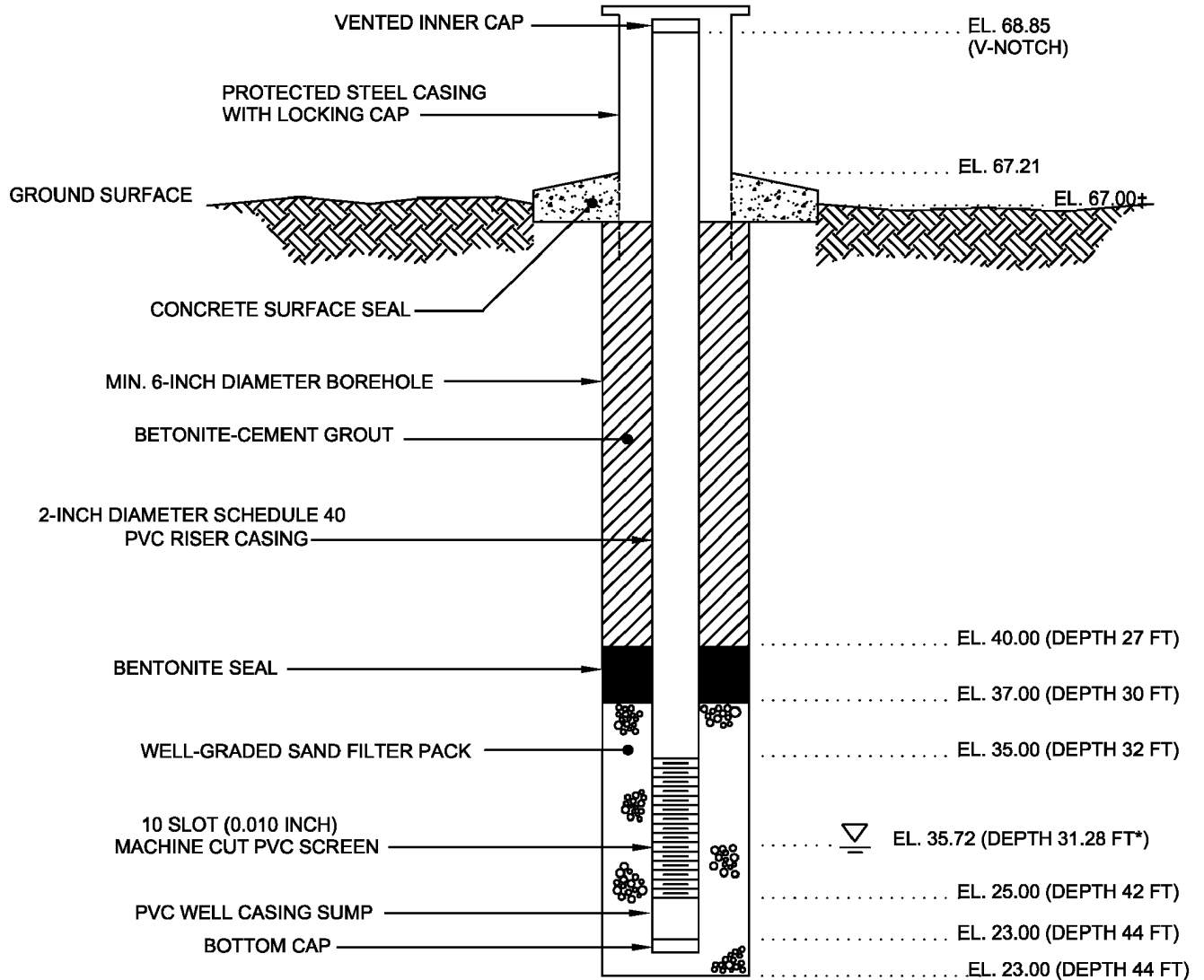
DATE COMPLETED : 07/06/2006

NORTHING: 217369.78

EASTING: 960290.37

GROUND SURFACE ELEVATION: 67.00

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	31.28	35.72



- NOTES:**
- 1) SEE B-754 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-754.DWG

**WELL NO. : OW-756**

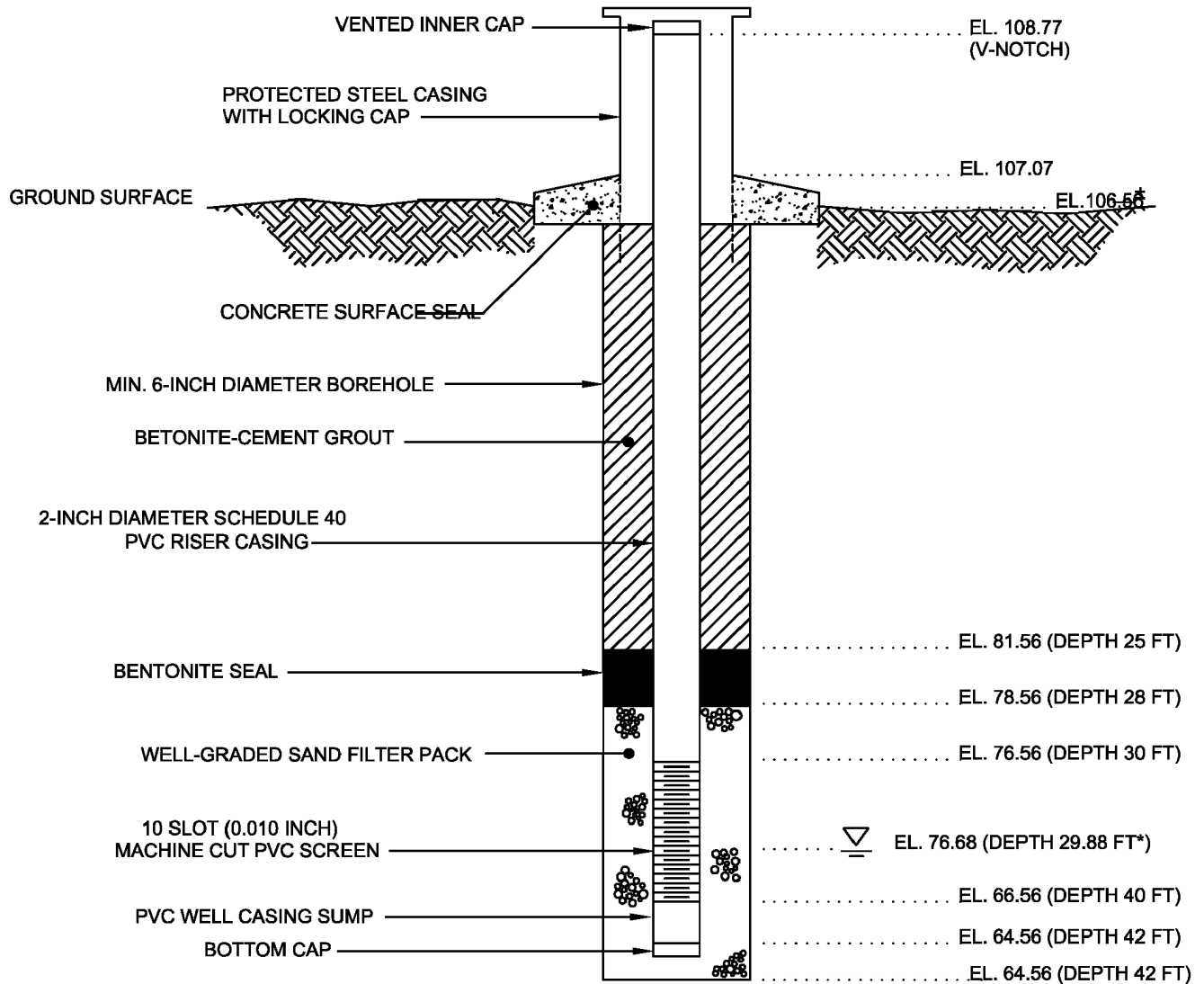
DATE COMPLETED : 06/21/2006

NORTHING: 215497.07

EASTING: 961212.39

GROUND SURFACE ELEVATION: 106.56

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-24-06	29.88	76.68



- NOTES:**
- 1) SEE B-756 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-756.DWG



**WELL NO. : OW-759A**

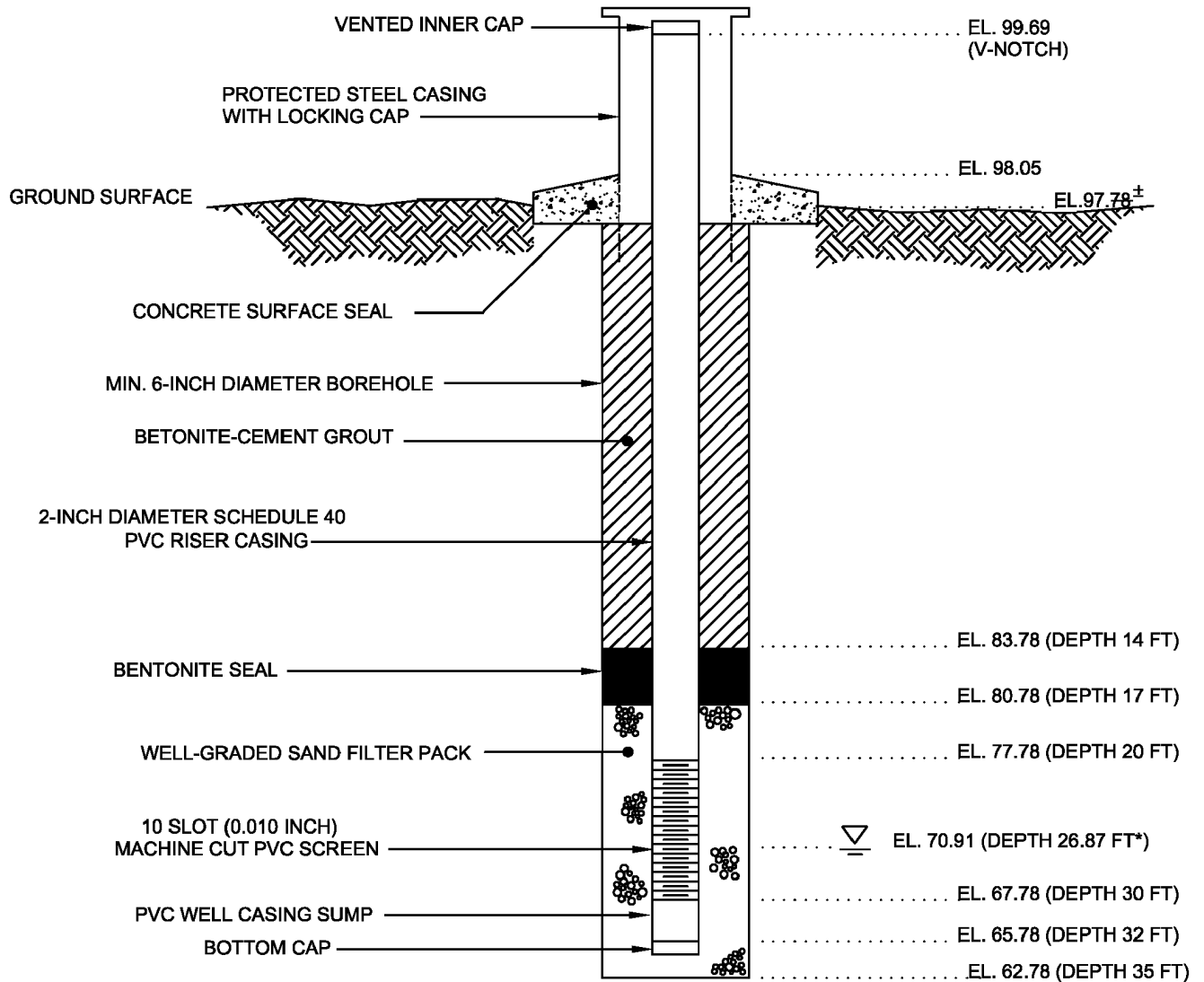
DATE COMPLETED : 06/22/2006

NORTHING: 214536.47

EASTING: 960055.02

GROUND SURFACE ELEVATION: 97.78

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	26.87	70.91



- NOTES:**
- 1) SEE B-759 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-759A.DWG

**WELL NO. : OW-759B**

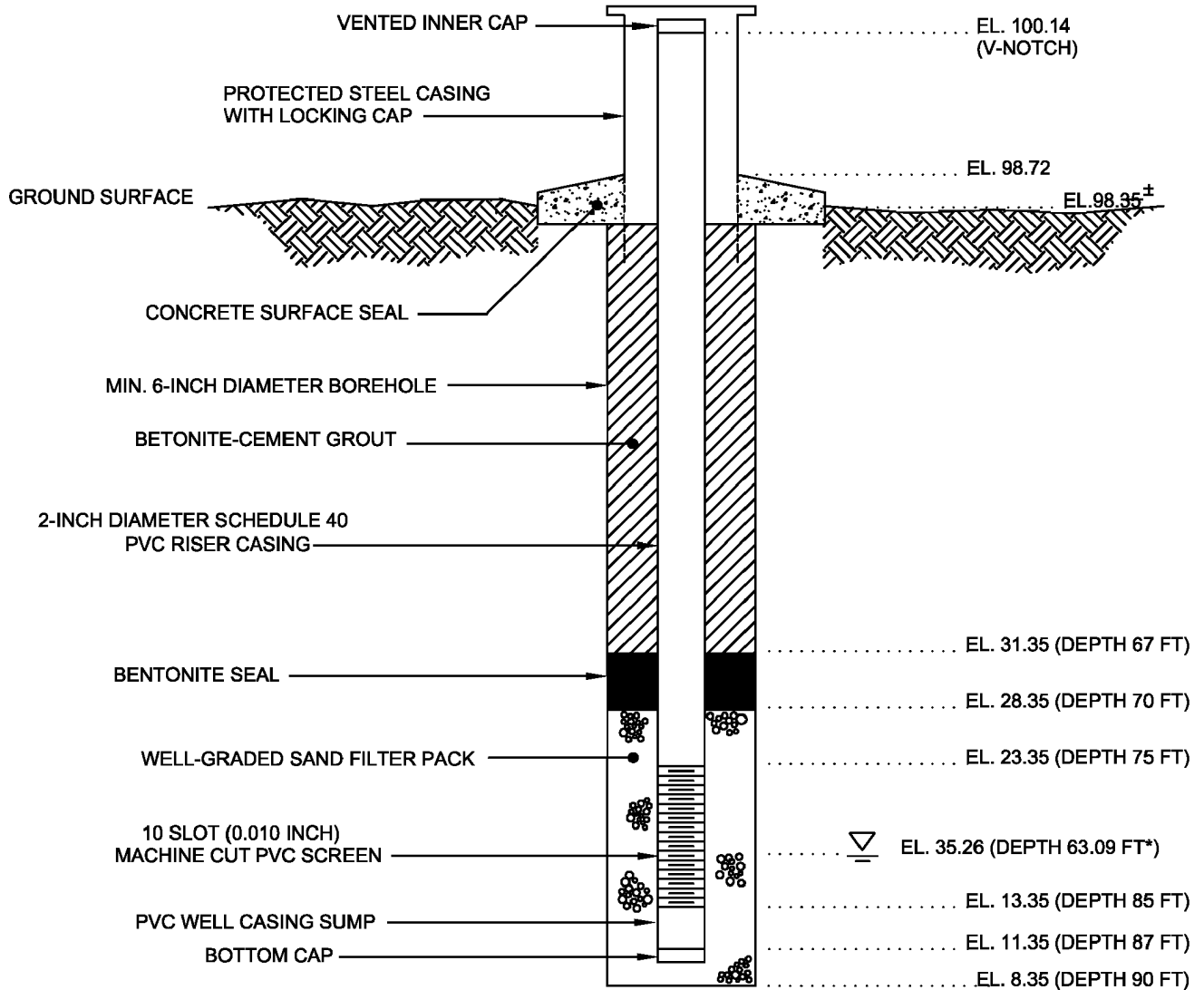
DATE COMPLETED : 06/22/2006

NORTHING: 214526.25

EASTING: 960056.32

GROUND SURFACE ELEVATION: 98.35

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	63.09	35.26



- NOTES:**
- 1) SEE B-759 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-759B.DWG

**WELL NO. : OW-765A**

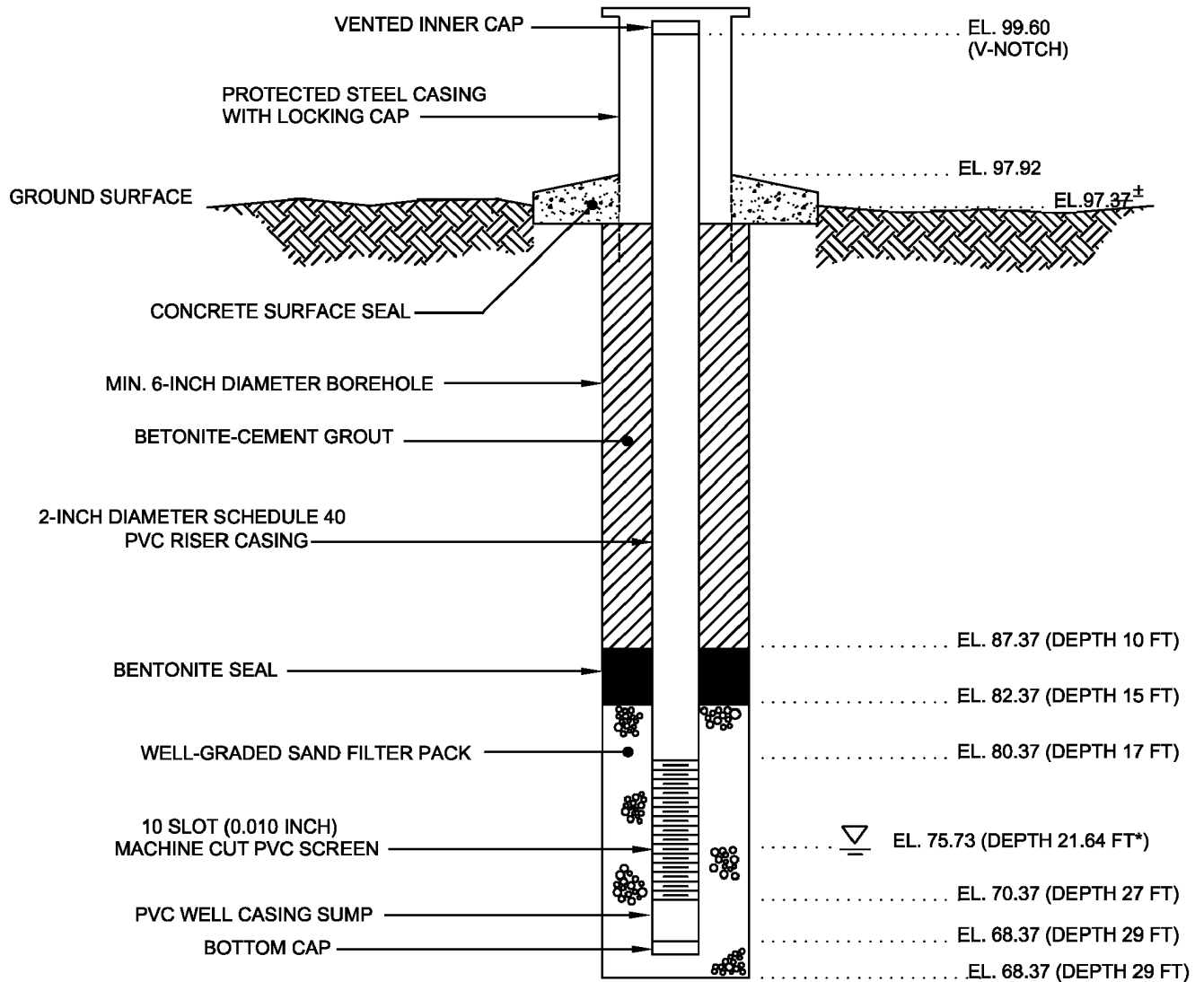
DATE COMPLETED : 07/13/2006

NORTHING: 216424.51

EASTING: 959701.22

GROUND SURFACE ELEVATION: 97.37

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	21.64	75.73



- NOTES:**
- 1) SEE B-765 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-765A.DWG

**WELL NO. : OW-765B**

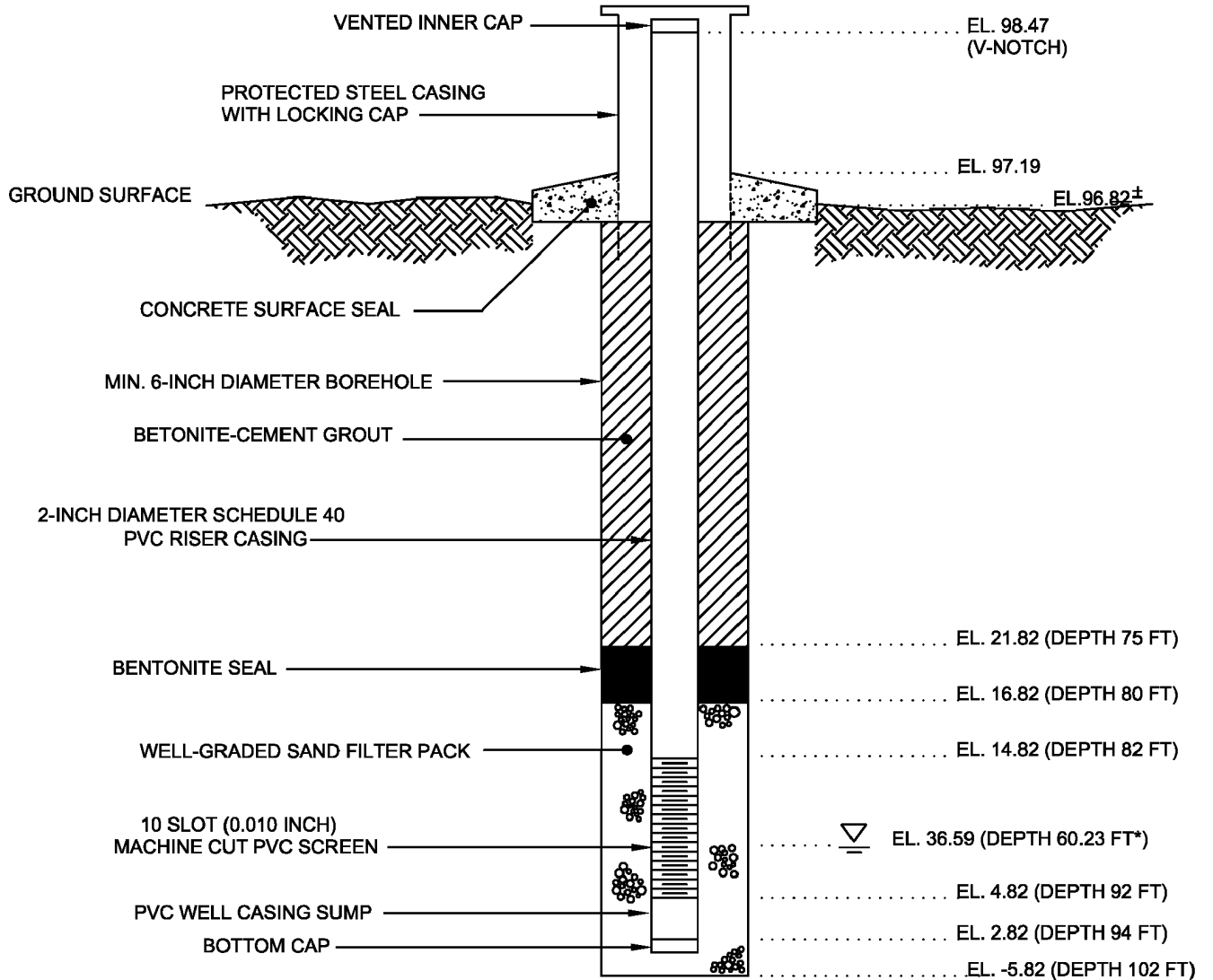
DATE COMPLETED : 07/13/2006

NORTHING: 216420.42

EASTING: 959693.64

GROUND SURFACE ELEVATION: 96.82

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-27-06	60.23	36.59



- NOTES:**
- 1) SEE B-765 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-765B.DWG

**WELL NO. : OW-766**

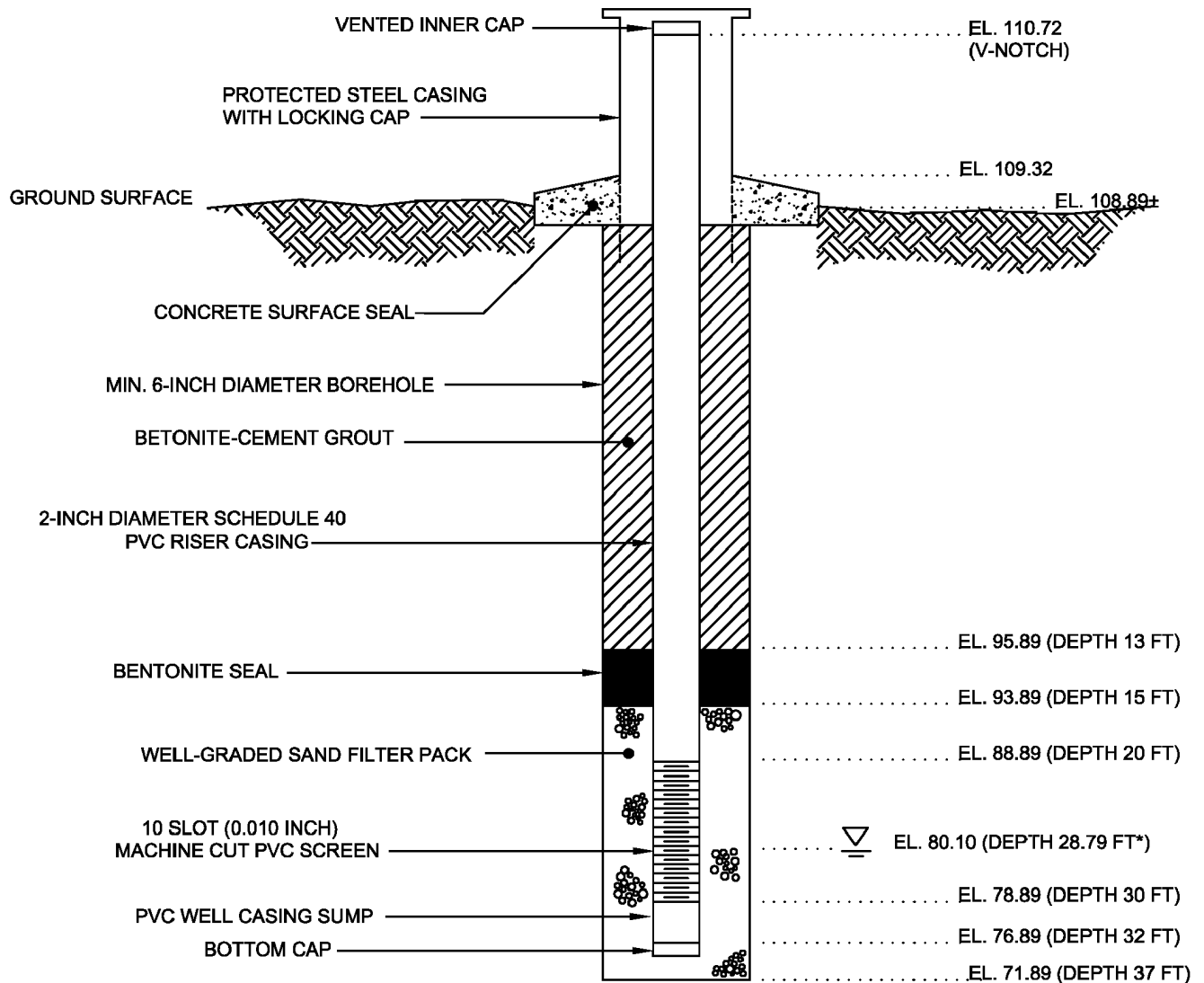
DATE COMPLETED : 07/13/2006

NORTHING: 216932.89

EASTING: 959791.50

GROUND SURFACE ELEVATION: 108.89

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-26-06	28.79	80.10



- NOTES:**
- 1) SEE B-766 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH
  - 5) BENTONITE HOLE PLUG USED TO BACKFILL BORING B-766 FROM 50 FT TO 37 FT.



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-766.DWG

**WELL NO. : OW-768A**

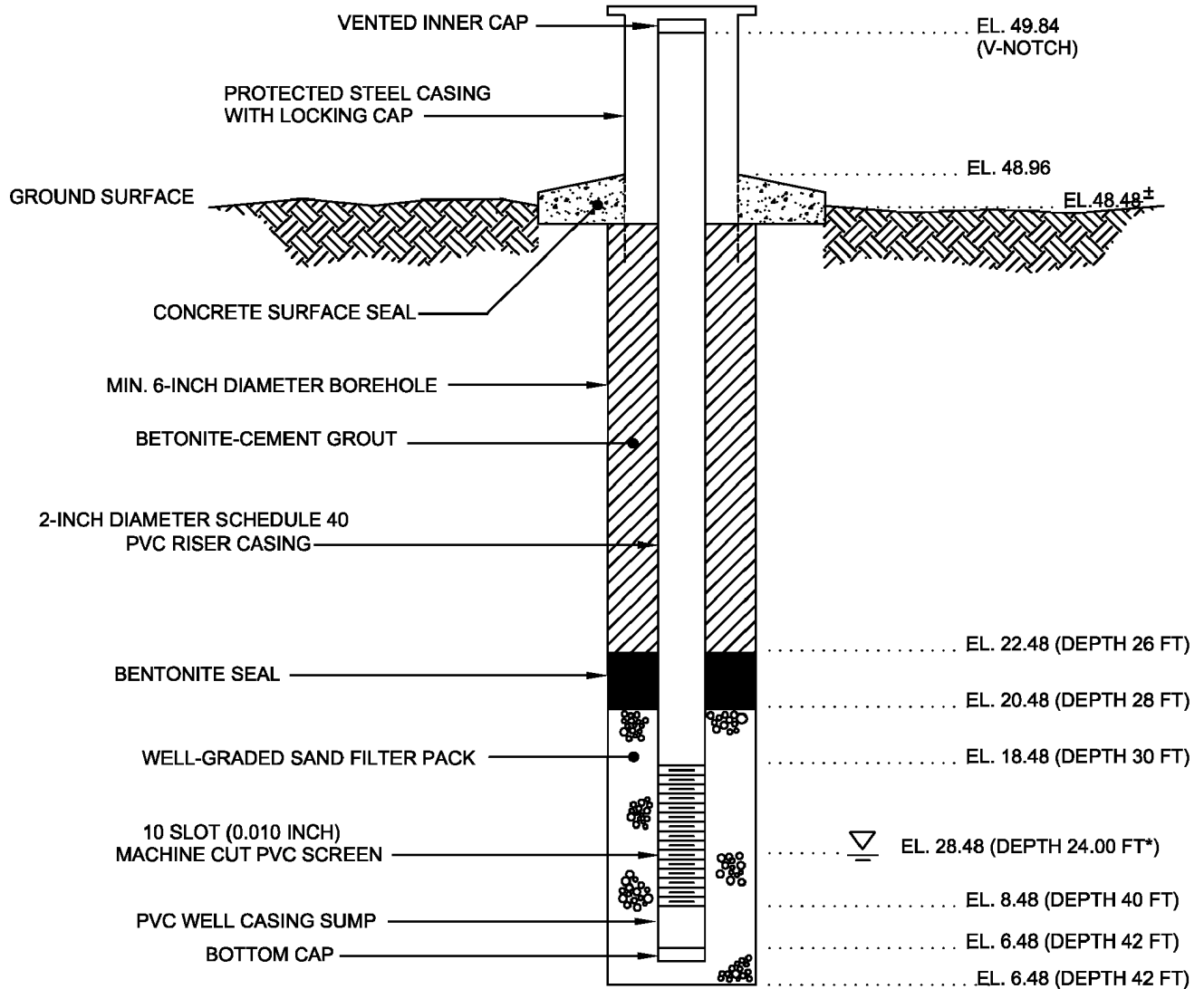
DATE COMPLETED : 06/20/2006

NORTHING: 217106.06

EASTING: 962238.98

GROUND SURFACE ELEVATION: 48.48

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	24.00	24.48



- NOTES:**
- 1) SEE B-768 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MEASURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-768.DWG

WELL NO. : **OW-769A**

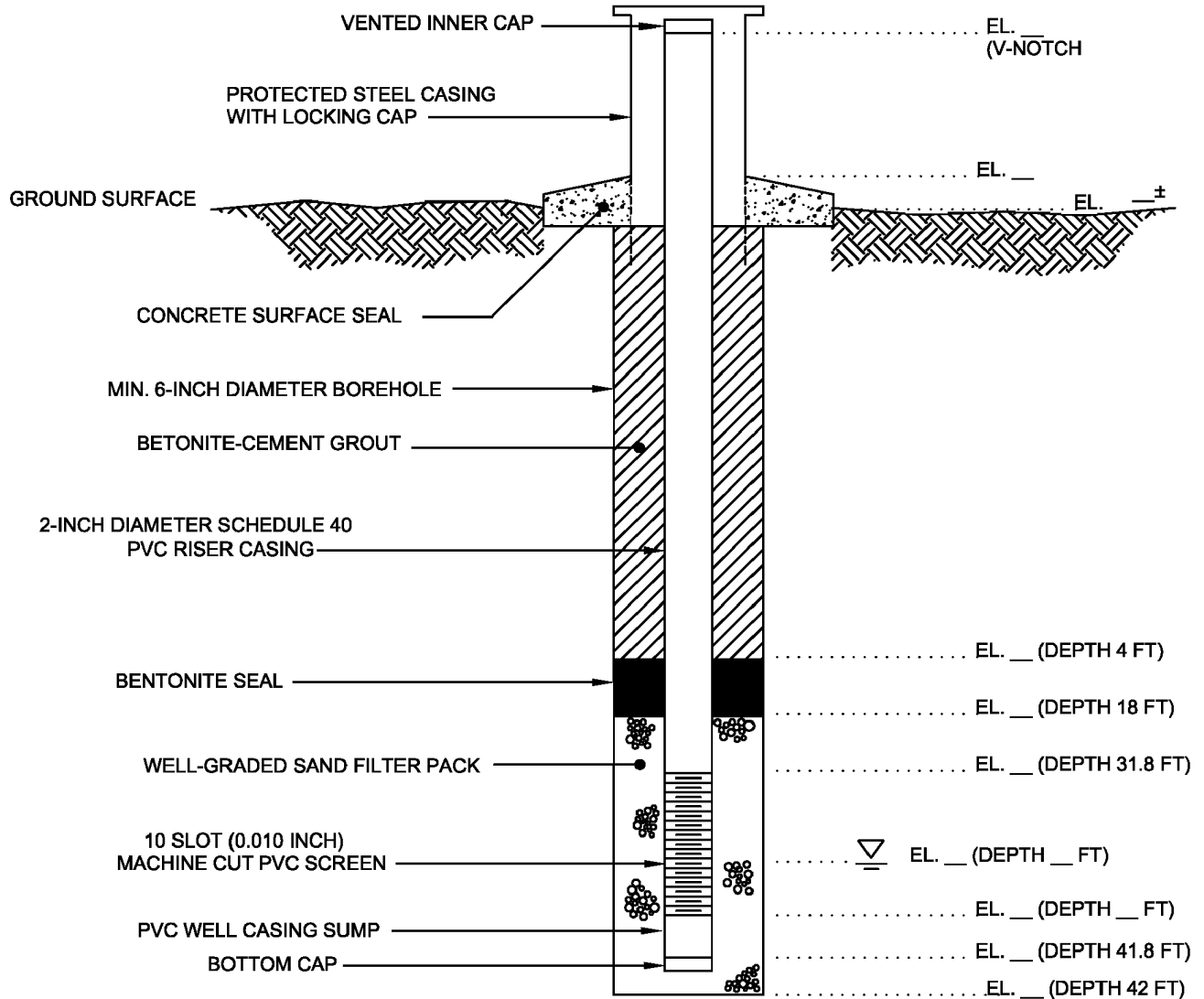
DATE COMPLETED : 06/23/2006

NORTHING:

EASTING:

GROUND SURFACE ELEVATION:

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT)	ELEVATION (FT)



- NOTES:**
- 1) SEE B-769 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**  
PROJECT NO. 06120048  
DWG NO. OW-769.DWG

**WELL NO. : OW-770**

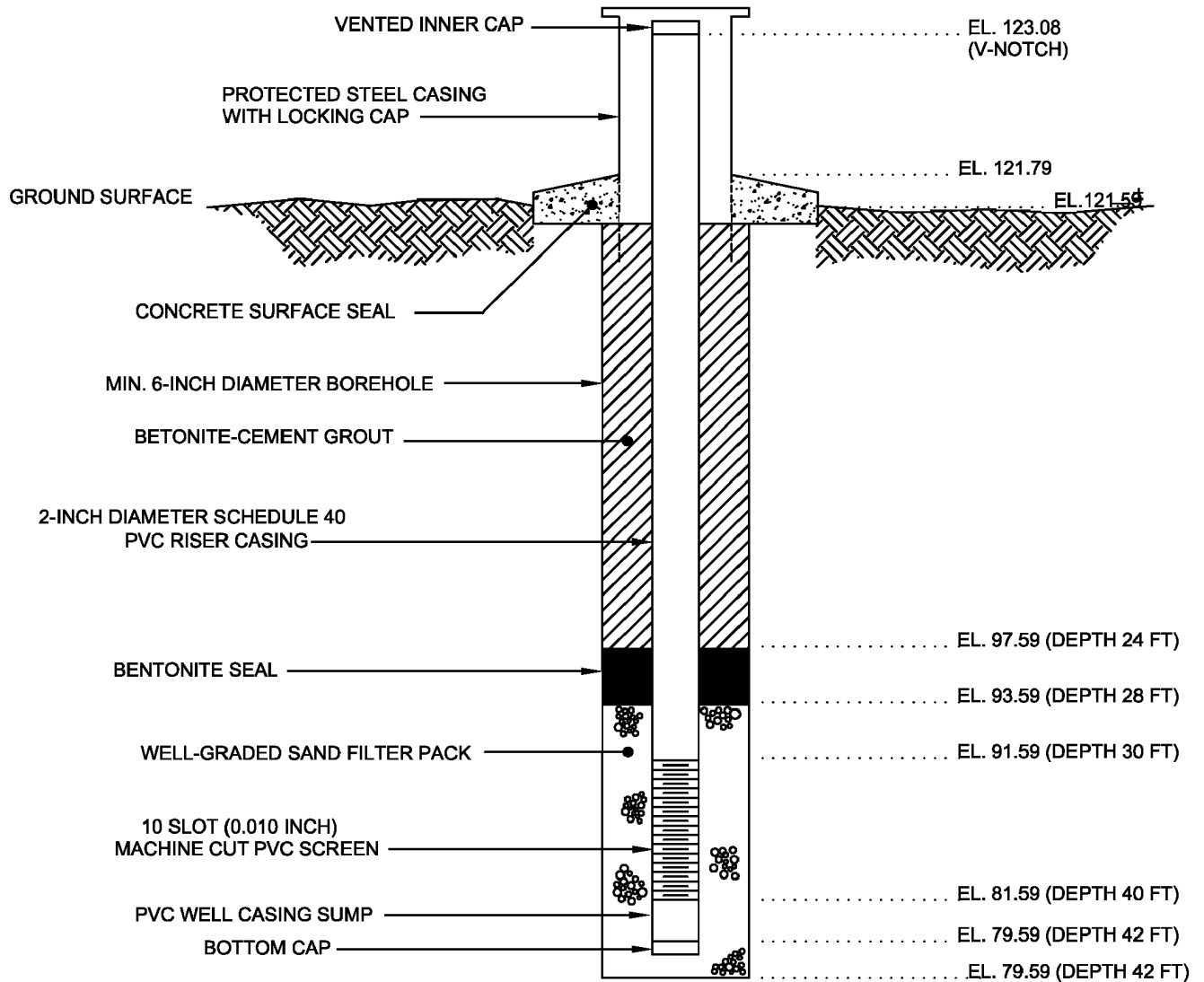
DATE COMPLETED : 06/22/2006

NORTHING: 215466.60

EASTING: 962826.95

GROUND SURFACE ELEVATION: 121.59

GROUND WATER TABLE OBSERVATIONS		
DATE	DEPTH (FT) *	ELEVATION (FT)
7-25-06	DRY	-----



- NOTES:**
- 1) SEE B-770 BORING LOG FOR STRATA DESCRIPTIONS
  - 2) DEVELOPED BY PUMPING
  - 3) CENTRALIZERS USED
  - 4) \* =GROUND WATER DEPTH MESURED FROM V-NOTCH



**CALVERT CLIFFS NUCLEAR  
POWER PLANT CALVERT  
COUNTY, MD**

**GROUND WATER OBSERVATION  
WELL CONSTRUCTION LOG**

PROJECT NO. 06120048  
DWG NO. OW-770.DWG



**FIELD PERMEABILITY TEST DATA**

## PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT: Calvert Cliffs NPP COLA Project  
 LOCATION: Lusby, MD  
 DATE: July 27, 2006  
 WEATHER/ TEMP: 90 humid

PROJECT NO.: 06120048  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	( <u>Falling Head</u> / Rising Head )
Slug Type:	( <u>Mechanical</u> / Water )
Approximate Volume of Slug:	<u>0.32</u> 0.625 GAL
Manual Water Level Meter S/N:	<u>WLP-001</u>
Transducer S/N:	<u>101259</u>
Slug S/N:	<u>SLUG-002</u>

WELL INFORMATION	
WELL ID:	<u>DW-301</u>
Screen Inside Diameter:	<u>2"</u>
Casing Inside Diameter:	<u>2"</u>
Total Well Depth (ft, TOC):	<u>79.1</u>
Screen Interval Depth (ft, TOC):	<u>63-75</u>
Riser Height (ft):	<u>2'</u>

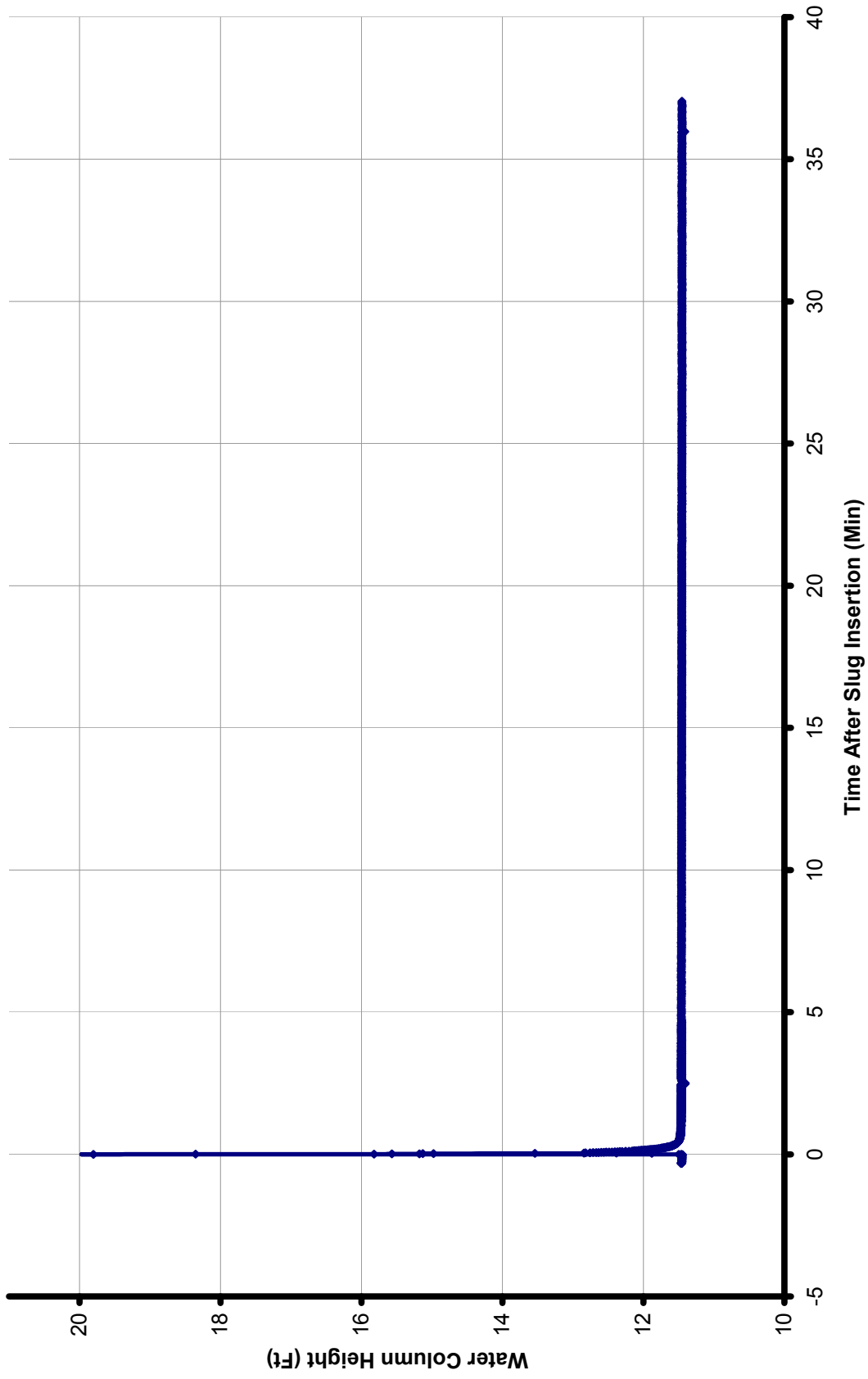
- 1 Pre-Test Water Level (ft, TOC)/ Time : 58.75 / 15:35
- 2 Water Level after Probe Insertion (ft, TOC)/ Time: 58.74 / 15:52
- 3 Transducer Depth: 700ft
- 4 Calc. Pre-Test Head over Transducer: 11.26 ft
- 5 Measured Pre-Test Head over Transducer: 11.45 ft
- 6 Time Test Started: Pretest / Slug-test 3:39 pm / 3:54 PM
- 7 Time Test Ended: 4:31 pm
- 8 ~~Percent Recovery~~ <sup>head</sup> at End of Test: 1142 ft
- 9 Datalogger File Name: 06120048-PTD-OW-301-SLUG

**Comments:**

TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 9/21/06

### OW-301 Permeability Test



Advanced Engineering Health, LLC  
2000 Collins Street, Suite 700  
Cincinnati, OH 45202  
(513) 421-2000

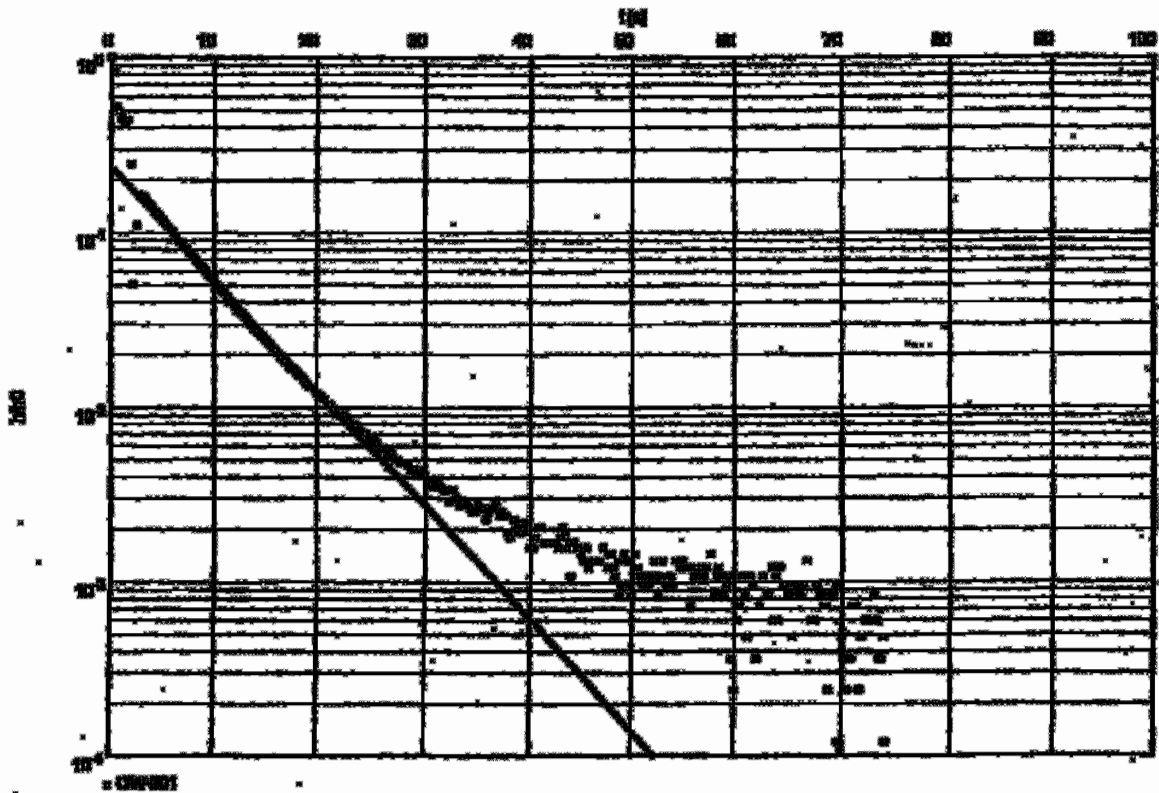
slotted test analysis  
ACKNOWLEDGEMENT

Date: 10/20/2009 Page 1  
Project: Collins CHS  
Insulated log patch

Slag Test No. 207

Test conducted on: 10/20/2009

CHS/CHS



Hydrochloric acid: 1.0M  $10^{-4}$

INPUT PARAMETERS  
Slag: White Limestone - 25.00 %  
Depth to Bottom of Anode - 100.00 m  
Length of Slag - 10.00 m  
Radius of Slag - 0.00 m  
Radius of Anode - 0.00 m  
Insulated log patch

Insulated log patch

*Michael Patrick*  
*Chris L...*

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Calvert Cliffs NPP COLA Project  
 LOCATION: Lusby, MD  
 DATE: July 27, 2006  
 WEATHER/ TEMP: 90, humid

PROJECT NO.: 06120048  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	<u>( Falling Head / Rising Head )</u>
Slug Type:	<u>( Mechanical / Water )</u>
Approximate Volume of Slug:	<u>0.32 GAL 0.625 GAL</u>
Manual Water Level Meter S/N:	<u>WLP-001</u>
Transducer S/N:	<u>109213</u>
Slug S/N:	<u>SLUG-003</u>

WELL INFORMATION	
WELL ID:	<u>OW-313A</u>
Screen Inside Diameter:	<u>2"</u>
Casing Inside Diameter:	<u>2"</u>
Total Well Depth (ft, TOC):	<u>52.9</u>
Screen Interval Depth (ft, TOC):	<u>40-50</u>
Riser Height (ft):	<u>2.0</u>

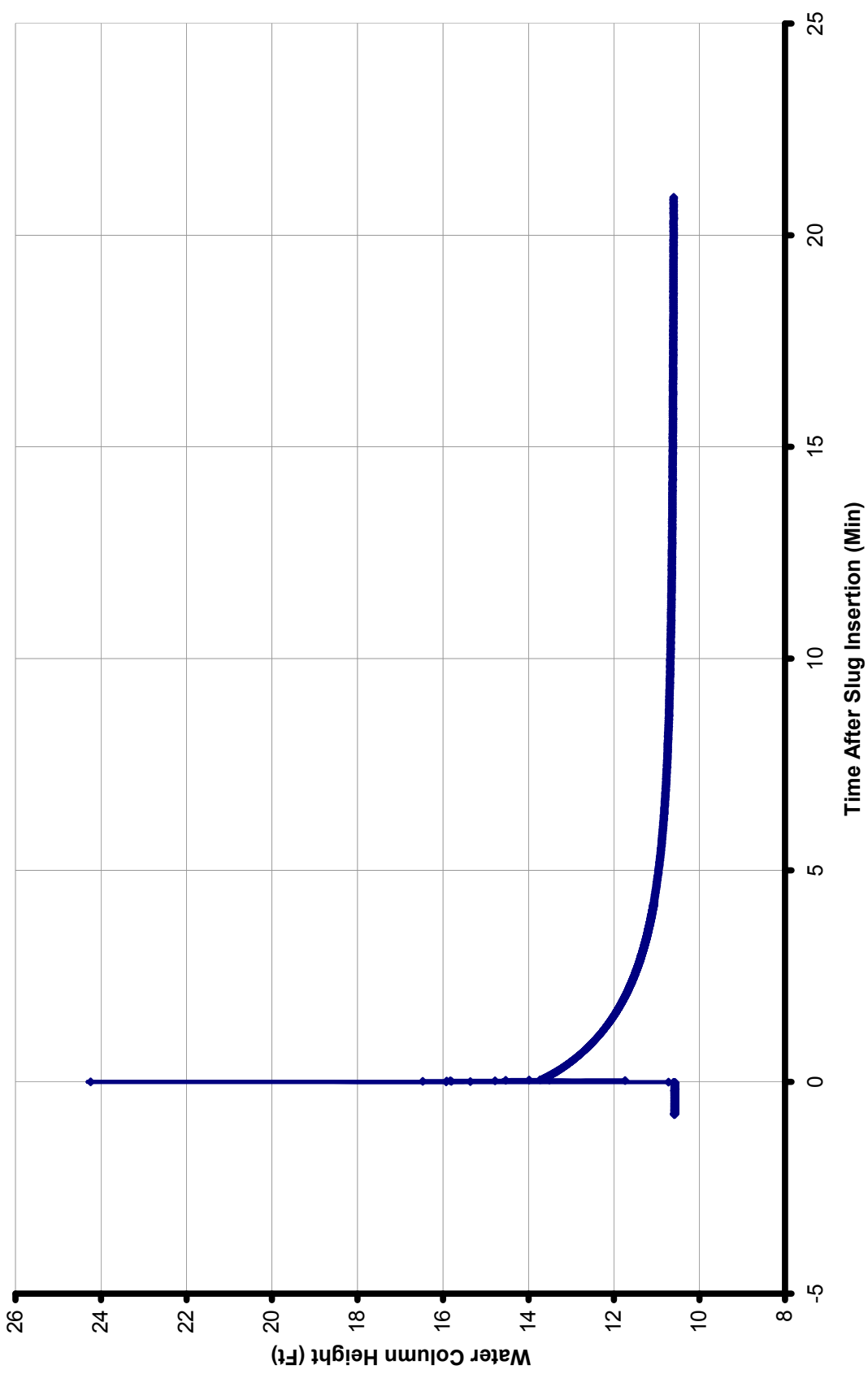
- 1 Pre-Test Water Level (ft, TOC)/ Time : 19.69 ft / 4:10 PM
- 2 Water Level after Probe Insertion (ft, TOC)/ Time: 19.70 ft / 4:45 PM
- 3 Transducer Depth: 30 ft
- 4 Calc. Pre-Test Head over Transducer: 10.30 ft
- 5 Measured Pre-Test Head over Transducer: 10.53 ft
- 6 Time Test Started: 4:48 PM slug-test
- 7 Time Test Ended: 5:10 PM
- 8 ~~Percent Recovery~~ <sup>Head</sup> at End of Test: 10.58 ft
- 9 Datalogger File Name: 06120048-PTD-OW-313A-SLUG

**Comments:**  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 7/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

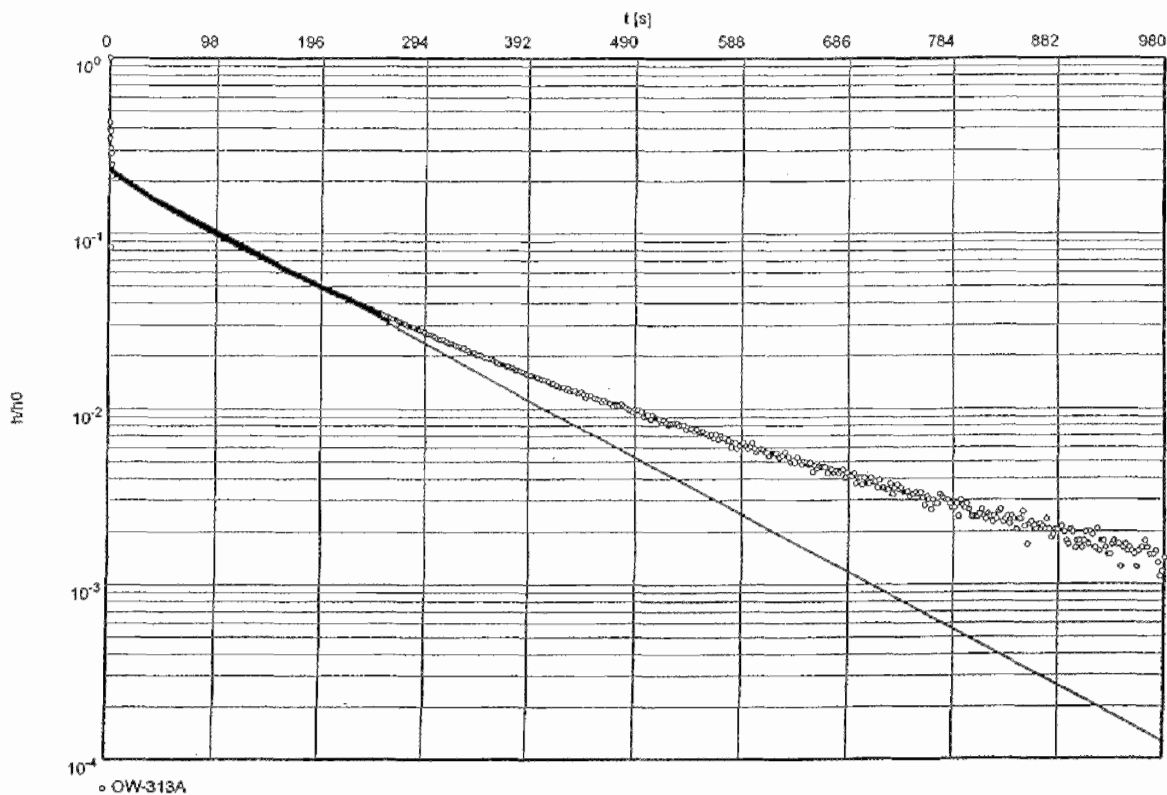
### OW-313A Permeability Test



Slug Test No. 313A

Test conducted on: 7/27/2003

OW-313A



Hydraulic conductivity [ft/s]:  $7.50 \times 10^{-6}$

INPUT PARAMETERS

Static Water Level = 10.60 ft  
Depth to Bottom of Aquifer = 62.00 ft  
Length of Screen = 10.00 ft  
Radius of Casing = 0.08 ft  
Radius of Influence = 0.25 ft

Evaluated by: Patricia Patrick  
Reviewed by: Christopher Krantz



# PERMEABILITY (SLUG) TEST FIELD FORM

Rev. 1.0.1

PROJECT: Calvert Cliffs NPP CCCLA Project  
 LOCATION: Lusby, MD  
 DATE: July 27, 2006  
 WEATHER TIME: 8:00 AM

PROJECT NO.: 08720046  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	( Slug Test / Rising Head / Falling Head )
Slug Type:	( Mudstone / Water )
Approximate Volume of Slug:	0.625 G.A.
Manual Water Level Meter S/N:	111 P-100
Transducer S/N:	12259
Slug S/N:	SLUG-002

WELL INFORMATION	
Well ID:	CAJ-215S
Screen Inside Diameter:	2.4
Coating Inside Diameter:	2.4
Total Well Depth (ft, TOG):	3100
Screen Interval Depth (ft, TOG):	95-105
Screen Height (ft):	1.7

- 1 Pre-Test Water Level (ft, TOG) Time: 23:09 ft / 7:50 AM
- 2 Water Level after Probe Insertion (ft, TOG) Time: 22:41 ft / 8:52 AM
- 3 Transducer Depth: 40 ft
- 4 Cables, Pre-Test Head over Transducer: 17.08 ft
- 5 Measured Pre-Test Head over Transducer: 17.08 ft
- 6 Time Test Started: 7:56 / 8:56 AM
- 7 Time Test Ended: 17:00 PM
- 8 Power/Recovery at End of Test: 17:15
- 9 Challenge File Name: 08720046-110-010-3153-SLUG

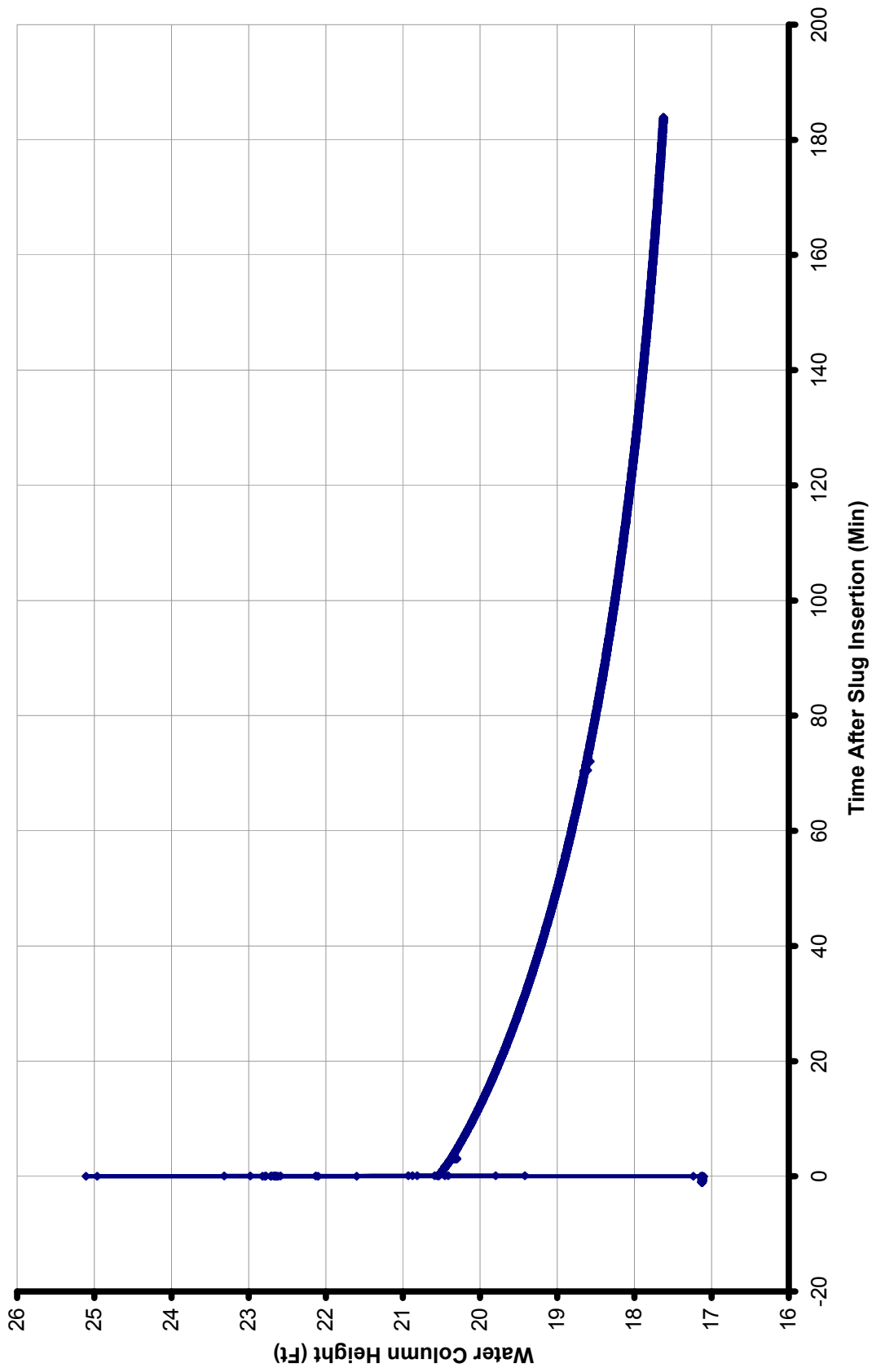
**Comments:**  
 TOG = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 9/21/06

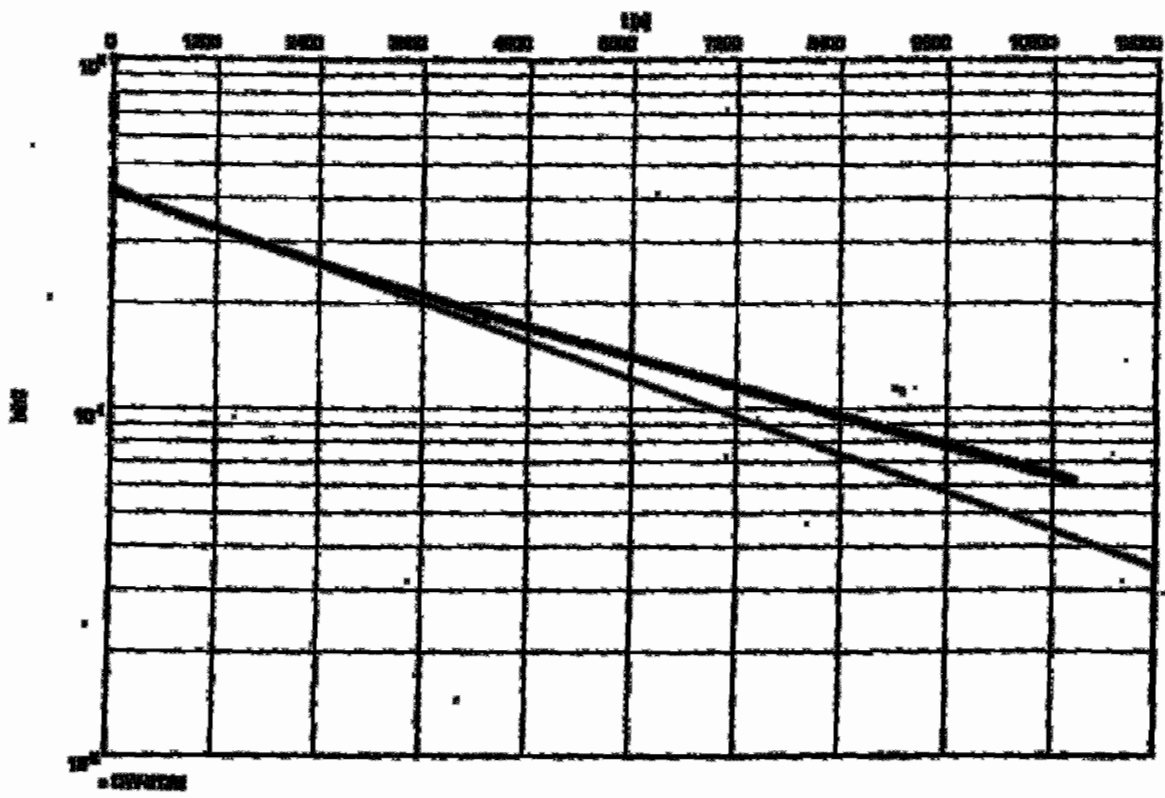
Note: All water level measurements abstracted from well measurement point at top of casing.  
 Reference: ASTM D5084



### OW-313B Permeability Test



<b>Industrial Engineering Dept., I.I.T.</b> 1111 S. State Street, State 701 Berkeley, CA 94720 (415) 875-5000	<b>Original test results</b> <b>EXPERIMENTAL RESULTS</b>	<b>Plate THERMOS</b> <b>Page 1</b>
<b>Spec. Test No. 2120</b> <b>CONCRETE</b>	<b>Test conducted on: THERMOS</b>	<b>Project: Control GMA</b> <b>Reinforcing by patch</b>



Hydraulic conductivity  $k_{avg} = 2.24 \times 10^{-7}$

**NOTY PARAMETERS**  
 Shell Width  $L_{shell} = 17.50 \text{ m}$   
 Depth to Middle of Shell  $= 10.00 \text{ m}$   
 Length of Shell  $= 10.00 \text{ m}$   
 Radius of Shell  $= 0.80 \text{ m}$   
 Radius of Influence  $= 0.80 \text{ m}$   
 Conducted by: *[Signature]*  
 Reviewed by: *[Signature]*

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Calvert Cliffs NPW DCOLA Project  
 LOCATION: Lusby, MD  
 DATE: 7/21/06  
 WEATHER TEMP: 9-65deg F

PROJECT NO.: 04780008  
 CLIENT: Essential Power Corporation

TEST INFORMATION	
Type of Test:	(Falling Head / Rising Head)
Slug Type:	(Distilled / Water)
Approximate Volume of Slug:	0.625 GAL
Manual Water Level Meter S/N:	1019 -001
Transducer S/N:	10-4-855
Slug S/N:	612 -001

WELL INFORMATION	
Well ID:	OW-319A
Screen Inside Diameter:	2.0"
Casing Inside Diameter:	2.0"
Total Well Depth (ft, TOC):	54.13
Screen Interval Depth (ft, TOC):	51.5 - 53.5'
Screen Height (ft):	19" @ 1.25'

- 1 Pre-Test Water Level (ft, TOC) Time: 26.55' / 11:15 AM
- 2 Water Level after Probe Insertion (ft, TOC) Time: 26.36' / 11:42 AM
- 3 Transducer Depth: 3.0'
- 4 Casing Pre-Test Head over Transducer: 5.45'
- 5 Measured Pre-Test Head over Transducer: 7.04'
- 6 Time Test Started: 11:48 AM
- 7 Time Test Ended: 1:13 PM
- 8 Recovery Allowance at End of Test: 5.5'
- 9 Datalogger File Name: 06122006-OW-319A-SLUG

Step: 0-5 min @ 14 sec  
 75 @ 30 sec

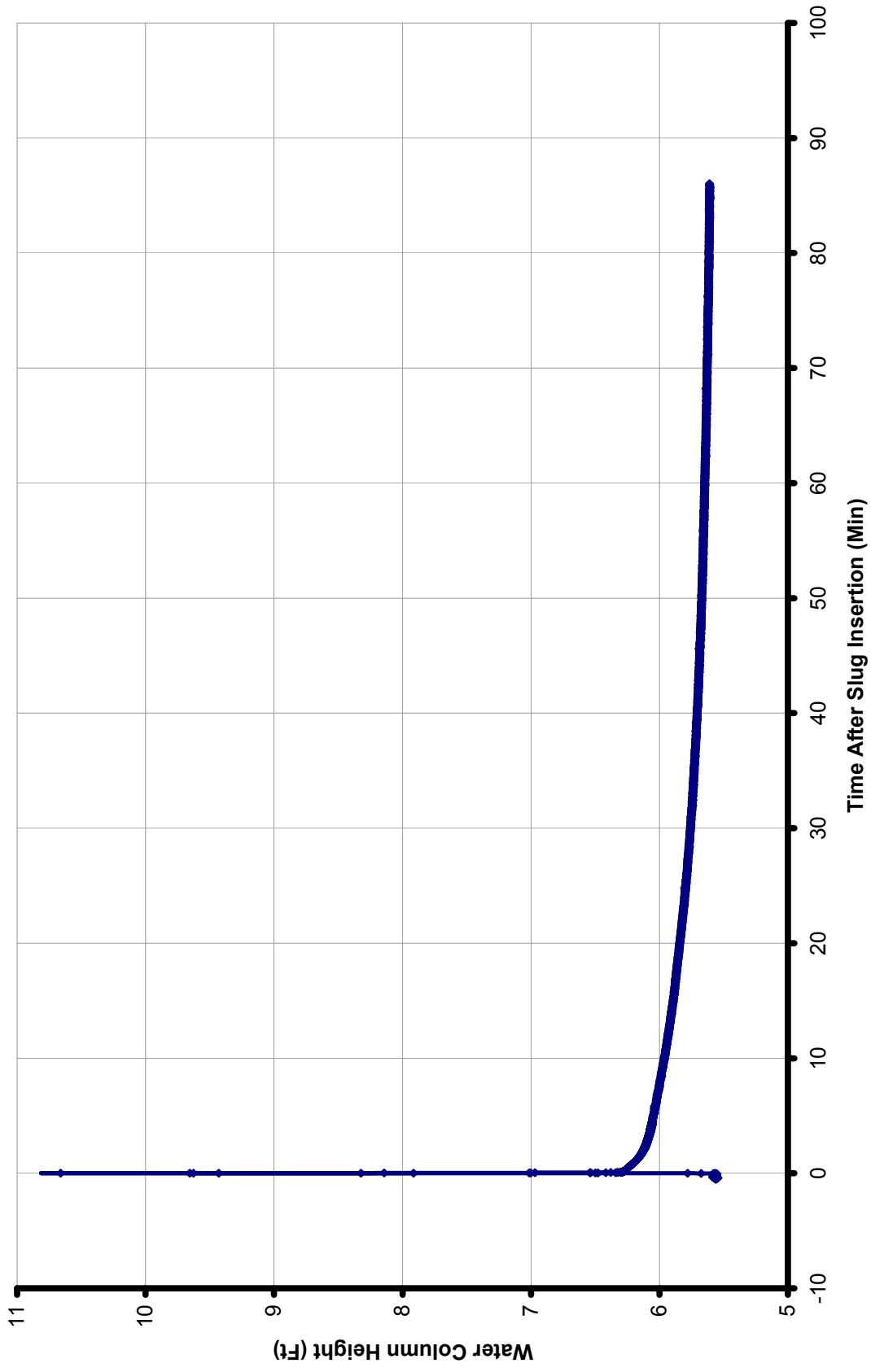
NOTE: Bottom of slug @ 33 ft depth may not be fully submerged

Geographic: TOC = Bottom of the V-notch at top of casing

Performed By: Feld White Date: July 21, 2006  
 Approved By: [Signature] Date: 7/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D-4044

### OW-319A Permeability Test



Geological Engineering North, L.L.C.  
2000 Graham Industrial Blvd., Suite 700  
Cincinnati, OH 45228  
(513) 435-1234

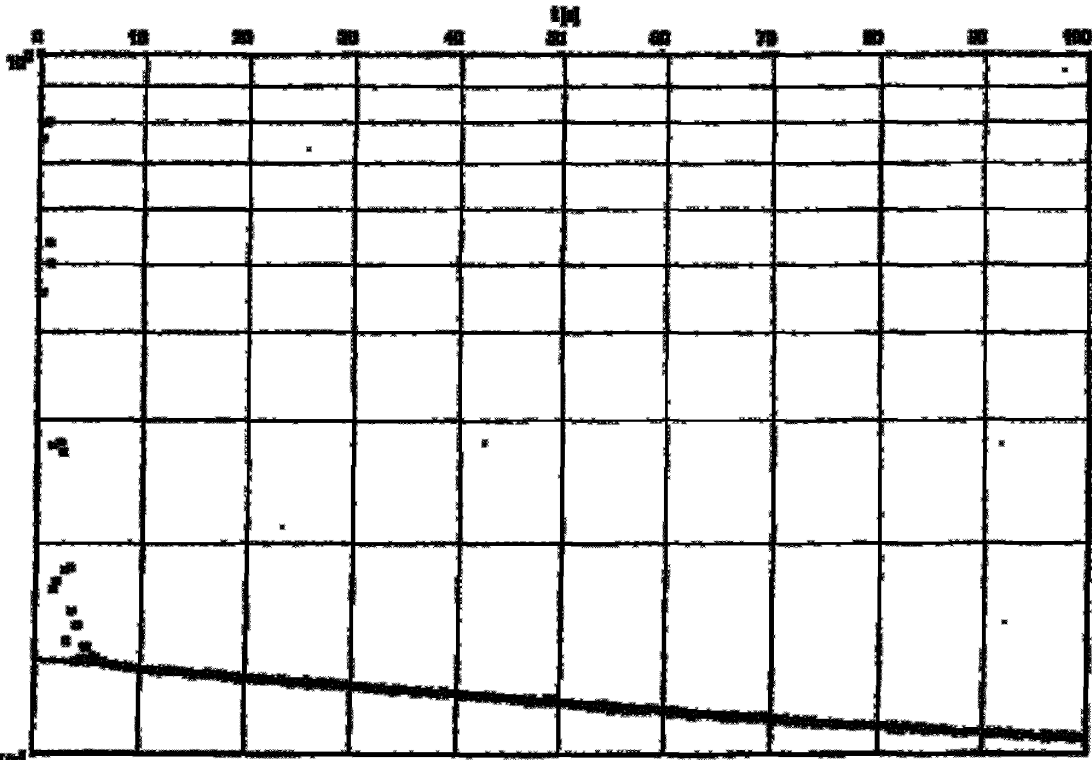
slight test results  
INCLINATION METHOD

Date: 02/12/2010 Page 1  
Project: Ground title  
Estimated by: jpb

Blot Test No. 0000

Test conducted on: 02/12/2010

CH2000



CH2000

Hydraulic conductivity (m/s)  $1.5 \times 10^{-3}$

TEST PARAMETERS  
Soil: White Loam - 0.5% S  
Depth to Bottom of Aquifer - 0.500 m  
Length of Slug - 0.500 m  
Radius of Slug - 0.500 m  
Radius of Influence - 0.500 m  
Estimated by: Paula Pollock  
Reviewed by: [Signature]



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Clinic HPP COLA Project  
 LOCATION: Lusby, MD  
 DATE: July 27, 2006  
 WEATHER: Temp 90, Windy

PROJECT NO.: 0510000  
 CLIENT: Regional Power Corporation

TEST INFORMATION	
Type of Test:	CEILING Head / Rising Head
Slug Type:	Mercuric / Water
Approximate Volume of Slug:	0.625 GAL
Measured Water Level Meter BIV:	1.18' - 0.0
Transducer BIV:	108259
Slug BIV:	3.65' - 0.0

WELL INFORMATION	
Well ID:	061-31A15
Screen Inside Diameter:	2 1/2"
Casing Inside Diameter:	2 1/2"
Total Well Depth (ft. TOC):	77.5' ft
Screen Interval Depth (ft. TOC):	70-80'
Flare Height (ft):	18.5' ft

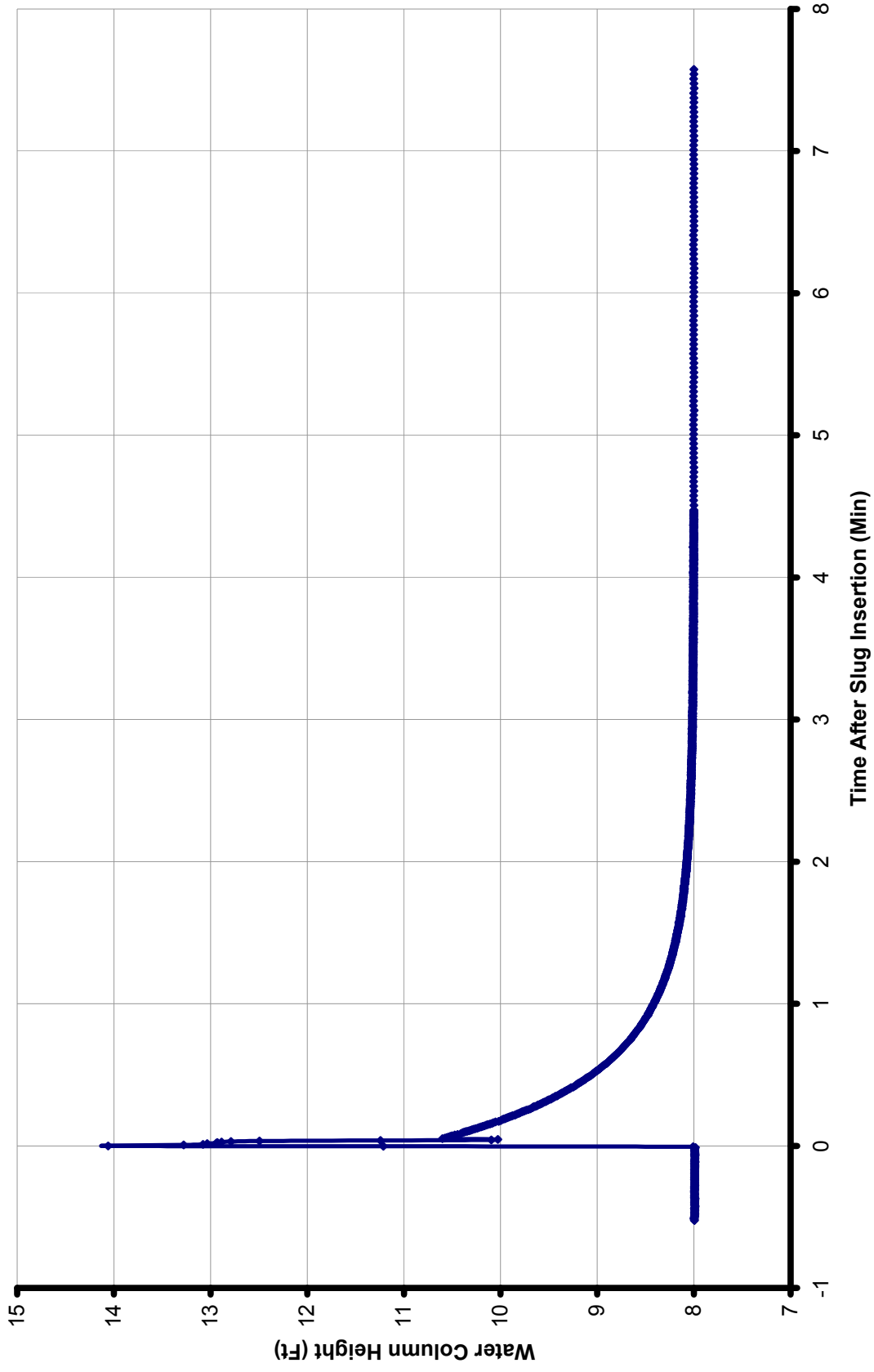
- 1 Pre-Test Water Level (ft. TOC) Time: 67.43 ft / 7:10 AM
- 2 Water Level after Pore Inertion (ft. TOC) Time: 67.42 ft / 7:25 AM
- 3 Transducer Depth: 15.5 ft
- 4 Casing Pre-Test Head over Transducer: 7.58 ft
- 5 Measured Pre-Test Head over Transducer: 7.98 ft
- 6 Time Test Started: 7:15 / 7:30 AM
- 7 Time Test Ended: 7:36 AM
- 8 Penetration at End of Test: 7.99
- 9 Discharge File Name: 21000-08-PTD-01-1-118-5120

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 7/27/06

Note: All water level measurements shall be taken from well measurement point at top of casing.  
 Reference ASTM D4044

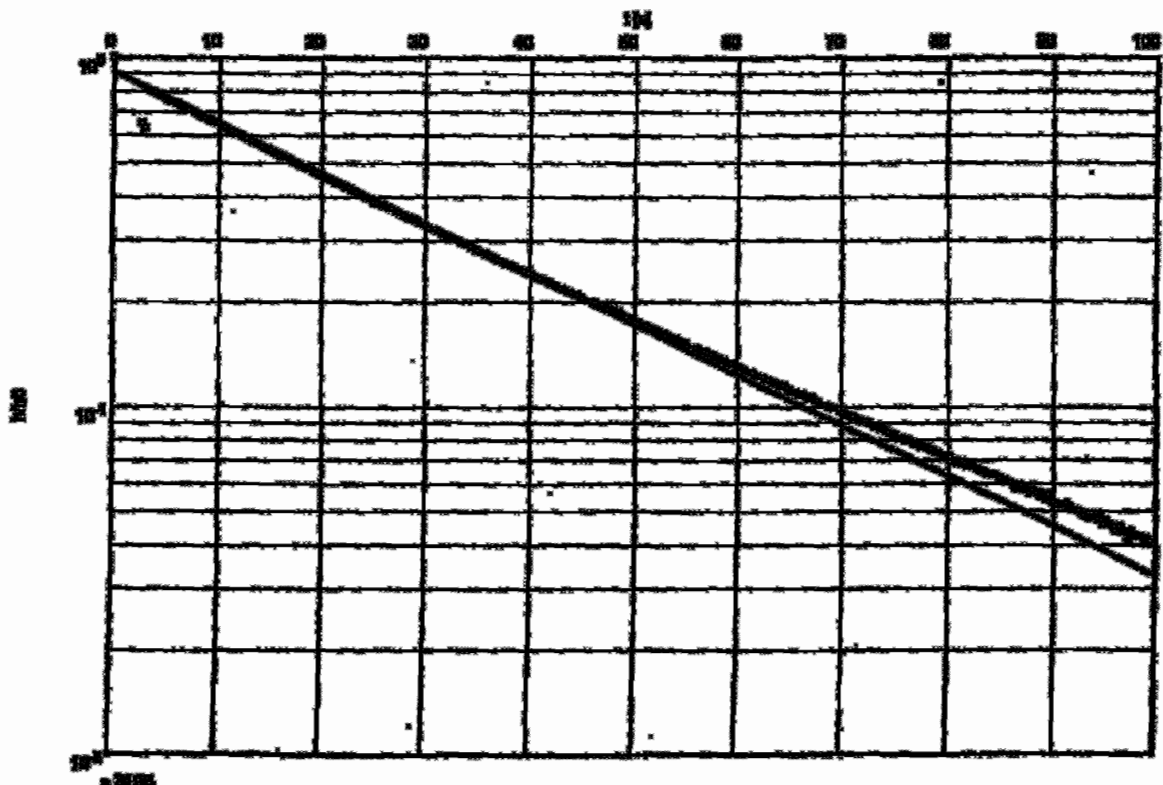
### OW-319B Permeability Test



Job Title No. 0200

Test conducted on: 02/28/2008

CONCRETE



Hydrostatically [unclear] 0.000 20"

IMPACT PARAMETERS  
 Initial Water Level = 0.000 m  
 Depth to Bottom of Pile = 100 m  
 Length of Beam = 0.000 m  
 Radius of Curvature = 0.000 m  
 Radius of Influence = 0.000 m

Measured by: [Signature]  
 Measured by: [Signature]





# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Colony Creek WPP COLA Project  
 LOCATION: Lynch, MD  
 DATE: July 26, 2006  
 WEAATHER: 85 - 100

PROJECT NO.: 0170000  
 CLIENT: Residential Power Corporation

TEST INFORMATION	
Type of Test:	<u>Sealing Head / Rising Head</u>
Slug Type: (Material / Water)	<u>Water</u>
Approximate Volume of Slug:	<u>0.625 gal</u>
Manual Water Level Marker S/N:	<u>WLP-001</u>
Transducer S/N:	<u>101255</u>
Slug S/N:	<u>SLUG-001</u>

WELL INFORMATION	
Well ID:	<u>QJ-323</u>
Screen Inside Diameter:	<u>2"</u>
Casing Inside Diameter:	<u>2"</u>
Total Well Depth (ft. TOC):	<u>41.6</u>
Screen Interval Depth (ft. TOC):	<u>32-4</u>
Screen Height (ft):	<u>15</u>

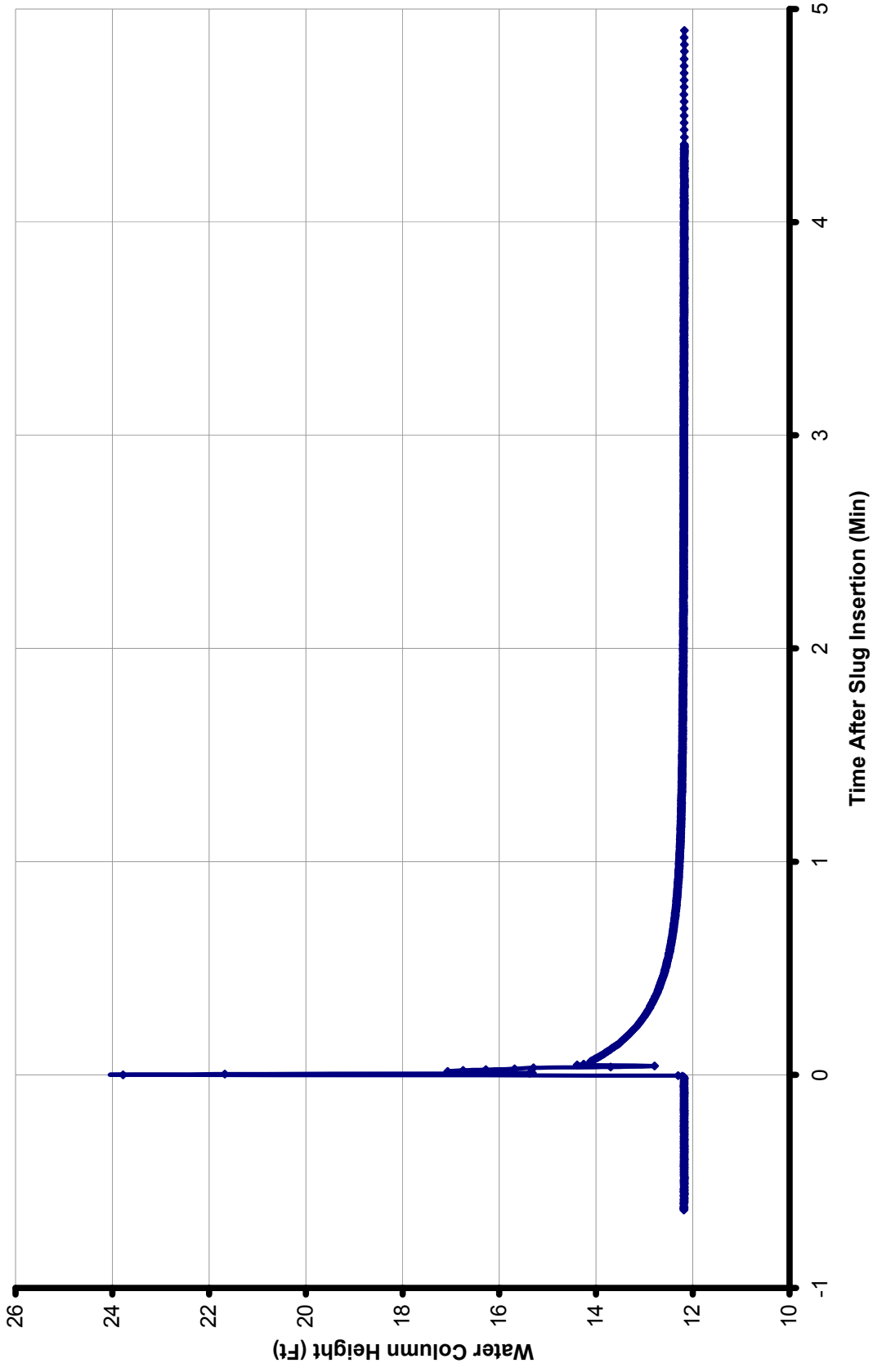
- 1 Pre-Test Water Level (ft. TOC) Time: 27.76 ft / 12:18 pm
- 2 Water Level after Probe Insertion (ft. TOC) Time: 27.76 ft / 12:15 pm
- 3 Transducer Depth: 0 ft
- 4 Casing Pre-Test Head over Transducer: 12.29 ft
- 5 Measured Pre-Test Head over Transducer: 12.15 ft
- 6 Time Test Started: Reboot / 12:29 PM
- 7 Time Test Ended: 12:34 PM
- 8 Percent Penetration at End of Test: 12.15
- 9 Data Logger File Name: 0170000-PT-01-323-SLR

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 26, 2006  
 Approved By: [Signature] Date: 9/1/06

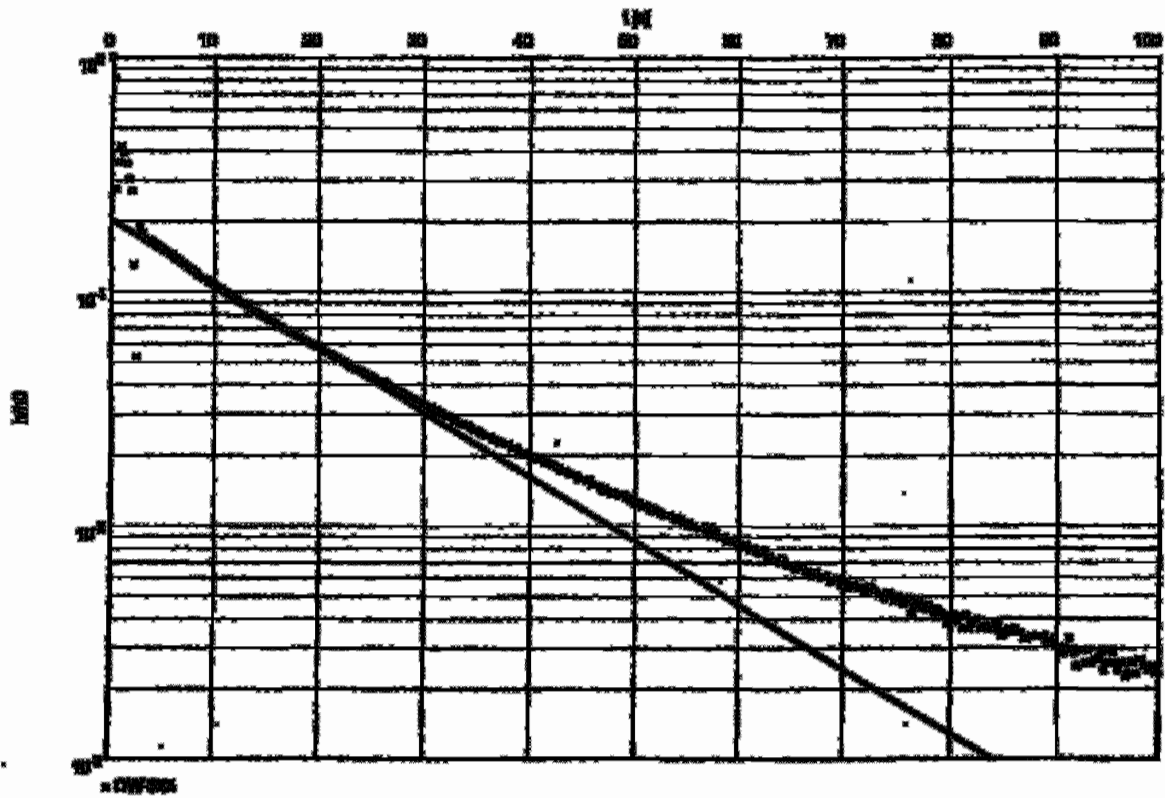
Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

### OW-323 Permeability Test



High Test No. 100  
 CONFIDENCE

Test conducted on 7/20/2010



Hydraulic conductivity (log)  $1.20 \times 10^{-8}$

**INPUT PARAMETERS**  
 Static Water Level = 10.000 ft  
 Depth to Bottom of Aquifer = 40.000 ft  
 Length of Screen = 10.000 ft  
 Radius of Screen = 0.100 ft  
 Radius of Wellbore = 0.100 ft  
 Estimated top: *Thomas P. P.*  
 Estimated top: *Thomas P. P.*



**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT NO.: 04720048  
 CLIENT: Rockwell Power Corporation

PROJECT: Calvert Cliffs NPP SOLA Project  
 LOCATION: Lusby, MD  
 DATE: July 13, 2006  
 WETNESS TEST: 70 - Initial

<b>TEST INFORMATION</b>	
Type of Test:	Falling Head / Rising Head
Slug Type:	Water
Approximate Volume of Slug:	0.25 gal
Measured Water Level Meter S/N:	WLE-001
Transducer S/N:	14255
Slug S/N:	SLUG-001

<b>WELL INFORMATION</b>	
Well ID:	OW-328
Screen Inside Diameter:	2" / 2"
Casing Inside Diameter:	2" / 2"
Total Well Depth (ft, TOC):	70.5'
Screen Interval Depth (ft, TOC):	60-70'
Screen Height (ft):	2'

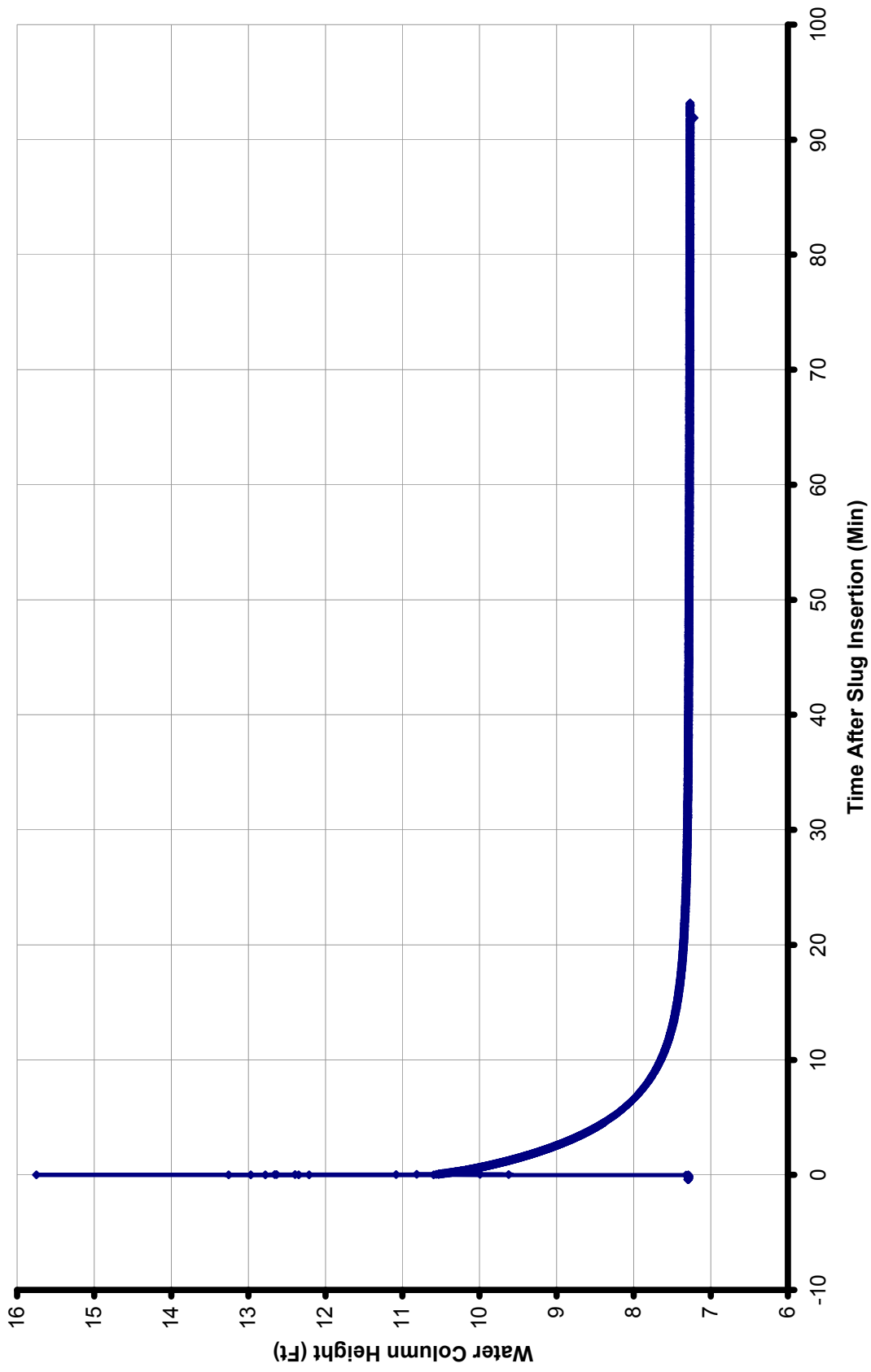
- 1 Pre-Test Water Level (ft, TOC): 70.5 ft / 8:15 AM
- 2 Water Level after Probe Insertion (ft, TOC): 70.5 ft / 8:15 AM
- 3 Transducer Depth: 48 ft
- 4 Casing Pre-Test Head over Transducer: 2.5'
- 5 Measured Pre-Test Head over Transducer: 1.28'
- 6 Time Test Start: 8:18 AM / 8:19 AM
- 7 Time Test End: 8:24 AM
- 8 Reason for Early End of Test: 1.26 ft
- 9 Database File Name: 06720048-PTV-001-328-SLUG

**Comments:**  
 TOC = Bottom of the V-notch at top of casing

Performed by: Todd White Date: July 13, 2006  
 Approved by: [Signature] Date: 7/13/06

Note: All water level measurements obtained from well measurement points at top of casing.  
 Reference ASTM D4844

### OW-328 Permeability Test



Advanced Engineering Works, S.L.C.  
200 Chichester Road, Suite 100  
Chichester, Delaware  
19921-3400

Applied Test Analysis  
Performance Analysis Division

Date: 02/01/2000

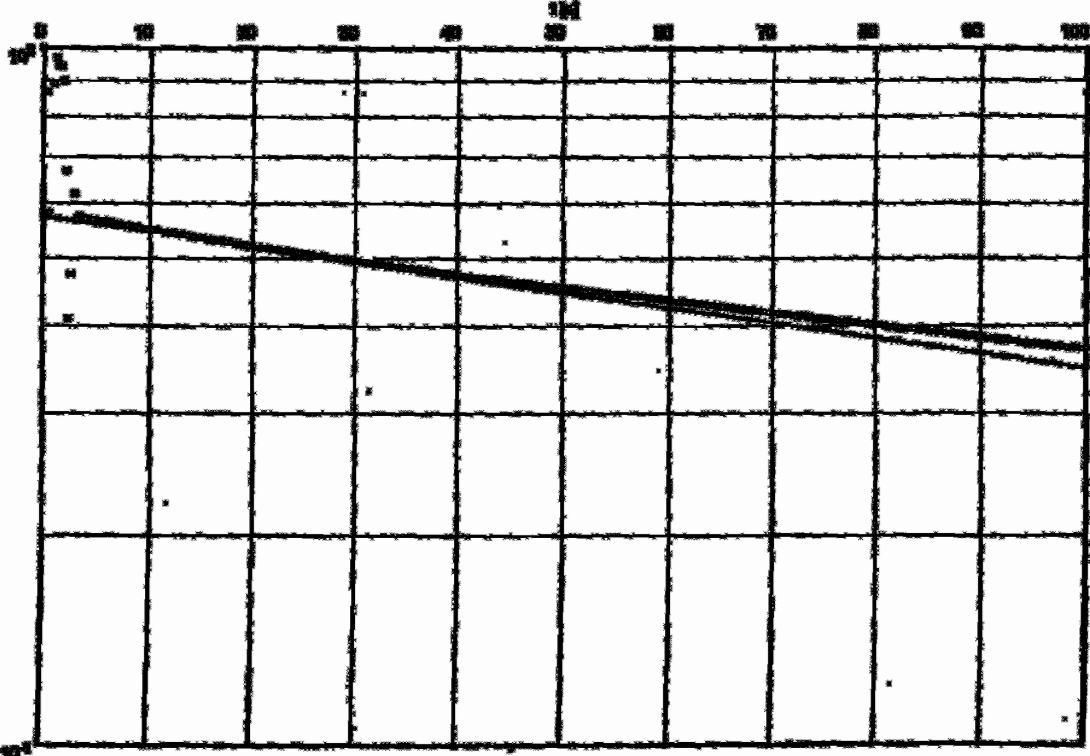
Page 7

Project: 02-0001-0000  
Analysis: 02-0001-0000

Job Test No. 000

Test completed on: 02/01/2000

Client:



Hydraulic conductivity test results

TEST PARAMETERS  
Static Water Level = 2.00 ft  
Depth to Bottom of Filter = 0.50 ft  
Length of Screen = 0.50 ft  
Radius of Screen = 0.25 ft  
Radius of Well = 0.25 ft  
Radius of Influence = 0.25 ft

Analyst: *George P. Smith*  
Reviewed by: *D. L. J.*



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Cliffs NPP COLA Project  
 LOCATION: Calvert Cliffs, MD  
 DATE: July 31, 2006  
 WEATHER: TEMPER 90-100 F

PROJECT NO.: MW100048  
 CLIENT: Electrical Power Corporation

TEST INFORMATION	
Type of Test:	Seal-off Head (Rising Head)
Method of Water Withdrawal/Injection:	(Seal-off Slug - Water Injection/Removal)
Water Loss (Volume of Slug):	0.6256 GAL
Water Level/Marker Bore:	WLP-001
Water Level/Marker Bore:	SLUG-002
Threatener Bore:	101257

WELL INFORMATION	
Well ID:	02-336
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Depth of Well (ft, TOC):	75.2
Screened Interval (ft, TOC):	60-70
Riser Height (ft):	21

Pre-test  
 60.83 ft / 11:40 AM

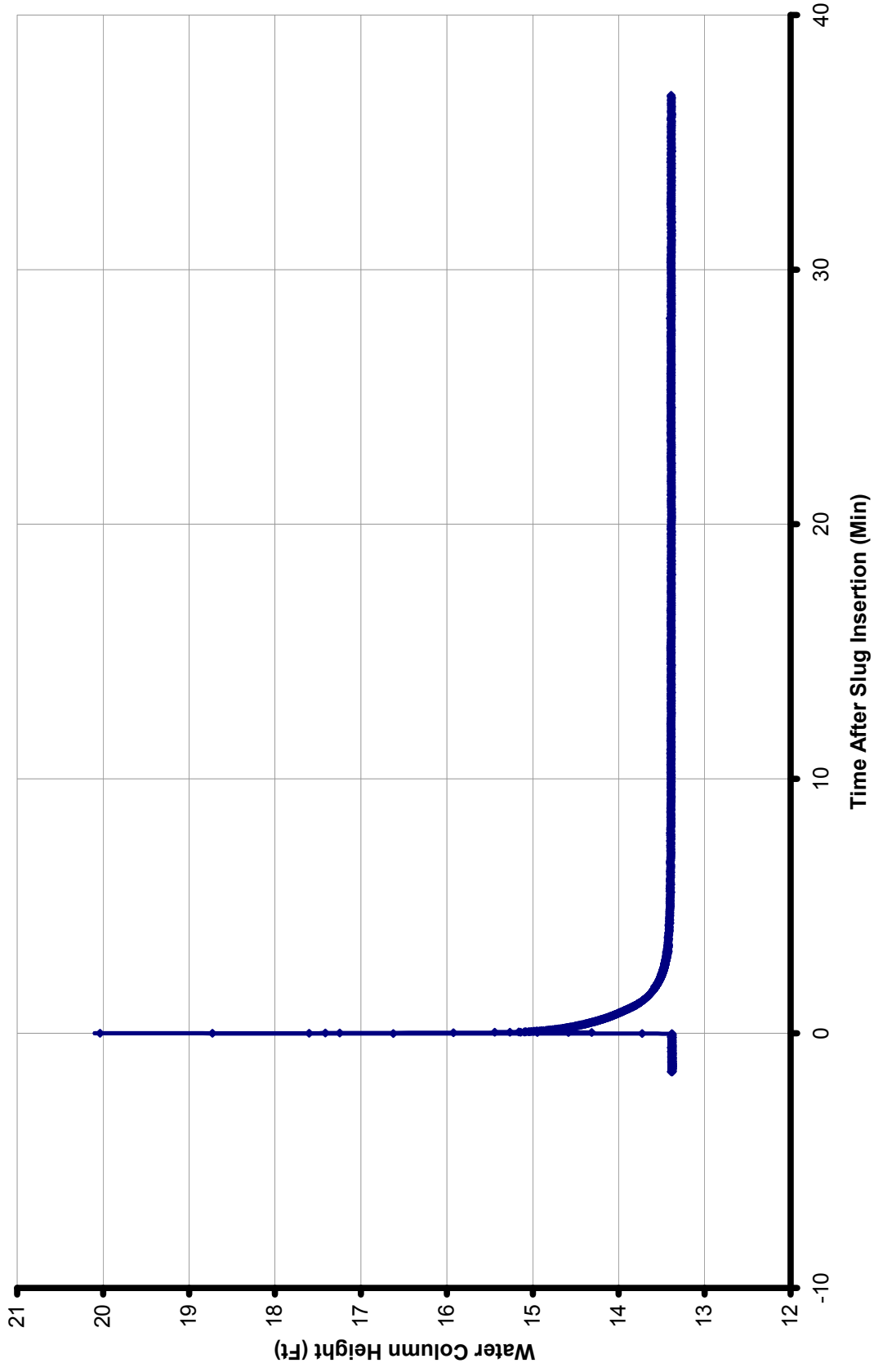
- 1 Pre-Test Static Depth to Water (ft, TOC): 60.89 ft / 11:36 AM
- 2 Threatener Depth: 79 ft
- 3 Calc. Pre-Test Head over Threatener: 19.7 ft
- 4 Measured Pre-Test Head over Threatener: 13.8 ft
- 5 Time Test Started: Pre-test/Slug at 11:45 AM / 12:25 PM
- 6 Time Test Ended: 1:10 PM
- 7 Percent Recovery at End of Test: 3.39 ft
- 8 Datalogger File Name: A6120048-1TD-DW-38-SDG

### Comments:

NAME: Testot White  
 SIGNATURE: [Handwritten Signature]

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D-4094

### OW-336 Permeability Test





**Subsidiary Engineering North, L.L.C.**  
 6800 Collins Center Road, Suite 700  
 Houston, TX 77030  
 281-417-1000

digital soil analysis  
 BSA/PTC/STP/STP's method

Date: 10/20/2009

Page: 1

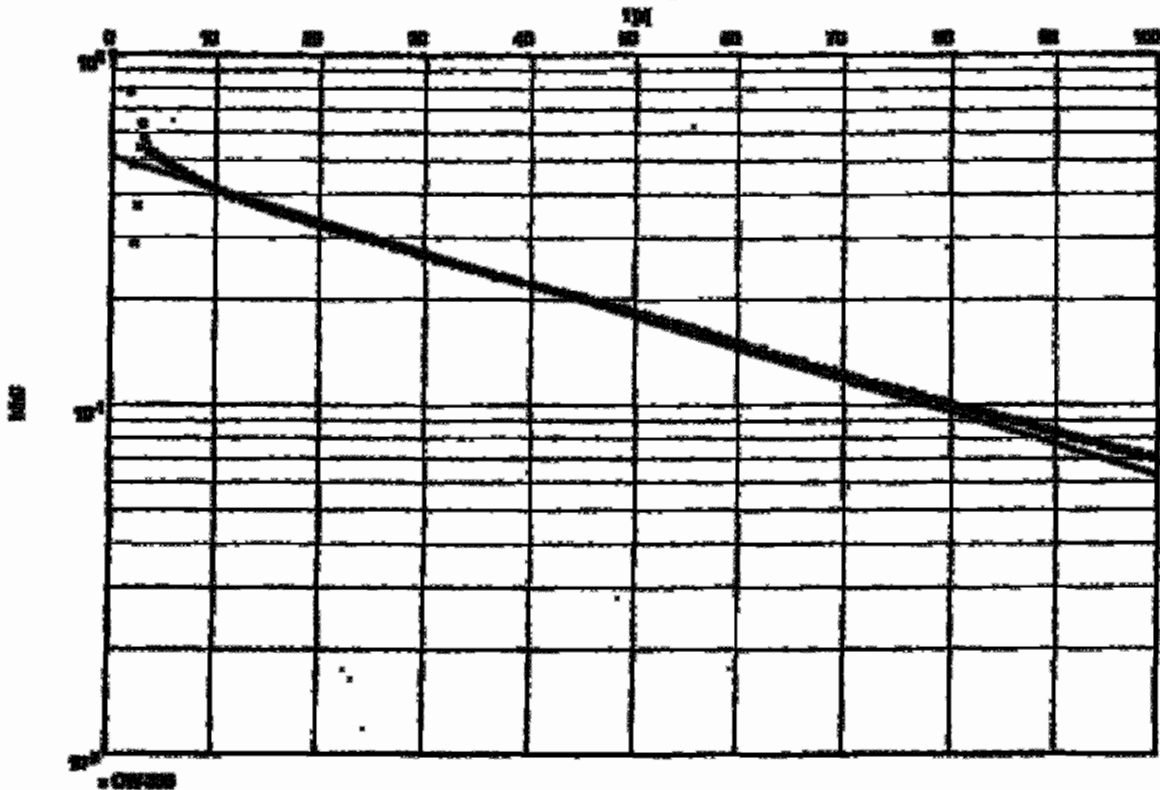
Project: Channel 2200

Analyst: Jpn/pjebk

Site: Test No. 000

Test conducted on: 10/20/2009

CH2000



CH2000

Hydraulic conductivity (k):  $1.10 \times 10^{-8}$

**INPUT PARAMETERS**

Soils Water Level = 12.00 m

Depth to Bottom of Aquifer = 67.00 m

Length of Screen = 0.00 m

Radius of Casing = 0.00 m

Radius of Influence = 0.00 m

Analyst: Jpn/pjebk

Reviewed by: *[Signature]*

Checked by: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Cliffs NPP CECLA Project  
 LOCATION: Lusby, MD  
 DATE: July 28, 2006  
 MEASUREMENT TEMP: 90 - 100 - 100

PROJECT NO.: 00000000  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	( Sealing Head / Rising Head )
Slug Type:	( <del>Water</del> / Water )
Approximate Volume of Slug:	0.625 GAL
Manual Water Level Meter S/N:	104213
Transducer S/N:	104213
SLUG S/N:	SLUG-003

WELL INFORMATION	
Well ID:	023-401
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	77.5'
Screen Interval Depth (ft, TOC):	67-75
Screen Height (ft):	2.1

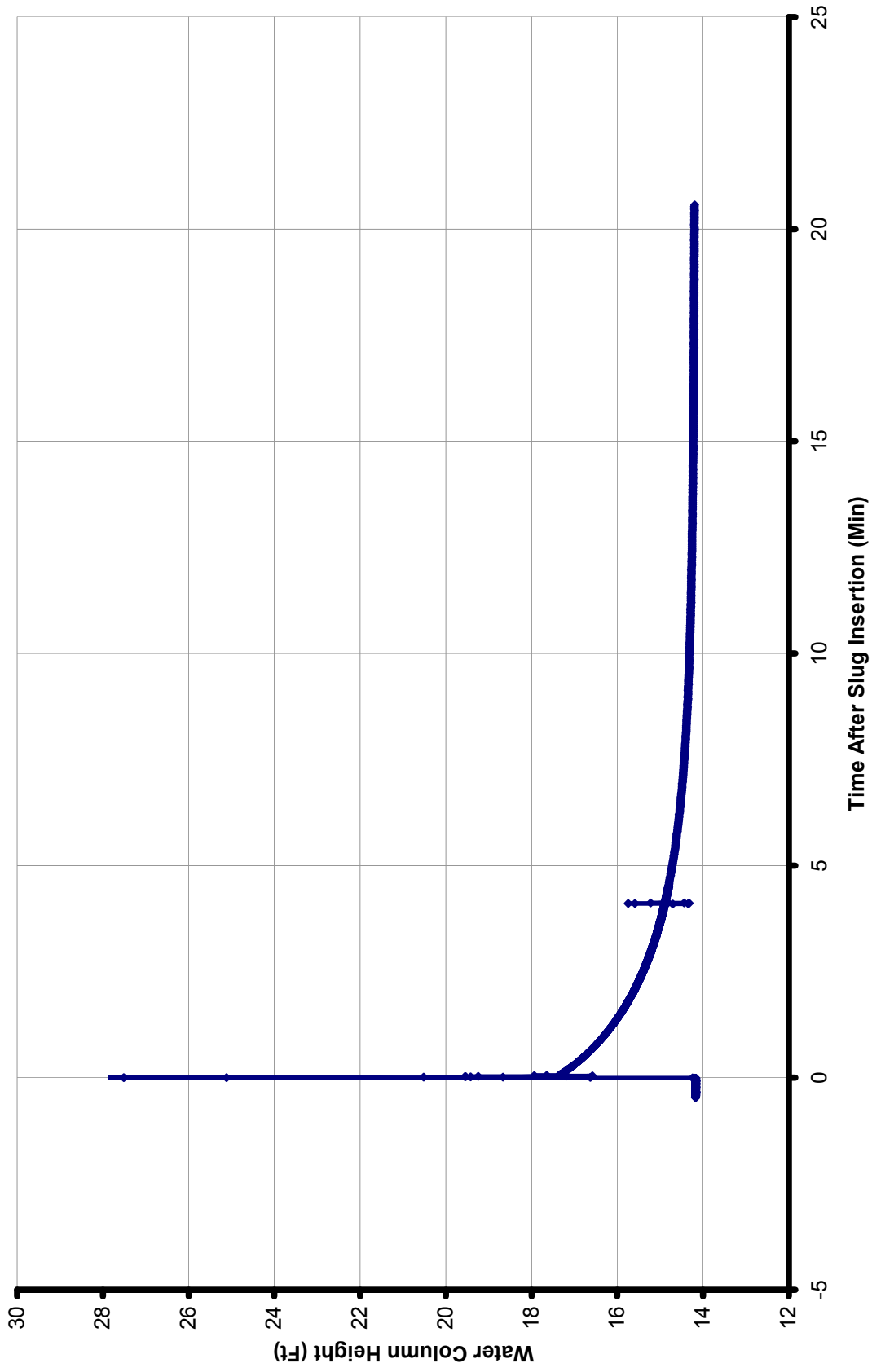
- 1 Pre-Test Water Level (ft, TOC)/Time: 91.23 ft / 9:11 AM
- 2 Water Level after Probe Insertion (ft, TOC)/Time: 91.23 ft / 9:30 AM
- 3 Transducer Depth: 15.5 ft
- 4 Caha Pre-Test Head over Transducer: 13.78 ft
- 5 Measured Pre-Test Head over Transducer: 14.12 ft
- 6 Three Test Minutes: 91.54 ft / 9:33 AM
- 7 Three Test Minutes: 91.54 ft / 9:33 AM
- 8 Pressure Head at End of Test: 14.19 ft
- 9 Discharge File Name: 06700018-PTD-01W-401-3.LUD

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 28, 2006  
 Approved By: [Signature] Date: 7/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

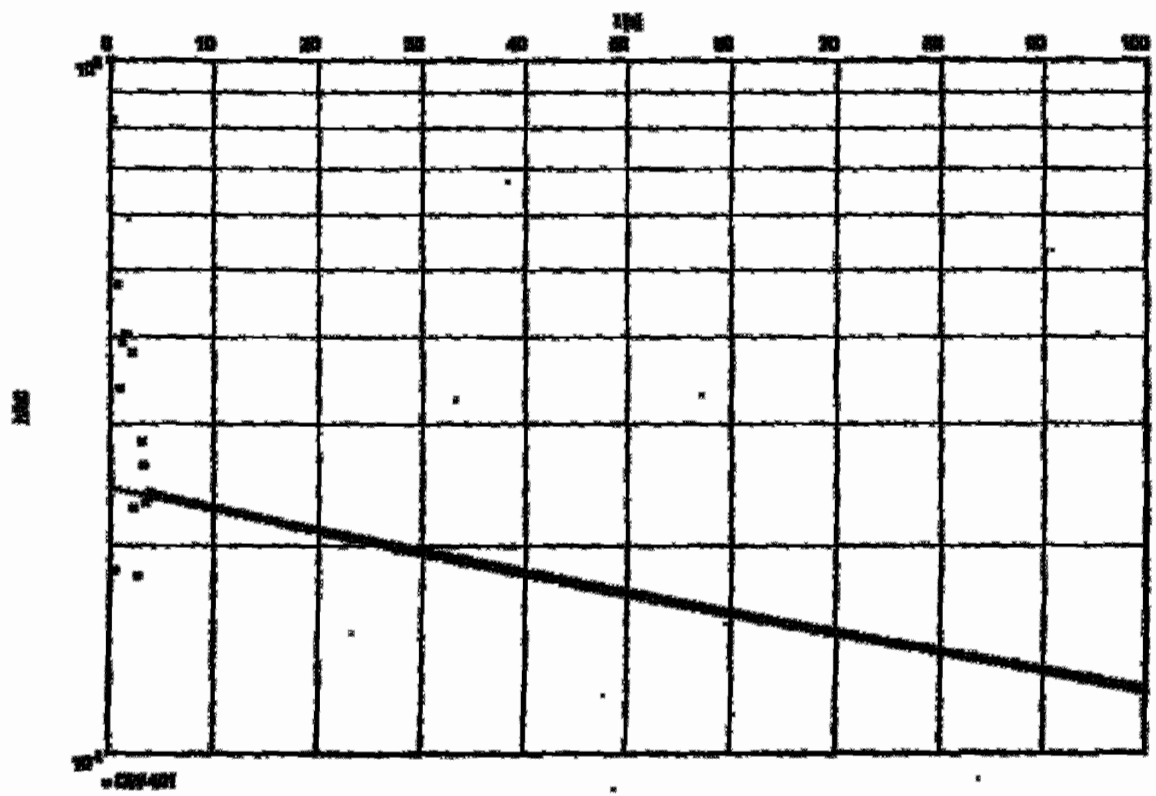
### OW-401 Permeability Test



Log Test No. 401

Test conducted on 10/05/2000

CR-401



Hydraulic conductivity (Dm):  $2.77 \times 10^{-10}$

INPUT PARAMETERS  
 Well Water Level = 14.17 m  
 Depth to Bottom of Aquifer = 17.00 m  
 Length of Screen = 0.40 m  
 Radius of Screen = 0.20 m  
 Radius of Wellbore = 0.20 m  
 Estimated by: jpb

Reviewed by: *[Signature]*  
 Date: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Cliffs NEP COLA Project  
 LOCATION: Calvert Cliffs, MD  
 DATE: 7/2/06  
 WEATHER TEMP: 95 - 65°F

PROJECT NO.: 051200-048  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Sealing Head / Rising Head
Method of Water Withdrawal/Injection:	Mechanical Slug / Water Injection (permeable)
Volume of Slug:	0.625 Gal - 0.625 Gal
Water Level Meas./Meters/Mark:	1.25 - 0.0
Water Level Meas./Meters/Mark:	
Transducer Make:	101255 3025-501

WELL INFORMATION	
Well No.:	202-48A
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Depth of Well (ft, TOC):	49.19
Screened Interval (ft, TOC):	55' - 45'
Riser Height (ft):	2'

PRE-TEST 15:26 / 8:55 AM  
 Bottom of slug @ 18' depth - slug very wet  
 no Sully submergence!

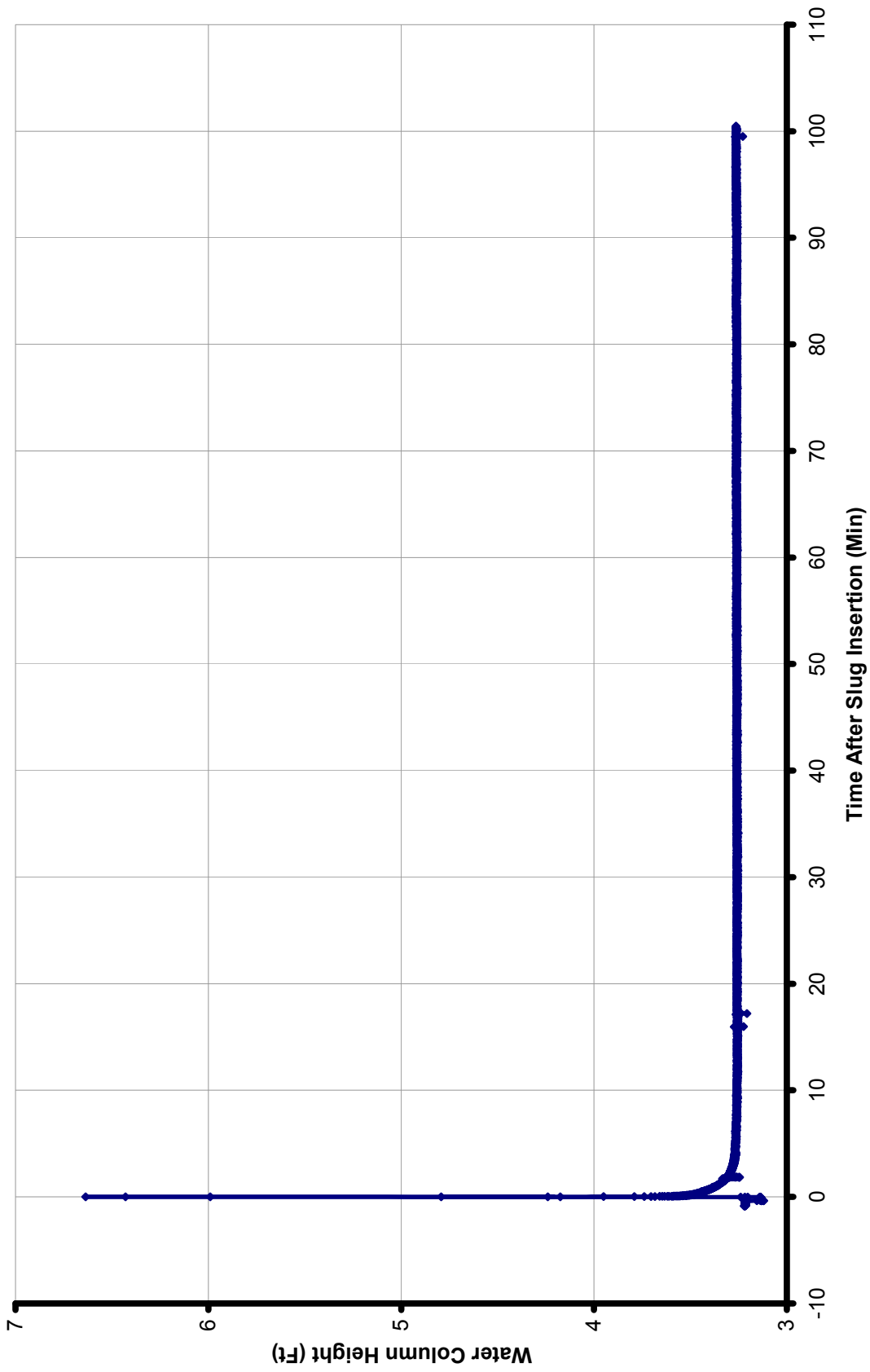
- 1 Pre-Test Static Depth to Water (ft, TOC):
- 2 Transducer Depth:
- 3 Cols. Pre-Test Head over Transducer:
- 4 Measured Pre-Test Head over Transducer:
- 5 Time Test Started: 8:55 AM
- 6 Time Test Ended: 11:12 AM
- 7 Percent Recovery at End of Test: 3.25 - 1.7
- 8 Datalogger File Name: 0420048-PTD-02-18A-VUG

### Remarks:

NAME: Todd White  
 SIGNATURE: *[Handwritten Signature]*

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D3084

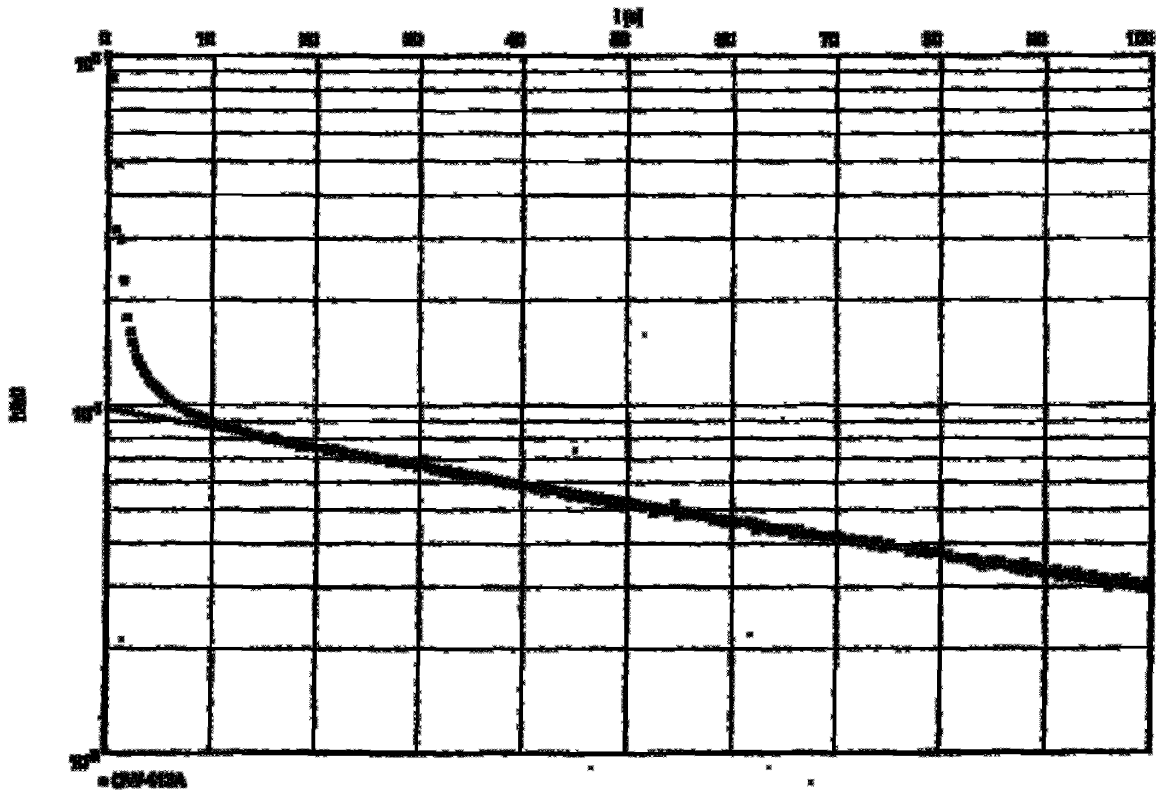
### OW-413A Permeability Test



Log File No. 422A

Test conducted on: 7/15/2008

CH-422A

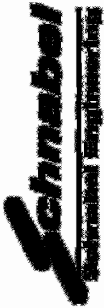


Hydraulic conductivity (K):  $1.01 \times 10^{-4}$

TEST PARAMETERS

Static Water Level = 24.00 ft  
 Depth to Bottom of Aquifer = 26.50 ft  
 Length of Screen = 10.00 ft  
 Radius of Casing = 0.100 ft  
 Radius of Wellbore = 0.050 ft  
 Analyzed by: Patrick

Reviewed by: *Patrick Patrick*  
 D. J.



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Cohort Clinic NPP COLA Project  
 LOCATION: Cohort Clinic, MD  
 DATE: July 21, 2016  
 WEATHER TEMP: 81

PROJECT NO.: 08180048  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	( Falling Head / Rising Head )
Method of Water Withdrawal/ Injection:	( Mechanical Slug / Water Injection/Inflow )
Volume of Slug:	<u>0.125 GAL</u>
Water-Level Meter Make and Model:	
Water Level Meter SN:	<u>64P-001</u>
Transducer Make and Model:	
Transducer SN:	<u>101259 2116-002</u>

WELL INFORMATION	
Well ID:	<u>SWR-413B</u>
Screen Inside Diameter:	<u>2 1/4</u>
Casing Inside Diameter:	<u>2 1/4</u>
Total Depth of Well (ft, TOC):	<u>2100</u>
Screened Interval (ft, TOC):	<u>110-120'</u>
Riser Height (ft):	<u>2'</u>

PRE-TEST 86.55 / 9:41 AM

- 1 Pre-Test Static Depth to Water (ft, TOC): 86.55 / 9:40 AM
- 2 Transducer Depth: 00 ft
- 3 Coda, Pre-Test Head over Transducer: 13.45 ft
- 4 Measured Pre-Test Head over Transducer: 13.90 ft
- 5 Time Test Started: 9:42 AM / 9:47 AM
- 6 Time Test Ended: 11:09 AM
- 7 Percent Recovery at End of Test: 13.88 ft
- 8 Data Logger File Name: 8612-008-110-02-413B-SLUG

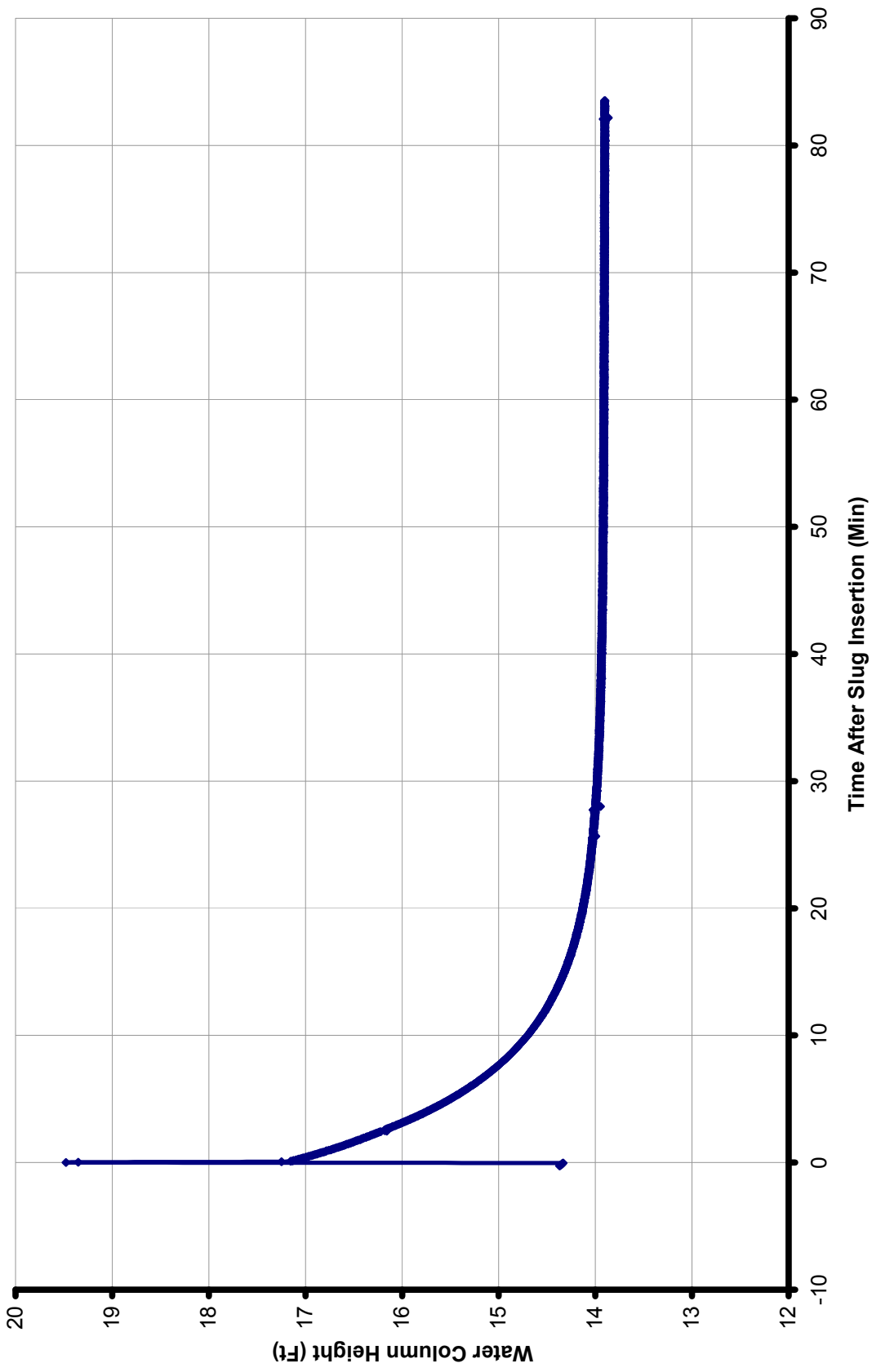
### Comments:

NAME: Taylor Wilkins  
 SIGNATURE: [Signature]

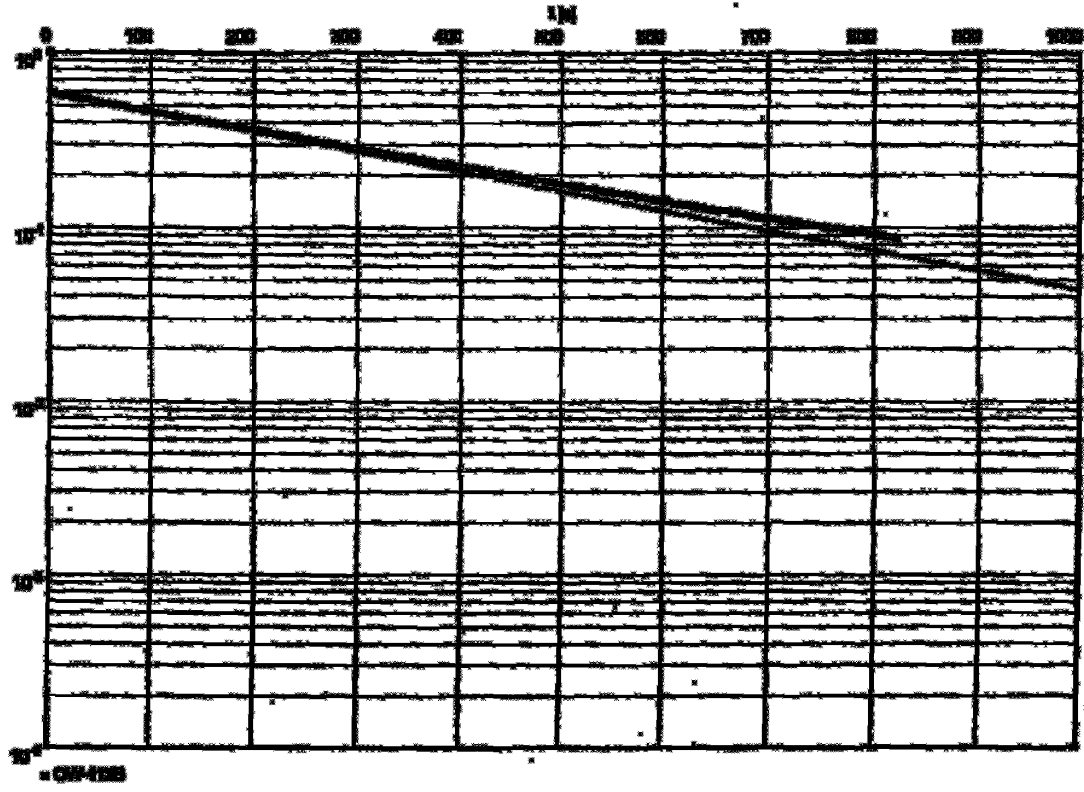
Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4094



### OW-413B Permeability Test



Industrial Engineering Dept., I.I.C. 200 Chas. Clark Blvd., Suite 100 Washington, Missouri 63107-0700	Project Test results 200-0000-0000's result	Order 1500000 Project Control 0000 Checked by: jpb	Page 1
Map Test No. 0000 000-0000	Test conducted on: 00/00/00		



Hydraulic conductivity (cm/s):  $1.2 \times 10^{-3}$

EMPTY PARAMETERS  
 Depth to Water Table = 0.00 m  
 Depth to Bottom of Aquifer = 0.00 m  
 Length of Screen = 0.00 m  
 Radius of Casing = 0.00 m  
 Radius of Wellbore = 0.00 m  
 Checked by: *[Signature]*  
 Checked by: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT: Calvert Cliffs NPP USLA Project  
 LOCATION: Lusby, MD  
 DATE: July 23, 2006  
 WEATHER TEMPERATURE: 85 - 86-87

PROJECT NO.: 04180048  
 CLIENT: Electrical Power Corporation

TEST INFORMATION	
Type of Test:	(Slug Test / Rising Head)
Slug Type:	(Distilled / Water)
Approximate Volume of Slug:	0.615 GM
Measured Water Level Meter S/N:	104255
Transducer S/N:	104255
Slug S/N:	SLUG-001

WELL INFORMATION	
WELL ID:	0WJ-418A
Screen Inside Diameter:	2"
Casing Inside Diameter:	2 1/4"
Total Well Depth (ft, TOC):	59.45
Screen Interval Depth (ft, TOC):	25-35
Riser Height (ft):	2.2'

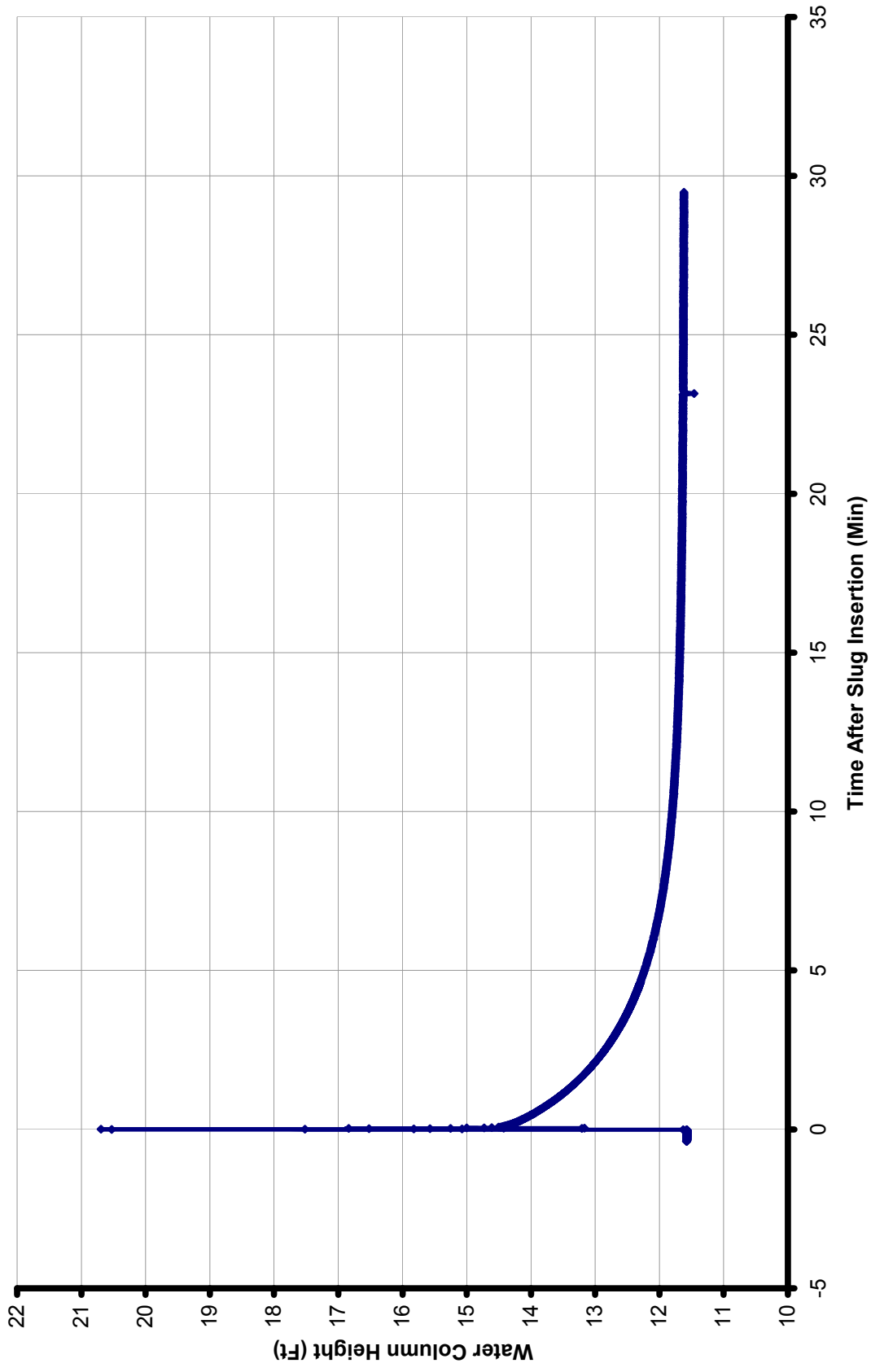
- 1 Pre-Test Water Level (ft, TOC)/Time: 8:39 AM / 10:50 AM
- 2 Water Level after Probe Insertion (ft, TOC) Time: 8:39 AM / 11:10 AM
- 3 Transducer Depth: 2.1 ft
- 4 Cols. Pre-Test Head over Transducer: 1.61 ft
- 5 Measured Pre-Test Head over Transducer: 1.652 ft
- 6 Time Test Started: 10:52 / 11:17 AM
- 7 Time Test Ending: 11:41 AM
- 8 Percent Recovery at End of Test: 1.62 ft
- 9 Data Logger File Name: 060723-PTD-0WJ-418A-SLUG

Comments:  
 TOC - Bottom of five V-notch at top of casing

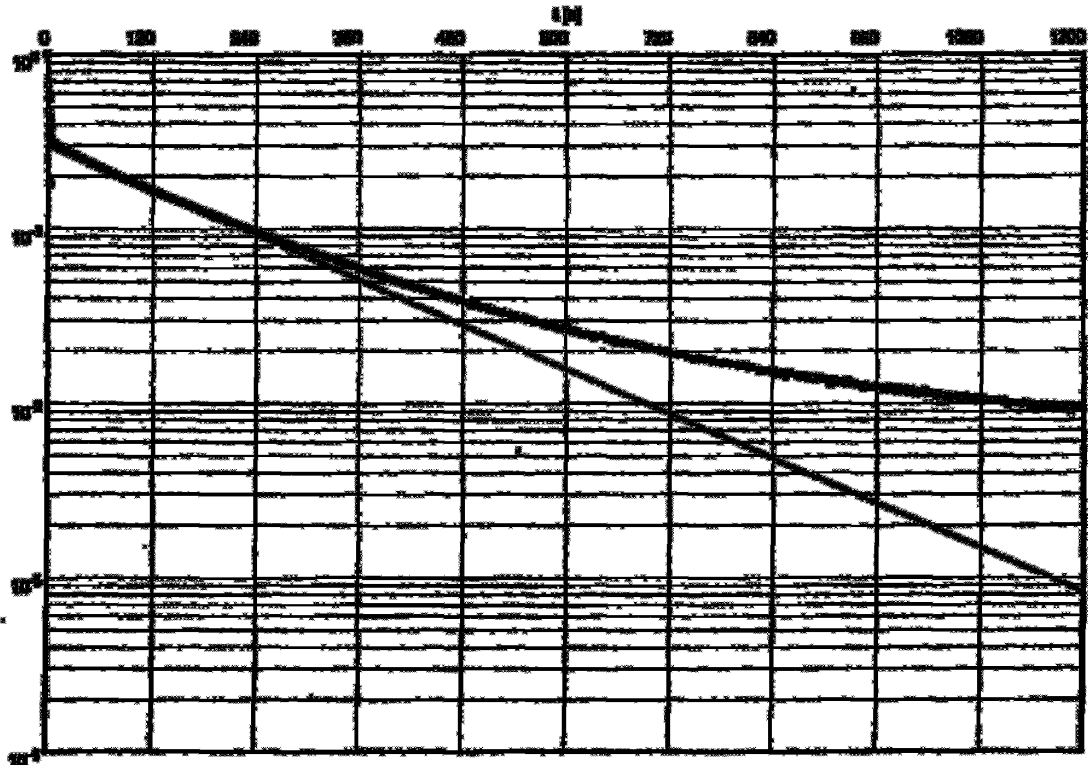
Performed By: Todd White Date: July 27, 2006  
 Approved By: Mark Dore Date: 7/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D-4044

### OW-418A Permeability Test



Map Test No. 010A      Test completed on: 10/15/2010  
 010-010A



010-010A

Hydraulic conductivity (k):  $4.41 \times 10^{-3}$

**INPUT PARAMETERS**  
 Static Water Level = 11.20 m  
 Depth to Bottom of Anvil = 0.20 m  
 Length of Hammer = 0.20 m  
 Radius of Anvil = 0.10 m  
 Radius of Influence = 0.20 m

Calculated by: *Frank P. ...*  
 Reviewed by: *[Signature]*

# PERMEABILITY (SLUG) TEST FIELD FORM



PROJECT NO.: 187520048  
CLIENT: Essential Power Corporation

PROJECT: Cabinet Creek NEPP O&A Project  
LOCATION: Landing, MO  
DATE: July 28, 2016  
WEATHER TEMP: 82 - 84

WELL INFORMATION	
Well ID:	02-4181S
Screen Inside Diameter:	2"n
Casing Inside Diameter:	2"n
Total Well Depth (ft, TOC):	85.52
Screen Interval Depth (ft, TOC):	5.75
Water Height (ft):	2.7

TEST INFORMATION	
Type of Test:	Leak Head / Rising Head
Slug Type:	Sealed Water
Approximate Volume of Slug:	0.415 GAL
Manual Water Level Marker (ft):	WLP-001
Transducer (ft):	1042.13
Slug (ft):	SLUG-002

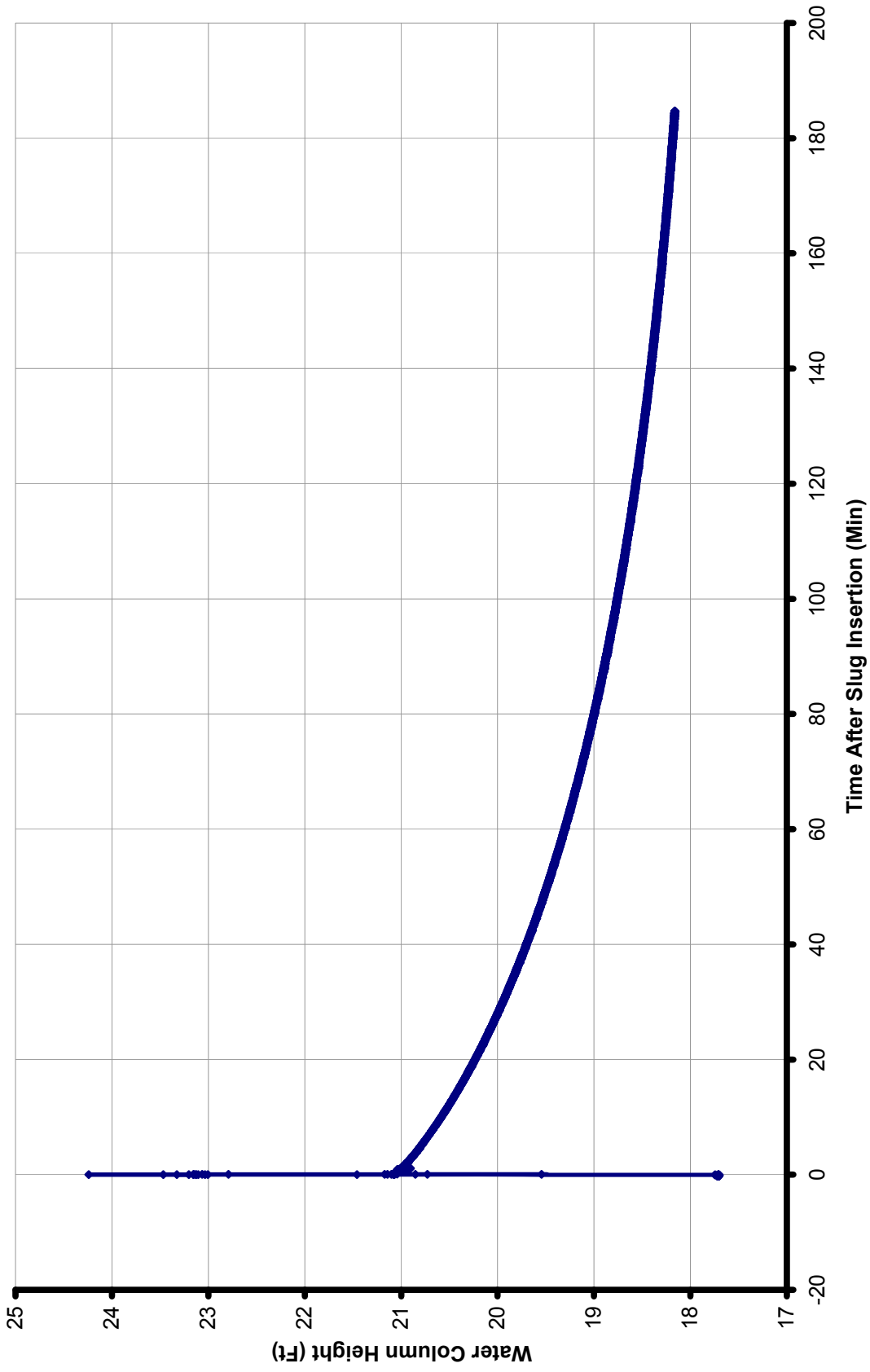
- 1 Pre-Test Water Level (ft, TOC) Time: 7:51 / ~~8:10~~ 8:10 AM
- 2 Water Level after Presh Imposition (ft, TOC) Time: 7:52 / 10:00 AM
- 3 Transducer Depth: 1042.13
- 4 Cols. Pre-Test Head over Transducer: 17.45 ft
- 5 Measured Pre-Test Head over Transducer: 17.67 ft
- 6 Time Test Started: 8:41 AM / 10:00 AM
- 7 Time Test Ended: 1:00 PM
- 8 Percent Recovery at End of Test: 18.24 %
- 9 Discharge File Name: 06122016-10-00-4181S-SLUG

Comments:  
TOC = Bottom of the V-notch at top of casing

Performed By: F. J. White Date: 7/28/16  
 Approved By: [Signature] Date: 7/28/16

Note: All water level measurements obtained from well measurement point at top of casing.  
Reference: ASTM D4041

### OW-418B Permeability Test



Industrial Engineering North, L.L.C.  
 800 Collins Street West, Suite 700  
 Columbus, OH 43260  
 614-447-4444

Standard Test Method  
 ASTM D 1585-03

Date: 08/20/2008

Page 1

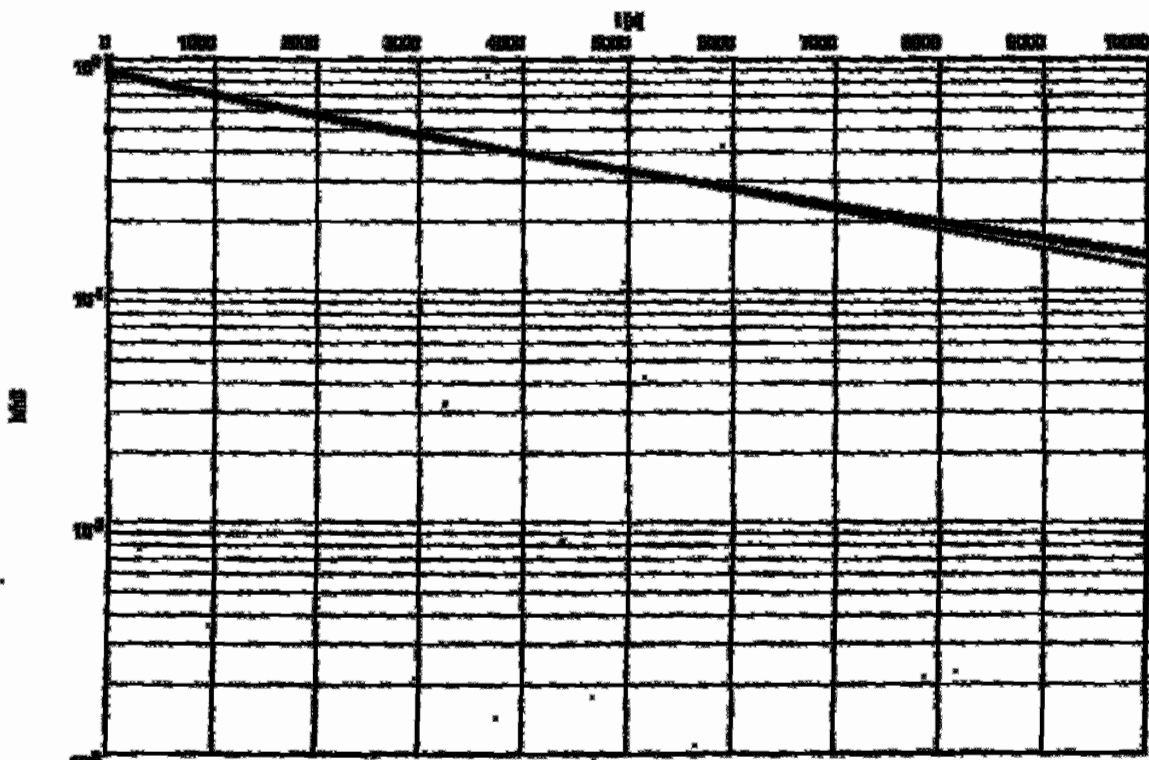
Project:                     

Material:                     

Job No.                     

Test conducted on:                     

CVN-4100



CVN-4100

Charpy sensitivity (CVN)  $1.1 \times 10^3$

TEST PARAMETERS  
 Strike Water Level - 7.27 M  
 Depth to Bottom of Anvil - 0.00 M  
 Length of Hammer - 0.20 M  
 Radius of Chisel - 0.00 M  
 Radius of Indenter - 0.00 M

Material by:                       
 Material by:



**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Caltrans Office BPP OELA Project  
 LOCATION: Lundy, MO  
 DATE: July 24, 2016  
 WEATHER TEST: AS per

PROJECT NO.: 15120046  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	<u>(Leaking Head) Rising Head</u>
Slug Type:	<u>Commercial Water</u>
Approximate Volume of Slug:	<u>0.675 GAL</u>
Manual Water Level Meter S/N:	<u>119-001</u>
Transducer S/N:	<u>10255</u>
SLUG S/N:	<u>SLUG-01</u>

WELL INFORMATION	
WELL ID:	<u>OW-425</u>
Screen Inside Diameter:	<u>2"</u>
Casing Inside Diameter:	<u>2"</u>
Total Well Depth (ft, TDC):	<u>42.12</u>
Screen Interval Depth (ft, TDC):	<u>30-40</u>
Filter Height (ft):	<u>18"</u>

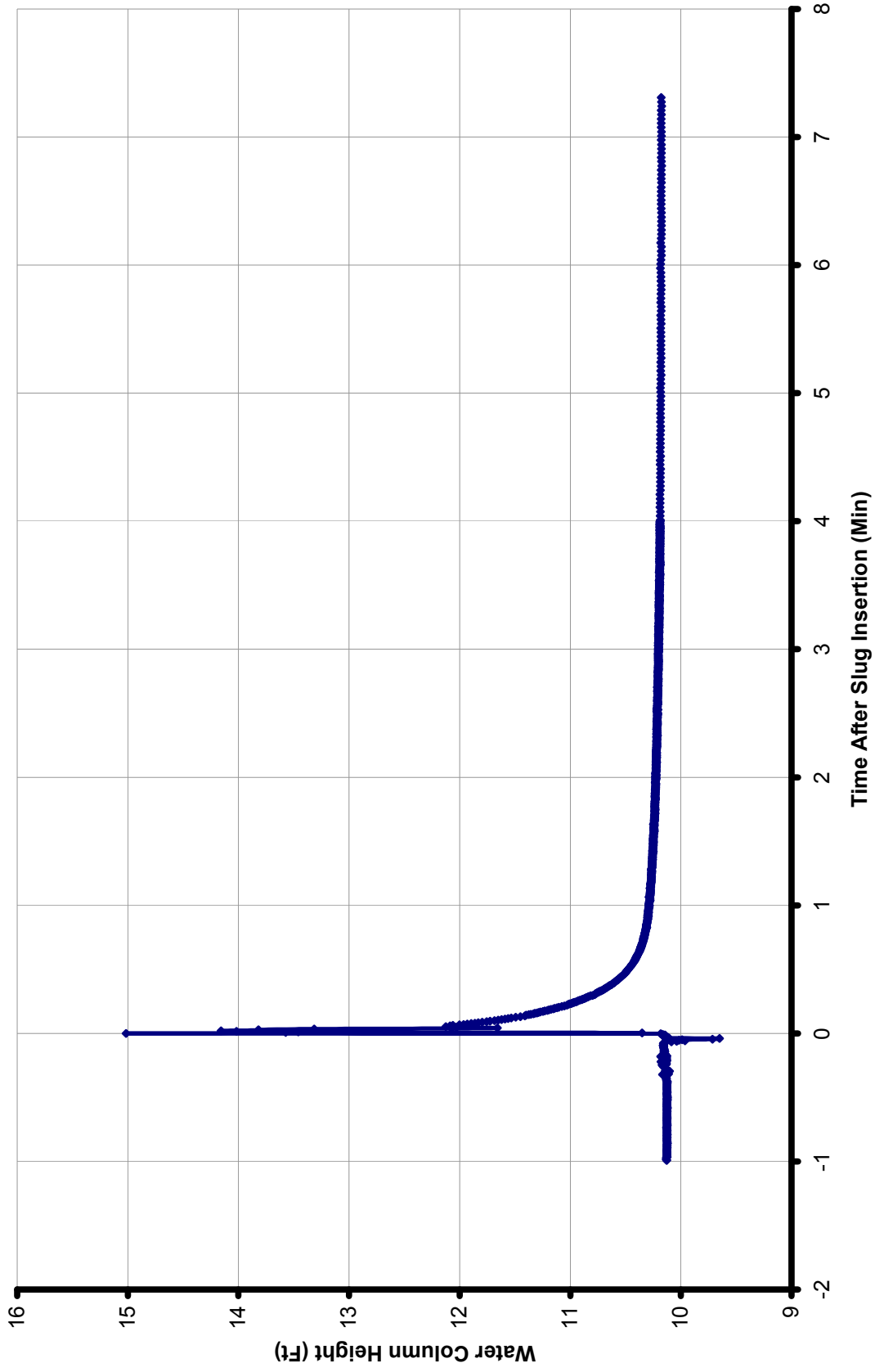
- 1 Pre-Test Water Level (ft, TDC) Time: 29.76 / 3:09 pm
- 2 Water Level after Probe Insertion (ft, TDC) Time: 29.75 / 3:29 pm
- 3 Transducer Depth: 40 ft
- 4 Obs. Pre-Test Head over Transducer: 10.25
- 5 Measured Pre-Test Head over Transducer: 10.10
- 6 Time Test Started: 15:15 / 15:15
- 7 Time Test Ended: 15:25
- 8 Probe Withdrawn at End of Test: 10.16
- 9 Data Logger File Name: OW-425-01-425-SLUG

Observations:  
 TCG = Bottom of the V-notch at top of casing

Prepared By: Todd White Date: July 24, 2016  
 Approved By: [Signature] Date: 9/21/16

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

### OW-423 Permeability Test





Page 4 of 4

# PERMEABILITY (SLUG) TEST FIELD FORM



PROJECT NO.: 01100040  
CLIENT: National Power Corporation

PROJECT: Central City NPP CCLA Project  
LOCATION: Lusby, MD  
DATE: July 24, 2006  
WEATHER TEMP: 78° F

WELL INFORMATION	
Well ID:	OW-128
Screen Inside Diameter:	2" / 2"
Casing Inside Diameter:	2" / 2"
Total Well Depth (ft. TOC):	110.5'
Screen Interval Depth (ft. TOC):	35' - 110.5'
Screen Height (ft):	17' / 1'

TEST INFORMATION	
Type of Test:	( Falling Head / Rising Head )
Slug Type:	( Sand / Water )
Approximate Volume of Slug:	0.625 Gall
Manual Water Level Meter S/N:	WLP-001
Transducer S/N:	101255
Slug S/N:	SLUG-001

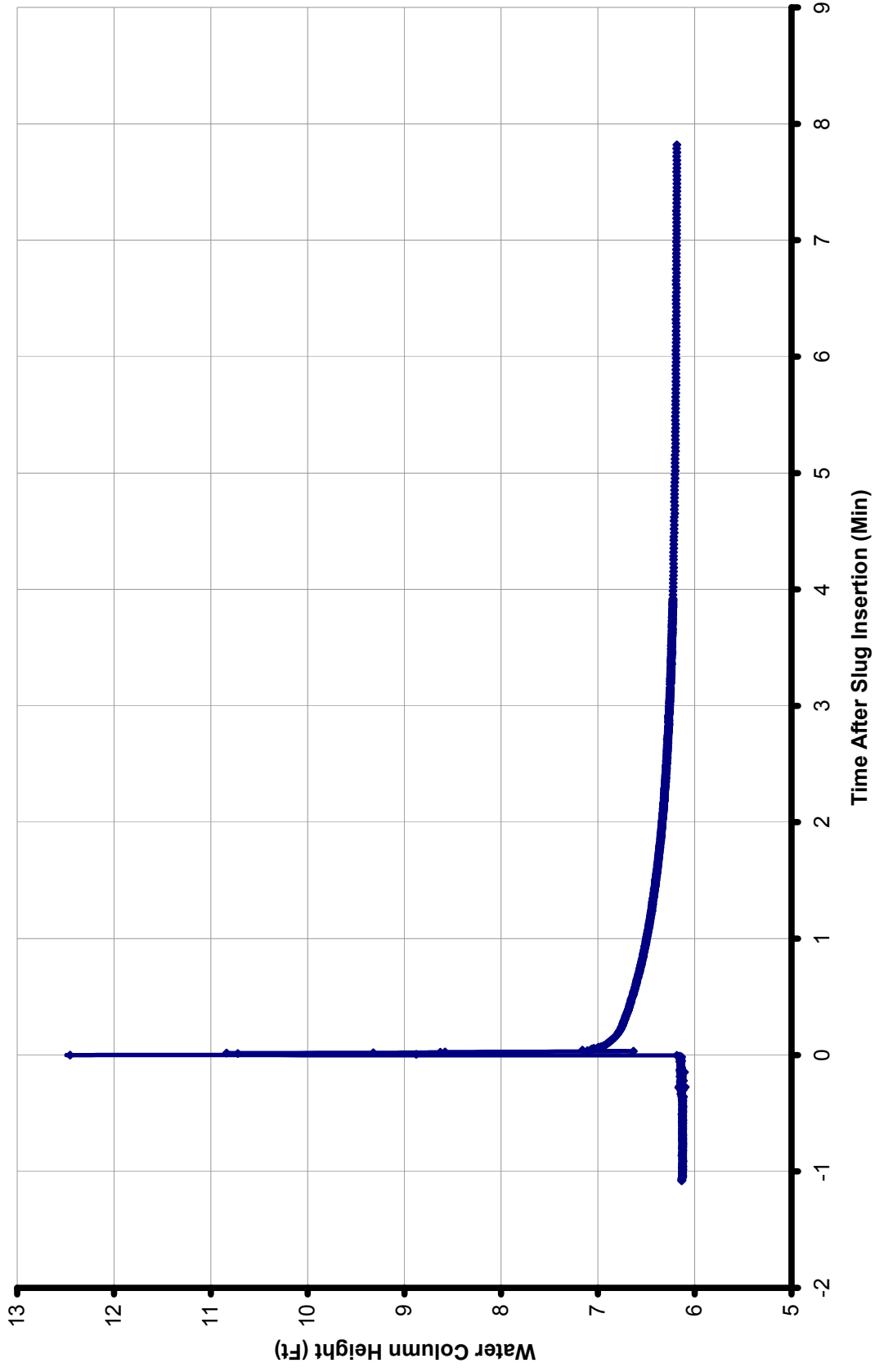
- 1 Pre-Test Water Level (ft. TOC) Time: 57.75 / 1:17 pm
- 2 Water Level after Probe Insertion (ft. TOC) Time: 51.9 / 1:26 pm
- 3 Transducer Depth: 44.4'
- 4 Casing Pre-Test Head over Transducer: 6.25 ft
- 5 Measured Pre-Test Head over Transducer: 6.12 ft
- 6 Time Test Started: 1:28 / 1:35
- 7 Time Test Ended: 1:50 PM
- 8 Penetration at End of Test: 57.75' / 44.4'
- 9 Data Logger File Name: 06R0018-PTD-OW-128-SUG

Remarks:  
TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 24, 2006  
 Approved By: [Signature] Date: 7/24/06

Note: All water level measurements obtained from well measurement point at top of casing. Reference ASTM D4044

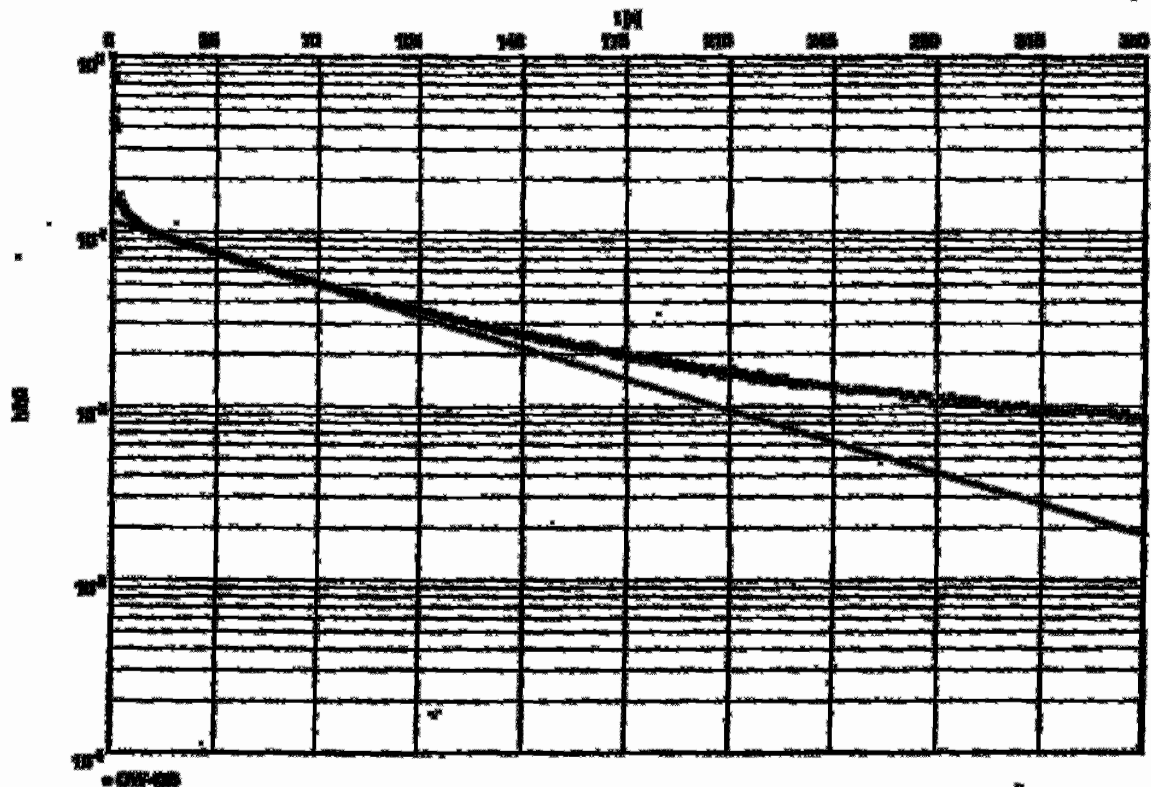
### OW-428 Permeability Test



Log Test No. 400

Test completed on: 12/15/2010

400-000



Hydraulic conductivity  $K = 1.0 \times 10^{-4}$

**WELL PARAMETERS**

- Static Water Level = 8.74 ft
- Depth to Bottom of Aquifer = 83 ft
- Length of Screen = 30.00 ft
- Radius of Casing = 8.25 ft
- Radius of Wellbore = 1.25 ft
- Installed by: [Signature]

Reviewed by: [Signature]



**PERMEABILITY (SLUG) TEST FIELD FORM**

Page 1 of 1

PROJECT: Calvert Cliffs NEP CCLA Project  
 LOCATION: Ledy, MD  
 DATE: July 25, 2006  
 WEATHER TEMP: 80 Clear

PROJECT NO.: 04750048  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Slug (Yield / Water Head)
Slug Type:	(Inches / Water)
Approximate Volume of Slug:	0.625 GAL
Manual Water Level Meter S/N:	WLP-001
Transducer S/N:	01255
Slug S/N:	S410-001

WELL INFORMATION	
Well ID:	OWJ-136
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	13.8'
Screen Interval Depth (ft, TOC):	24'-31'
Screen Height (ft):	22.5"

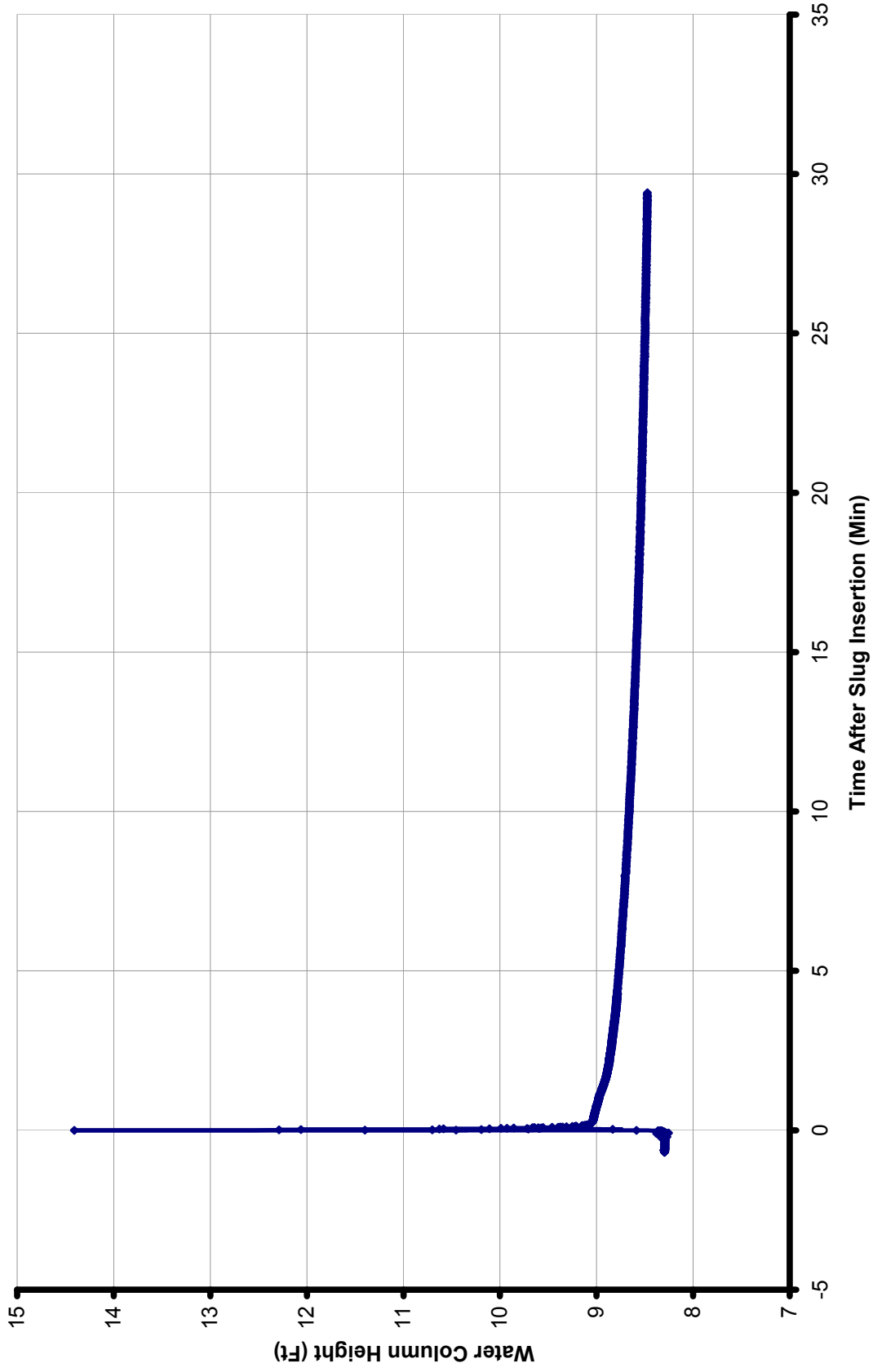
- 1 Pre-Test Water Level (ft, TOC)/Time: 5.62 ft / 8:07 AM
- 2 Water Level after Probe Insertion (ft, TOC)/Time: 5.62 ft / 8:55 AM
- 3 Transducer Depth: 8.0 ft
- 4 Cahn, Pre-Test Head over Transducer: 8.26 ft
- 5 Measured Pre-Test Head over Transducer: 8.26 ft
- 6 Time Test Started: 8:27 AM
- 7 Time Test Ended: 8:43 AM
- 8 -Packer Recovery at End of Test: 0.625 GAL
- 9 Datalogger File Name: 0612006-P1-OWJ-01-SLUG

Remarks:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Talk White Date: July 27, 2006  
 Approved By: [Signature] Date: 8/2/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

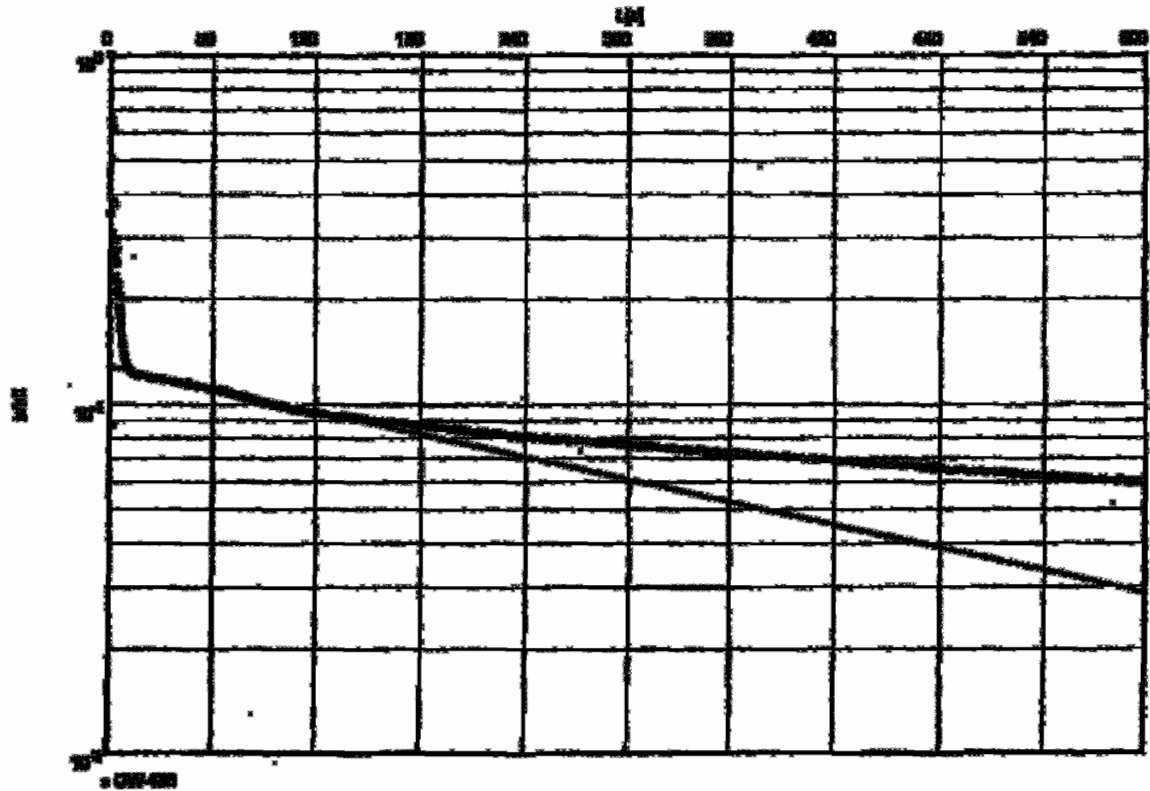
### OW-436 Permeability Test





Weg Test No. 428  
 CRW-428

Test conducted on: 7/20/2020



Hydraulic conductivity (log):  $1.0 \times 10^{-4}$

INPUT PARAMETERS  
 Wells Water Level = 0.00 ft  
 Depth to Bottom of Aquifer = 30.00 ft  
 Length of Screen = 10.00 ft  
 Radius of Casing = 0.50 ft  
 Radius of Wellbore = 0.50 ft  
 Reviewed by: jpb  
 Checked by: [Signature]



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Cliffs NPP CO2A Project  
 LOCATION: Lusby, MD  
 DATE: July 26, 2006  
 WEATHER: 85, 6, wind

PROJECT NO.: 00720048  
 CLIENT: Electrical Power Corporation

TEST INFORMATION	
Type of Test:	Crilling Head / Rising Head
Slug Type:	(Distilled) Water
Approximate Volume of Slug:	0.625 GM
Manual Water Level Meter SN:	WLP-100
Transducer SN:	104255
Slug Size:	SLUG-001

WELL INFORMATION	
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	48.9
Screen Interval Depth (ft, TOC):	55-45
Water Height (ft):	21

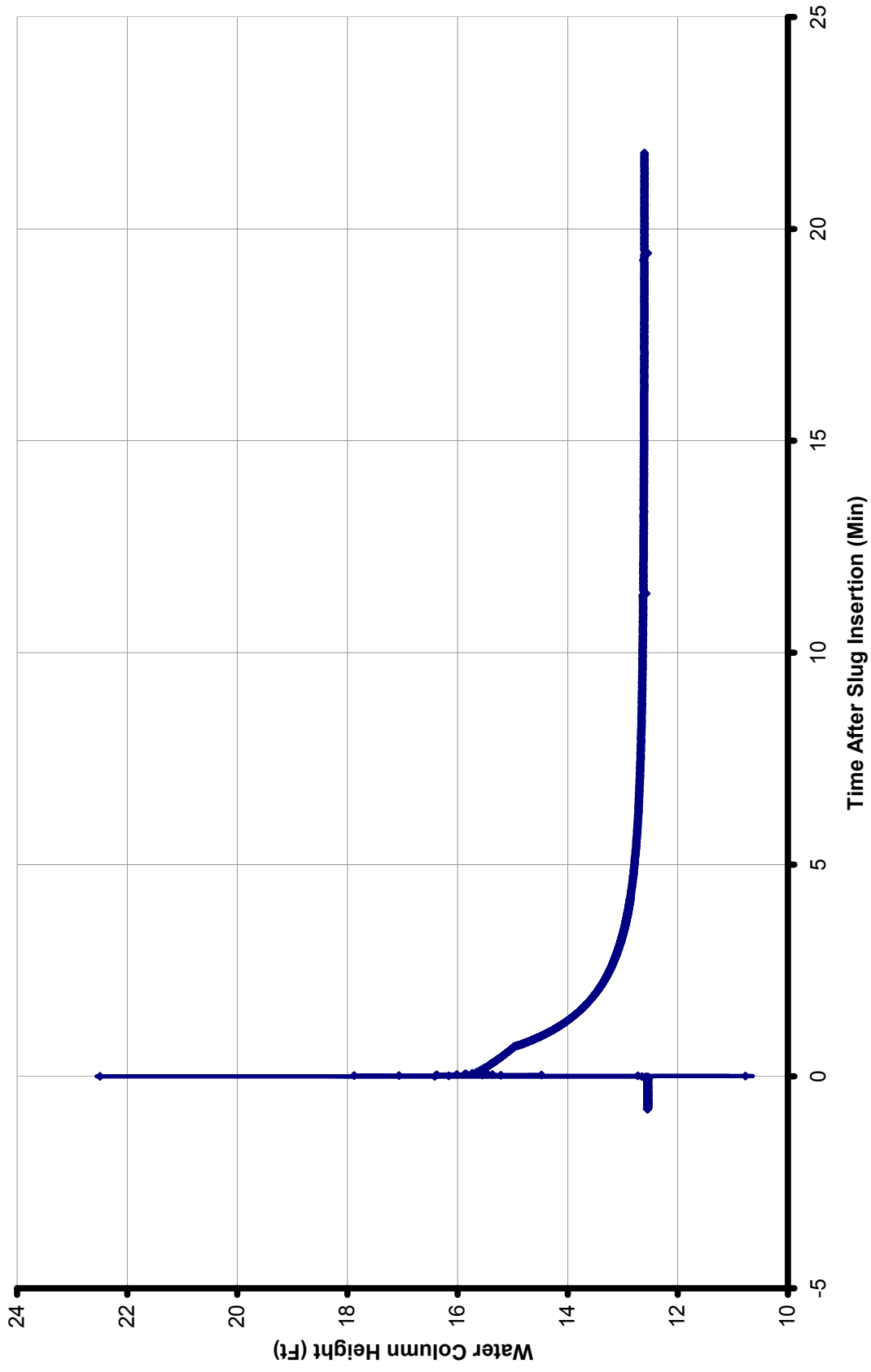
- Pre-Test Water Level (ft, TOC) Time: 27.30 ft / 8:10 am
- Water Level after Probe Insertion (ft, TOC) Time: 27.34 ft / 8:36 am
- Transducer Depth: 40 ft
- Cable, Pre-Test Head over Transducer: 12.66 ft
- Measured Pre-Test Head over Transducer: 12.52 ft
- Time Test Started: 8:15 AM / 8:10 AM
- Time Test Ended: 9:06 AM
- Percent Recovery at End of Test: 12.57 ft
- Designer File Name: 060001-PTD-CW-7834-SUG

Examined:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Tom White Date: July 26, 2006  
 Approved By: [Signature] Date: 7/26/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D-4044

### OW-703A Permeability Test



Independent Engineering North, LLC  
 2000 Colson Street, Suite 200  
 Charlotte, NC 28203  
 (704) 544-4444

Applied Test Analysis  
 INCUBATION-STEADY method

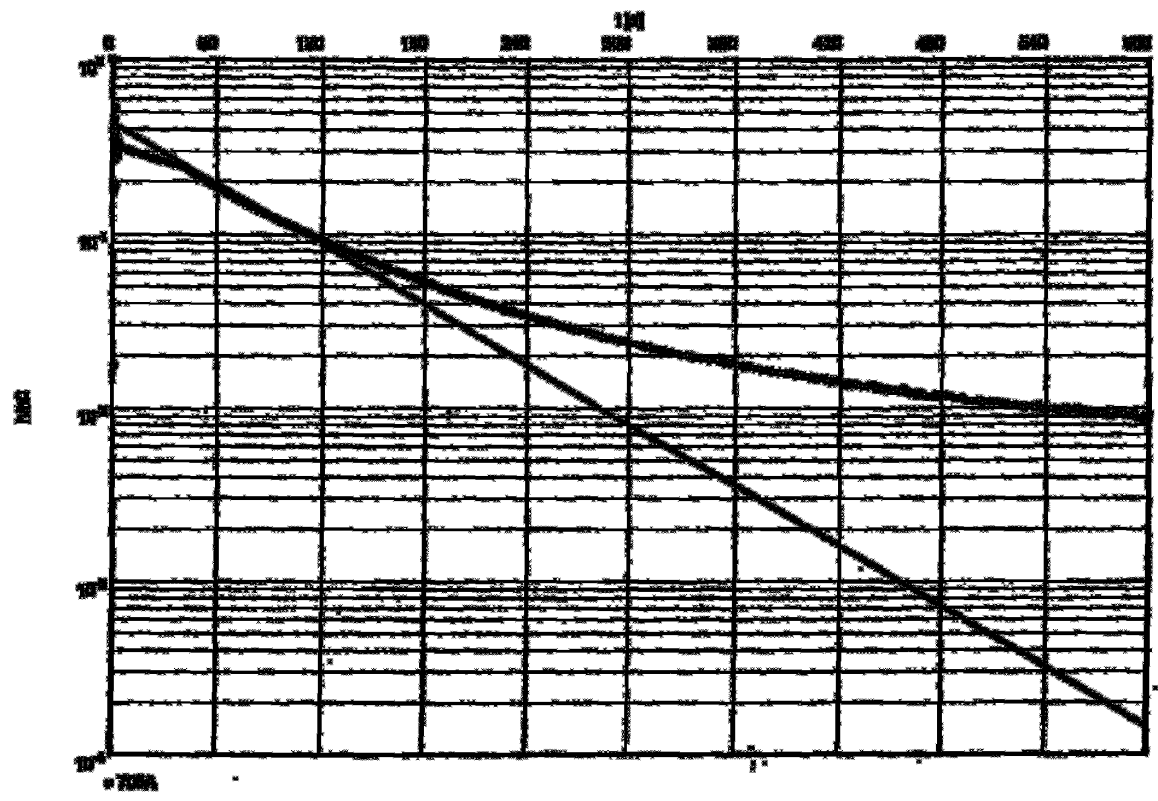
Job No: 1000000 Page 1

Project: Street 1000  
 Drawn by: jps

Job Title: 7000

Test produced per: 1000000

DATE: 10/1/2000



Hydraulic conductivity (cm/s):  $1.00 \times 10^{-3}$

INFLY PARAMETERS  
 Initial Water Level = 12.00 ft  
 Height to Bottom of Aperture = 42.00 ft  
 Length of Screen = 20.00 ft  
 Radius of Screen = 0.00 ft  
 Radius of Inflow = 0.00 ft  
 Drawn by: *James Patrick*  
 Produced by: *CL PJ*

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Calvert Cliffs NEW CO2A Project  
 LOCATION: Leesville, MD  
 DATE: July 26, 2006  
 WEATHER: TEMP: 70.3 F, WIND: 1-2 mph

PROJECT NO.: 08750008  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	<u>Slug Test / Rising Head</u>
Slug Type:	<u>Calvert Cliffs</u>
Approximate Volume of Slug:	<u>0.675 GAL</u>
Manual Water Level Meter S/N:	<u>L-1-P-001</u>
Transducer S/N:	<u>101259</u>
Slug S/N:	<u>SLUG-002</u>

WELL INFORMATION	
Well ID:	<u>OW-208</u>
Screen Inside Diameter:	<u>2"</u>
Casing Inside Diameter:	<u>2"</u>
Total Well Depth (ft, TOC):	<u>81.65</u>
Screen Interval Depth (ft, TOC):	<u>68-78</u>
Water Height (ft):	<u>2'</u>

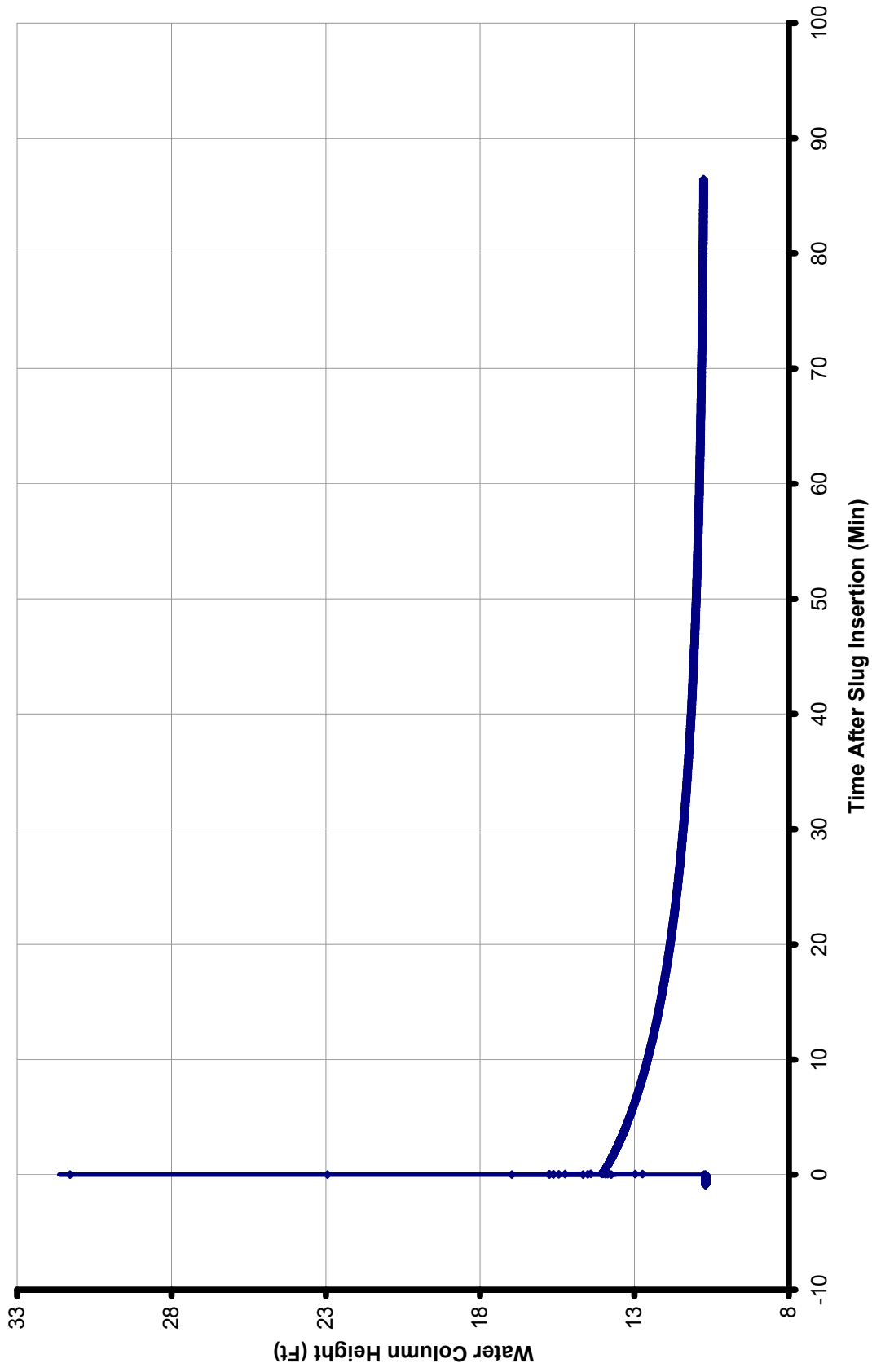
- 1 Pre-Test Water Level (ft, TOC): 78.53 AM
- 2 Water Level after Probe Insertion (ft, TOC): 79.27 AM / 9:42 AM
- 3 Transducer Depth: 78 ft
- 4 Casing Pre-Test Head over Transducer: 19.73 ft
- 5 Measured Pre-Test Head over Transducer: 10.81 ft
- 6 Time Test Started: 9:01 AM / 9:49 AM
- 7 Time Test Ended: 11:16 AM
- 8 Percent Recovery at End of Test: 10.29 ft
- 9 Discharge File Name: CG200608-PTD-002-208-Slug

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Tom White Date: July 26, 2006  
 Approved By: [Signature] Date: 7/26/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D2044

### OW-703B Permeability Test



Hydrotest Engineering North, LLC  
 2500 Collins Creek Road, Suite 100  
 Huntington, WV 25701  
 800-454-6228

Accepted test results  
 RCLARENCE-ROCK'S method

Date: 11/02/2006 Page 1

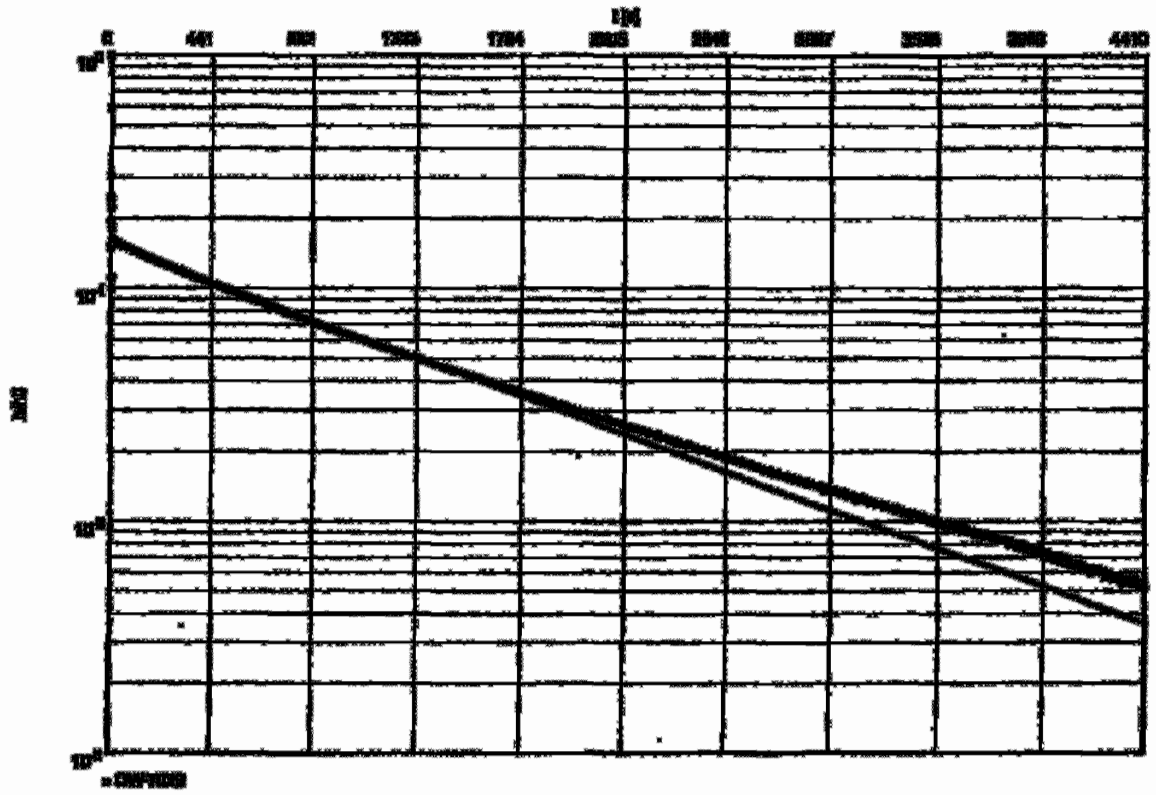
Project: Cherry Hill

Inspected by: Patrick

Slag Test No. 7028

Test conducted on: 11/02/2006

CONCRETE



Hydraulic conductivity (K):  $1.00 \times 10^{-6}$

TEST PARAMETERS  
 Slag Water Level = 30.00 ft  
 Slag to Surface of Slag = 7.00 ft  
 Length of Slag = 12.00 ft  
 Surface of Slag = 0.00 ft  
 Surface of Slag = 0.00 ft  
 Inspected by: Patrick

Inspected by: *Patrick*  
 Inspected by: *Patrick*



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Cabnet Office RFP SOLA Project  
 LOCATION: Lumbis, MS  
 DATE: July 27, 2006  
 WEATHER TEMP: 92 / 65 - 80

PROJECT NO.: 012504  
 CLIENT: Bostford Power Corporation

TEST INFORMATION	
Type of Test:	(Falling Head / Rising Head)
Slug Type: (Water / Water)	
Apparatus Volume of Slug:	0.52 - 6.46 0.125 6.46
Manual Water Level Meter M/N:	WLP-001
Transducer M/N:	10255
Slug M/N:	SLUG-001

WELL INFORMATION	
Well ID:	025-705
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	11.46
Screen Interval Depth (ft, TOC):	40-50
Filter Height (ft):	2.5'

- 1 Pre-Test Water Level (ft, TOC) Time: 20.28 ft / 2:19 pm
- 2 Water Level after Probe Insertion (ft, TOC) Time: 20.27 ft / 2:16 pm
- 3 Transducer Depth: 40 ft
- 4 Cables, Pre-Test Head over Transducer: 19.73
- 5 Measured Pre-Test Head over Transducer: 19.58
- 6 Time Test Started: 2:52 / 3:24 pm
- 7 Time Test Ended: 4:12 PM
- 8 Percent Recovery at End of Test: 19.63
- 9 Challenge File Name: 02504-6-PID-025-705-SLUG

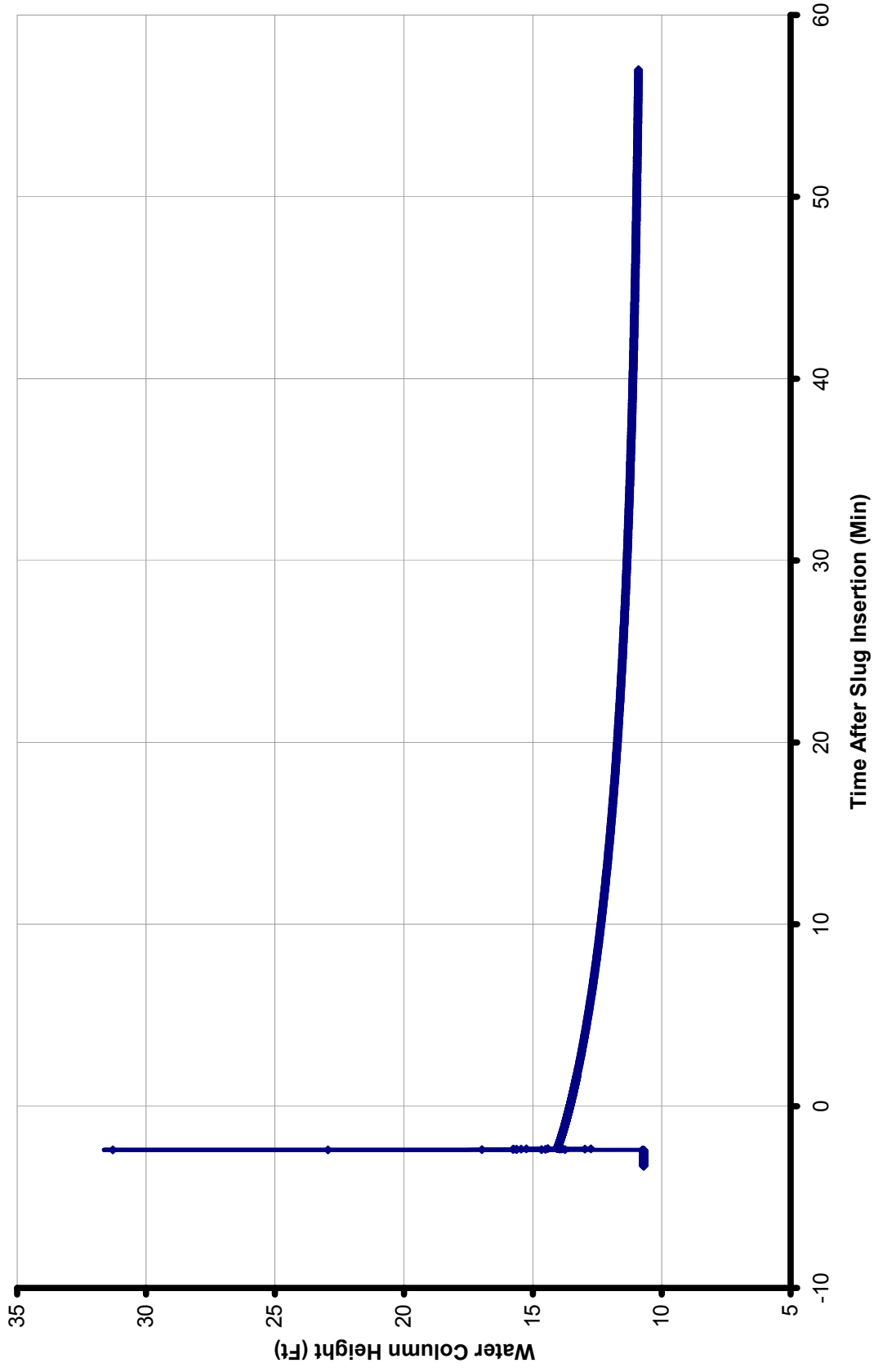
Observations:  
 TOC = Bottom of the V-robin at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 8/1/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044



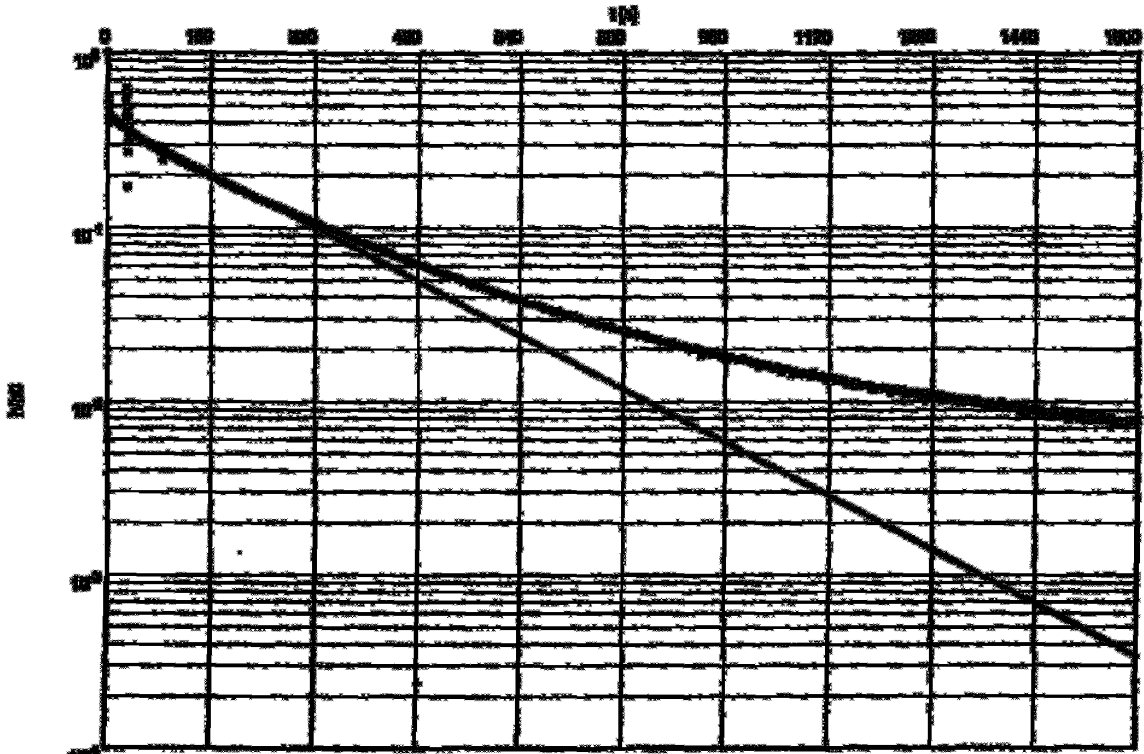
### OW-705 Permeability Test



Slip Test No. 728

Test conducted on: 1/28/2009

Client:



Hydraulic conductivity (K):  $4.00 \times 10^{-5}$

INPUT PARAMETERS  
 Initial Water Level = 78.00 m  
 Length of Section of Aquifer = 21.00 m  
 Length of Section = 71.00 m  
 Number of Channels = 2.00 m  
 Number of Releases = 0.00 m  
 Reviewed by: jgiblin

Reviewed by: *[Signature]*  
 Date: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

10/21/11

**PROJECT:** Calvert Cliffs NPV TOLA Project  
**LOCATION:** Ledy, MD  
**DATE:** July 24<sup>th</sup> 2011  
**WEATHER TEMP:** 81<sup>st</sup>

**PROJECT NO.:** 08180048  
**CLIENT:** Medical Power Corporation

TEST INFORMATION	
Type of Test:	(Falling Head - Rising Head)
Slug Type:	(Mechanical Displacer)
Approximate Volume of Slug:	0.021 gal - 0.415 gal
Measured Water Level Meter S/N:	1418-001
Transducer S/N:	1047-53
Slug S/N:	820-001

WELL INFORMATION	
Well ID:	201508
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	58.74
Screen Interval Depth (ft, TOC):	22-00 to 52'
Flare Height (ft):	22.5

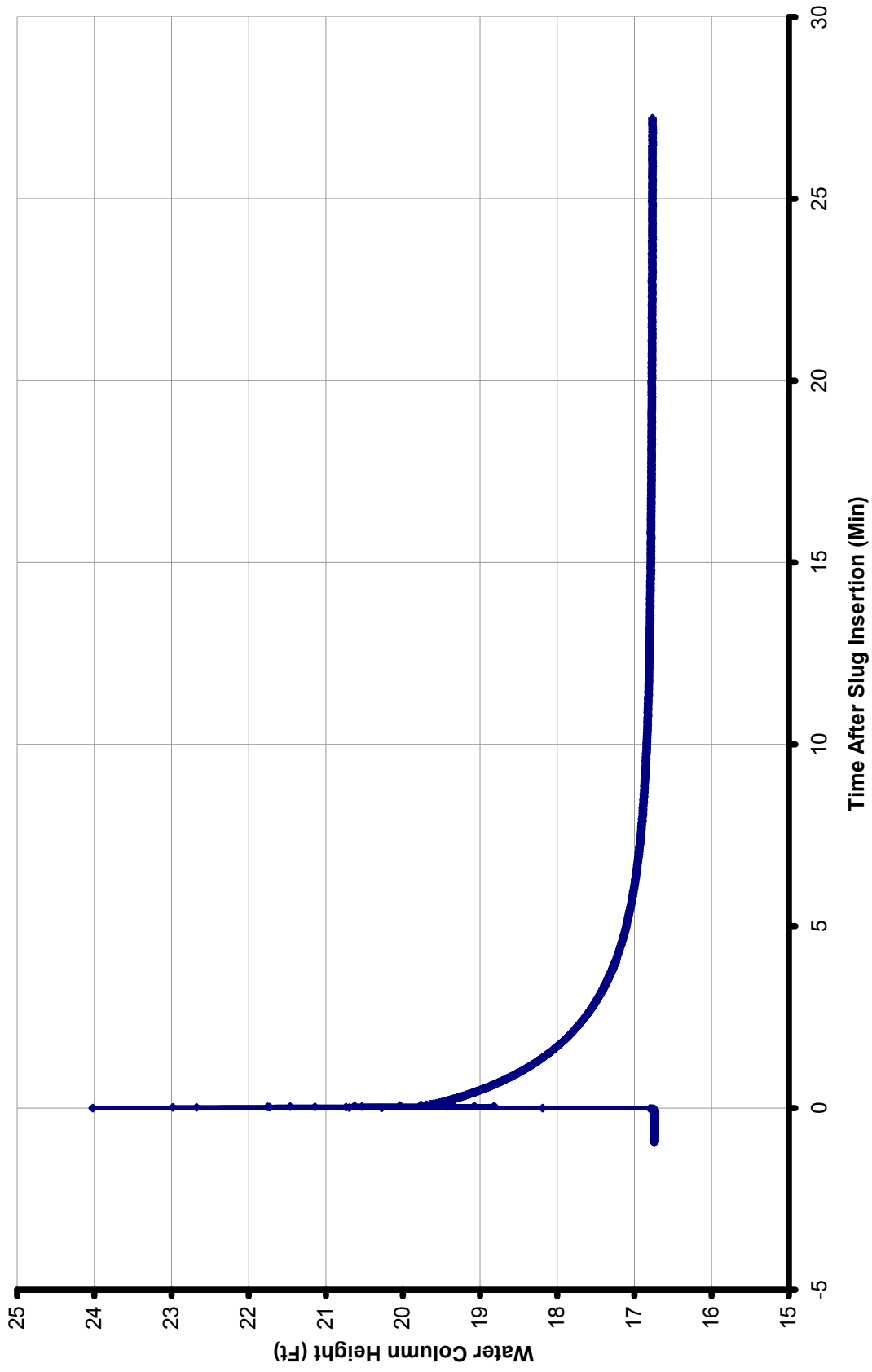
- 1 Pre-Test Water Level (ft, TOC) Time: 13:21 / 10:39 AM
- 2 Water Level after Probe Insertion (ft, TOC) Time: ~~13:23~~ / 11:00 AM
- 3 Transducer Depth: 30 ft
- 4 Casing Pre-Test Head over Transducer: 16.79 ft
- 5 Measured Pre-Test Head over Transducer: 16.77
- 6 Time Test Started: 10:43 / 11:07 AM
- 7 Time Test Ended: 11:34 AM
- 8 Percent Recovery at End of Test: 100% 16.74'
- 9 Dislogger File Name: C6170048-FTD-0WJ-AB-Slug

**Remarks:**  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 24, 2011  
 Approved By: [Signature] Date: 7/21/11

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

### OW-708 Permeability Test



Advanced Engineering Health, LLC  
 600 Chiles Circuit Road, Suite 700  
 Columbus, GA 31906  
 706 435-8200

slugflow test results  
 DELAWARE PROJECT method

Name: 1500000

Page: 1

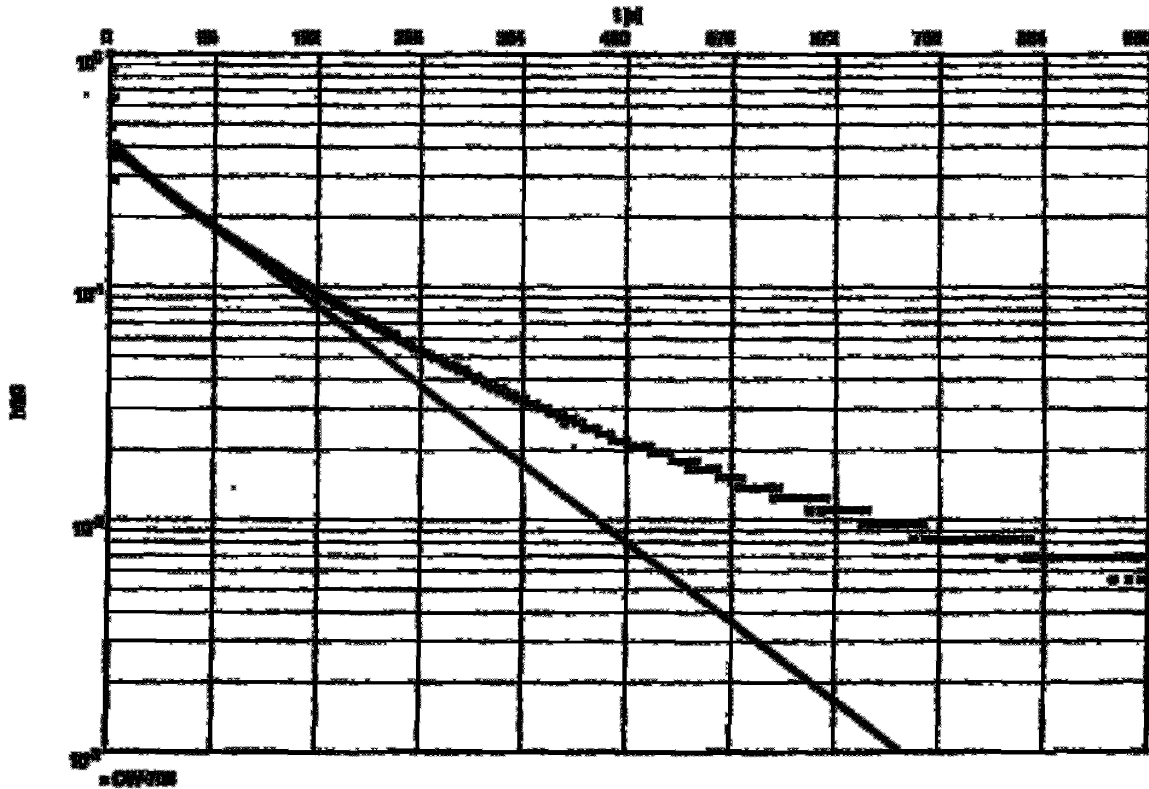
Project: United 0000

Installed by: jstark

Slug Test No. 700

Test conducted on: 10/06/2000

000000



Hydraulic conductivity (K):  $2.25 \times 10^{-2}$

REPORT PARAMETERS

Static Water Level = 10.74 ft  
 Depth to Bottom of Slugline = 0.00 ft  
 Length of Slugline = 10.00 ft  
 Radius of casing = 0.00 ft  
 Radius of wellbore = 0.00 ft  
 Installed by: jstark

Reviewed by: *[Signature]*  
*[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 2 of 1

PROJECT NO.: 0712004  
 CLIENT: Medical Power Corporation

PROJECT: Calvert Cliffs NPP COLA Project  
 LOCATION: Lusby, MD  
 DATE: July 20th 2006  
 WEATHER TEMP: 98° clear

TEST INFORMATION	
Type of Test:	(Filling Head / Rising Head)
Slug Type:	(Sand / Water)
Approximate Volume of Slug:	0.625 cu ft
Measured Water Level Meter S/N:	1118-001
Transducer S/N:	104255
Slug S/N:	5116-001

WELL INFORMATION	
Well ID:	062-04-711
Screen Inside Diameter:	2" / 2"
Casing Inside Diameter:	2" / 2"
Total Well Depth (ft, TOC):	47.68
Screen Interval Depth (ft, TOC):	55-00 to 55-05
Screen Height (ft):	24.5"

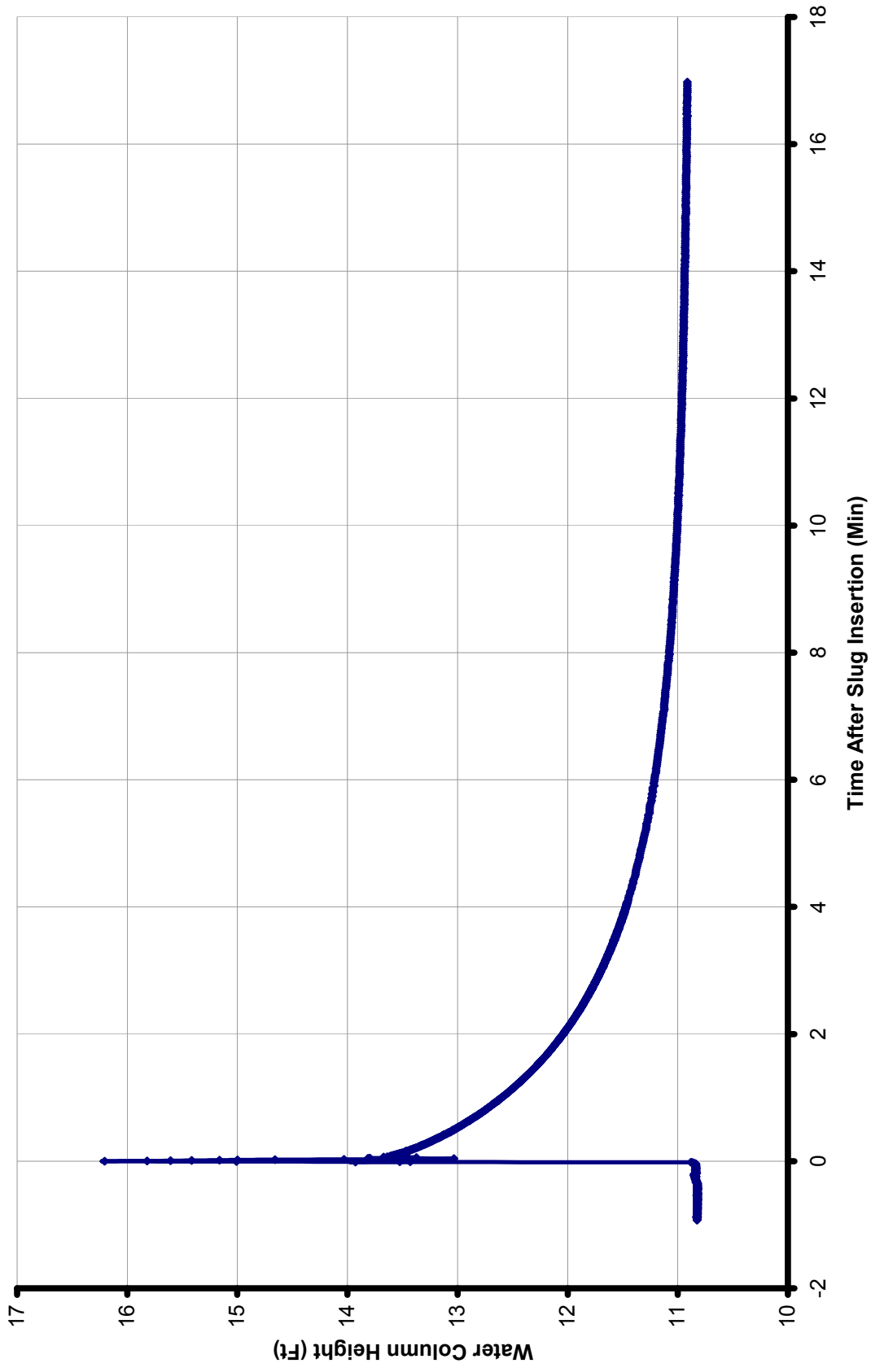
- 1 Pre-Test Water Level (ft, TOC) Time: 19.22 / 12:11 PM
- 2 Water Level after Probe Insertion (ft, TOC) Time: 19.12 / 12:20 PM
- 3 Transducer Depth: 20.8 ft
- 4 Cols. Pre-Test Head over Transducer: 10.89 ft
- 5 Measured Pre-Test Head over Transducer: 10.93 ft
- 6 Time Test Started: 12:28 / 12:40 PM
- 7 Time Test Ended: 12:57 PM
- 8 Percent Recovery at End of Test: 10.90
- 9 Datlogger File Name: 062004-01D-04-711-5ug

**Comments:**  
 TOC = Bottom of the V-robin at top of casing

Performed By: Todd White Date: July 20th 2006  
 Approved By: [Signature] Date: 9/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4844

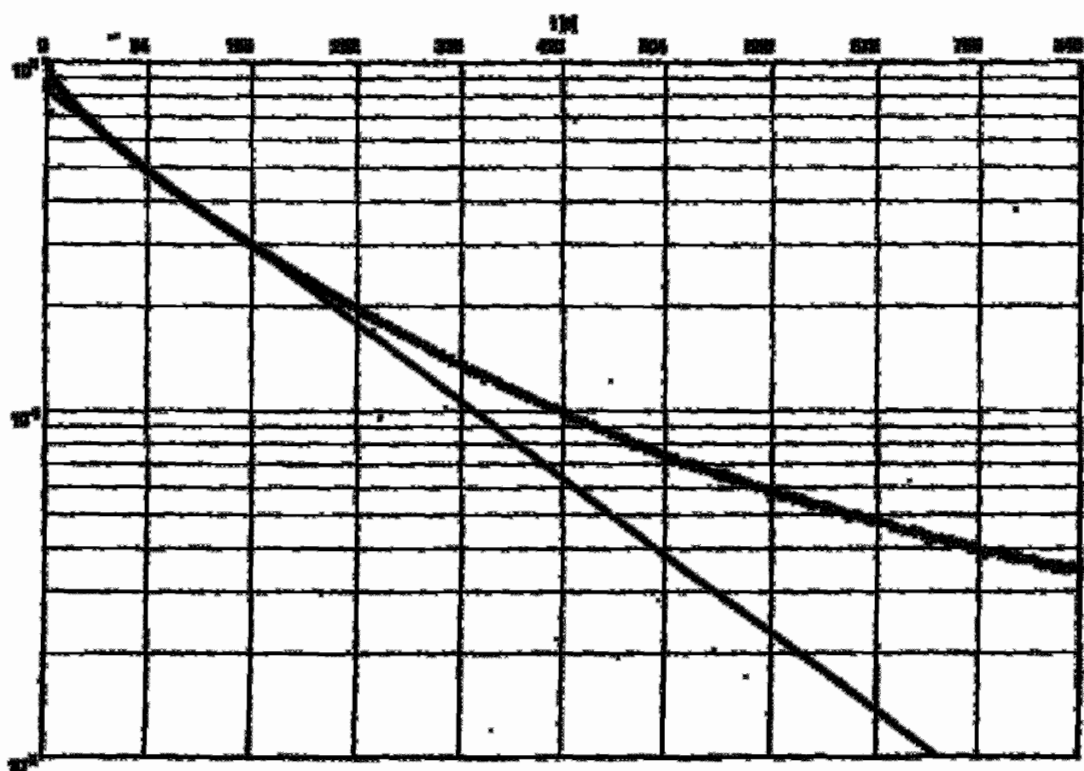
### OW-711 Permeability Test



Map No. 711

Test conducted on: 11/05/2008

CHPT1



CHPT1

Hydraulic conductivity  $k_{sat} = 0.01 \times 10^{-2}$

TEST PARAMETERS  
 Moisture Limit - 19.5%  
 Plasticity Limit - 10.5%  
 Length of Curve - 10.0%  
 Plasticity Index - 9.0%  
 Moisture of Shrinkage - 10.5%  
 Shrinkage Ratio - 1.00

Tested by: *Frank P. Smith*  
 Checked by: *Chris Smith*



**PERMEABILITY (SLUG) TEST FIELD FORM**

Rev. 1.0.1

PROJECT: Calvert Cliffs HPP SOLA Project  
 LOCATION: Lundy, MD  
 DATE: July 25, 2006  
 WEATHER: Clear

PROJECT NO.: 00110048  
 CLIENT: Electrical Power Corporation

TEST INFORMATION	
Type of Test:	<u>Slugg / Head / Rising Head</u>
Slugg Type:	<u>Chemically Treated Water</u>
Approximate Volume of Slugg:	<u>0.625 Gall</u>
Manual Water Level Meas.:	<u>WLP-001</u>
Transducer Rate:	<u>0.255</u>
Slugg Size:	<u>SLUG-001</u>

WELL INFORMATION	
Well ID:	<u>OW-714</u>
Screen Inside Diameter:	<u>2" / 11</u>
Casing Inside Diameter:	<u>2" / 11</u>
Total Well Depth (ft, TOCP):	<u>52.2</u>
Screen Interval Depth (ft, TOCP):	<u>38 - 41.18</u>
Screen Height (ft):	<u>2' 2"</u>

- 1 Pre-Test Water Level (ft, TOCP) Time: 15:23 / 10:25 AM
- 2 Water Level after Probe Insertion (ft, TOCP) Time: 15:28 / 10:32 AM
- 3 Transducer Depth: 49.9
- 4 Casing Pre-Test Head over Transducer: 2.09
- 5 Measured Pre-Test Head over Transducer: 2.38
- 6 Time Test Started: 10:35 / 10:57 AM
- 7 Time Test Ended: 11:16 AM
- 8 Permeability Pathway at Head of Test: Re-test / Slugg
- 9 Debugger File Name: CH2008-PRD-001-714-SLUG

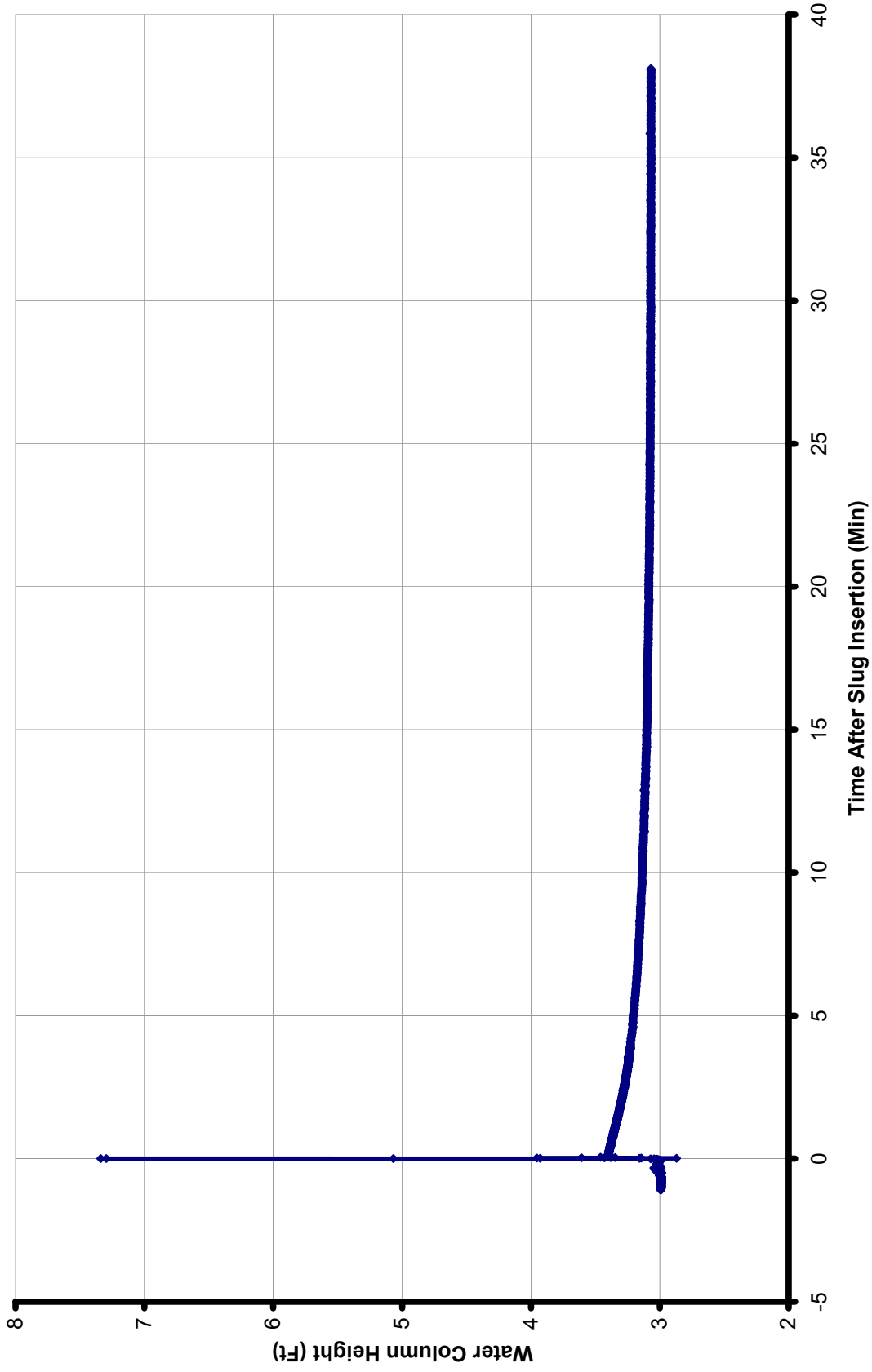
NOTE: Bottom of 5' slugg not fully submerged. May not be fully submerged.

Comments:  
 TEC - Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 25, 2006  
 Approved By: [Signature] Date: 7/25/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D-4054

### OW-714 Permeability Test



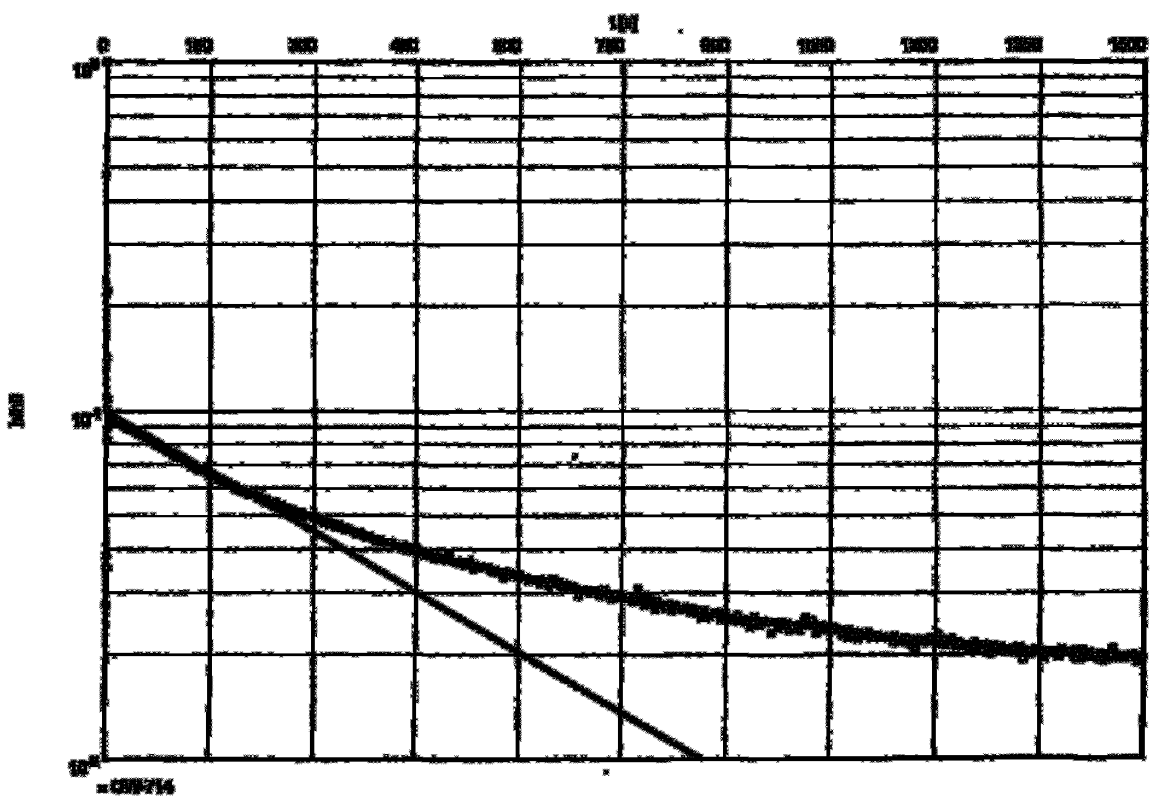
Industrial Engineering North, LLC  
 1000 Collins Street, Suite 710  
 Pittsburgh, PA 15222  
 412.481.1111

Applied Test Analysis  
 AEC/EMC/ETC's method

Date: 1/20/2020 Page: 1  
 Project: Global 2019  
 Estimated Age: 10/10/19

Mag Test No. 734  
 CRF74

Test conducted on: 1/20/2020



Hydrolytic conductivity (pS): 1.0E+08

**INPUT PARAMETERS**  
 Shell Water Level = 0.000 m  
 Depth to Bottom of Anode = 0.000 m  
 Length of Anode = 0.000 m  
 Radius of Anode = 0.000 m  
 Radius of Cathode = 0.000 m  
 Estimated Age: *10/10/19*  
 Estimated Age: *10/10/19*



# PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT NO.: 08150048  
 CLIENT: Escalator Power Corporation

PROJECT: Cabinet Mills MPP O&A Project  
 LOCATION: Lansing, MI  
 DATE: July 25, 2006  
 WEATHER: Temp: 80, Clear

WELL INFORMATION	
Well ID:	01W-718
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TDC):	49
Screen Interval Depth (ft, TDC):	30-0
Water Height (ft):	1' 0"

TEST INFORMATION	
Type of Test:	(Leak Head) / (Slug Head)
Slug Type:	(Distilled) / (Water)
Approximate Volume of Slug:	0.130 / 0.625 GAL
Manual Water Level Meter S/N:	LWP-001
Transducer S/N:	104255
Slug S/N:	3669-001

Volume of Slug @ 15 ft depth: 1.04 gal  
 Slug S/N: 3669-001

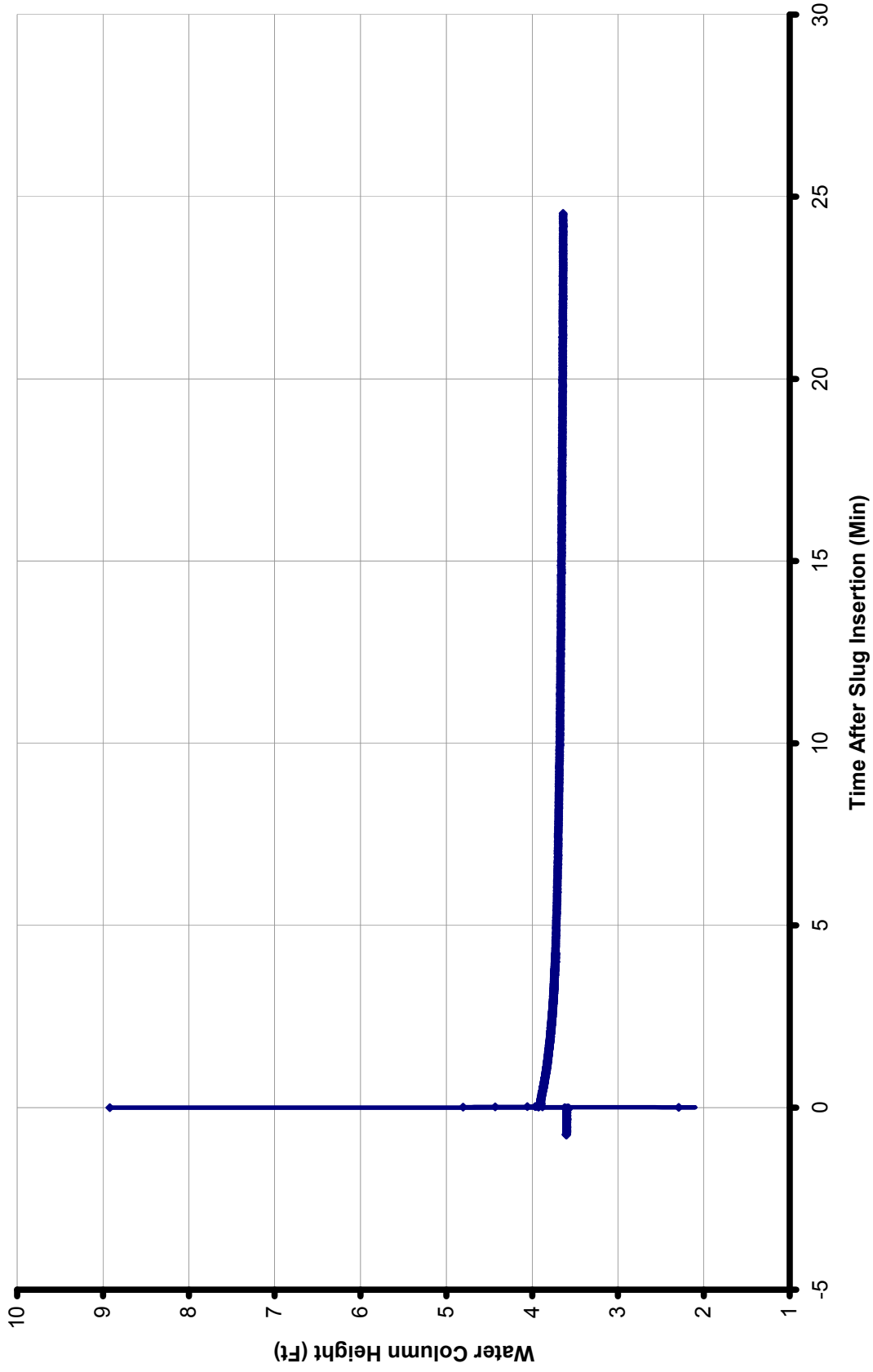
- 1 Pre-Test Water Level (ft, TDC) Time: 10:30 AM / 15:15
- 2 Water Level after Probe Insertion (ft, TDC) Time: 10:35 AM / 15:15
- 3 Transducer Depth: 8 ft
- 4 Cuts, Pre-Test Head over Transducer: 3.65 ft
- 5 Measured Pre-Test Head over Transducer: 3.57 ft
- 6 Time Test Started: 15:21 / 15:47
- 7 Time Test Ended: 15:57
- 8 Distance (ft) of Head of Test: 3676
- 9 Datapoint File Name: 06120048-718-01W-718-5400

Comments:  
 TDC = Bottom of the V-rails at top of casing

Performed By: Todd White DATE: July 26, 2006  
 Approved By: [Signature] DATE: 7/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4044

### OW-718 Permeability Test



Industrial Engineering Dept., I.I.T.  
 200 Spence Street, Cambridge, Mass.  
 02139

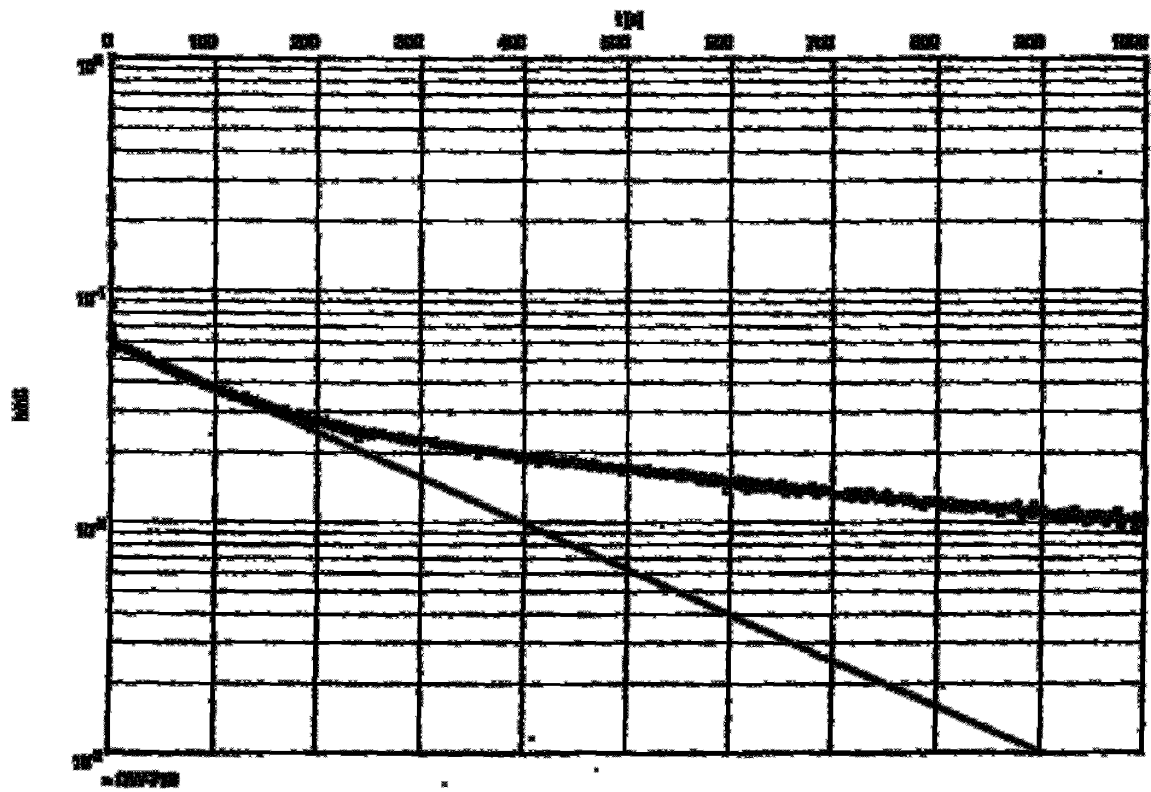
Physical Test Analysis  
 Mechanical Test Report

Date: 11/20/55 Page: 1  
 Project: School 1000  
 Conducted by: Smith

Buy Test No. 718

Test conducted on: 11/20/55

CUPPEN



Hydraulic conductivity  $1.0 \times 10^{-8}$

IMPLY PARAMETERS  
 Depth of Water Level = 10.00 ft  
 Depth to Bottom of Sample = 10.00 ft  
 Length of Sample = 10.00 ft  
 Radius of Core = 0.50 ft  
 Number of Inflows = 1000  
 Conducted by: *Smith*  
 Endused by: *Smith*



# PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT: Calvert Cliffs NPP CCLA Project  
 LOCATION: Lusby, MD  
 DATE: July 25, 2006  
 WEATHER TEMP: 80 Clear

PROJECT NO.: 04720044  
 CLIENT: Electrical Power Corporation

TEST INFORMATION	
Type of Test:	Cr. Sealing Head / Rising Head
Slug Type:	2. Minimum Water
Approximate Volume of Slug:	0.625 GAL
Manual Water Level Meter S/N:	1112-001
Transducer S/N:	10265
Slug S/N:	SLUG-001

WELL INFORMATION	
Well ID:	QW-725
Casing Inside Diameter:	2"
Casing Outside Diameter:	2"
Total Well Depth (ft, TOC):	61.2
Casing Interval Depth (ft, TOC):	48.58
Water Height (ft):	12.62
	GA

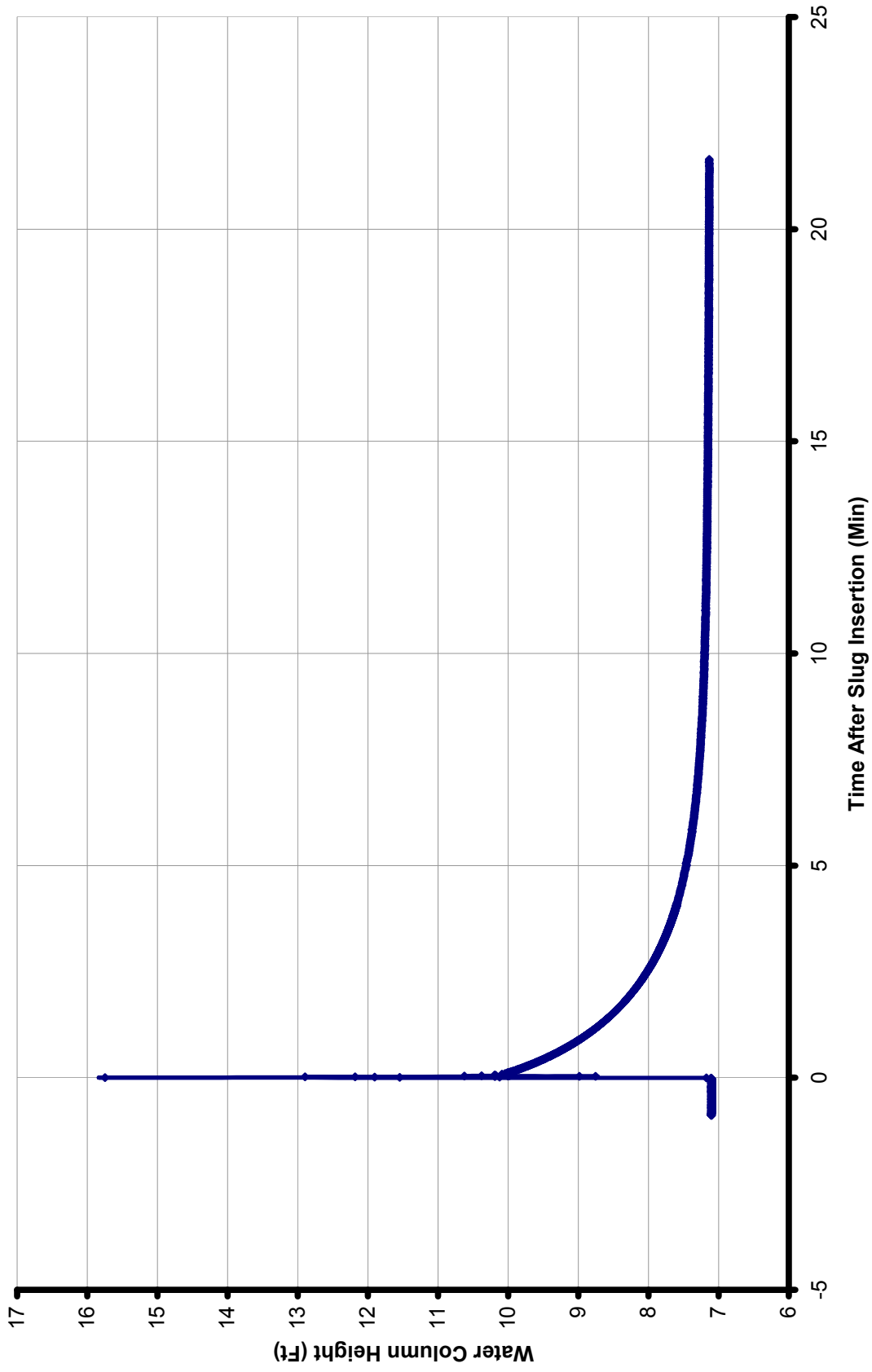
- Pre-Test Water Level (ft, TOC): 28.2 ft / 2:05 PM
- Water Level after Probe Insertion (ft, TOC): 28.3 ft / 2:05 PM
- Transducer Depth: 40 ft
- Cable Pre-Test Head over Transducer: 7.17 ft
- Measured Pre-Test Head over Transducer: 7.09 ft
- Time Test Started: 2:10 / 2:30 PM
- Time Test Ended: 2:52 PM
- Remarks: Recovered End of Test
- Distalogue File Name: CALVERT-PPD-QW-725-SLUG

**Comments:**  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: 7/25/06  
 Approved By: [Signature] Date: 9/21/06

Made: All water level measurements obtained from well measurements point at top of casing.  
 Reference: ASTM D4044

### OW-725 Permeability Test





Industrial Engineering North, LLC  
 2000 Calumet Parkway, Suite 700  
 Chicago, IL 60608  
 312-461-1100

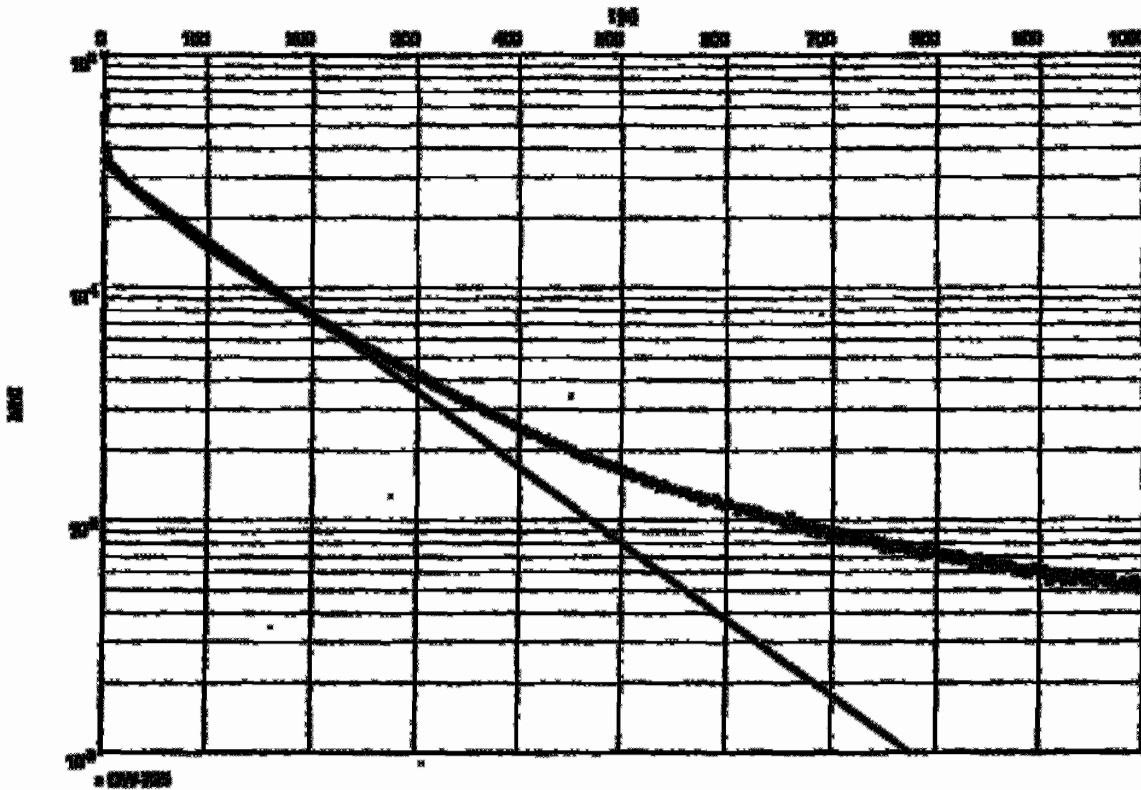
digital test analysis  
 INCORPORATED

Date: 10/15/2010 Page 1  
 Project: Glass Case  
 Embedded eye patch

Key Test No. 700

Test number: 7000000

00000



Hydrodynamicity (MVA)  $1.0E+01$

**TEST PARAMETERS**  
 Glass White Level = 7.00 M  
 Depth to Bottom of Aperture = 10.00 M  
 Length of Glass = 10.00 M  
 Radius of Curvature = 0.00 M  
 Radius of Aperture = 0.00 M  
 Embedded Eye Patch

Testbed Log: *Frank Patrick*  
*CP*

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT NO.: 07102048  
CLIENT: Bechtel Power Corporation

PROJECT: Calvert Cliffs NPP CECLA Project  
LOCATION: Lundy, MD  
DATE: July 25, 2006  
WEATHER TEMP: 80 Clear

TEST INFORMATION	
Type of Test:	(1) Empty Well / Rising Head
Slug Type:	Mineral Oil
Approximate Volume of Slug:	0.52 - 0.54
Measured Water Level Meter Site:	WLP-001
Transducer Site:	21255
Slug Site:	Submerged Water

WELL INFORMATION	
Well ID:	OW-729
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (B, TOC):	41.1
Screen Interval Depth (B, TOC):	30-40
Screen Height (B):	20 3/4"

- 1 Pre-Test Water Level (B, TOC) Time: 11.1 (DRY)
- 2 Water Level after Probe Insertion (B, TOC) Time: 11.5 (DRY)
- 3 Transducer Depth: 49 ft (DRY)
- 4 Curb, Pre-Test Head over Transducer: 0
- 5 Measured Pre-Test Head over Transducer: 0
- 6 Time Test Started: 11:51 / 12:20 PM
- 7 Time Test Ended: 12:43 pm
- 8 Percent Recovery at End of Test: 0
- 9 Data Logger File Name: BE\_06\_07\_25\_18-180-04-729-SAVE

16 gallons of Water as Slug  
Water dropped and stabilized  
at 41.79 ft  
2nd Slug added  
1 gallon of Water

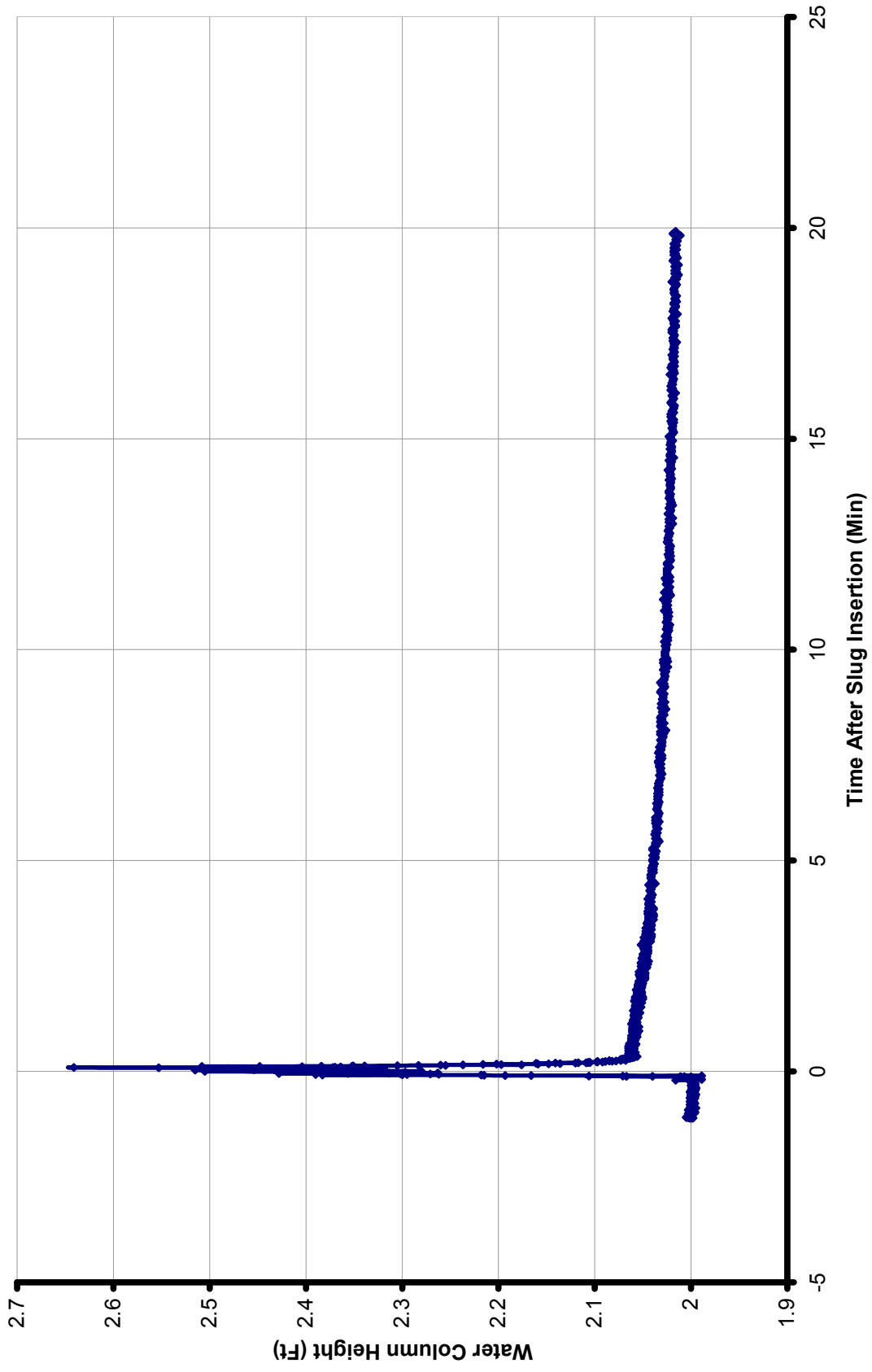
-62062

**Comments:**  
TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 25, 2006  
Approved By: [Signature] Date: 8/1/06

Note: All water level measurements obtained from well measurement point at top of casing.  
Reference ASTM D4044

### OW-729 Permeability Test





# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calumet Mills NREFF CGLA Project  
LOCATION: Lansing, MI  
DATE: July 27, 2006  
WEATHER: T=75, S=60-70

PROJECT NO.: 05120042  
CLIENT: Ecological Power Corporation

TEST INFORMATION	
Type of Test:	6-Footing Head / Rising Head
Ring Type:	(Manufacturer / Water)
Approximate Volume of Slug:	0.625 gal
Measured Water Level Meter S/N:	W68-001
Transducer S/N:	10259
Slug S/N:	SLUG-1002

WELL INFORMATION	
Well ID:	041-755
Screen Inside Diameter:	2
Casing Inside Diameter:	7.5 ft
Total Well Depth (ft, TDC):	60-70
Screen Interval Depth (ft, TDC):	1-10 ft

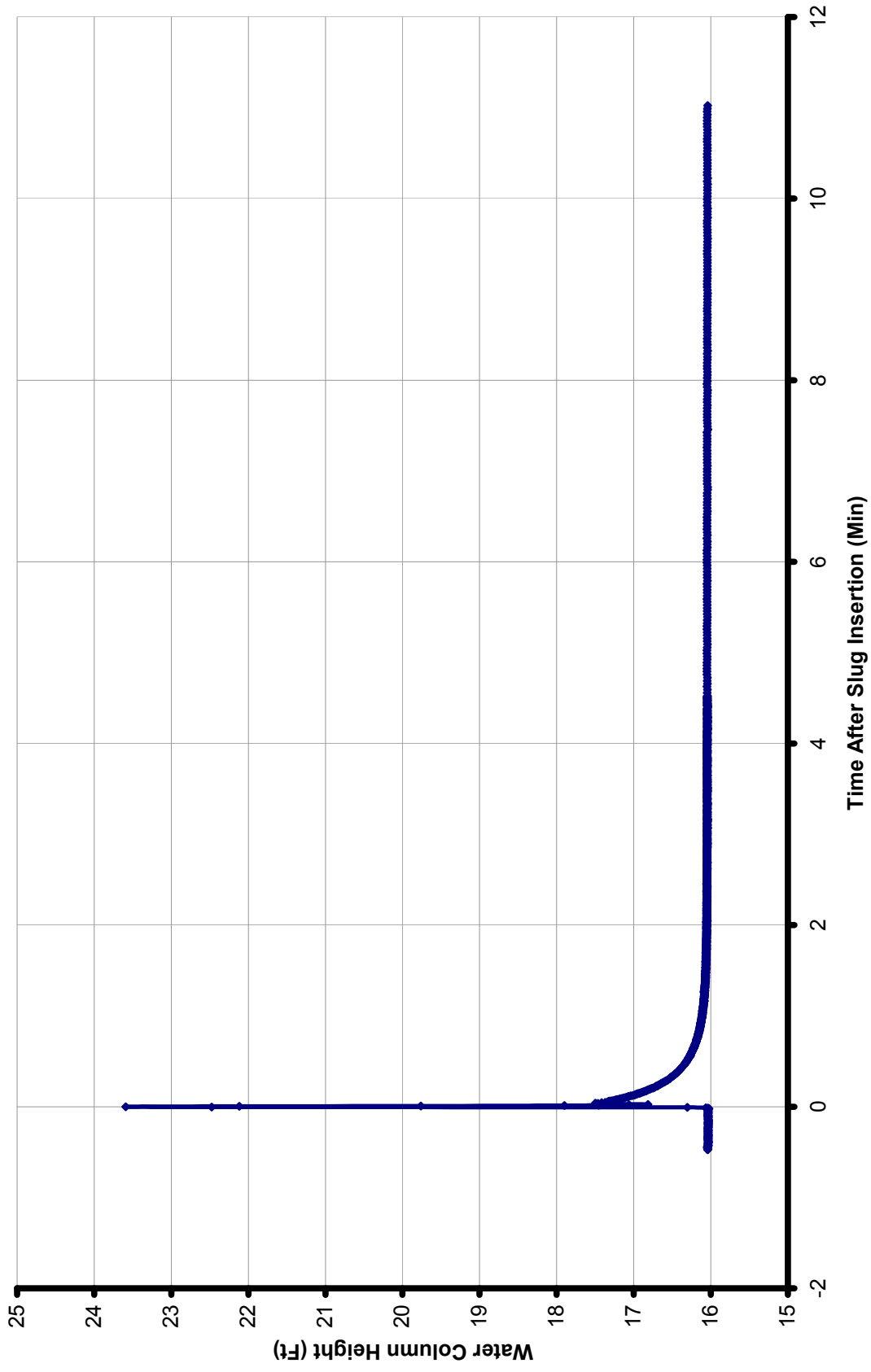
- 1 Pre-Test Water Level (ft, TDC) Time: 54:20.87 / 1:47 am
- 2 Water Level after Probe Insertion (ft, TDC) Time: 54:20 / 1:55
- 3 Transducer Depth: 10 ft
- 4 Curb's Pre-Test Head over Transducer: 15.80
- 5 Measured Pre-Test Head over Transducer: 16.023
- 6 Time Test Started: 1:59 / 1:00
- 7 Time Test Ended: 2:14:13
- 8 Percent Recovery at End of Test: 16.03
- 9 Discharge File Name: 06170084-00-007-75-5106

Remarks:  
TOG = Bottom of the V-notch at top of casing

Performed By: Todd Labrize Date: July 27, 2006  
 Approved By: [Signature] Date: 7/27/06

Note: All water level measurements obtained from well measurement points at top of casing.  
Reference ASTM D4044

### OW-735 Permeability Test



Ballou's Engineering, Inc., I.I.C.  
 2000 Chas. Center Blvd., Suite 700  
 Columbia, Missouri  
 65201-2000

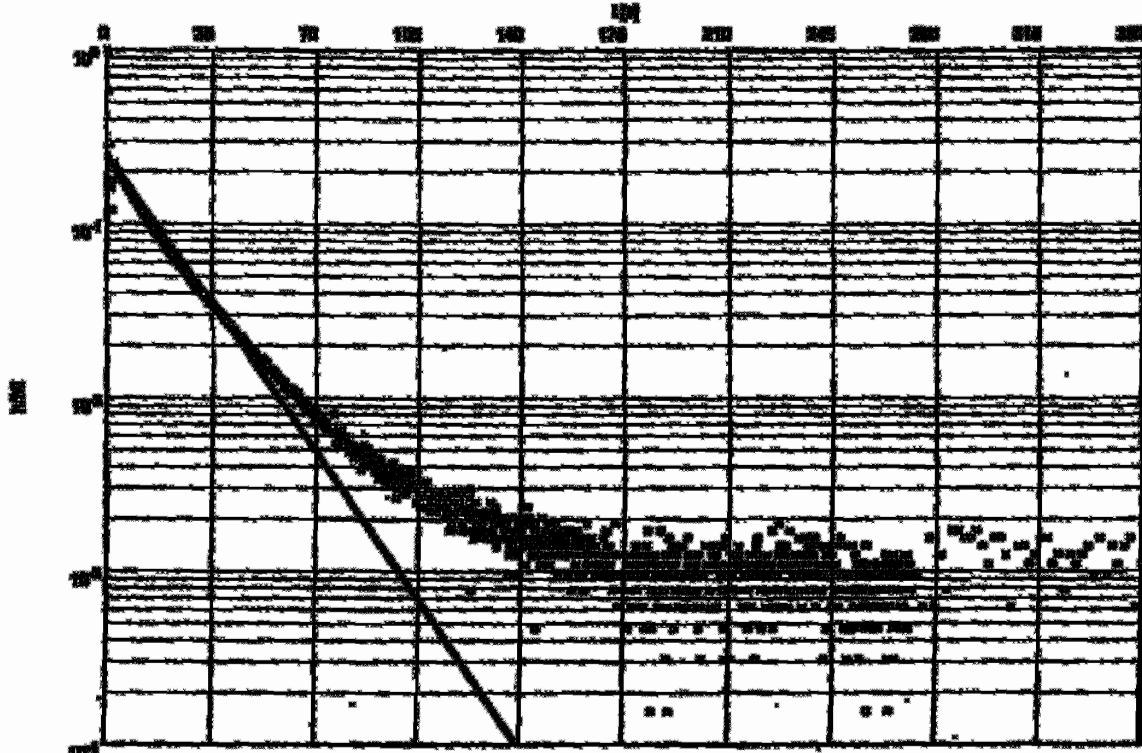
Hydraulic test results  
 2000 Chas. Center Blvd., Suite 700  
 Columbia, Missouri  
 65201-2000

Date: 11/10/00 Page 1  
 Project: 2000 Chas. Center Blvd.  
 Evaluated by: JPH

Job Test No. 700

Test conducted on: 11/10/00

CU-200



Hydraulic conductivity (K):  $5.4 \times 10^{-3}$

TEST PARAMETERS  
 Static Water Level = 10.00 ft  
 Depth to Middle of Aquifer = 10.00 ft  
 Length of Screen = 10.00 ft  
 Radius of Casing = 4.00 ft  
 Radius of Wellbore = 4.00 ft

Evaluated by: JPH  
 Checked by: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Cliffs NEPP GOLA Project  
 LOCATION: Lusby, MD  
 DATE: July 26, 2006  
 WREATHMENT TEST: CS - In-situ

PROJECT NO.: 0072008-06  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Crushing Head / Rising Head
Slug Type:	Unconsolidated Water
Approximate Volume of Slug:	0.125 GAL
Measured Water Level Meter S/N:	1412-001
Transducer S/N:	1412-15
Slug S/N:	5176-003

WELL INFORMATION	
Screen Inside Diameter:	2"
Casing Inside Diameter:	2 1/2"
Total Well Depth (ft, TOC):	54
Screen Interval Depth (ft, TOC):	12-52'
Screen Height (ft):	2'

- Pre-Test Water Level (ft, TOC): 57.24M / 5:09 AM
- Water Level after Probe Insertion (ft, TOC): 58.22 / 5:57 PM
- Transducer Depth: 45.4'
- Cable, Pre-Test Head over Transducer: 1.18 ft
- Measured Pre-Test Head over Transducer: 57.27 ft
- Time Test Started: 5:50 / 5:42 AM
- Time Test Ended: 5:45 PM
- Percent Recovery at End of Test: 5.25
- Discharge File Name: 5825008-17D-0W-293-54-06

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed by: John White Date: July 26, 2006  
 Approved by: [Signature] Date: 8/2/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D4046

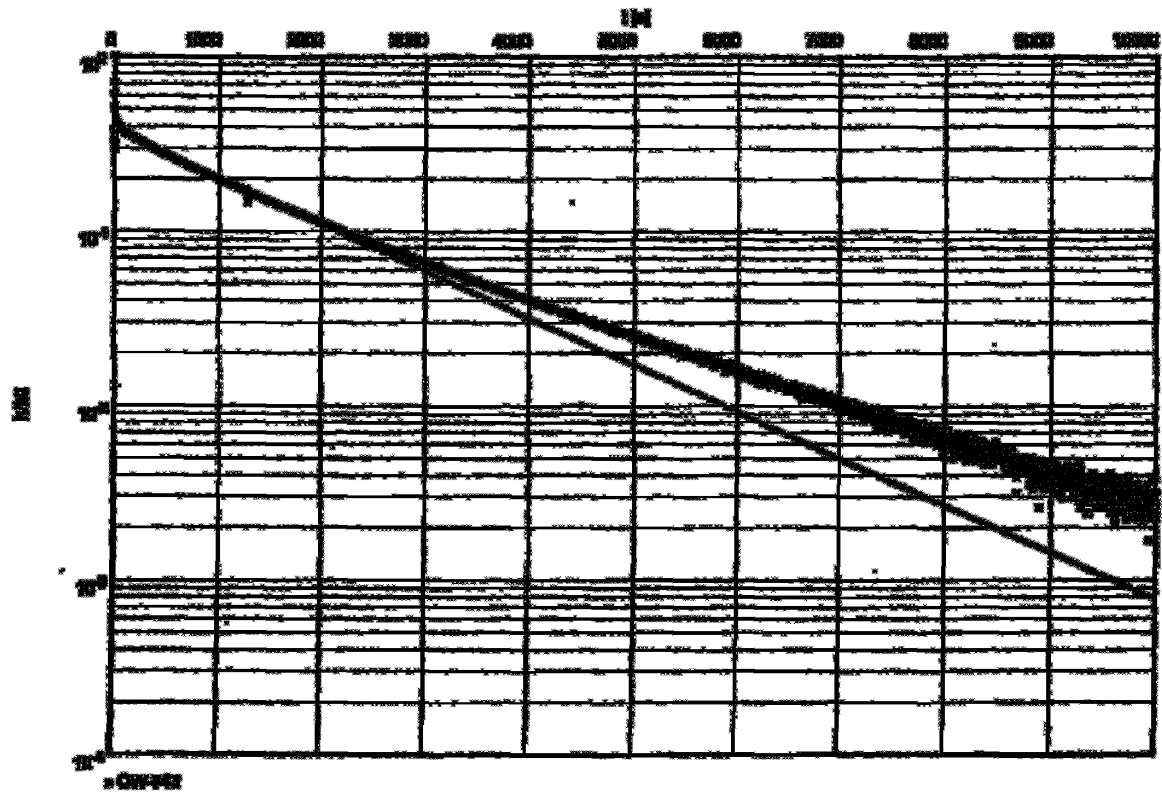
### OW-743 Permeability Test





Log Test No. 748  
 CWP-048

Test conducted on: 1/28/10



Hydraulic conductivity (k)  $10^{-1}$  to  $10^1$

NO-LET FOUNDATION  
 Wellbore Level = 0.000  
 Depth to Bottom of Aquifer = 47.00 m  
 Length of Screen = 25.00 m  
 Radius of Casing = 0.100 m  
 Radius of Wellbore = 0.050 m  
 Conducted by: David P. Smith  
 Reviewed by: Chad R. Smith



# PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT: Calvert Cliffs NPP USLA Project  
 LOCATION: Lusby, MD  
 DATE: July 27, 2006  
 WEATHER TEST: 85-90

PROJECT NO.: 09120046  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Slug / Head / Rising Head
Slug Type:	Distilled Water
Approximate Volume of Slug:	0.625 Gal
Manual Water Level Meter Bore:	1.58" dia
Transducer Bore:	1/4" dia
Slug Bore:	5/16" dia

WELL INFORMATION	
Well ID:	0W-74A
Screen Inside Diameter:	2" dia
Casing Inside Diameter:	2" dia
Total Well Depth (ft, TOC):	52.8
Screen Interval Depth (ft, TOC):	38-48
Riser Height (ft):	1.10'

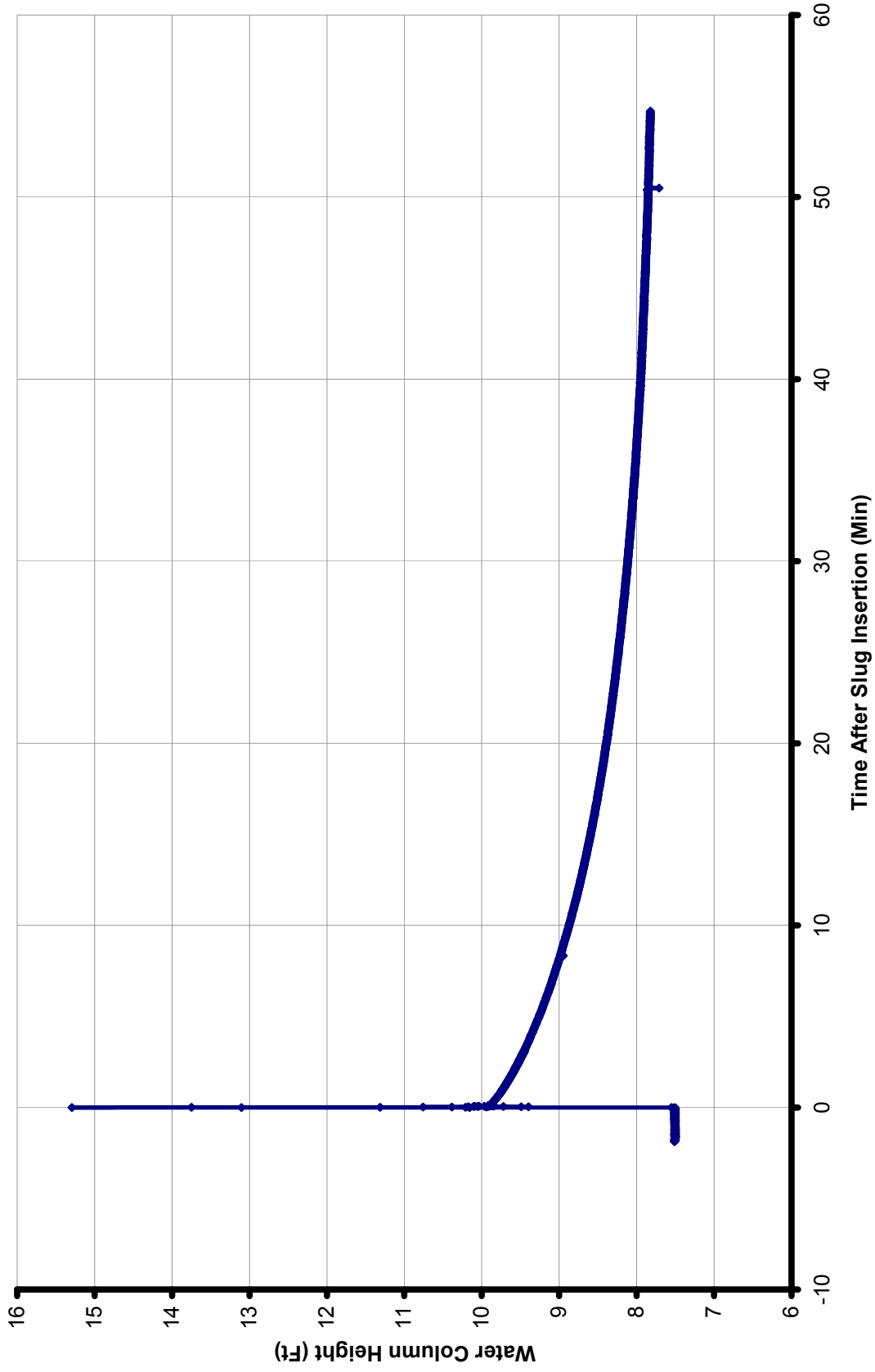
- 1 Pre-Test Water Level (ft, TOC) Time: 33.01 / 9:17 AM
- 2 Water Level after Probe Insertion (ft, TOC) Time: 33.01 / 10:27 AM
- 3 Transducer Depth: 4.0 ft
- 4 Casing Pre-Test Head over Transducer: 7.0 ft
- 5 Measured Pre-Test Head over Transducer: 7.8 ft
- 6 Time Test Started: 9:19 / 10:35 AM
- 7 Time Test Ended: 11:50 AM
- 8 Percent Recovery at End of Test: 7.75
- 9 Data Logger File Name: 06R0008 - PID-0W-74A-SLUG

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 9/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D4044

### OW-744 Permeability Test



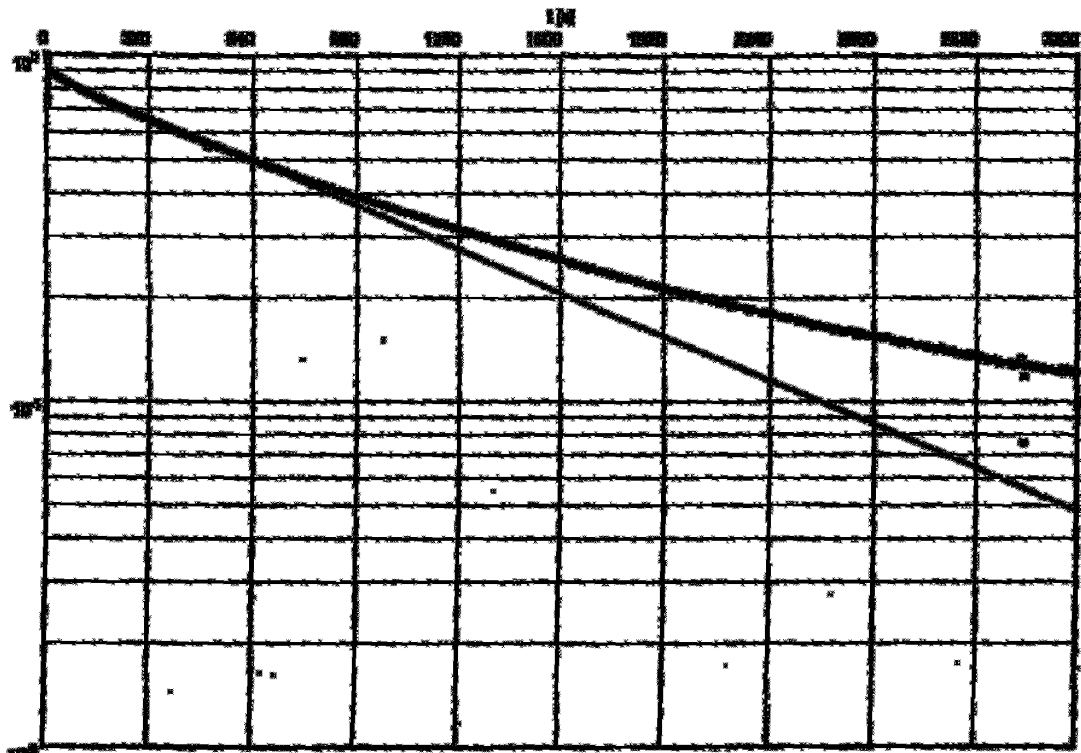
Richard Engineering North, L.L.C.  
 4000 Collins Street, Suite 700  
 Denver, Colorado  
 80202

Hydraulic analysis  
 MCH.11020-1020's roadway

Date: 10/20/08 Page 1  
 Project: Colostate Blvd  
 Estimated by: jpm

Design No. 799  
 CIV/08

File number: MCH.11020-1020



Hydraulic conductivity (k):  $1.5 \times 10^{-2}$

INPUT PARAMETERS  
 State Water Level = 7.01 M  
 Depth to Bottom of Aquifer = 45.00 M  
 Length of Aquifer = 11.00 M  
 Radius of Aquifer = 0.00 M  
 Radius of Well = 0.00 M  
 Estimated Top of Aquifer  
 Richard Engineering  
 10/20/08

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Cabnet Creek RIPP COLA Project  
 LOCATION: Lundy, MS  
 DATE: July 27, 2016  
 WEAATHER TEST: 87.1 F

PROJECT NO.: 08158040  
 CLIENT: Escalator Power Corporation

TEST INFORMATION	
Type of Test:	(Pre-Test Head) (Rising Head)
Slug Type:	(Mechanical) (Water)
Approximate Volume of Slug:	0.015 cu ft
Manual Water Level Meter S/N:	6212-00
Transducer S/N:	01658
Slug S/N:	Sub - 90

WELL INFORMATION	
Well ID:	02-752A
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	88.6
Screen Interval Depth (ft, TOC):	75-85
Screen Height (ft):	11'

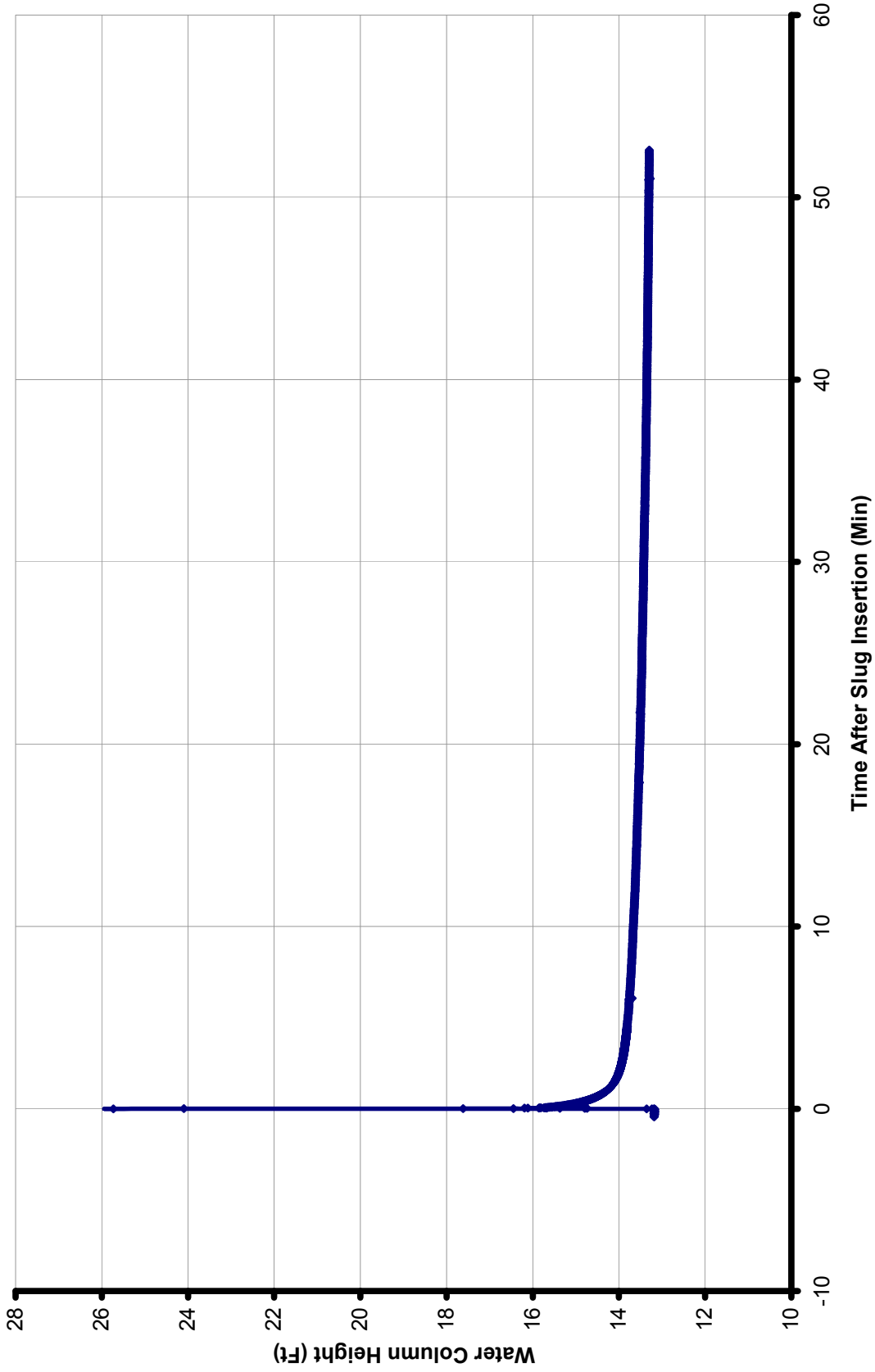
- 1 Pre-Test Water Level (ft, TOC) Time: 21.73 / 12:19 pm
- 2 Water Level after Probe Insertion (ft, TOC) Time: 21.67 / 12:25 pm
- 3 Transducer Depth: 28 ft
- 4 Cuts Pre-Test Head over Transducer: 3.53 ft
- 5 Measured Pre-Test Head over Transducer: 13.17 ft
- 6 Time Test Started: 12:17 / 12:38 pm
- 7 Time Test Ended: 1:30 pm
- 8 Screen Penetration at End of Test: 13.28 ft
- 9 Database File Name: 020218-210-02-752A - SUG

Comments:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2016  
 Approved By: [Signature] Date: 8/2/16

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D4044

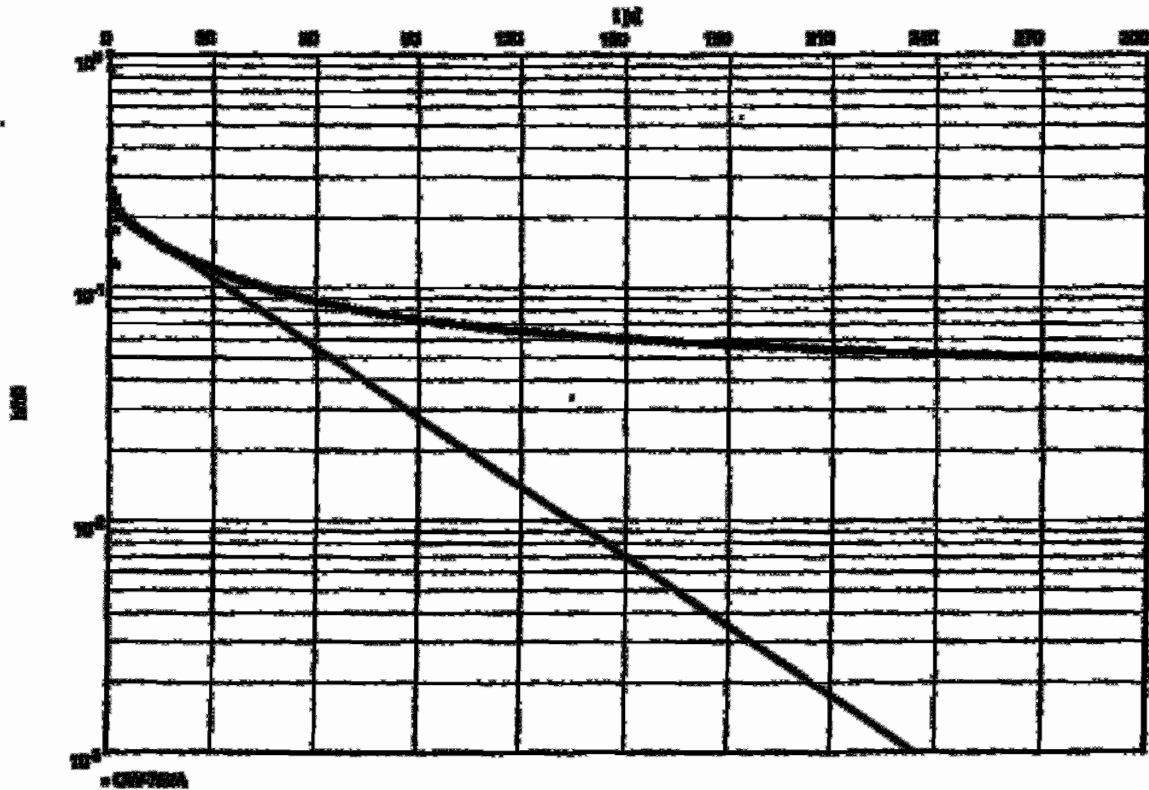
### OW-752A Permeability Test



Well Depth: 7000

Test number: 20120001

CEP/00A



Hydraulic conductivity (Darcy):  $1.00 \times 10^{-4}$

WELL PARAMETERS  
 Static Water Level = 10.10 m  
 Depth to Bottom of Casing = 68.00 m  
 Length of Screen = 15.00 m  
 Radius of Casing = 0.20 m  
 Radius of Screen = 0.20 m  
 Estimated log: Thomas Patrick

Estimated log: *Thomas Patrick*  
 Estimated log: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

see loc 1

PROJECT: Calvert Cliffs NPP CCLA Project  
 LOCATION: Lusby, MD  
 DATE: July 27, 2006  
 WENTHERY TEMP: 85 - 90

PROJECT NO.: 08120048  
 CLIENT: Essential Power Corporation

TEST INFORMATION	
Type of Test:	( Slug, Head, Rising Head )
Slug Type:	( Sand, Gravel, Water )
Approximate Volume of Slug:	0.625 GAL
Manual Water Level Meter (M):	WLP-001
Transducer (M):	104257
Slug (M):	SLUG - 002

WELL INFORMATION	
WELL NO:	04-752-35
Screen Inside Diameter:	2 1/4
Casing Inside Diameter:	2 3/4
Total Well Depth (ft, TOC):	47
Screen Interval Depth (ft, TOC):	85-95
Screen Height (ft):	10'

- 1 Pre-Test Water Level (ft, TOC)/ Time: 59.65 / 12:12 pm
- 2 Water Level after Probe Insertion (ft, TOC)/ Time: 59.61 / 12:34 pm
- 3 Transducer Depth: 80 ft
- 4 Cahn Pre-Test Head over Transducer: 20.39 ft
- 5 Measured Pre-Test Head over Transducer: 20.68 ft
- 6 Time Test Started: 12:22 / 12:59 PM
- 7 Time Test Ended: 1:28 pm
- 8 Percent Recovery at End of Test: 20.74
- 9 Challenge File Name: 08120048-10-001-1528-SLUG

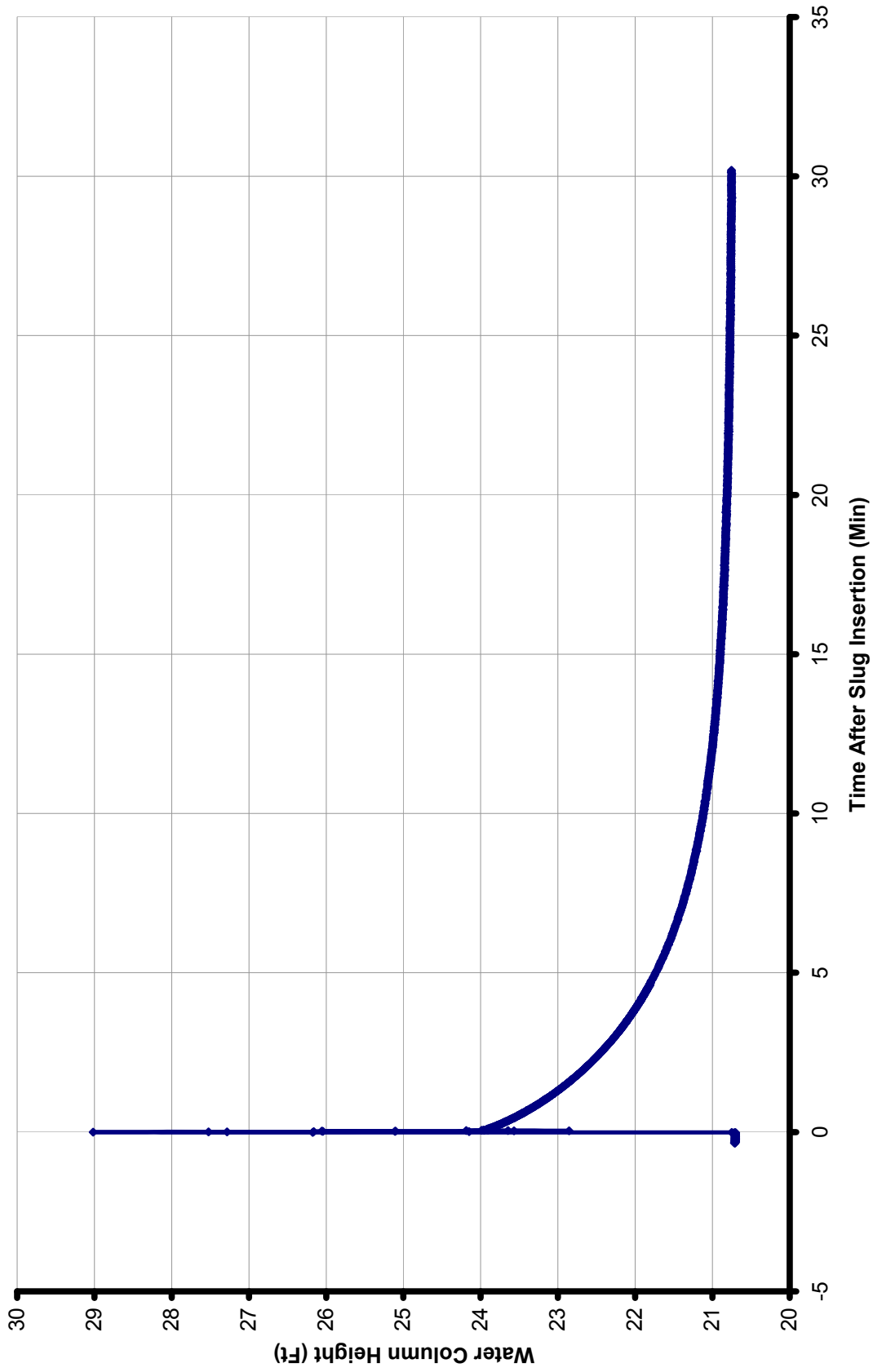
Remarks:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 27, 2006  
 Approved By: [Signature] Date: 8/1/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D-1585



### OW-752B Permeability Test



Structural Engineering North, LLC  
 200 Collins Street East, Suite 700  
 Columbus, Missouri  
 65201-4200

Standard Test Methods  
 ENCL. 1018-1019-1020

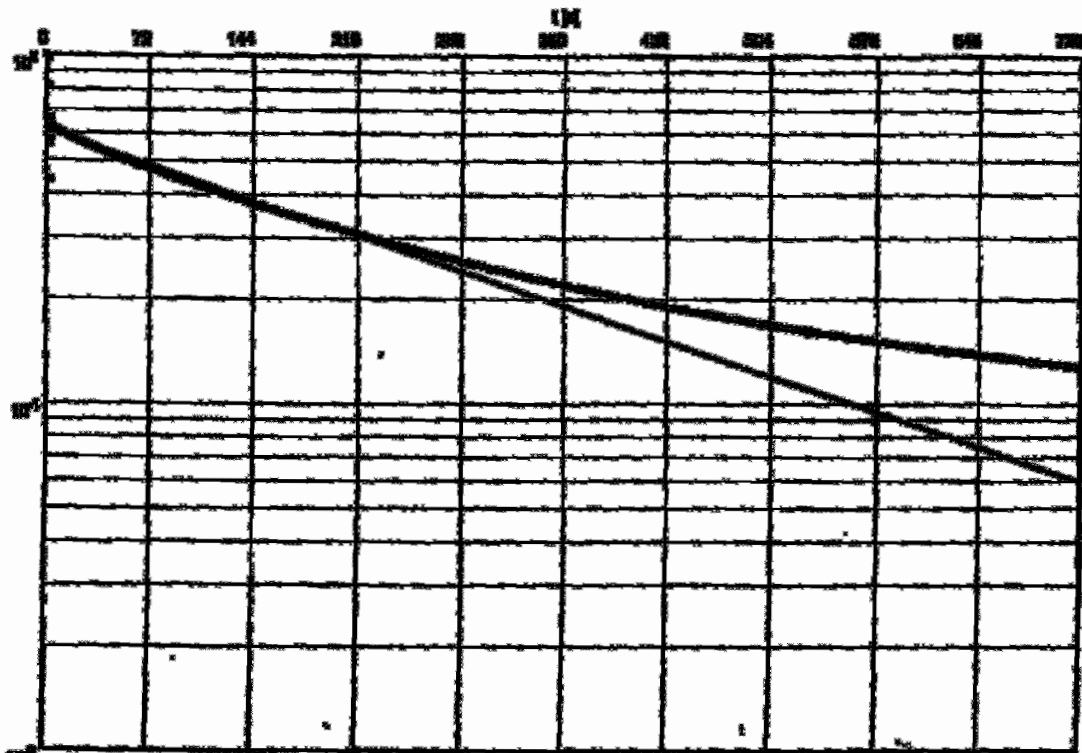
Form 1018000 Page 1

Project: Collins Street  
 Rebarbed type: plain

Shop Test No. 2000

Test conducted on 10/20/00

CRS-2000



Specific weight of steel: 490 lb/ft<sup>3</sup>

**REPORT INFORMATION**

Rebar Water Level = 20.71 ft  
 Depth to Bottom of Rebar = 125.00 ft  
 Length of Core = 10.00 ft  
 Number of Cores = 1.00 ft  
 Number of Sections = 1.00 ft

Rebarbed type: Plain  
 Rebarbed type: CRS-2000



**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT NO.: 081200048  
 CLIENT: Bantrol Power Corporation

PROJECT: Calvert Cliffs NPP SOLA Project  
 LOCATION: Lusby, MD  
 DATE: July 26, 2006  
 WEATHER TEST: 85%, Windy

TEST INFORMATION	
Type of Test:	Falling Head / Rising Head )
Slug Type:	(Sandstone / Water )
Approximate Volume of Slug:	0.625 GAL
Manual Water Level Meter S/N:	51LP-001
Transducer S/N:	02865
Slug S/N:	5106-03

WELL INFORMATION	
Well ID:	02-28A
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	46.15
Screen Interval Depth (ft, TOC):	32-42
Screen Height (ft):	12"

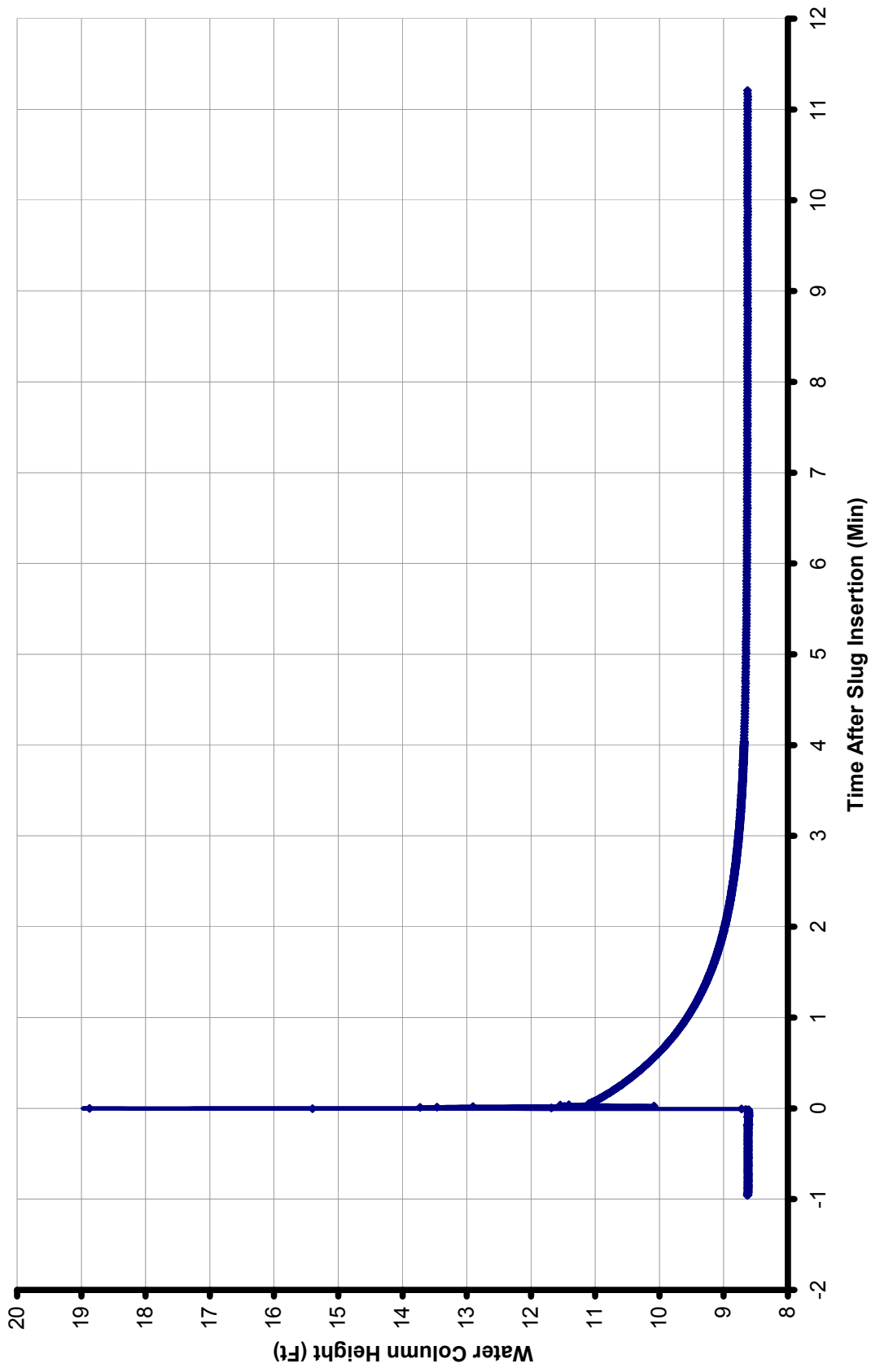
- 1 Pre-Test Water Level (ft, TOC)/Time: 31.28 ft / 11:27 AM
- 2 Water Level after Probe Insertion (ft, TOC)/Time: 31.28 ft / 11:42 AM
- 3 Transducer Depth: 40 ft
- 4 Casing Pre-Test Head over Transducer: 8.72 ft
- 5 Measured Pre-Test Head over Transducer: 8.54 ft
- 6 Time Test Started: 11:50 / 11:49 AM
- 7 Time Test Ended: 12:00 PM
- 8 Manual Recovery at End of Test: 8:16 PM
- 9 Drilling File Name: 081200048 - TD - 02 - 28A - SLUG

Comments:  
 TOC = Bottom of the V-points at top of casing

Performed By: Todd White Date: July 26, 2006  
 Approved By: [Signature] Date: 7/27/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference ASTM D-4044

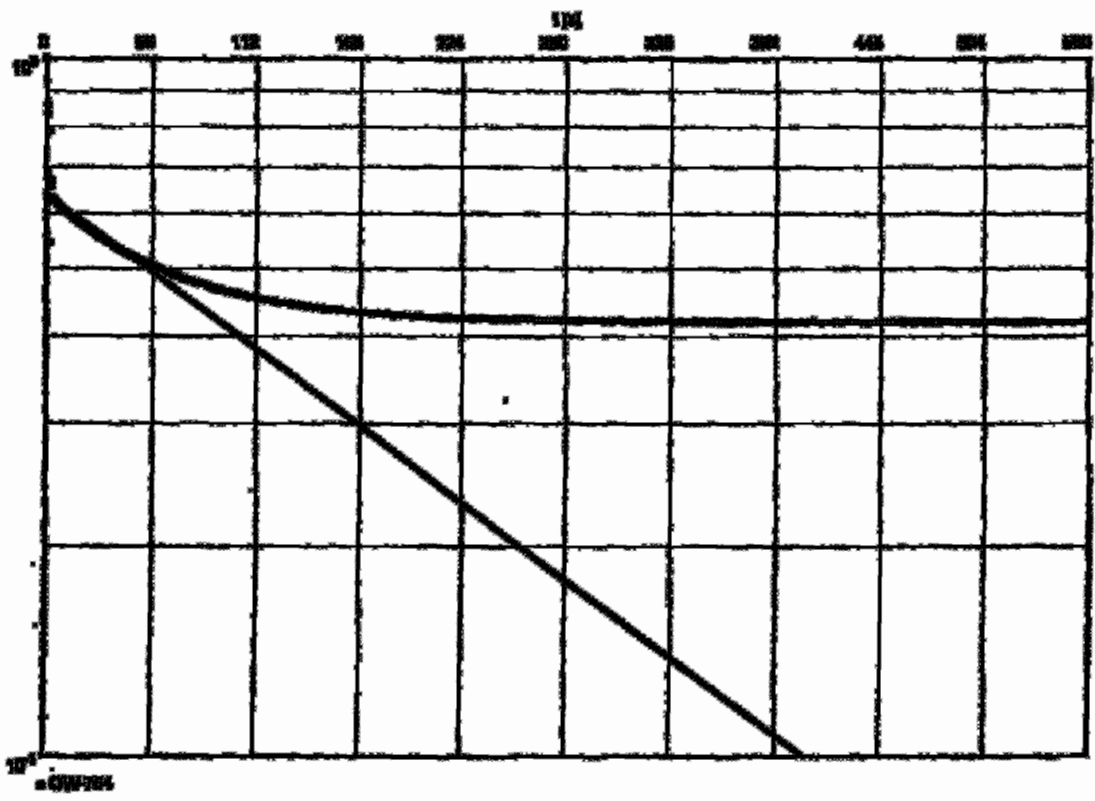
### OW-754 Permeability Test



Specimen No. 200

Test conducted on: 7/18/2008

CHP 200



Hydraulic conductivity (k<sub>h</sub>): 1.0E-08

EMPTY PARAMETERS  
 Depth Water Level = 0.24 m  
 Depth to Bottom of Sample = 0.10 m  
 Length of Sample = 10.00 m  
 Radius of Sample = 0.05 m  
 Radius of Container = 0.05 m  
 Requested by: *Frank Patrick*  
 Requested by: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

Form 01/01

PROJECT: Calvert Cliffs NPP CCLA Project  
 LOCATION: Leesburg, MD  
 DATE: July 24, 2006  
 WENTHERS TEMP: 78 - 84

PROJECT NO.: 0615048  
 CLIENT: Residual Power Corporation

TEST INFORMATION	
Type of Test:	<u>Celling (w/ Rising Head)</u>
Slug Type:	<u>Non-aqueous (Water)</u>
Approximate Volume of Slug:	<u>0.22 0.675 GAL</u>
Manual Water Level Meter S/N:	<u>WLP-001</u>
Transducer S/N:	<u>64255</u>
Slug S/N:	<u>SLUG-001</u>

WELL INFORMATION	
Well ID:	<u>0W-156</u>
Screen Inside Diameter:	<u>2"</u>
Casing Inside Diameter:	<u>2 1/4"</u>
Total Well Depth (ft, TDC):	<u>12.8</u>
Screen Interval Depth (ft, TDC):	<u>30-40</u>
Screen Height (ft):	<u>11.5"</u>

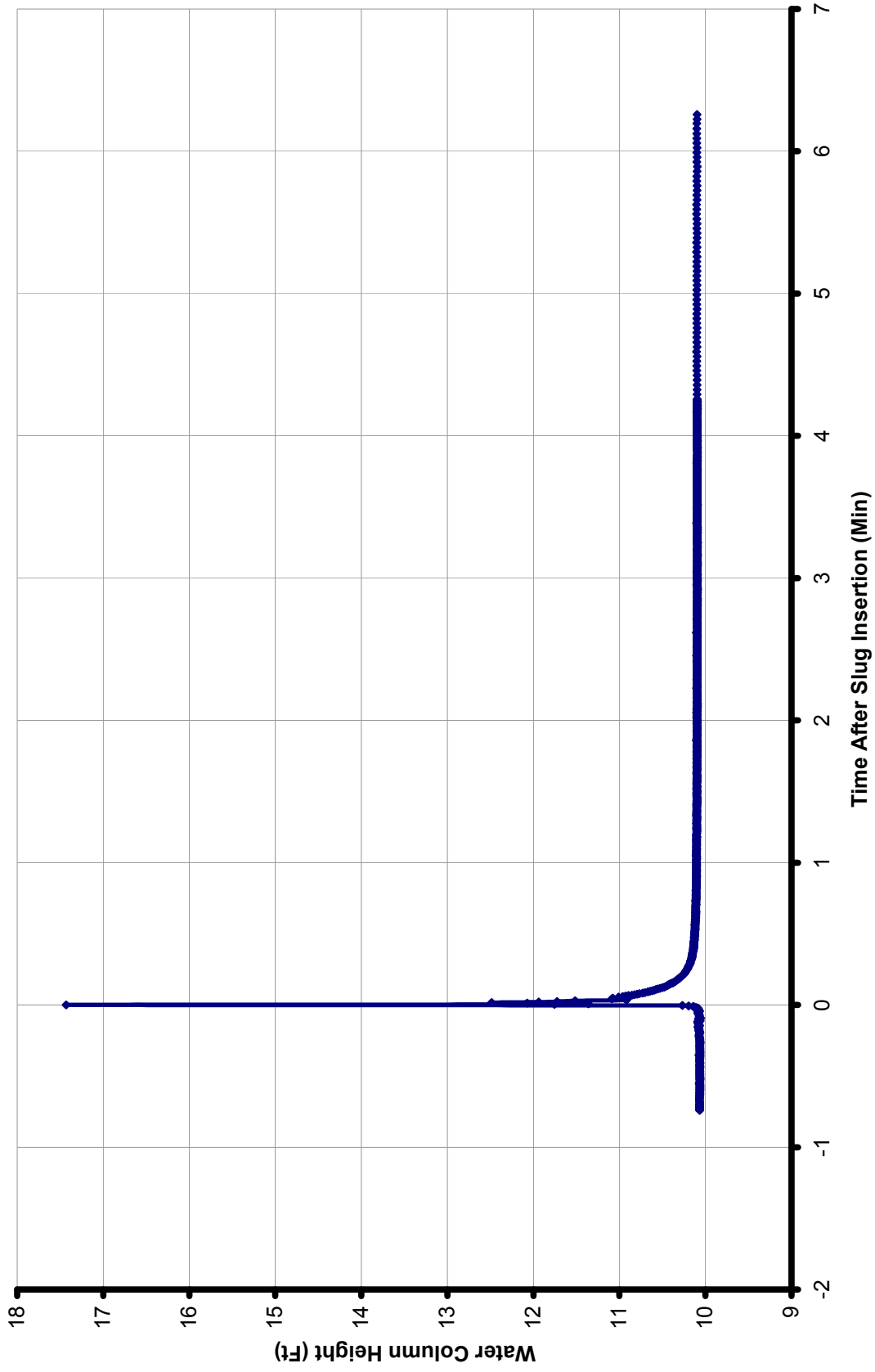
- 1 Pre-Test Water Level (ft, TDC) Time: 2:58 / 4:06 pm
- 2 Water Level after Probe Insertion (ft, TDC) Time: 2:58 / 4:20 pm
- 3 Transducer Depth: 10 ft
- 4 Casing Pre-Test Head over Transducer: 10:14
- 5 Measured Pre-Test Head over Transducer: 10:05
- 6 Time Test Started: 4:10 / 6:31
- 7 Time Test Finished: 4:40 pm
- 8 Percent Recovery at End of Test: 10.5%
- 9 Data Logger File Name: 0615048-PTD-001-156-SLUG

Observations:  
 TDC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 24, 2006  
 Approved By: [Signature] Date: 7/27/06

Note: All water level measurements should be taken from well measurement point at top of casing.  
 Reference: ASTM D4044

### OW-756 Permeability Test



Technical Engineering South, LLC  
 200 Collins Street, Suite 700  
 Columbus, Georgia  
 31904-0000

Registered Professional Engineer  
 License No. 10000

Date: 1/20/2008

Page 1

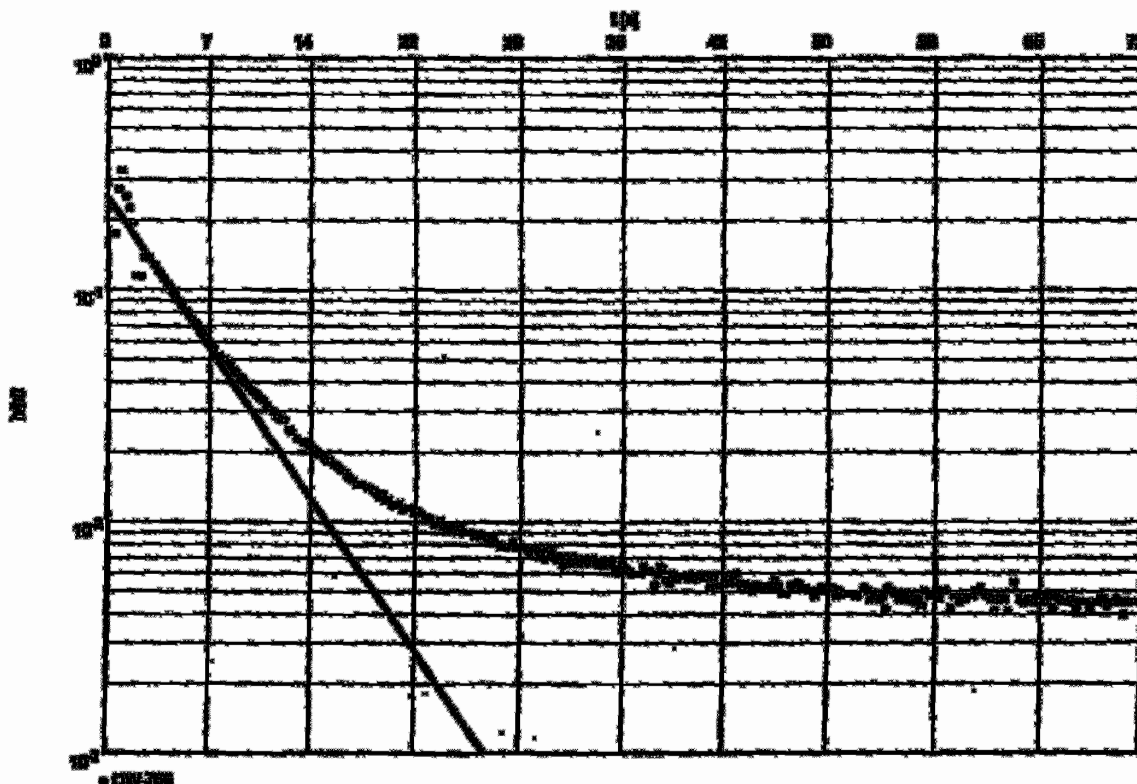
Project: Collins Street

Drawn by: J. Smith

City: Tallahassee, FL

Test conducted on: 1/20/2008

CP-200



CP-200

Hydraulic conductivity (K):  $1.5 \times 10^{-4}$

**TEST PARAMETERS**  
 Static Water Level = 10.0' M  
 Depth to Bottom of Aquifer = 10.0' M  
 Length of Slug = 1.0' M  
 Radius of Slug = 0.5' M  
 Radius of Well = 0.5' M  
 Drawn by: J. Smith

Checked by: *[Signature]*  
 Drawn by: *[Signature]*





# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Calvert Cliffs NPP ISCLA Project  
 LOCATION: Lusby, MD  
 DATE: July 26, 2006  
 WEATHER TEMP: 85 - 86

PROJECT NO.: 0818080  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Sealing Head / Rising Head
Slug Type: (Impervious Water)	
Approximate Volume of Slugs:	0.625 GAL
Measured Water Level Meter Sift:	WLP-001
Transducer S/N:	1012555
Blow S/N:	8126-001

WELL INFORMATION	
WELL ID:	OW-757A
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	53.72
Screen Interval Depth (ft, TOC):	20-30
Riser Height (ft):	1.5'

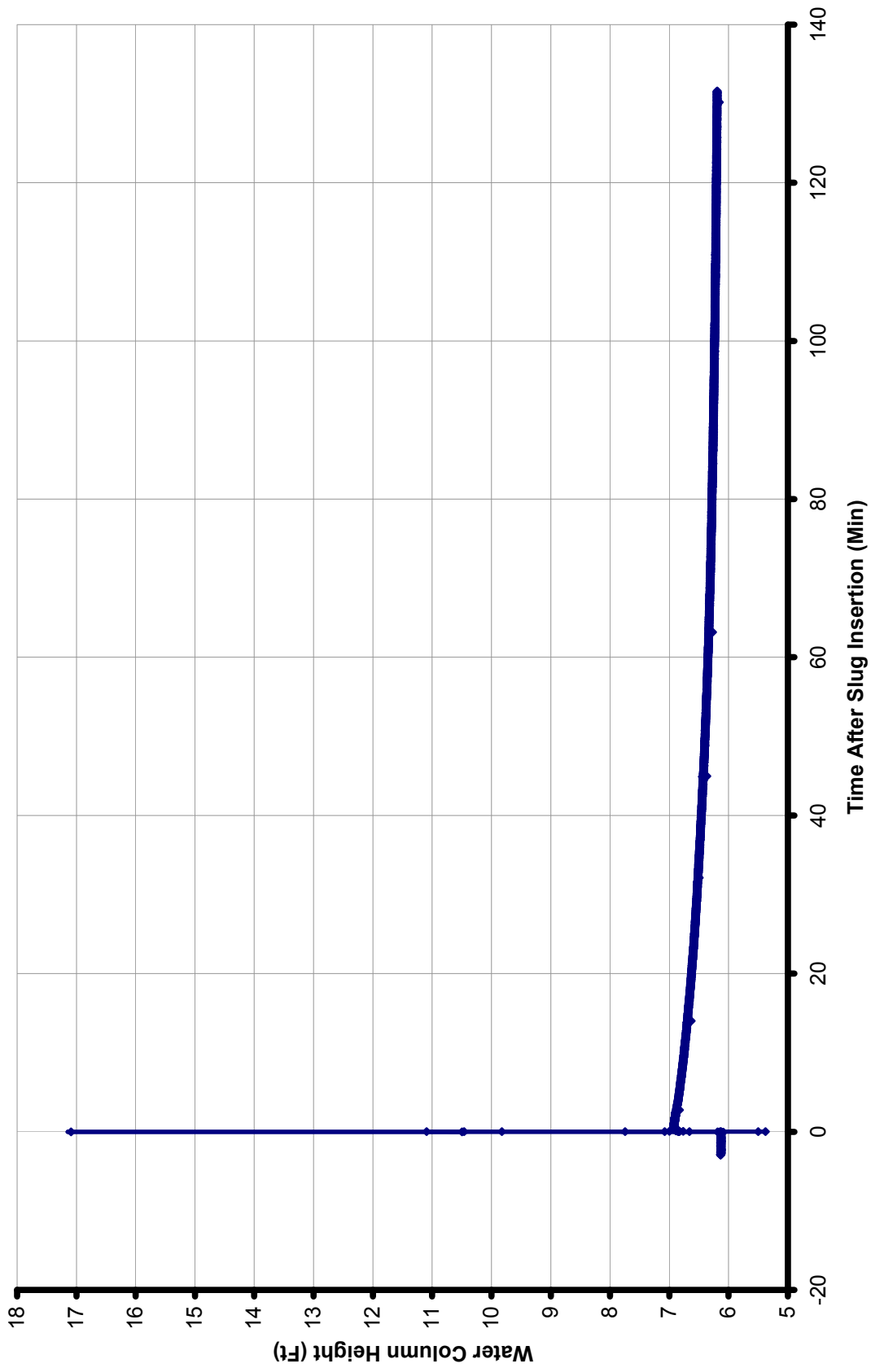
- Pre-Test Water Level (ft, TOC) Time: 26.87 / 2:59 PM
- Water Level after Probe Insertion (ft, TOC) Time: 26.87 / 3:31 PM
- Transducer Depth: 32.0
- Cable, Pre-Test Head over Transducer: 6.13 ft
- Measured Pre-Test Head over Transducer: 6.12 ft
- Time Test Started: Predict/Inject 3:00 / 3:35 PM
- Time Test Ended: 5:48
- Penetration/Seal-off End of Test: 6.18 ft
- Discharge File Name: 061808-TPD-OW-757A-SUC

Observations:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 26, 2006  
 Approved By: Todd White Date: 8/15/06

Note: All water level measurements obtained from well measurement points at top of casing.  
 Reference: ASTM D4044

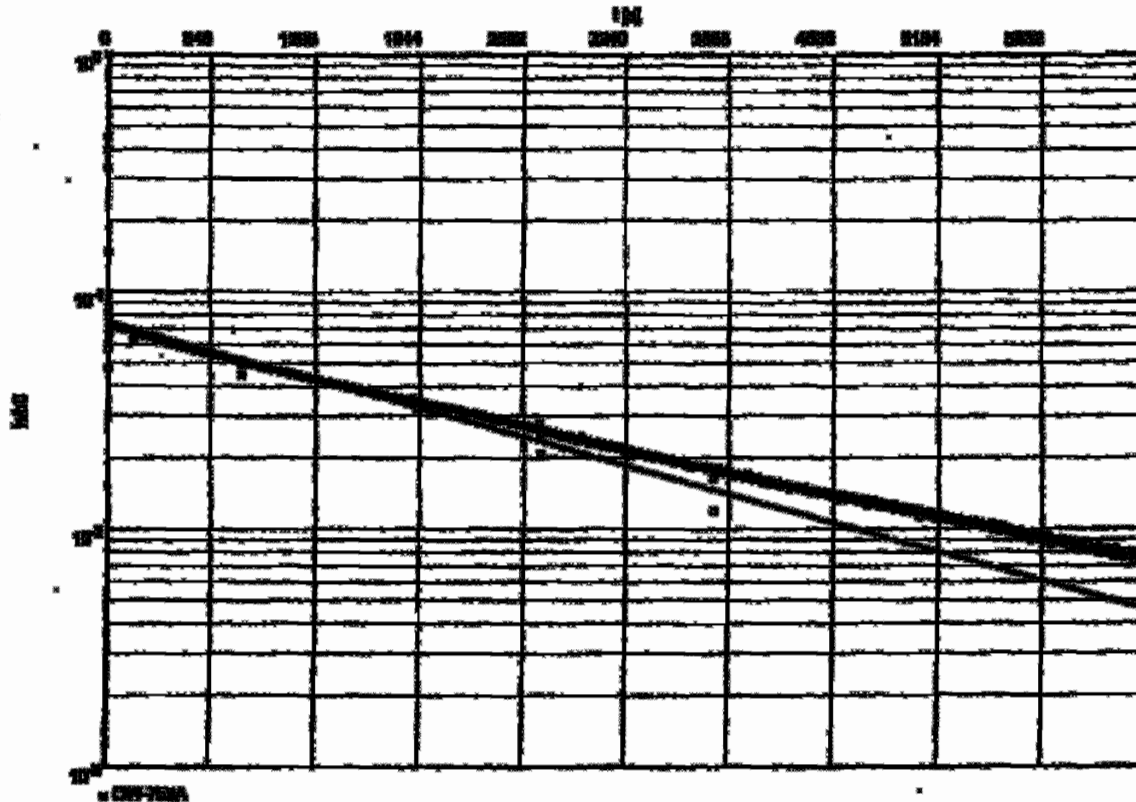
### OW-759A Permeability Test



Shop Draw No. 700A

Test conducted on: 7/20/2010

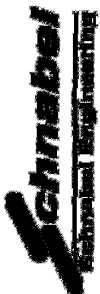
CW-700A



Hydroelasticity (H):  $4.04 \times 10^{-7}$

**INPUT PARAMETERS**  
 Study Water Level = 0.55 m  
 Depth to Bottom of Aperture = 30.00 m  
 Length of Dam = 10.00 m  
 Radius of Curvature = 0.00 m  
 Radius of Influence = 0.00 m  
 Evaluated by: *[Signature]*

Reviewed by: *[Signature]*



# PERMEABILITY (SLUG) TEST FIELD FORM

Rev. 1.0.1

PROJECT: Calvert Cliffs NPP CO2A Project  
 LOCATION: Lusby, MD  
 DATE: July 26, 2006  
 WEAHTER: Partly / 80-90

PROJECT NO.: 001500-03  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Seepage (Hand / Pumping (Hand))
Slug Type:	(Municipal) Water
Approximate Volume of Slug:	0.25 gal
Mercural Water Level Meter S/N:	442-001
Transducer S/N:	109259
Slug S/N:	820-032

WELL INFORMATION	
Well ID:	OW-7575
Screen Inside Diameter:	2"
Casing Inside Diameter:	2"
Total Well Depth (ft, TOC):	87.7
Screen Interval Depth (ft, TOC):	75-85
Screen Height (ft):	15'

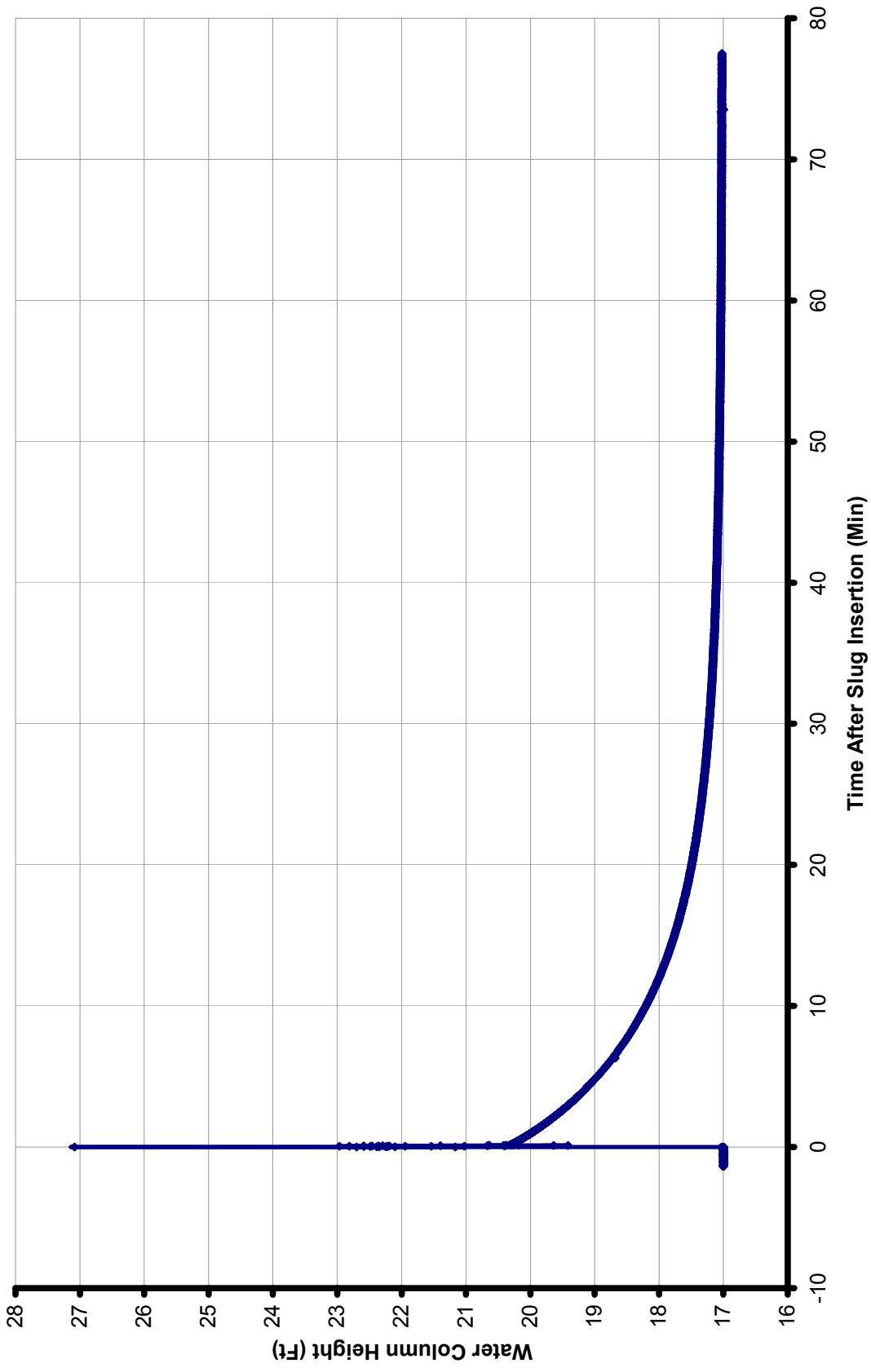
- Pre-Test Water Level (ft, TOC): 7.01 ft
- Water Level after Probe Insertion (ft, TOC): 6.309 ft / 300 pm
- Transducer Depth: 6.308 ft / 150 pm
- Time Pre-Test Hand over Transducer: 8:04
- Measured Pre-Test Hand over Transducer: 8:04
- Time Test Started: Pre-Test / Slug at 8:01 PM
- Time Test Ended: 5:59 PM
- Percent Recovery at End of Test: 17.01 ft
- Calculator File Name: 061200B-7575-OW-7575-SLUG

Remarks:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Fred Wade Date: July 26, 2006  
 Approved By: [Signature] Date: 8/1/06

Note: All water level measurements obtained from well measurement post-install of casing  
 Reference ASTM D-4844

### OW-759B Permeability Test



Industrial Engineering Dept., I.I.C.  
500 Collins Street, Suite 700  
Baltimore, MD 21201  
City of Baltimore

Original test results  
MILITARY SPEC'S method

Date: 1/20/2000

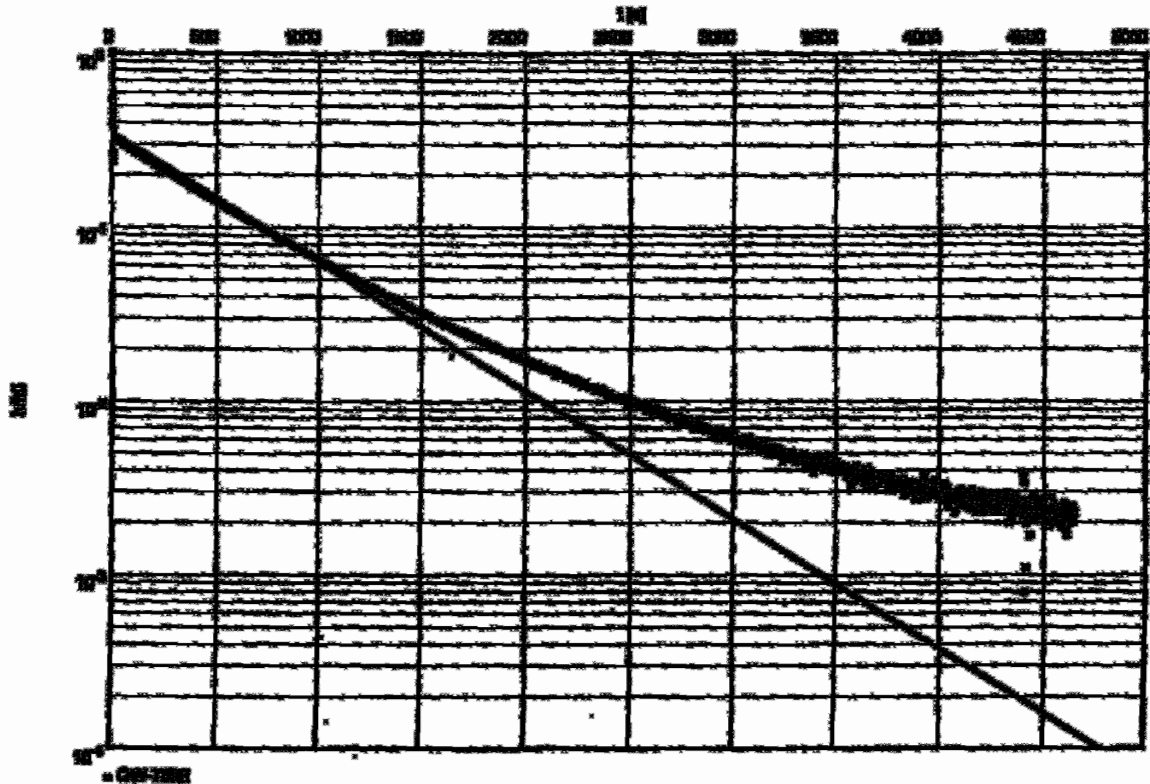
Page 1

Project: Colonel Galt  
Inspected by: Patrick

Buy Test No. 7000

Test conducted on: 2/20/2000

0017000



Hydraulic conductivity (μ):  $1.77 \times 10^{-2}$

INPUT PARAMETERS  
Water Table Level = 12.00 ft  
Depth to Bottom of Aquifer = 10.00 ft  
Length of Core = 10.00 ft  
Radius of Core = 0.25 ft  
Radius of Influence = 1.00 ft  
Inspected by: Patrick

Inspected by: [Signature]



# PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT NO.: 09120040  
CLIENT: Bechtel Power Corporation

PROJECT: Calvert Cliffs HPP COLA Project  
LOCATION: Lusby, MD  
DATE: July 27, 2006  
WARRANTY TERM: 65 Years

WELL INFORMATION	
Well ID:	061-765A
Screen Inside Diameter:	24"
Casing Inside Diameter:	24"
Total Well Depth (ft, TOC):	31'
Screen Interval Depth (ft, TOC):	17-27'
Screen Height (ft):	2'

TEST INFORMATION	
Type of Test:	Casing Head (Rising Head)
Slug Type:	Chemical (Water)
Approximate Volume of Slug:	0.67 m³ @ 0.615 g/cc
Normal Water Level Meter S/N:	611 P-0101
Transducer S/N:	012555
Slug S/N:	SLUG-001

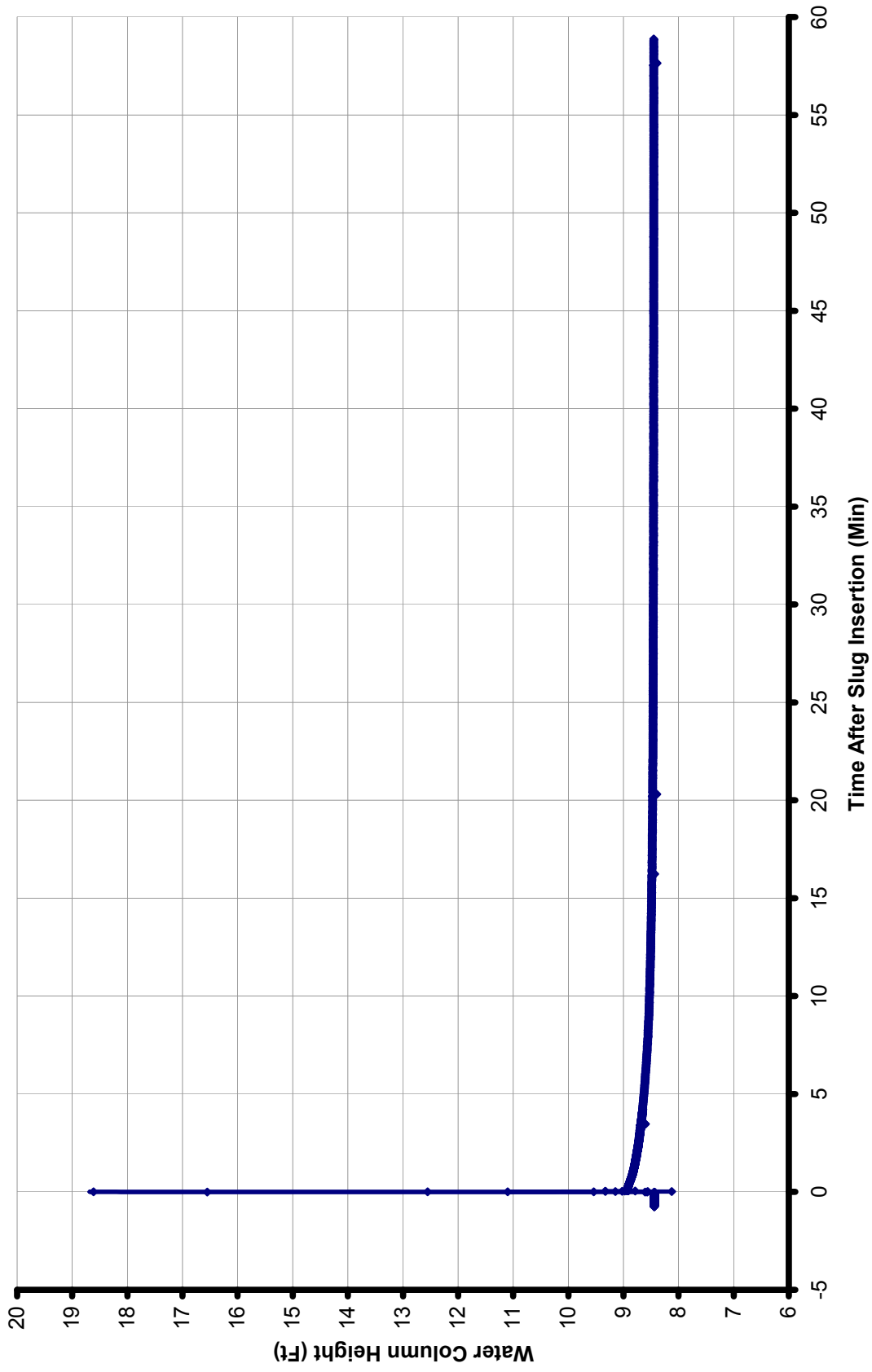
1 Pre-Test Water Level (ft, TOC) Time:	21.61 / 7:53 AM
2 Water Level after Probe Insertion (ft, TOC) Time:	21.61 / 8:00 AM
3 Transducer Depth:	30 ft
4 Casing Pre-Test Head over Transducer:	8.36 ft
5 Measured Pre-Test Head over Transducer:	8.40 ft
6 Time Test Started:	8:10 / 8:28 AM
7 Time Test Ended:	9:27 AM
8 Percent Recovery at End of Test:	8.40 ft
9 Database File Name:	0612004-PID-061-765A-SLUG

Comments:  
TOC = Bottom of the V-system at top of casing

Performed By: Todd Wilke Date: July 27, 2006  
 Approved By: [Signature] Date: 7/27/06

Note: All water level measurements obtained from well measurement point at top of casing.  
Reference: ASTM D4044

### OW-765A Permeability Test

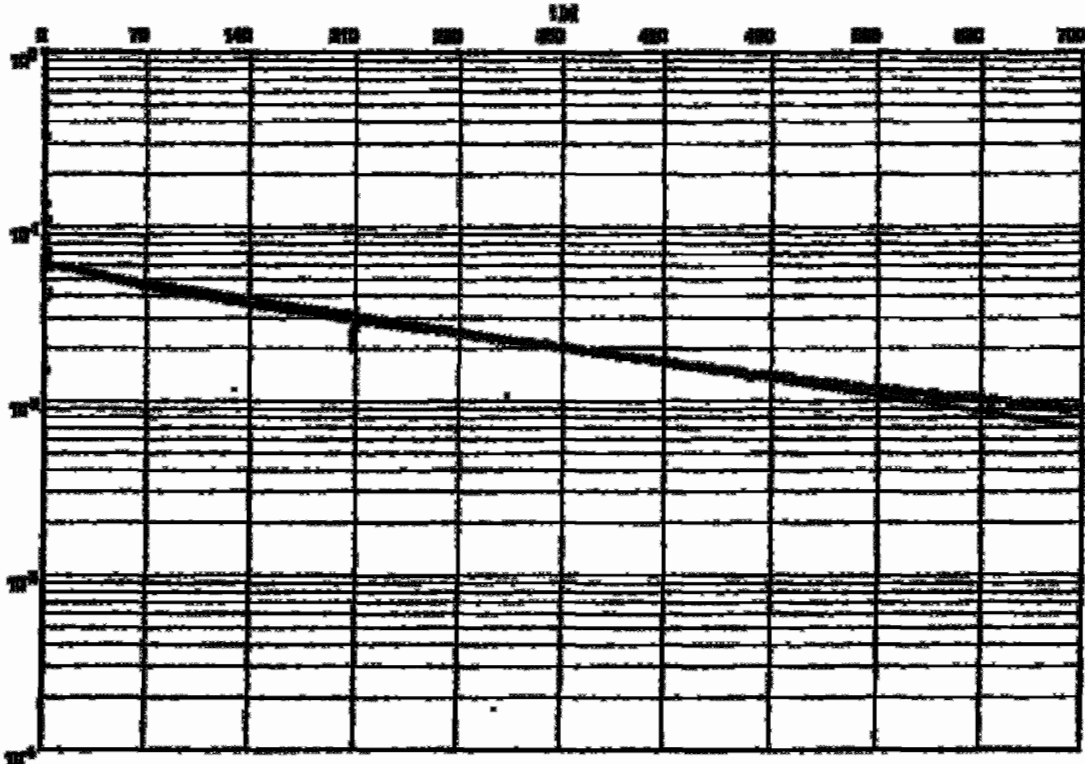




Log Title No. 1234

Test conducted on: 12/31/2023

CONTRACT



12/31/2023

Hydraulic conductivity (ft/s):  $1.00 \times 10^{-3}$

WELL PARAMETERS  
 Wellbore Length = 0.44 ft  
 Depth to Bottom of Aquifer = 27.00 ft  
 Length of Screen = 2.00 ft  
 Radius of Casing = 0.10 ft  
 Radius of Influence = 1.00 ft  
 Stationed to: 100+00  
 Performed by: *Frank Deltick*  
 Checked by: *Chris D.*



# PERMEABILITY (SLUG) TEST FIELD FORM

PROJECT: Calvert Cliffs NPP COLA Project  
 LOCATION: Lanby, MD  
 DATE: July 27, 2006  
 WEATHER: 75 - 85 - Partly Cloudy

PROJECT NO.: 0818048  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	<u>(Casing Head) (Pneum) (Head)</u>
Slug Type:	<u>(Distilled) Water</u>
Approximate Volume of Slug:	<u>0.015 GAL</u>
Measured Water Level Meter S/N:	<u>WLP-001</u>
Transducer S/N:	<u>08287</u>
Slug S/N:	<u>SLUG-002</u>

WELL INFORMATION	
Well ID:	<u>CLJ-7653</u>
Casing Inside Diameter:	<u>2"</u>
Casing Outside Diameter:	<u>2 1/4"</u>
Total Well Depth (ft, TDC):	<u>977</u>
Casing Interval Depth (ft, TDC):	<u>82-92'</u>
Water Height (ft):	<u>2'</u>

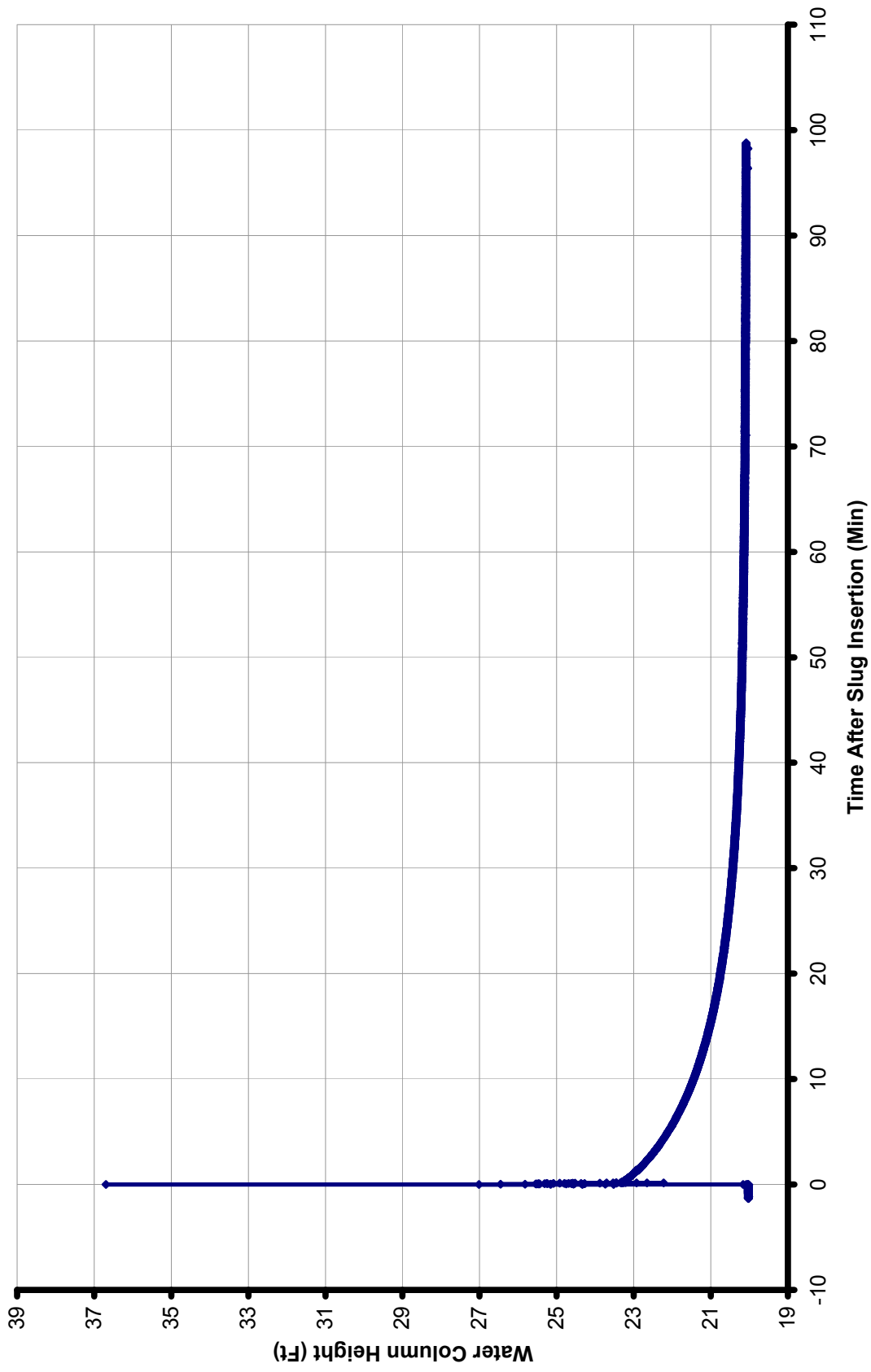
- 1 Pre-Test Water Level (ft, TDC) Time: 60:23 / 8:35 AM
- 2 Water Level after Probe Insertion (ft, TDC) Time: 60:23 / 9:30 AM
- 3 Transducer Depth: 80 ft
- 4 Cols. Pre-Test Head over Transducer: 19.77
- 5 Measured Pre-Test Head over Transducer: 20.06
- 6 Time Test Started: 8:39 AM / 9:35 AM
- 7 Time Test Ended: 11:20 AM
- 8 Pressure at End of Test: 20.07
- 9 Data Logger File Name: 0818048-27-01-25B-2406

Comments:  
 TOG = Bottom of the V-notch at top of casing

Performed By: Todd York Date: July 27, 2006  
 Approved By: [Signature] Date: 9/2/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D-4044

### OW-765B Permeability Test



Richard Engineering Works, LLC  
 555 Collins Colwell Road, Suite 700  
 Cambridge, MA 02142  
 (617) 452-0000

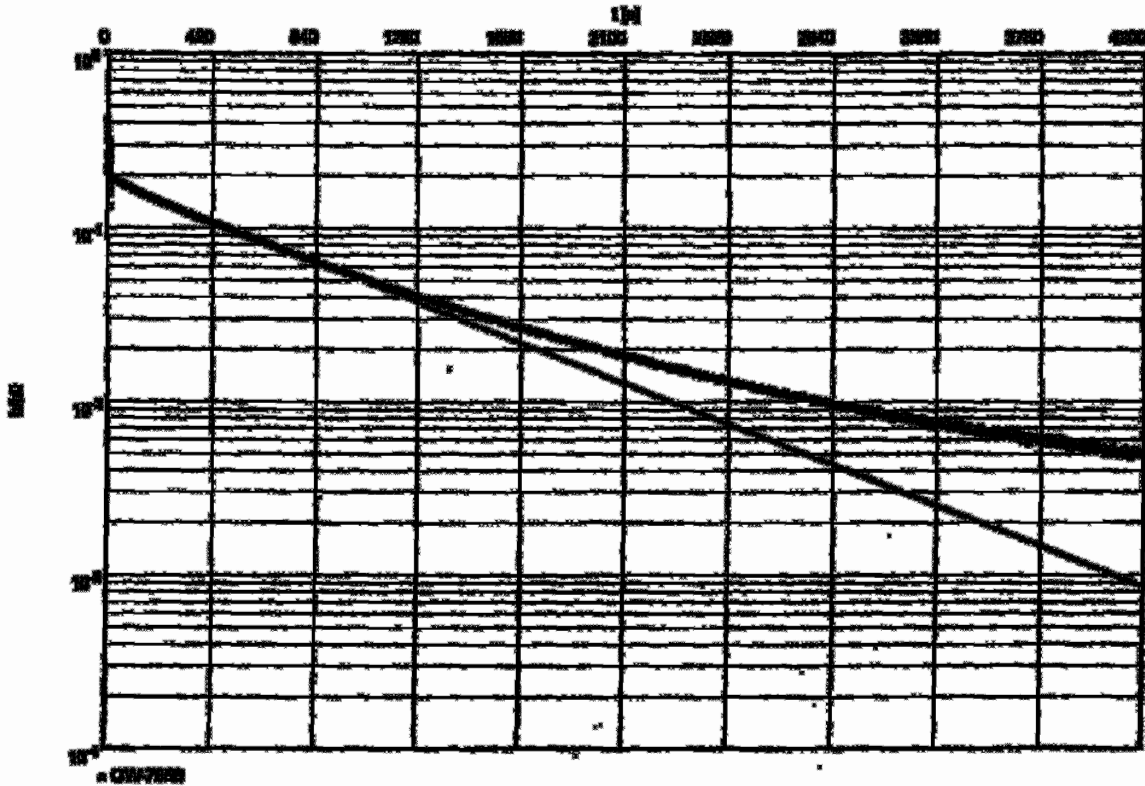
Original Test Sample  
 ICA 10000-10000's material

Order: 100000 Page 1  
 Project: Colwell 1000  
 Estimated by: Patrick

Slag Test No. 1000

Test conducted on: 10/10/00

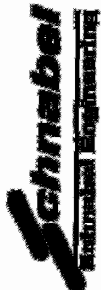
CONCRETE



Hydraulic conductivity (Darcy):  $1.00 \times 10^{-8}$

INPUT PARAMETERS  
 Water Table Level = 100.00 m  
 Depth to Bottom of Aquifer = 100 m  
 Length of Screen = 20.00 m  
 Radius of Casing = 0.20 m  
 Radius of Influence = 0.00 m  
 Estimated by: Patrick

Reviewed by: *Patrick Patrick*  
 Date: *10/10/00*



**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Chesapeake NPP CO2-A Project  
 LOCATION: Lusby, MD  
 DATE: July 26, 2006  
 WEATHER: 85, 1 Sunny

PROJECT NO.: 00120048  
 CLIENT: Bechtel Power Corporation

<b>TEST INFORMATION</b>	
Type of Test:	<u>Open Head / Rising Head</u>
Slug Type:	<u>Rectangular / Water</u>
Approximate Volume of Slug:	<u>0.002 cu m - 0.625 gal</u>
Measured Water Level Meter Bore:	<u>1.19 - 0.01</u>
Transducer Bore:	<u>0.8755</u>
Slug Bore:	<u>0.875 - 0.01</u>

<b>WELL INFORMATION</b>	
Well ID:	<u>02-76</u>
Screen Inside Diameter:	<u>2.0</u>
Casing Inside Diameter:	<u>2.0</u>
Total Well Depth (ft, TOC):	<u>21.05</u>
Screen Interval Depth (ft, TOC):	<u>20-30</u>
Screen Height (ft):	<u>16.8</u>

*note: slug @ 53 ft sub-surface.  
 depth. May not be fully submerged.*

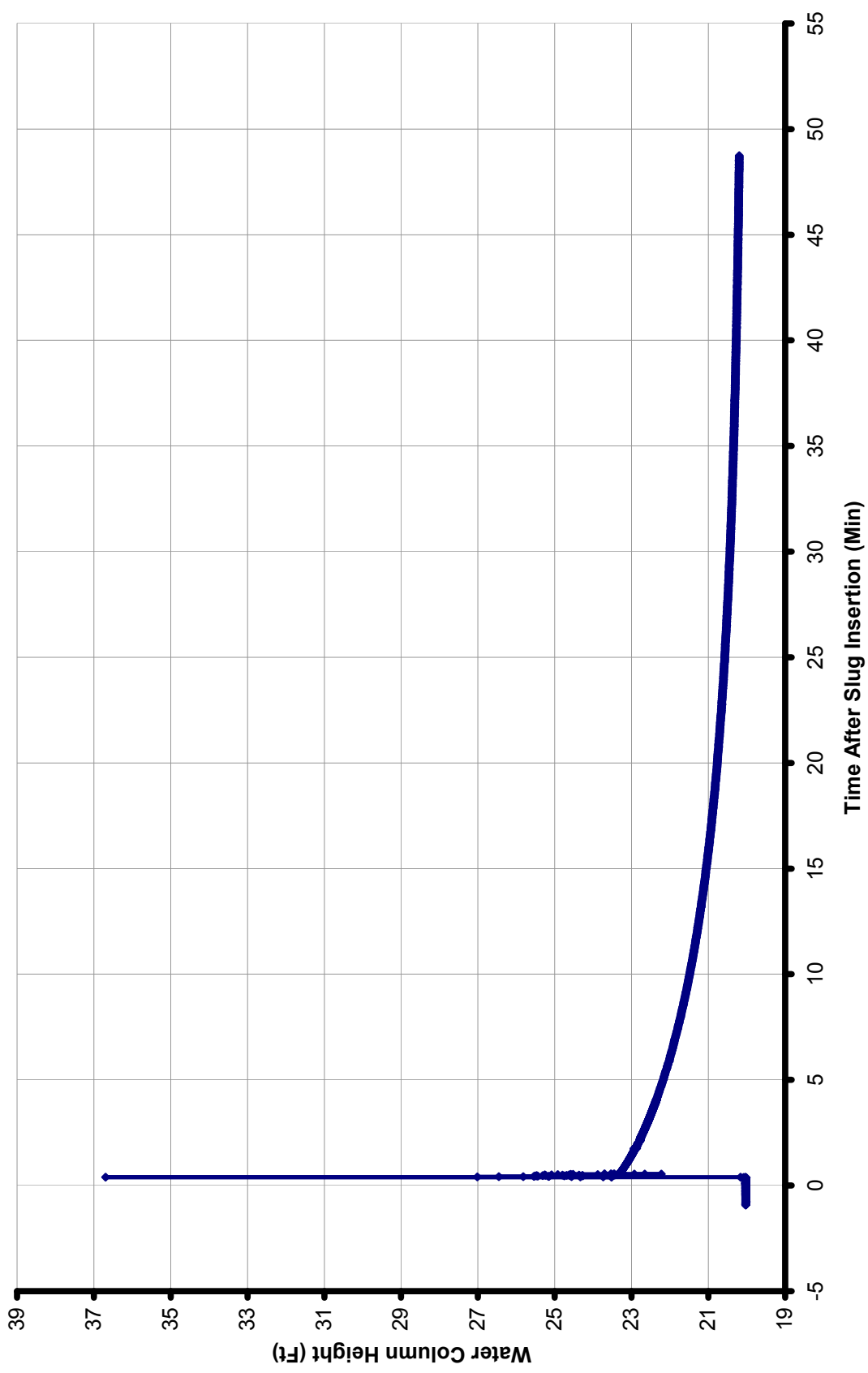
- 1 Pre-Test Water Level (ft, TOC) Time: 28.79 ft / 1:51 pm
- 2 Water Level after Probe Insertion (ft, TOC) Time: 29.77 ft / 1:42 pm
- 3 Transducer Depth: 5.23
- 4 Casing Pre-Test Head over Transducer: 5.21
- 5 Measured Pre-Test Head over Transducer: 1:32 / 13:45
- 6 Time Test Started: 8:23 pm
- 7 Time Test Ended: 5:31
- 8 Personnel at End of Test: W. J. ...
- 9 Casing/Filter Name: 08200-18-FID-0W-76-206

**Comments:**  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 26, 2006  
 Approved By: [Signature] Date: 7/26/06

Note: All water level measurements obtained from well measurement points at top of casing.  
 Reference ASTM D4044

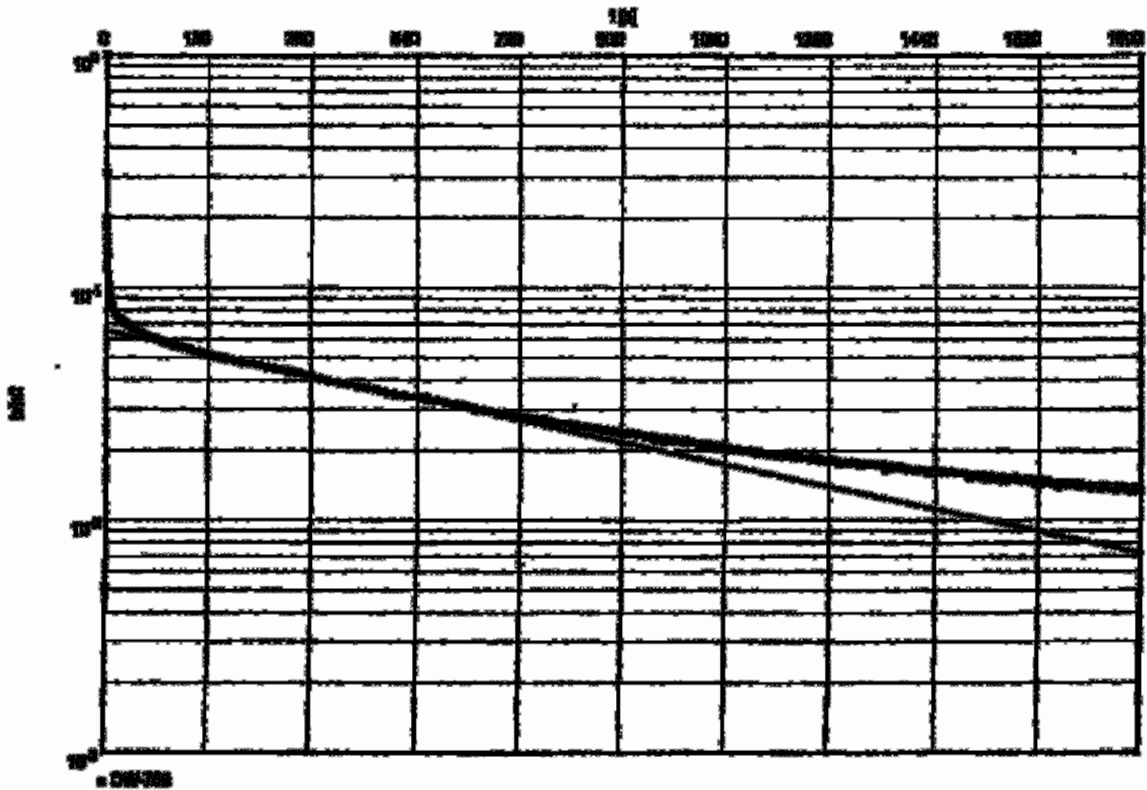
### OW-766 Permeability Test



Log Test No. 700

Test conducted on: 7/20/2010

CMPT00



Hydraulic conductivity (Darcy)  $1.0 \times 10^{-6}$

**WELL PARAMETERS**  
 Static Water Level = 0.00 m  
 Depth to Bottom of Aquifer = 0.00 m  
 Length of Screen = 0.00 m  
 Radius of Casing = 0.00 m  
 Radius of Influence = 0.00 m  
 Conducted by: *[Signature]*

Reviewed by: *[Signature]*

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Calvert Cliffs NEPP GOLA Project  
 LOCATION: Lusby, MD  
 DATE: July 25, 2006  
 MEASUREMENT TYPE: Slug Test

PROJECT NO.: 047200-03  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	( Slug Test / Piling Head )
Slug Type:	( Water )
Approximate Volume of Slug:	0.625 gal
Manual Water Level Meter S/N:	WLP-001
Transducer S/N:	04255
Slug S/N:	SLUG-001

WELL INFORMATION	
Well ID:	OW-768
Screen Inside Diameter:	2" / 2"
Casing Inside Diameter:	4.15
Total Well Depth (ft, TOC):	50-90
Screen Interval Depth (ft, TOC):	15'

- 1 Pre-Test Water Level (ft, TOC)/Time: 24.0 ft / 16:45
- 2 Water Level after Probe Insertion (ft, TOC)/Time: 23.99 ft / 17:10
- 3 Transducer Depth: 92.0 ft
- 4 Casing Pre-Test Head over Transducer: 16.01 ft
- 5 Measured Pre-Test Head over Transducer: 15.83 ft
- 6 Time Test Started: 16:48 / 17:15
- 7 Time Test Ended: 17:15
- 8 Pressure Recovery at End of Test: 6.05
- 9 Datasheet File Name: CHLWBLK-PTD-0W-768

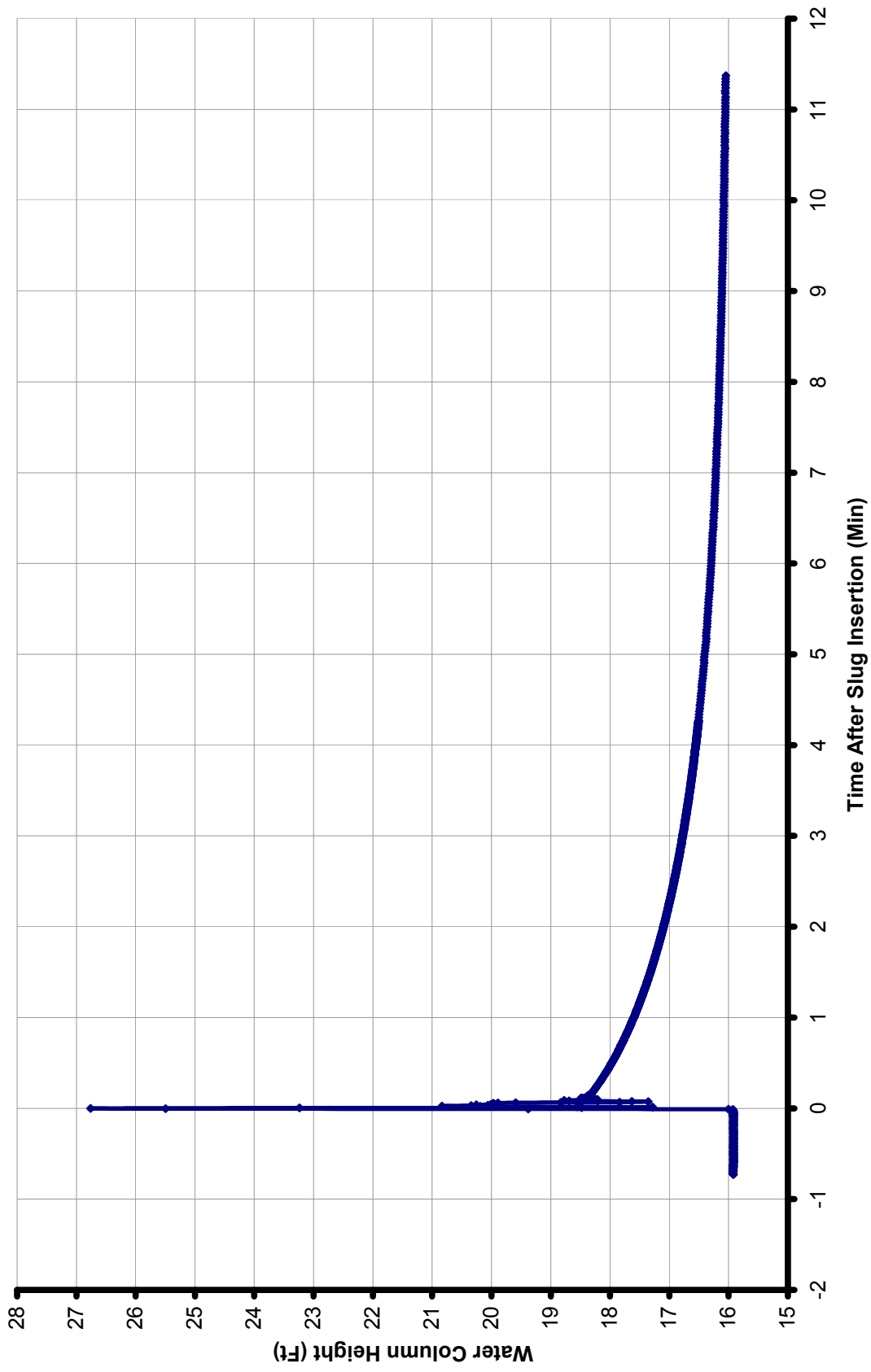
**Comments:**  
 TOC = Bottom of the V-notch at top of casing

Performed By: John White Date: July 25, 2006  
 Approved By: [Signature] Date: 9/28/06

Note: All water level measurements obtained from test measurement point at top of casing.  
 Reference ASTM D4044



### OW-768 Permeability Test



Industrial Engineering Study, LLC  
 2000 Colfax Street, Suite 700  
 Sacramento, CA 95811  
 916-487-7000

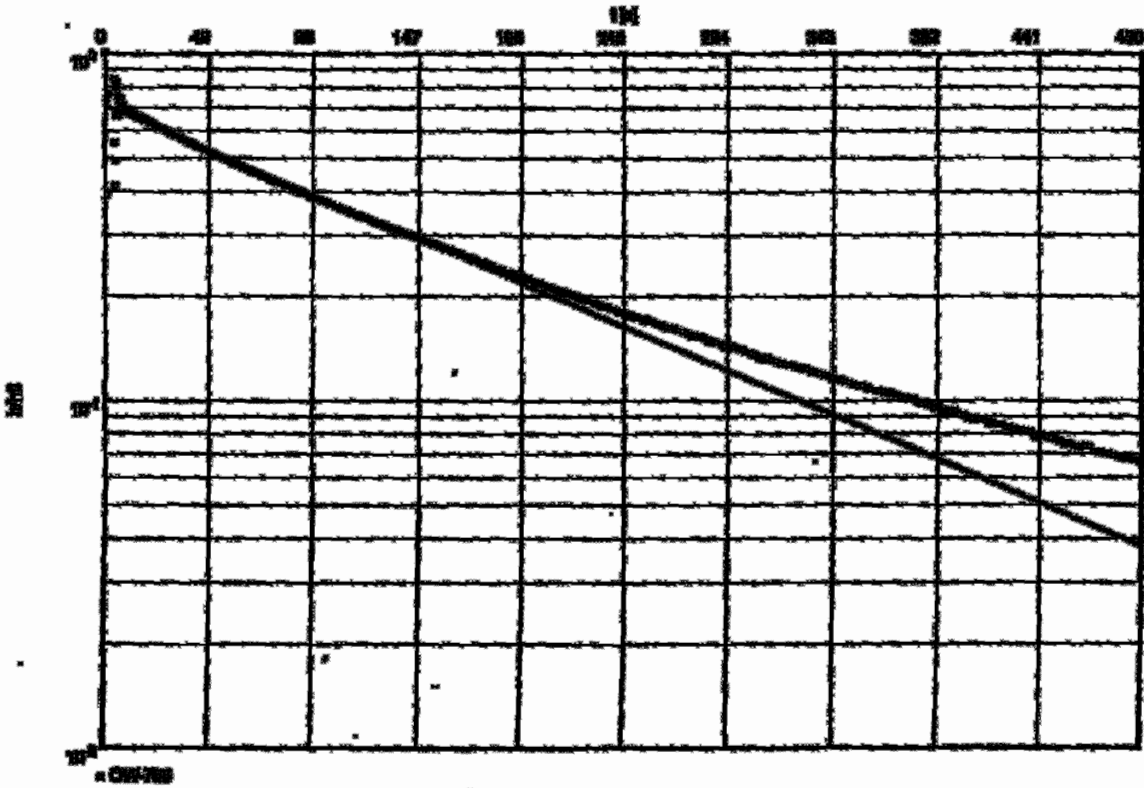
Applied Fluid Analysis  
 1000 Folsom Street, Suite 1000

Order: 12000000 Page 1  
 Project: Control Valve  
 Estimated Qty: 10000

Buy Part No. 700

Total estimated cost: 12000000

000000



Hydraulic conductivity (m/s):  $1.0 \times 10^{-10}$

INPUT PARAMETERS  
 Elastic Modulus = 2.0E+11  
 Poisson's Ratio of Polymer = 0.35  
 Length of Sleeve = 0.025  
 Thickness of Sleeve = 0.001  
 Thickness of Adhesive = 0.001

Estimated by: *[Signature]*  
 Approved by: *[Signature]*

**PERMEABILITY (SLUG) TEST FIELD FORM**

PROJECT: Calvert Cliffs NPP C&LA Project  
 LOCATION: Lusby, MD  
 DATE: July 25, 2006  
 WEATHER TEMP: 78° F, Clear

PROJECT NO.: 05750006  
 CLIENT: Bechtel Power Corporation

TEST INFORMATION	
Type of Test:	Slug (Hanging Head / Rising Head)
Slug Type:	Water
Approximate Volume of Slug:	0.015 cu ft
Manual Water Level Meter S/N:	WLP-001
Transducer S/N:	10965
Slug S/N:	SLUG-001

WELL INFORMATION	
Well ID:	OW-769
Screen Inside Diameter:	2.1"
Casing Inside Diameter:	2.1"
Total Well Depth (ft, TOC):	45.05
Screen Interval Depth (ft, TOC):	31.12' - 41.10'
Screen Height (ft):	2.1"

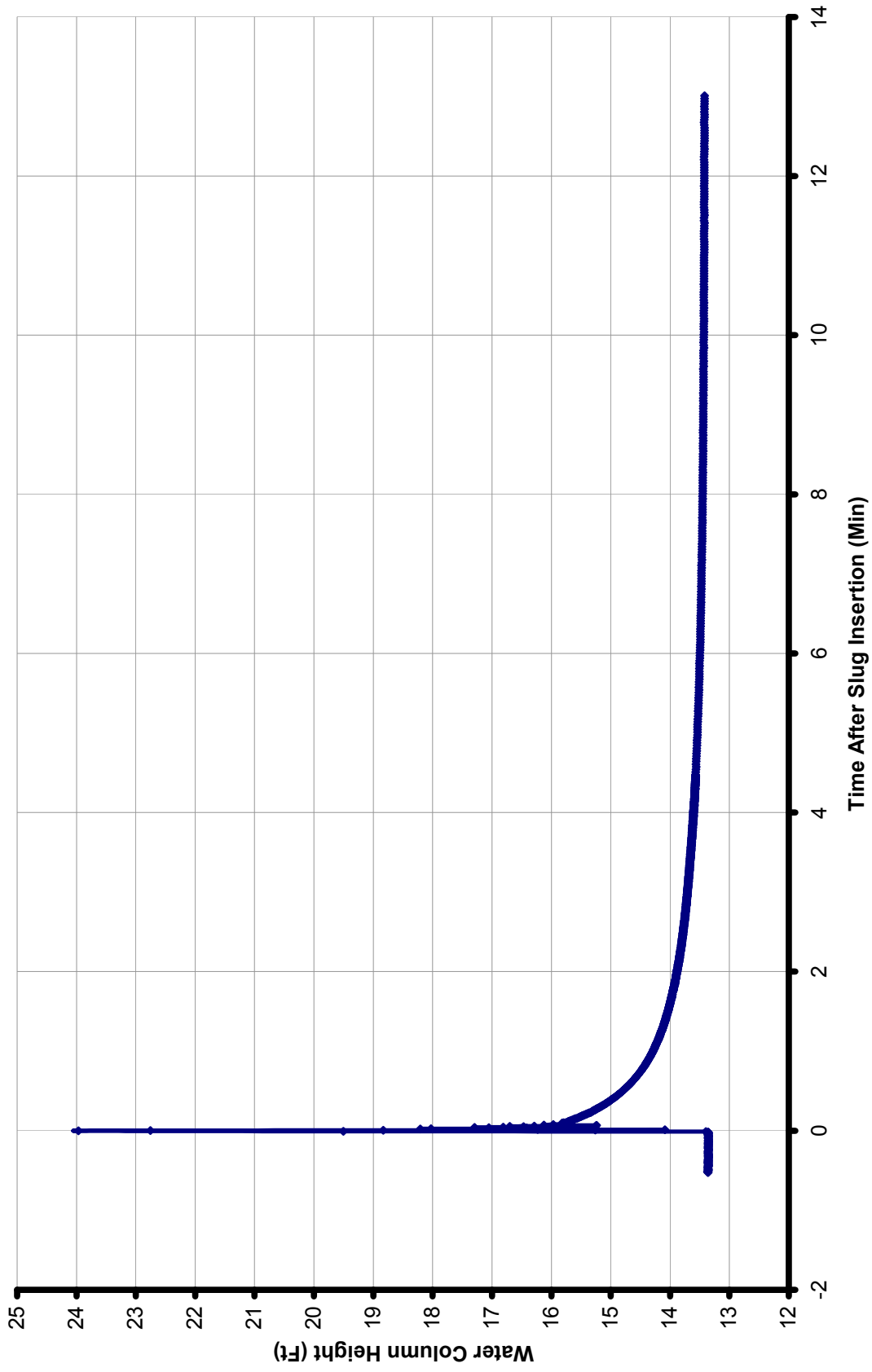
- 1 Pre-Test Water Level (ft, TOC) Time: 26.99 ft / 17:35
- 2 Water Level after Probe Insertion (ft, TOC) Time: 26.99 ft / 18:05
- 3 Transducer Depth: 40 ft
- 4 Cols. Pre-Test Head over Transducer: 13.52 ft
- 5 Measured Pre-Test Head over Transducer: 13.57 ft
- 6 Three Test Start: 17:40 / 18:06
- 7 Three Test End: 18:11
- 8 Pre-Test Head at End of Test: 13.51 ft
- 9 Designer File Name: 06120006-PTD-OW-769-SLUG

Remarks:  
 TOC = Bottom of the V-notch at top of casing

Performed By: Todd White Date: July 25, 2006  
 Approved By: [Signature] Date: 7/21/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4844

### OW-769 Permeability Test



Shop Test No. 700

Test conducted on 10/10/2001

001-700

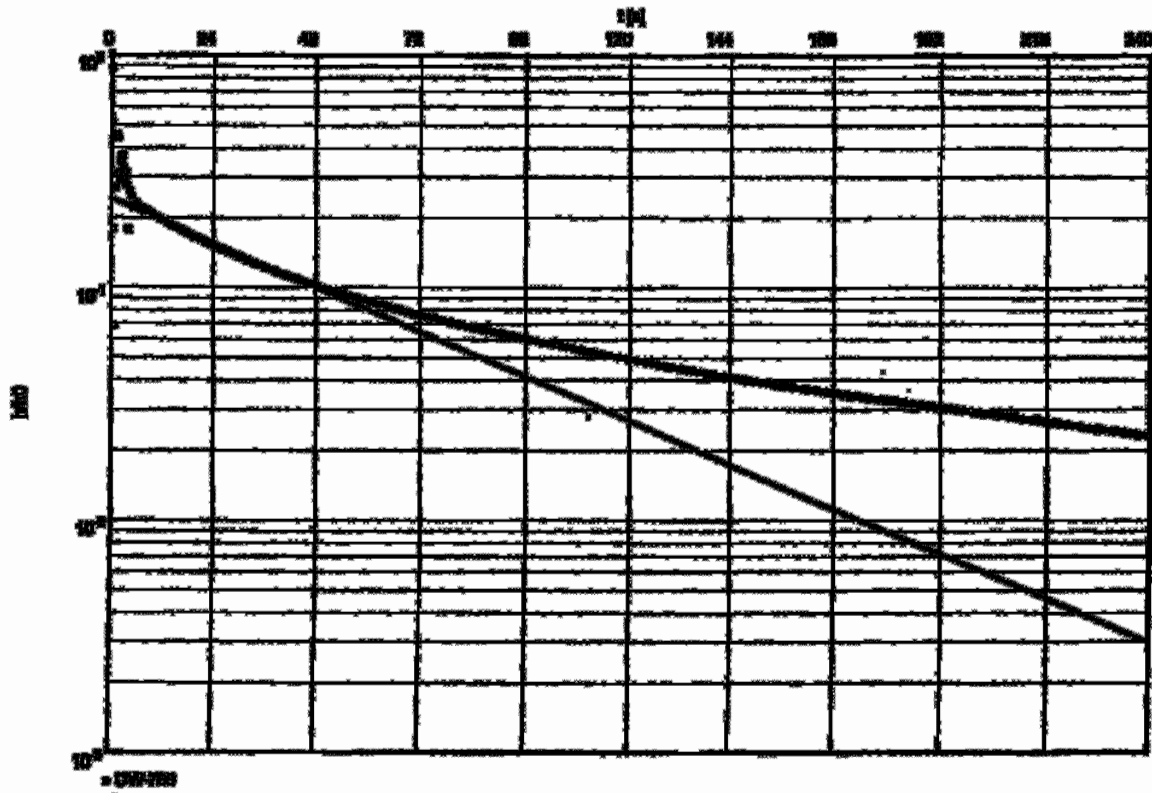


Figure 1: Magnitude (dB) vs. Frequency (Hz)  $1.25 \times 10^2$

INPUT PARAMETERS  
 Static Water Level = 70.000 m  
 Depth to Bottom of Aperture = 80.000 m  
 Length of Sleeve = 10.000 m  
 Radius of Sleeve = 0.000 m  
 Radius of Aperture = 0.000 m  
 Calculated by: jg/psk

Analyst: jg/psk

*[Handwritten signature]*  
 jg/psk



# PERMEABILITY (SLUG) TEST FIELD FORM

Page 1 of 1

PROJECT: Cabnet Creek SFP CGLA Project  
 LOCATION: July 25, 2006  
 DATE: July 25, 2006  
 WEATHER TEST: 90°C Clear

PROJECT NO.: 06/07046  
 CLIENT: Medical Power Corporation

TEST INFORMATION	
Type of Test:	( Falling Head / Rising Head )
Slug Type: ( Unconsolidated / Consolidated )	Unconsolidated
Approximate Volume of Slug:	5 Gallons
Measured Water Level Meter S/N:	WLP-001
Transducer S/N:	10250
Slug S/N:	

WELL INFORMATION	
Well ID:	QW-770
Screen Inside Diameter:	2"
Casing Inside Diameter:	2 1/2"
Total Well Depth (R, TCC):	44.25'
Screen Interval Depth (R, TCC):	30-40'
Screen Height (R):	15' 3 1/2"

- Pre-Test Water Level (R, TCC) Time: 0 (Dry)
- Water Level after Probe Insertion (R, TCC) Time: 0 (Dry)
- Transducer Depth: 29'
- Cable Pre-Test Head over Transducer: 0
- Measured Pre-Test Head over Transducer: -0.03'
- Time Test Started: Pre-test / slug test - 1:58 / 1:56 PM
- Time Test Ended: 2:04 PM
- Partial, Unobserved End of Test: 2:04
- Distalslugger File Name: 06/11/06/46-970-01-770-9106

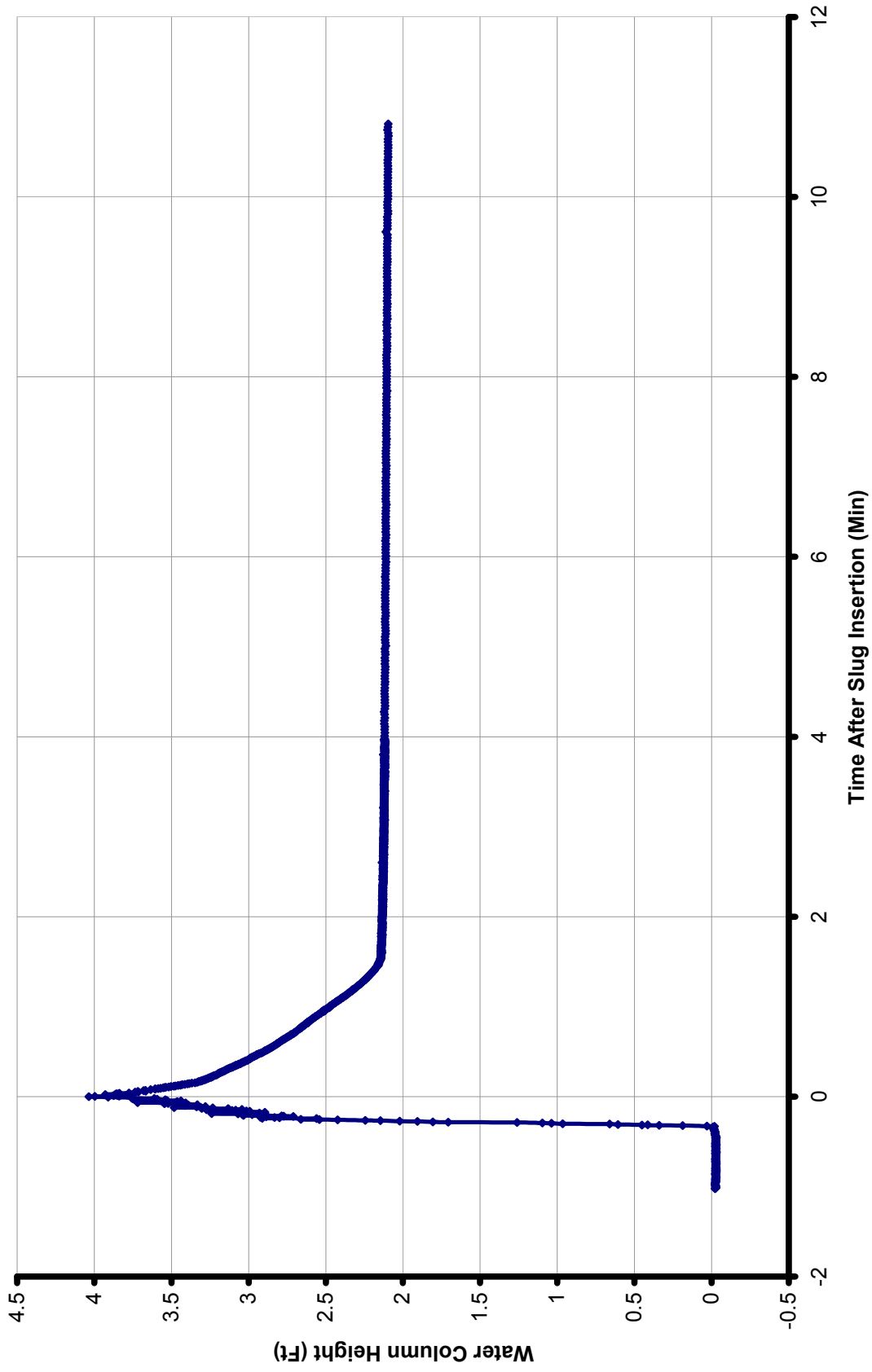
3 gallon water slug

Comments:  
 TOG = Bottom of first V-read at top of casing

Performed By: Todd White Date: July 25, 2006  
 Approved By: [Signature] Date: 7/24/06

Note: All water level measurements obtained from well measurement point at top of casing.  
 Reference: ASTM D4944

### OW-770 Permeability Test



**WELL SAMPLING RECORDS**





PROJECT <b>CCNPP</b>	WELL NO. <b>OW-301</b>
-------------------------	---------------------------

WELL SAMPLING RECORD	JOB NO. <b>06120048</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A. Brasco</b> <b>K. Powell</b>
PURGE METHOD <b>Submerge</b>	SAMPLING METHOD <b>Grab</b>	PURGING CRITERIA: <b>Volume &amp; Stabilization</b>	

PUMP TYPE <b>2" Grundfos</b>	PURGING DATE: <b>12/20/04</b> WEATHER: <b>Sunny/Cold</b> TEMPERATURE: <b>44</b> INITIAL WATER LEVEL: <b>56.18</b>	DATE OF SAMPLING: <b>12/20/04</b> TIME OF SAMPLING: <b>14:55</b> SAMPLE MATRIX: <b>GROUND WATER</b>
---------------------------------	--	---

**PUMPING VOLUME CALCULATION**

$V_w = (3.14) \left(\frac{dw}{2}\right)^2 (21.92) \left(\frac{2.48}{1.1}\right)$   $d_w$  - well diameter (in)  
 $= (3.14) (3)^2 (21.92) (2.25)$   $h$  - well depth (ft)  
 $= 10.9 \text{ gal}$   $n$  - porosity  
 $V_b = (3.14) \left(\frac{db}{2}\right)^2 (12) (0.3) \left(\frac{2.48}{1.1}\right)$   $d_b$  - Boring diameter  
 $= 3.7 (3) = 11.1$   
 $V_T = 220$

$1 \text{ ft}^3 = 7.48 \text{ gal}$   
 $V_w = I (dw)^2 h$   
 $V_b = I (db-dw)^2 \cdot 7.48 \cdot n$

Checked by:

PURGING DATA	FIELD PARAMETERS	COMMENTS
--------------	------------------	----------

Time Begin (mm)	Time Finish (mm)	Water Removal (gal)	Temp (°C)	pH	Conductivity (µmhos/cm) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
1353	1423	164	13.93	6.47	0.460	12.4	6.89	0.3	
1423	1428	5.5	13.90	6.89	0.478	12.4	6.90	6.5	
1428	1433	5.5	14.31	7.09	0.476	12.5	4.80	1.6	
1433	1438	5.5	14.12	7.14	0.480	12.5	3.03	1.9	
1441	1448	5.5	14.37	7.14	0.480	12.5	3.03	1.9	
1448	1449	5.5	14.58	7.16	0.477	12.4	1.17	2.7	
1449	1453	5.5	14.13	7.18	0.490	12.5	1.12	2.9	
1453	1453	5.5	14.12	7.18	0.478	12.5	1.11	2.5	

Equipment Calibration Performed By: K. Powell

Number of Sample Containers Collected: 3

5 gal / 55 sec

5 gal / 55 sec



PROJECT <b>CCNPP</b>	WELL NO. <del>DW-323</del> DW-323
-------------------------	---

WELL SAMPLING RECORD	JOB NO. D16170048	SITE Carnot Cliffs	PREPARED BY ABresko
	PURGE METHOD sub pump	SAMPLING METHOD grab	PURGING CRITERIA: Volume stabilization

PUMP TYPE 2" sub grouters	PURGING DATE: 12/14/08 WEATHER: Windy / Cool TEMPERATURE: 69°F INITIAL WATER LEVEL: 35.92	DATE OF SAMPLING: 12/14/08 TIME OF SAMPLING: 0818 SAMPLE MATRIX: GROUND WATER
------------------------------	--	---

**PUMPING VOLUME CALCULATION**

$V_w = 3.14 (3")^2 (3.95) (\frac{2.48}{12})$   
 $= 0.2 \text{ gal (3)} = 0.6 \text{ gal}$

$V_s = 3.14 (3")^2 (17.5) (0.3) (\frac{7.48}{12})$   
 $= 11.4 (3) = 34.2 \text{ gal}$

$V_T = 34.8 \text{ gal}$

$d_w$  - well diameter (in)       $1 \text{ ft}^3 = 7.48 \text{ gal}$   
 $h$  - well depths (ft)       $V_w = \pi (d_w)^2 h \cdot n$   
 $n$  - porosity       $n$   
 $d_b$  - Boring diameter       $V_s = \pi (d_b - d_w)^2 h \cdot n$

Checked by:

PURGING DATA	FIELD PARAMETERS	COMMENTS 13.6' below IAS 43.6' below V notch
--------------	------------------	--

Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µ mhos) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
0735		57	14.38						
0750		19	14.38	6.32	0.078	12.4	1.44	2.4	
0755		19	14.43	5.56	0.068	12.5	1.77	0.2	
0800		19	14.39	5.62	0.067	12.5	1.95	0.5	
0805		19	14.37	5.45	0.066	12.4	2.03	0.9	
0810		19	14.39	5.46	0.065	12.5	2.09	0.2	
0815	0815	-	14.37	5.43	0.065	12.4	2.12	0.0	

Equipment Calibration Performed By: K. Powell

Number of Sample Containers Collected: 3

3.8 gal/min #

3 gal / 1:3 min



PROJECT <b>CCNPP</b>	WELL NO. <b>065-336</b> <del>065-705</del>
-------------------------	--

WELL SAMPLING RECORD	JOB NO. <b>06520048</b>	SITE <b>Advent Cliffs</b>	PREPARED BY <b>ABreda</b>
	PURGE METHOD <b>sub pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA: <b>Volume + stabilization</b>

PUMP TYPE <b>2" Corros</b>	PURGING DATE: <b>12/20/06</b> WEATHER: <b>clear</b> TEMPERATURE: <b>40</b> INITIAL WATER LEVEL: <b>60.36</b>	DATE OF SAMPLING: <b>12/20/06</b> TIME OF SAMPLING: <b>15:17:50</b> SAMPLE MATRIX: <b>GROUND WATER</b>
-------------------------------	---	--

**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{d_w}{2}\right)^2 (13.69) \left(\frac{7.48 \text{ gal}}{1 \text{ ft}^3}\right)$  *d<sub>w</sub> - well diameter (in)*  
 $= 2.23(3) = 6.7 \text{ gal}$  *n - well depths (ft)*  
 $V_s = 3.14 \left(\frac{d_b}{2}\right)^2 (21) (0.30) \left(\frac{7.48 \text{ gal}}{1 \text{ ft}^3}\right)$  *n - porosity*  
 $= 41(3) = 12.3 \text{ gal}$  *d<sub>b</sub> - Boring diameter*  
 $V_T = 19.0 \text{ gal}$

$1 \text{ ft}^3 = 7.48 \text{ gal}$   
 $V_w = I (d_w)^2 2 h \cdot \frac{7.48}{24}$   
 $V_s = I (d_b - d_w)^2 \cdot 7.48 \cdot n \cdot \frac{24}{24}$

Checked by: *[Signature]*

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>Sample collected @ 69.5' below V.L.</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos) (±3%)	ORP (mV) (±10mV)	DO (mg/L) (±10%)	Turbidity (NTU) (±10%)	Comments
1708	3:00pm	-36							
1723		12.0	13.78	7.26	0.427	12.5	1.09	14.8	19.8
1729		12.0	14.08	7.29	0.421	12.5	1.00	14.6	
1737		12.0	14.12	7.30	0.422	12.5	0.97	12.4	
1738		12.0	13.93	7.30	0.421	12.5	1.05	13.2	
1743	4:15pm	-	14.05	7.30	0.420	12.5	1.00	12.2	

Equipment Calibration Performed By: K Powell

Number of Sample Containers Collected: 3

*5 gal / 2.0 min*  
*2.4 gal/min*



PROJECT <b>CCNPP</b>	WELL NO. <b>DW-357 401</b>
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WELL SAMPLING RECORD	JOB NO. <b>PL 20048</b>	SITE <b>Caulwatt Cliff</b>	PREPARED BY <b>A. Brestko K. Powell</b>
PURGE METHOD <b>Sub pump</b>	SAMPLING METHOD <b>Sub pump</b>	PURGING CRITERIA: <b>Volume + Stabilization</b>	

PUMP TYPE <b>Garmin/OS 2"</b>	PURGING DATE: <b>12/20/06</b>	DATE OF SAMPLING: <b>12/20/06</b>
	WEATHER: <b>Clear/Cloud</b>	TIME OF SAMPLING:
	TEMPERATURE: <b>40°</b>	SAMPLE MATRIX: <b>GROUND WATER</b>
	INITIAL WATER LEVEL: <b>33.60</b>	

**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{dw}{2}\right)^2 (20.5) (0.2) (7.48)$   
 $= 212(\text{g}) = 21.6 \text{ gal}$   
 $V_s = 3.14 \left(\frac{d_b}{2}\right)^2 (20.5) (0.2) (7.48)$   
 $= 40(\text{g}) = 1.2 \text{ gal}$   
 $V_T = 33.6 \text{ gal}$

dw - well diameter (in)       $1 \text{ ft}^3 = 7.48 \text{ gal}$   
 h - well depth (ft)       $V_w = \pi \left(\frac{dw}{2}\right)^2 h \cdot n$   
 n - porosity  
 d<sub>b</sub> - Boring diameter       $V_s = \pi \left(\frac{d_b - dw}{2}\right)^2 h \cdot n$

Checked by:

PURGING DATA	FIELD PARAMETERS	COMMENTS
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos) (±.3%)	ORP (mV) (±.10mV)	DO (mg/L) (±.10%)	Turbidity (NTU) (±.10%)	Comments
0924	0945	40 gal							dry
0949	0949	26 gal							
0949		7 gal	14.04	7.43	0.384	12.4	3.13	30.2	
0954		7 gal	14.57	7.41	0.380	12.5	2.41	20.3	
0959		7 gal	14.82	7.40	0.380	12.5	1.70	11.7	
1004	1004	7 gal	14.52	7.40	0.382	12.5	1.66	6.0	dry

Equipment Calibration Performed By: K. Powell

Number of Sample Containers Collected: 3

$11 \text{ min}$   
 $5 \text{ GAL} = 1.35 \text{ min} = 0.27$   
 $\frac{5 \text{ gal}}{1.35 \text{ min}} = 3.7 \text{ gal/min}$



PROJECT <b>CCNPP</b>	WELL NO. <b>DKW-423</b>
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WELL SAMPLING RECORD	JOB NO. <b>06120048</b>	SITE <b>Calcutt Cliffs</b>	PREPARED BY <b>A Brooks K Powell</b>
PURGE METHOD <b>Sub pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA: <b>Volume + Stabilization</b>	

PUMP TYPE: <b>2" Centrifuges</b>	PURGING DATE: <b>12/20/06</b>	DATE OF SAMPLING: <b>12/20/06</b>
	WEATHER: <b>Clear/sunny</b>	TIME OF SAMPLING:
	TEMPERATURE: <b>49</b>	SAMPLE MATRIX: <b>GROUND WATER</b>
	INITIAL WATER LEVEL: <b>29.55</b>	

**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{dw}{2}\right)^2 (13.45) \times \frac{2.48}{1.43}$        $1 \text{ ft}^3 = 7.48 \text{ gal}$   
 $= 7.99 \text{ gal} \times 3 = 23.7$        $V_w = T \left(\frac{dw}{2}\right)^2 h \times \frac{2.48}{1.43}$   
 $V_b = 3.14 \left(\frac{db}{2}\right)^2 (200) (0.3) \times \frac{2.48}{1.43}$        $V_b = T \left(\frac{db-dw}{2}\right)^2 \times 7.48 \times \pi$   
 $= 1.25 \times 3 = 3.75$        $24$

**VT = 27.4 gal**

Checked by: **[Signature]**

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>sample collected at 39.7' BGS</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos/cm) (± 2%)	ORP (mV) ± 10mV	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
1228		19.2							
1254		19.2	14.53	5.10	0.153	12.4	18.71	1.7	
1259		19.2	15.09	5.15	0.156	12.4	18.69	41.2	
1304		19.2	15.19	5.15	0.154	12.4	18.67	8.4	
1309		19.2	15.24	5.17	0.153	12.5	18.66	6.4	
1314		19.2	15.22	5.18	0.153	12.4	18.61	6.8	pumped dry

Equipment Calibration Performed By: K Powell      1:10 = 15 gal

Number of Sample Containers Collected: 3      2

Set @  $11.7 \times 29 = 39.7'$



PROJECT <b>CCNPP</b>	WELL NO. <b>OW-4 JB</b>
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WELL SAMPLING RECORD	JOB NO. <b>06120048</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A. Brosko</b>
PURGE METHOD <b>Substrate Pump</b>	SAMPLING METHOD <b>Grab</b>	PURGING CRITERIA: <b>Volume + Stabilization</b>	<b>R. Powell</b>

PUMP TYPE <b>2" Corwin Pcs.</b>	PURGING DATE: <b>12/20/06</b> WEATHER: <b>Clear/Sunny</b> TEMPERATURE: <b>45°</b> INITIAL WATER LEVEL: <b>3797</b>	DATE OF SAMPLING: <b>12/20/06</b> TIME OF SAMPLING: SAMPLE MATRIX: <b>GROUND WATER</b>
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**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{dw}{2}\right)^2 (H_1 - H_2) \left(\frac{2.31 \text{ gal}}{1 \text{ ft}^3}\right)$        $dw$  - well diameter (in)       $1 \text{ ft}^3 = 7.48 \text{ gal}$

$= 1.96(3) = 5.9 \text{ gal}$        $h$  - well depths (ft)       $V_w = T \frac{(dw)^2 h^*}{24}$

$V_b = 3.14 \left(\frac{d_b}{2}\right)^2 (200)(0.3) \left(\frac{2.31 \text{ gal}}{1 \text{ ft}^3}\right)$        $n$  - porosity

$= 3.9(1.5) = 11.8 \text{ gal}$        $d_b$  - Boring diameter       $V_b = T \frac{(d_b - dw)^2 * 7.48 * n}{24}$

$V_T = 17.6 \text{ gal.}$       Checked by:

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>Sample collected at 48.3' below V</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
1055	1059	20.25							pump dry
1104	1120	25.0							
1126	1137	9.7	14.54	6.10	0.111	12.5	16.77	4.1	low flow/dry
1137		1	14.29	5.41	0.125	12.4	23.36	2.5	purging
1136		1	14.03	5.22	0.107	12.5	22.27	2.0	
1141	1141	—	14.19	5.14	0.108	12.5	23.74	3.8	pumped dry

Equipment Calibration Performed By: R. Powell      1 gal = 20 s  
 Number of Sample Containers Collected: 3      6.75 min

Sample collected @ 48.3' due to static water level      1 gal / 6.75 min / 60 s  
 20 s / 1 min



PROJECT <b>CCNPP</b>	WELL NO. <b>04-705</b>
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WELL SAMPLING RECORD	JOB NO. <b>D6120046</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A. Bresko</b> <b>K. Powell</b>
	PURGE METHOD <b>5/20 pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA: <b>Volume stabilization</b>

PUMP TYPE <b>Gravel 2"</b>	PURGING DATE: <b>12/21/06</b> WEATHER: <b>clear</b> TEMPERATURE: <b>40</b> INITIAL WATER LEVEL: <b>19.53</b> <b>(19.52)</b>	DATE OF SAMPLING: <b>12/21/06</b> TIME OF SAMPLING: <b>16:35</b> SAMPLE MATRIX: <b>GROUND WATER</b>
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**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{d_w}{2}\right)^2 \cdot h \cdot n$   
 $= 3.14 \left(\frac{2}{2}\right)^2 \cdot 32.48 \cdot 0.30 = 5.3 \text{ gal} \cdot 3 = 15.9 \text{ gal}$   
 $V_s = 3.14 \left(\frac{d_s}{2}\right)^2 \cdot h_s \cdot n_s = 3.14 \left(\frac{4}{2}\right)^2 \cdot 17.23 \cdot 0.445 = 19.2 \text{ gal}$   
 $V_T = 19.2 \text{ gal}$

dw - well diameter (in)      1 ft<sup>3</sup> = 7.48 gal      V<sub>w</sub> - well volume  
 h - well depth (ft)      V<sub>s</sub> = I (d<sub>s</sub> - d<sub>w</sub>)<sup>2</sup> \* h \* n      V<sub>s</sub> - sandpack volume  
 n - porosity - 0.30  
 d<sub>s</sub> - Boring diameter - 4"      V<sub>T</sub> = I (d<sub>s</sub> - d<sub>w</sub>)<sup>2</sup> \* 7.48 \* n

Checked by: **[Signature]**

PURGING DATA	FIELD PARAMETERS	COMMENTS
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±0.1)	Conductivity (µmhos) (±3%)	ORP (mV) (±10mV)	DO (mg/L) (±10%)	Turbidity (NTU) (±10%)	Comments
15:30	15:33	6.5							pump dry
15:35	15:38	3.0							very slow/dry
15:40	16:02	19.0							low flow/still 15:40
16:02	16:07	9.4	13.55	7.20	0.512	12.4	0.12	28.6	
16:07		9.4	13.95	7.23	0.515	12.5	0.04	24.4	
16:18		4.4	13.88	7.24	0.517	12.5	0.08	19.4	
16:17		4.4	13.93	7.24	0.516	12.5	0.02	16.6	
16:22		4.4	13.98	7.26	0.510	12.5	0.09	13.5	
16:27		4.4	13.97	7.25	0.514	12.4	0.10	13.7	
16:32	16:52	4.4	14.01	7.25	0.514	12.4	0.13	12.5	

Equipment Calibration Performed By: K. Powell

Number of Sample Containers Collected: 3



PROJECT <b>CCNPP</b>	WELL NO. <b>OW-708A</b>
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WELL SAMPLING RECORD	JOB NO. <b>06170048</b>	SITE <b>Colony Cliffs</b>	PREPARED BY <b>ABreako</b>
PURGE METHOD <b>SUP</b>	SAMPLING METHOD <b>GRAB</b>	PURGING CRITERIA: <b>Volume stabilization</b>	<b>K Powell</b>

PUMP TYPE <b>2<sup>nd</sup> Column</b>	PURGING DATE: <b>12/19/06</b> WEATHER: <b>overcast</b> TEMPERATURE: <b>40°F</b> INITIAL WATER LEVEL: <b>12.5 ft (2.0)</b>	DATE OF SAMPLING: <b>12/19/06</b> TIME OF SAMPLING: <b>12:05</b> SAMPLE MATRIX: <b>GROUND WATER</b>
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<b>PUMPING VOLUME CALCULATION</b> $V_w = 3.14 \left(\frac{dw}{2}\right)^2 (2h) \left(\frac{n}{100}\right)$ $= (3.5)(3) = 0.5 \text{ gal}$ $V_s = 3.14 \left(\frac{d_b}{2}\right)^2 (15) \left(\frac{n}{100}\right) \left(\frac{24}{24}\right)$ $= 2.9(3) = 8.7 \text{ gal}$ $V_T = 19.2 \text{ gal}$	dw - well diameter (in) h - well depth (ft) n - porosity d <sub>b</sub> - Boring diameter	$1 \text{ ft}^3 = 7.48 \text{ gal}$ $V_w = T (dw)^2 h \cdot \frac{n}{24}$ $V_s = T (d_b - dw)^2 \cdot 7.48 \cdot n$ $\frac{n}{24}$
Checked by:		

PURGING DATA	FIELD PARAMETERS	COMMENTS
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos) (±.3%)	ORP (mV) (±.10mV)	DO (mg/L) (±.10%)	Turbidity (NTU) (±.10%)	Comments
1045	-	1.2 gal	16.34	6.79	0.386	12.5	0.56	337.7	dry
1055	1059	3.5	16.34	7.07	0.719	12.5	2.31	126.8	dry
1115	1129	2.5 gal	16.80	7.08	0.741	12.5	1.74	123.4	dry
1133	1133	5.6 gal	16.35	7.39	0.727	12.5	6.01	482.5	low flow
1138	1138	1.2 gal	16.73	7.21	0.731	12.5	6.11	477.1	
1143	-	1.5 gal	16.83	7.18	0.730	12.5	6.12	486.1	

Equipment Calibration Performed By: Kidby Powell  
 Number of Sample Containers Collected: 3 + 3 composite

CU-1 | 708a  
 CU-2 | 709a  
 CU-3 | 708a







PROJECT <b>CCNPP</b>	WELL NO. <b>OW-725</b>
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WELL SAMPLING RECORD	JOB NO. <b>D6120048</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A Bresko</b>
	PURGE METHOD <b>sub pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA: <b>Volume stabilization</b>

PUMP TYPE <b>2nd grungos</b>	PURGING DATE: <b>12/21/06</b> WEATHER: <b>cloudy / cool</b> TEMPERATURE: <b>43°</b> INITIAL WATER LEVEL: <b>23.41</b>	DATE OF SAMPLING: <b>12/21/06</b> TIME OF SAMPLING: <b>14:35</b> SAMPLE MATRIX: GROUND WATER
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**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{dw}{2}\right)^2 (2.59) \left(\frac{2.48}{n}\right)$   
 $= 5.97(3) = 17.9 \text{ gal}$   
 $V_s = 3.14 \left(\frac{ds}{2}\right)^2 (14) \left(\frac{2.48}{n}\right)$   
 $= 2.74(3) = 8.2$   
 $V_T = 26.1 \text{ gal}$

dw - well diameter (in)       $1 \text{ ft}^3 = 7.48 \text{ gal}$   
 h - well depth (ft)       $V_w = \pi \left(\frac{dw}{2}\right)^2 h \cdot n$   
 n - porosity  
 ds - Boring diameter       $V_s = \pi \left(\frac{ds-dw}{2}\right)^2 \cdot 7.48 \cdot n$

Checked by: *[Signature]*

PURGING DATA	FIELD PARAMETERS	COMMENTS
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µ mhos) (±.3%)	ORP (mV) (±.10mV)	DO (mg/L) (±.10%)	Turbidity (NTU) (±.10%)	Comments
1320	1324	9.5							dry
1326	1358	30.5	1						
1358		9.5	14.59	6.66	0.381	73.2	2.52	39.5	
1408		9.5	14.67	6.67	0.386	62.8	2.48	8.0	
1418		9.5	14.61	6.68	0.385	67.3	2.62	8.4	
1428	1428	-	14.58	6.68	0.386	67.1	2.52	8.2	

Equipment Calibration Performed By: L Powell

Number of Sample Containers Collected: 3

Sgd / 5.25

Sgd / 2.1 min

0.95 gal/min



PROJECT <b>CCNPP</b>	WELL NO. <b>DW-735</b>
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WELL SAMPLING RECORD	JOB NO. <b>06120049</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A Bresko</b>
	PURGE METHOD <b>2.5 pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA: <b>Volume + stabilization</b>

PUMP TYPE <b>2" Grundfos</b>	PURGING DATE: <b>12/21/06</b> WEATHER: <b>cloudy / cool</b> TEMPERATURE: <b>46°</b> INITIAL WATER LEVEL: <b>53.39</b>	DATE OF SAMPLING: <b>12/21/06</b> TIME OF SAMPLING: <b>1123</b> SAMPLE MATRIX: <b>GROUND WATER</b>
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**PUMPING VOLUME CALCULATION**

$V_{ws} = 3.14 (\frac{dw}{2})^2 (10.6) (2.4)$   
 $= 3.04 (3) = 9.1 \text{ gal}$

$V_s = 3.14 (\frac{d_b}{2})^2 (14) (0.20) (2.4)$   
 $= 2.74 (3) = 8.2$

$V_T = 17.3 \text{ gal}$

dw - well diameter (in)       $1 \text{ ft}^3 = 7.48 \text{ gal}$   
 h - well depths (ft)       $V_w = T (\frac{dw}{2})^2 h \cdot n$   
 n - porosity  
 d<sub>b</sub> - Boring diameter       $V_s = T (\frac{d_b - dw}{2})^2 \cdot 7.48 \cdot n$

Checked by: *[Signature]*

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>Sample collected at 66.4 ft below V<sub>1</sub> water table.</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (± .01)	Conductivity (µmhos) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
10:31									
10:25	11:05	155							
11:05	11:10	2.3	13.36	6.21	0.217	26.3	4.97	0.7	
11:10	11:15	2.3	13.71	6.35	0.215	17.9	3.01	2.7	
11:15	11:20	2.3	13.72	6.37	0.212	20.4	3.19	2.3	
11:20	11:20	-	13.79	6.37	0.214	24.6	3.14	2.8	

Equipment Calibration Performed By: K Powell

Number of Sample Containers Collected: 3

5 gal / 1.10 min



PROJECT <b>CCNPP</b>	WELL NO. <b>OW-744</b>
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WELL SAMPLING RECORD	JOB NO. <b>D1620048</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A Bracko</b>
	PURGE METHOD <b>sub pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA <b>Volume + stabilization</b>

PUMP TYPE <b>2" groutless</b>	PURGING DATE: <b>12/21/06</b> WEATHER: <b>cloudy cool</b> TEMPERATURE: <b>43°</b> INITIAL WATER LEVEL: <b>40.75</b>	DATE OF SAMPLING: <b>12/21/06</b> TIME OF SAMPLING: <b>0945</b> SAMPLE MATRIX: GROUND WATER:
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<b>PUMPING VOLUME CALCULATION</b> $V_w = 3.14 \left(\frac{d_w}{2}\right)^2 (L_{75}) (2.48)$ $= 1.10 (63) = 3.3 \text{ gal}$ $V_b = 3.14 \left(\frac{d_b}{2}\right)^2 (L) (2.48)$ $= 274 (63) = 9.2$ $V_T = 11.5 \text{ gal}$	$d_w$ - well diameter (in) $L_{75}$ - well depths (ft) $n$ - porosity $d_b$ - Boring diameter	$1 \text{ ft}^3 = 7.48 \text{ gal}$ $V_w = T (d_w)^2 h$ $V_b = T (d_b - d_w)^2 * 7.48 * n$
Checked by: _____		

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>Sample collected 47.2'</b> <b>below V-notch</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (± .01)	Conductivity (µ mhos) (± 2%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
0953	0955	7.5							dry
0900	0905	7.5							low flow/dry
0911	0916	2 gal							low flow/dry
0921	0921	1 gal	13.54	5.79	0.104	76.2	7.02	1169.9	mid/low
0931	0938		16.01	6.02	0.104	72.4	6.39	622.8	74.2
0938	0943		14.23	6.15	0.106	69.4	4.99	477.6	dry
0943	0943		16.15.00	6.08	0.108	70.7	5.88	475.6	

Equipment Calibration Performed By: K Powell  
 Number of Sample Containers Collected: 3

5 gal / 15 min

set below screen



PROJECT <b>CCNPP</b>	WELL NO. <b>OW-752</b>
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WELL SAMPLING RECORD	JOB NO. <b>0101200478</b>	SITE <b>Catvert Cuffs</b>	PREPARED BY <b>A Bracko</b>
PURGE METHOD <b>sub pump</b>	SAMPLING METHOD <b>grab</b>	PURGING CRITERIA: <b>Volume + stabilization</b>	

PUMP TYPE <b>2nd grunfos</b>	PURGING DATE: <b>12/24/06</b> WEATHER: <b>cloudy cool</b> TEMPERATURE: <b>48</b> INITIAL WATER LEVEL: <b>24.10</b>	DATE OF SAMPLING: <b>12/21/06</b> TIME OF SAMPLING: <b>1225</b> SAMPLE MATRIX: <b>GROUND WATER</b>
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**PUMPING VOLUME CALCULATION**

$V_w = 3.14 \left(\frac{dw}{2}\right)^2 \times h \times n$   
 $= 2.11 (3) = 6.3 \text{ gal}$   
 $V_b = 3.14 \left(\frac{db}{2}\right)^2 \times h \times n$   
 $= 3.52 (3) = 10.6 \text{ gal}$   
 $V_T = 16.9 \text{ gal}$

dw - well diameter (in)       $1 \text{ ft}^3 = 7.48 \text{ gal}$   
 h - well depths (ft)       $V_w = I \left(\frac{dw}{2}\right)^2 h \times n$   
 n - porosity  
 db - Boring diameter       $V_b = I \left(\frac{db}{2}\right)^2 h \times n$

Checked by: **[Signature]**

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>Sample collected at 33.7' below "V"</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (± .01)	Conductivity (µmhos) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 1.0%)	Turbidity (NTU) (± 10%)	Comments
1144	1145	2.4							dry
1147	1148	1.8							dry / slow purge
1149	1150	1							dry / slow purge
1153	1208	2.5							micro purge / dry
1210	1215	.25	15.94	5.77	0.209	33.3	8.03	1252.2	
1215	1220	.25	16.40	5.27	0.210	110.10	6.62	790.9	
1220	1220	—	17.08	5.28	0.207	112.3	6.29	261.9	

Equipment Calibration Performed By: **V Powell**

Number of Sample Containers Collected: **3**

Sample collected @ **33.7 ft below "V" notch.**

12:30



PROJECT <b>CLNPP</b>	WELL NO. <b>0w-766A</b>
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WELL SAMPLING RECORD	JOB NO. <b>06120048</b>	SITE <b>Calvert Cliffs</b>	PREPARED BY <b>A Brosko</b>
	PURGE METHOD <i>Sub pump</i>	SAMPLING METHOD <b>Grabs</b>	PURGING CRITERIA: <b>Volume + stabilization</b>

PUMP TYPE <b>2" Grundfos</b>	PURGING DATE: <b>12/19/06</b> WEATHER: <b>Cloudy</b> TEMPERATURE: <b>64</b> INITIAL WATER LEVEL: <b>23.63</b>	DATE OF SAMPLING: <b>12/19</b> TIME OF SAMPLING: <b>1435</b> SAMPLE MATRIX: <b>GROUND WATER</b>
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<b>PUMPING VOLUME CALCULATION</b> $V_w = 3.14 \left(\frac{dw}{2}\right)^2 (19.77) \left(\frac{2.49}{1.45}\right)$ $= (3.14 \times 3) = 9.0 \text{ gal}$ $V_s = 3.14 \left(\frac{d_b}{2}\right)^2 (14) (0.03) \left(\frac{7.49}{1.45}\right)$ $= 2.74 \text{ gal} (3) = 8.2$ $V_T = 17.2 \text{ gal}$	dw - well diameter (in) h - well depth (ft) n - porosity d <sub>b</sub> - Boring diameter	$1 \text{ ft}^3 = 7.48 \text{ gal}$ $V_w = I (dw)^2 h^*$ $V_s = I (d_b - dw)^2 n^* 7.48^* h$
Checked by:		

PURGING DATA	FIELD PARAMETERS	COMMENTS <b>MULTI PURGE pumped dry</b>
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Time Begin (hrs)	Time Finish (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos/cm) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
12:30	12:33	15.8							Pump Dry
12:35	12:38	37.7							Low Flow
12:40		0.5	12.88	7.47	0.610	12.5	9.64	42.0	low flow/dry
12:45		0.5	11.96	7.50	0.618	12.4	9.44	42.16	dry
12:50	2:30 14:30	0.5	13.22	7.52	0.324	12.5	11.81	46.53	dry

Equipment Calibration Performed By: J. Powell  
 Number of Sample Containers Collected: 3

16 GAL = 12.14 gal  
 1 GAL = 1.24 gal 59 min 39.7

1575



PROJECT <b>CCNPP</b>	WELL NO. <b>01w-769</b>
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WELL SAMPLING RECORD	JOB NO. <b>01W019.15</b>	SITE <b>Colvert A/B</b>	PREPARED BY <b>A Bresler K Powell</b>
	PURGE METHOD <b>Sub Pump</b>	SAMPLING METHOD <b>Sub Pump</b>	PURGING CRITERIA: <b>Volume + Stabilization</b>

PUMP TYPE <b>2" Grundfos</b>	PURGING DATE: <b>12/19/06</b> WEATHER: <b>overcast</b> TEMPERATURE: <b>45°</b> INITIAL WATER LEVEL: <b>25.72</b>	DATE OF SAMPLING: <b>12/19/06</b> TIME OF SAMPLING: <b>1634</b> SAMPLE MATRIX: <b>GROUND WATER</b>
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**PUMPING VOLUME CALCULATION**

$V_{is} = 3.14 \left(\frac{dw}{2}\right)^2 (h-w) \times n$   
 $= 3.14 \left(\frac{24}{2}\right)^2 (24) \times 0.3 = 21.9 \text{ gal}$

$V_s = 3.14 \left(\frac{d_b}{2}\right)^2 (L) \times n$   
 $= 3.14 \left(\frac{4.7}{2}\right)^2 (3) \times 0.3 = 14.1$

$V_T = 21.9 \text{ gal}$

dw - well diameter (in)      1 ft<sup>3</sup> = 7.48 gal  
 h - well depths (ft)       $V_w = \pi (dw)^2 h$   
 n - porosity       $V_s = \pi \left(\frac{d_b - dw}{2}\right)^2 L n$

Checked by:

PURGING DATA	FIELD PARAMETERS	COMMENTS
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Time Begin (hrs)	Time End (hrs)	Water Removal (gal)	Temp (°C)	pH (±.01)	Conductivity (µmhos) (± 3%)	ORP (mV) (± 10mV)	DO (mg/L) (± 10%)	Turbidity (NTU) (± 10%)	Comments
1525	1531	2.1							dry
1535	1610	13.8							low flow
1610	1612	0.8	11.73	7.89	50.4	12.5	12.40	149.0	dry/low flow
1615		0.6	16.31	7.23	0.46	12.5	12.23	152.5	
1622		0.6	13.25	7.16	0.193	12.5	11.05	140.9	
1628	1628	-	14.61	7.00	0.471	12.5	9.92	271.6	

Equipment Calibration Performed By: K Powell

Number of Sample Containers Collected: 3

$17s = 1 \text{ gal}$   
 $54s = 13.8 \text{ gal}$   
 $\frac{13.8 \text{ gal}}{35 \text{ min}} = 0.4 \text{ gal/min}$

$\frac{17s}{160s} = 15.5$

$\frac{1 \text{ gal}}{179} = 0.0056$   
 $\frac{1 \text{ gal}}{10 \text{ min}} = 0.1$

**APPENDIX E**  
**FIELD ELECTRICAL RESISTIVITY**

- Field Electrical Resistivity Test Data



**FIELD ELECTRICAL RESISTIVITY TEST DATA**

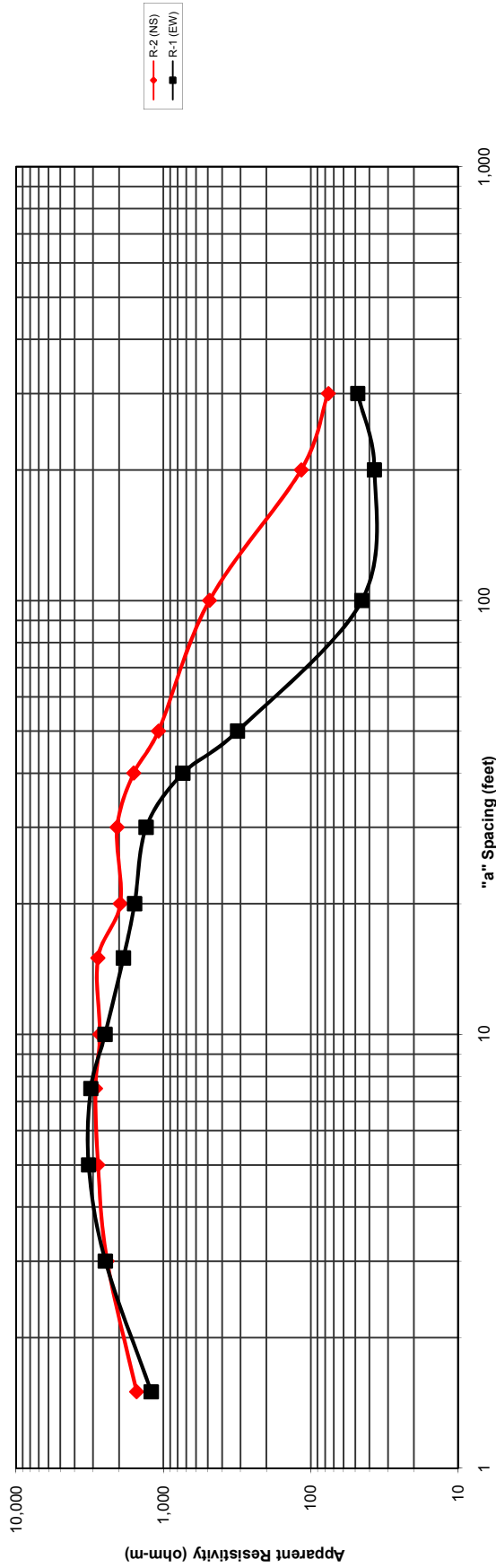
**Date:** June 19, 2006     **Project:** Calvert Cliffs COLA     **Representative:** Todd White  
**Weather:** Sunny, 92 Degrees     **Project Number:** 06120048     **Array type:** Wenner Array  
**Surficial Soil:** Forest litter     **Meter:** Sting R1 Earth Resistivity Meter S/N 990324

"a" spacing (feet)	1.5	3.0	5.0	7.5	10.0	15.0	20.0	30.0	40.0	50.0	100.0	200.0	300.0
R-1 (EW)	419.800	431.4	336.3	216.5	129.9	65.16	40.87	22.87	9.643	3.274	0.2375	0.09787	0.08322
ρ (ohm-ft)	3,960	8,130	10,570	10,200	8,162	6,141	5,140	4,310	2,424	1,030	149	123	157
ρ (ohm-m)	1,210	2,480	3,220	3,110	2,490	1,870	1,570	1,310	739	314	45	37	48
ρ (ohm-cm)	121,000	248,000	322,000	311,000	249,000	187,000	157,000	131,000	73,900	31,400	4,500	3,700	4,800

"a" spacing (feet)	1.5	3.0	5.0	7.5	10.0	15.0	20.0	30.0	40.0	50.0	100.0	200.0	300.0
R-2 (NS)	529.800	419.3	290.7	201.4	140.9	96.71	51.12	35.83	20.71	11.3	2.541	0.3023	0.1331
ρ (ohm-ft)	4,993	7,904	9,133	9,491	8,853	9,115	6,420	6,750	5,205	3,550	1,600	380	250
ρ (ohm-m)	1,520	2,410	2,780	2,890	2,700	2,780	1,960	2,060	1,590	1,080	487	116	76
ρ (ohm-cm)	152,000	241,000	278,000	289,000	270,000	278,000	196,000	206,000	159,000	108,000	48,700	11,600	7,600

$$\rho = 2\pi aR$$

Notes: Resistivity calculated using the standard equation for the Wenner array as shown:  
 Electrodes were hammered into the subsurface at various depths depending on the "a" spacing.



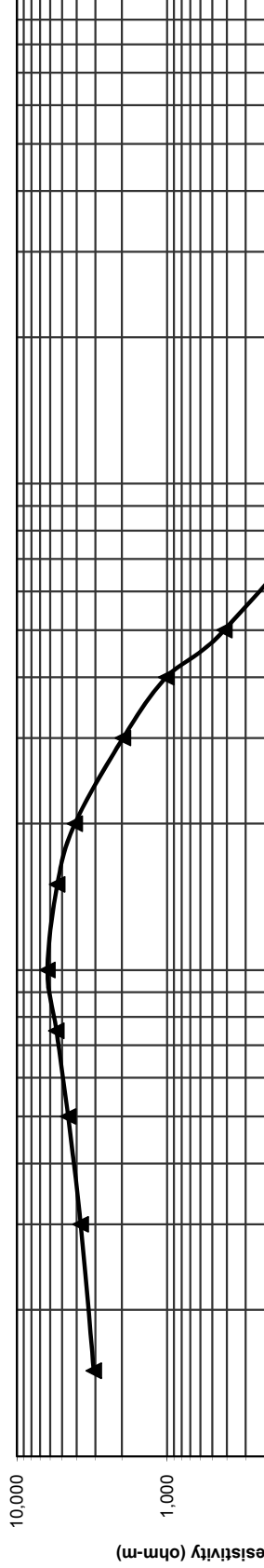
**Date:** June 19, 2006     **Project:** Calvert Cliffs COLA     **Representative:** Todd White  
**Weather:** P-Cloudy, 80 Degrees     **Project Number:** 06120048     **Array type:** Wenner Array  
**Surficial Soil:** Forest litter     **Meter:** Sting R1 Earth Resistivity Meter S/N 990324

"a" spacing (feet)	1.5	3.0	5.0	7.5	10.0	20.0	30.0	40.0	50.0	100.0	200.0	300.0
R-3 (NS)	1069,000	651.8	474.8	378.4	325.7	107.1	34.14	13.21	4.338	0.3577	0.1002	0.05408
$\rho$ (ohm-ft)	10,080	12,290	14,920	17,830	20,460	13,460	6,440	3,320	1,360	220	130	100
$\rho$ (ohm-m)	3,070	3,750	4,550	5,440	6,240	4,100	1,960	1,010	415	69	38	31
$\rho$ (ohm-cm)	307,000	375,000	455,000	544,000	624,000	410,000	196,000	101,000	41,500	6,900	3,800	3,100

Notes: Resistivity calculated using the standard equation for the Wenner array as shown:  
 Electrodes were hammered into the subsurface at various depths depending on the "a" spacing.

$$\rho = 2\pi aR$$

R-3



R-3

**Date:** June 20, 2006     **Project:** Calvert Cliffs COLA     **Representative:** Todd White  
**Weather:** P-Cloudy, 80 Degrees     **Project Number:** 06120048     **Array type:** Wenner Array  
**Surficial Soil:** Forest litter     **Meter:** Sting R1 Earth Resistivity Meter S/N 990324

"a" spacing (feet)	1.5	3.0	5.0	7.5	10.0	15.0	20.0	30.0	40.0	50.0	100.0	200.0	300.0
R	164,000	111.3	68.86	56.1	59.21	46.53	46.73	28.51	16.73	10.18	2.418	0.1492	0.07195
$\rho$ (ohm-ft)	1,550	2,100	2,160	2,640	3,720	4,390	5,870	5,370	4,200	3,200	1,520	190	140
$\rho$ (ohm-m)	471	640	660	806	1,130	1,340	1,790	1,640	1,280	975	463	57	41
$\rho$ (ohm-cm)	47,100	64,000	65,950	80,600	113,000	134,000	179,000	164,000	128,000	97,500	46,300	5,700	4,100

Notes: Resistivity calculated using the standard equation for the Wenner array as shown:  
 Electrodes were hammered into the subsurface at various depths depending on the "a" spacing.

$$\rho = 2\pi aR$$

R-4

