CORRECTIVE ACTION PLAN

Bel Air Xtra Fuels

MDE Case #2011-0112-HA

2476 Churchville Road

Bel Air, MD

Prepared for:

DRAKE PETROLEUM COMPANY, INC.
P.O. Box 488.
Newburgh, NY, 12550

Prepared by:

GROUNDWATER & ENVIRONMENTAL SERVICES, INC.
2142 Priest Bridge Court, Suite 1
Crofton, Maryland 21114

October 2011

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BEL AIR XTRA FUELS
2476 CHURCHVILLE ROAD
BEL AIR, MARYLAND
MDE CASE #2011-0112-HA

October 31, 2011

Prepared for:

Eric Harvey
Mid-Atlantic Environmental Compliance
& Remediation Manager
Drake Petroleum Company, Inc.
P.O. Box 488
Newburgh, NY, 12550

Prepared by:

Nick Kurtz
Environmental Scientist

Dan Drennan, EIT
Project Engineer

Reviewed by:

Andrea Taylorson-Collins
Project Manager

Richard Evans, PE
Director of Engineering

Groundwater & Environmental Services, Inc.
2142 Priest Bridge Court, Suite 1
Crofton, MD 21114
(800) 220-3606

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ATTACHEMENTS

1.0 INTRODUCTION

Groundwater & Environmental Services, Inc. (GES), on behalf of Drake Petroleum Company, Inc. (Drake), is pleased to submit a Corrective Action Plan (CAP) for the station located at 2476 Churchville Road in Bel Air, Maryland (the Site) (**Figure 1**). The Maryland Department of the Environment (MDE) Case number assigned to the site is 2011-0112-HA. The objective of this CAP is to provide a remedial approach to address on-site groundwater impacts and to comply with the MDE directives dated June 1, 2011 and July 20, 2011. Furthermore, this CAP will define a proposed remedial plan and remedial endpoints based on risk to human health and the environment, including consideration of hydrocarbon source areas and on-site/off-site remedial efforts to date.

1.1 Site Description

The site is located at 2476 Churchville Road in Bel Air, Harford County, Maryland. The Site, currently an Xtra Fuels gasoline, diesel and kerosene station and convenience store, is located in a commercial strip mall parking lot, Campus Hills Shopping Center. Campus Hills Shopping Center contains a Food Lion grocery store, Gardiners Furniture and various other small businesses located north of the Site. A parking lot for the Food Lion grocery store is located east of the Site, followed by an open field. A parking lot containing the La Tolteca restaurant is located west of the Site, followed by other restaurant properties. There are residential homes with located south of the Site, across Churchville Road. Site topography slopes to the northeast. A One Half Mile Radius Map is attached as **Figure 2**.

In May, 1989, Easton Petroleum removed six (6) steel USTs: four (4) 2,000 gallon gasoline USTs a 1,000 gallon used oil UST and a 1,000 gallon heating oil UST. In 1989, Easton Petroleum installed five (5) USTs adjacent to the former tank field. The current UST system is single walled, composite steel/fiberglass reinforced plastic tanks with single walled fiberglass piping. There is one (1) 10,000 gallon gasoline UST, two (2) 8,000 gallon gasoline USTs an 8,000 gallon diesel UST and an 8,000 gallon kerosene UST. The UST system was tested in July and August 2011 and the results of the testing were submitted to the MDE in August 2011. The tank field is located adjacent to the western side of the property building.

A well search of the area using the MDE well database revealed the existence of 92 potable wells located within one mile of the Site, including a municipal supply well. Residential potable wells are located cross gradient of the Site across Churchville Road. Those that could be visually verified are illustrated on **Figure 2**. The Site itself is supplied by municipal water.

The Site and the surrounding area are served by a mixture of aboveground and underground utilities. Along Churchville Road there are overhead electrical lines and underground communication lines. Underground electrical lines are located on the west, south and east sides of the property. The underground electric lines run from the kerosene dispenser island on the west side of the property south to the station sign then east to eastern edge of the property where they turn north to an area light. Storm drains were located along the northern boundary of the Site between the Campus Hills shopping center parking lot and the station building. The Site is served by Campus Hills Water Works which obtains water from five municipal water wells located in the Port Deposit, Gneiss and Wissachickon aquifers. Water and sewer connections were noted to enter the station building from the north but were unable to be traced during a private utility mark out conducted on August 11, 2009. No signs of natural gas lines were noted during the utility mark out. Locations of Site utilities are illustrated on the Site Map, **Figure 3**.

1.2 Site History

SITE HISTORY:

1988 The Maryland Department of the Environment (MDE) opens case number 1989-0972-HA in response to a compliance inspection indicating damaged fill caps on the UST system owned and operated by Easton Petroleum Company, Inc. (Easton Petroleum).

1989 First generation underground storage tanks (USTs) were removed and five (5) single-walled composite steel/fiberglass USTs installed on behalf of Easton Petroleum: one (1) 10,000-gallon gasoline, two (2) 8,000-gallon gasoline, one (1) 8,000-gallon diesel, and one (1) 8,000-gallon kerosene.

04/91 Four (4) groundwater monitoring wells were installed on behalf of Easton Petroleum as part of a Phase I and Phase II Environmental Site Assessment (ESA). Liquid non-aqueous phase liquids (LNAPL) were observed during this investigation and the MDE responded by issuing Notice of Violation NOV-91-182 to Easton Petroleum Company, Inc. The MDE required installation of additional groundwater monitoring well and a remediation system.

03/92 A groundwater remediation system was installed using ten (10) groundwater monitoring wells, two (2) groundwater recovery wells (R-1 and R-2), an oil/water separator tank, a pre-aerator, and two (2) liquid granular activated carbon (GAC) treatment units.

12/92 Harford County Health Department (HCHD) requested potable well sampling in the vicinity of the site. Sampling was conducted and Volatile Organic Carbons (VOCs) related to gasoline were not detected. The results were reported to MDE and follow-up was requested.

07/93 The remediation system was upgraded to include two (2) aeration units, as approved by the MDE.

09/93 Notice of Violation NV-91-182B issued due to free-phase petroleum product present in groundwater monitoring wells MW-1 and MW-2 and monthly reports not being submitted as required.

10/93 Proposal submitted to MDE for installation of a groundwater recovery well adjacent to groundwater monitoring well MW-1 and installation of a passive bailer in groundwater monitoring well MW-2.

01/94 Installation of the new groundwater recovery well RW-3.

04/94 Groundwater recovery well RW-3 connected to established remediation system. Passive bailer installed in groundwater monitoring well MW-2 for LNAPL removal.

06/95 Soil Vapor Extraction (SVE) pilot test conducted and groundwater monitoring well MW-9 was installed.

11/95 A SVE test was conducted with groundwater depression.

12/96 MDE requests remediation system discharge location to be moved to a down-gradient storm drain.

01/97 Groundwater monitoring well MW-2 is paved over with asphalt and is no longer accessible.

05/97 Request from the MDE to install Oxygen Release Compound (ORC) filter socks in two groundwater monitoring wells, MW-7 and MW-9.

10/97 Pumps removed from groundwater recovery wells RW-1 and RW-3 and the system was reconfigured to include groundwater extraction from groundwater monitoring wells MW-1, MW-9, and groundwater recovery well RW-3; replaced the former 55-gallon aerator units with a shallow tray aerator unit to enhance treatment of the recovered groundwater.

06/00 Site is documented by the MDE to be temporarily out of service.

10/00 The MDE approves a request for the implementation of cleaning groundwater recovery wells RW-1 and RW-2, and initiating Enhanced Fluid Recovery (EFR) events on groundwater recovery wells RW-1 and RW-3 and groundwater monitoring wells MW-1, MW-2, and MW-7.

11/00 Well, pump, and remediation system cleaning conducted along with EFR event.

03/01 MDE received notification that Keyon Oil leases Site and returned out-of-service USTs to active status.

05/01 MDE approves an Envirojet event and groundwater and vapor extraction from groundwater monitoring well MW-7, and the accumulation of LNAPL in groundwater recovery well RW-3 and former groundwater recovery well RW-1.

02/02 Easton Petroleum request to shut the recovery system down due to drought conditions.

03/02 MDE grants system shut down until the water levels have recovered, at which time it will return to operation as per Notice of Violation NV-91-182C.

07/02 A notice was sent to Easton Petroleum from the MDE, requesting all monitoring data from the time of system shut-down to the present.

10/04 MDE was notified that Easton Petroleum forfeited status to operate a business in the state of Maryland.

01/05 As the current UST owner, Drake Petroleum Company (Drake), began sampling the network of 12 groundwater monitoring wells and four groundwater recovery wells in accordance with Code of Maryland Regulations (COMAR) 26.10.02.03-.03-6.

05/05 Groundwater sampling data submitted on behalf of Drake per MDE request.

05/05 Receptor survey and UST system testing was conducted on behalf of Drake.

07/05 Report of receptor survey and UST system testing data submitted to MDE as part of emergency regulations.

04/07 GES on behalf of Drake requests the MDE remove Drake from Responsible Party status.

05/09 GES on behalf of Drake submitted proof that the Site is connected to public water. Site potable sampling terminated.

10/09 Groundwater monitoring well network abandoned with the exception of groundwater monitoring wells MW-7 and MW-9, so these wells could be used for HRGUA sampling.

11/09 New groundwater monitoring wells MW-10 and MW-11 installed for HRGUA sampling.

02/10 Site Characterization Report submitted to MDE documenting results of the installation of groundwater monitoring wells MW-10 and MW-11.

07/10 Warren Equities submits letter to MDE stating that Drake is not the responsible party for MDE case #9-0972HA.

10/10 MDE sends a Non-Compliance letter to Warren Equities.

11/10 Warren Equities submits letter to MDE stating that Drake is not the responsible party for MDE case #9-0972HA.

12/10 Site Characterization Report submitted to MDE.

01/11 MDE requests a Site Characterization Report Addendum including results of down gradient characterization activities and two (2) quarterly post site characterization monitoring events.

06/11 GES on behalf of Drake submits Work Plan for vertical delineation of apparent source to MDE.

07/11 MDE approved the GES and Drake potable well sampling letter for 2317 and 2319 Churchville Road.

07/11 MDE issued Conditional Work Plan Approval.

08/11 Drake submitted UST testing results to MDE.

08/11 GES submitted additional information regarding the installation of the nested wells, per MDE's request. MDE approved the installation on August 26, 2011.

08/11 Access agreement was signed between Drake and the Campus Hills Shopping Center property owner to install groundwater monitoring wells off-site.

08/11 GES installed four new groundwater monitoring wells (MW-12, MW-13, MW-14 and MW-16) on August 24 through 29, 2011.

08/11 GES submitted a request to reduce the size of groundwater monitoring well PMW-13 from four-inches to one-inch diameter based on space and safety constraints at this location and the recovery of groundwater monitoring well MW-8 on this date.

08/11 Potable well at 2319 Churchville Road was sampled.

08/11 SHA issued a right-of-way permit for the proposed nested well in the shoulder of Churchville Road on August 31, 2011.

09/11 Potable well at 2317 Churchville Road was sampled.

09/11 Feasibility Testing was conducted on September 8 and 9, 2011.

09/11 Potable well sampling results letter was submitted to the property owner at 2319 Churchville Road.

09/11 Seven (7) groundwater monitoring wells, two (2) tank field wells and two (2) temporary groundwater monitoring wells were gauged and seven (7) groundwater monitoring wells and one (1) tank field well were sampled.

09/11 Potable well sampling results were submitted to the property owner of 2317 Churchville Road.

09/11 GES, on behalf of Drake, requested a Corrective Action Plan (CAP) extension due to driller cancellation of the proposed nested wells in the Churchville Road right of way.

1.3 Geology / Hydrogeology

The Site lies in the eastern portion of Maryland's Piedmont Physiographic Province. According to the Maryland Geologic Survey, the Site is underlain by the Port Deposit Gneiss a moderately to strongly deformed intrusive complex composed of gneissic biotite quartz diorite, hornblende-biotite quartz diorite, and biotite granodiorite; all rocks foliated and some strongly sheared; age 550 +/- 50 m.y. by radiogenic dating.

Depth to groundwater across the site varies from approximately 8.44 (MW-9) to 18.80 (former MW-3) feet below ground surface (bgs). Historical liquid level gauging data is summarized in **Table 1**. Based on groundwater elevation data recorded on September 12, 2011, groundwater flows to the west/ southwest at a hydraulic gradient of 0.02 feet per foot. A groundwater monitoring map illustrating inferred groundwater contours is included as **Figure 4**.

Regional topography is relatively flat, however the Site gently slopes to the northeast away from Churchville Road. The closest surface water body is an unnamed stream located approximately 750 feet to the northwest of the Site, that feeds into a pond located approximately one-half mile north of the Site.

1.4 Soil Quality

On August 24 through 29, 2011, B.L. Myers Brothers (B.L. Myers), a Maryland-licensed drilling company, installed two (2) additional groundwater monitoring wells (MW-12 and MW-14) and two (2) temporary groundwater monitoring wells (MW-13 and MW-16) at the Site. Groundwater monitoring well locations are illustrated on **Figure 3**. B.L. Myers began by hand clearing each location to a depth of five (5) feet bgs using air-knife technology to provide utility clearance. The two (2) locations were then converted to groundwater monitoring wells using a convertible hollow stem auger and air rotary drill rig. Groundwater monitoring wells MW-12 and MW-14 were installed to a total depth of 25 feet bgs and constructed with 20 feet of 4-inch diameter PVC 0.020-slot screened casing, five (5) feet of 4-inch diameter PVC solid casing and a flush-mounted bolting well cover. The two (2) locations were then converted to groundwater monitoring wells using a Geoprobe ®. Groundwater monitoring wells MW-13 and MW-16 were installed to a total depth of 19 and 18 feet bgs, respectively, and constructed with 15

feet of 1-inch diameter PVC 0.020-slot screened casing, and both were completed to grade with 1-inch diameter PVC solid casing and a flush-mounted bolting well cover.

Sampling depths, lithological descriptions, Photoionization Detector (PID) readings, well construction details, and any other conditions noted during drilling activities are presented in the boring logs attached as **Appendix A**.

Soil samples were collected by GES during the groundwater monitoring well installation activities of MW-10, MW-11, MW-12, MW-13, MW-14, and MW-16 in 2009 and 2011. A review of the recent soil data collected from the installation of these groundwater monitoring wells indicates adsorbed-phase gasoline petroleum hydrocarbons are mainly concentrated around groundwater monitoring well MW-10, located approximately ten (10) feet west of the tank field. Total BTEX concentrations ranged from non-detect (MW-12, MW-13, MW-14 and MW-16) to 1,492 micrograms per kilogram (µg/kg) (MW-10). Methyl-t-butyl-ether (MTBE) concentrations ranged from non-detect (MW-13) to 54,400 µg/kg (MW-10). Total Phase Hydrocarbon- Diesel Range Organics (TPH-DRO) concentrations ranged from non-detect (MW-10, MW-11, MW-12, MW-14) to 161,000 µg/kg. Total Phase Hydrocarbons - Gasoline Range Organics (TPH-GRO) concentrations ranged from non-detect (MW-11, MW-12, MW-14, MW-13, and MW-16) to 50.9 mg/kg (MW-10).

Soil sampling results indicate hydrocarbon impacts are located at or below the water table. A **Soil Quality Data Summary** is documented in **Table 2** and contains MDE standards (June 2008) for the protection of groundwater and non-residential standards. The **Laboratory Analytical Reports** for soil samples collected from the installation of groundwater monitoring wells MW-12, MW-13, MW-14 and MW-16 are included as **Appendix B.**

1.5 Groundwater Quality

Historic gauging data and groundwater analytical data for the former groundwater monitoring wells and the existing groundwater monitoring well MW-7 and MW-9 since January 2001 is summarized in **Table 3**. Most recently, groundwater samples were collected from the groundwater monitoring wells and one tank field well on September 12, 2011. The groundwater samples were couriered to Accutest Laboratories in Dayton, New Jersey to be analyzed for full volatile organic compounds (VOCs), including fuel oxygenates in accordance with United States Environmental Protection Agency (USEPA) Method 8260 and TPH-DRO, TPH-GRO via USEPA method 8015. Maximum concentrations were reported as follows: 2,680 µg/L benzene in MW-10; 28,360 µg/L total BTEX in MW-10; 95,900 µg/L MTBE in MW-12; 24,800 µg/L TPH-DRO in MW-7; and 161,000 µg/L in MW-12.

Groundwater quality data agrees with soil quality data, with maximum concentrations from gasoline constituents found in groundwater monitoring wells MW-10 and MW-12 located immediately west of the tank field.

Two (2) area potable water supply wells were sampled per the June 2011 MDE directive. The results for all constituents were below the MDE drinking water standards for both wells sampled at 2317 and 2319 Churchville Road. Potable well results are summarized in Table 4. Additional investigation is recommended to determine the source of the detected petroleum constituents concentrations. Once access is established to install a nested deep and shallow well on the property of 2319 Churchville Road, the results of this investigation will be submitted as an Addendum to this CAP, under separate cover.

2.0 SUMMARY OF FEASIBILITY TESTING

A remedial feasibility test was conducted on September 8-9, 2011 to evaluate potential remedial options. Groundwater monitoring well MW-10, TF-1, MW-7, and MW-12 were utilized as extraction points for the feasibility test. SVE, Pump & Treat (P&T), and Vacuum-Enhanced Groundwater Extraction (VEGE) feasibility tests were conducted during the two (2) day test.

The primary objective of remedial feasibility testing activities was to evaluate an appropriate remediation technology. Additionally, several specific data collection objectives were to be accomplished through feasibility testing. The data to be collected during feasibility testing included the following:

- feasibility of VEGE technology;
- groundwater recovery rates under non-vacuum pumping conditions;
- vacuum-enhanced groundwater recovery rates;
- SVE extraction radii-of-influence;
- vapor flow rates during SVE tests;
- vacuum versus vapor flow relationships for individual extraction wells;
- vapor VOC/TPH concentrations during SVE and VEGE; and
- groundwater quality during pumping conditions in groundwater monitoring wells MW-10 and MW-12.

2.1 Methodology

Feasibility test activities were conducted using GES' Data Acquisition Processing Laboratory (DAPL). The DAPL unit is a self-contained platform that provides on-site computerized real-time data acquisition and processing evaluation. The DAPL unit is fully equipped with pumps, vacuum blowers, sensors and hardware needed to conduct multiple remediation technologies and various groundwater recovery tests. On-board sensors monitor and continuously log system operating conditions and field responses, including vacuum/pressure responses, vapor and liquid flow rates and groundwater levels. The on-board computer manages and integrates the incoming data and conducts real-time calculations and analyses to allow for immediate evaluation of test conditions. This allows for flexibility in customizing the test to site conditions.

P&T, SVE, and VEGE tests were conducted on groundwater monitoring wells MW-10 and MW-12, while SVE only tests were conducted on TF-1 and MW-7. Groundwater monitoring wells MW-7, MW-10, MW-12 and tank field well TF-1 were selected as testing wells due to their location within the area of concern, and proximity to other groundwater monitoring wells and tank field wells for the collection of pneumatic and hydraulic data.

Applied vacuum, airflow rates, and VOC concentrations, were monitored at the extraction points during each study. Airflow readings were monitored using a Magnehelic gauge, which measures differential pressure. VOC concentrations were monitored with a calibrated PID.

Induced influences (e.g., vacuum response and groundwater level fluctuations) were recorded in designated observation wells surrounding the extraction well. Vacuum response was recorded using vacuum transducers installed in the observation wells and extraction well. Magnehelic gauges calibrated in inches of water column (i.w.) were connected to the observation wells to serve as a manual check to ensure accurate data collection. Water level fluctuations were recorded using pressure transducers installed in the observation wells and the extraction well.

2.2 Testing Activities

During the SVE, P&T, and VEGE feasibility tests, the resulting induced vacuum (pneumatic influence) and liquid level drawdown (hydraulic influence) was measured at each of the surrounding observation wells. Static soil pressure conditions (positive or negative) may exist due to natural pressures that occur in the soil pore space relative to atmospheric and groundwater conditions. The soil pressure readings were recorded using Magnehelic differential pressure gauges/transducers, which were connected to each observation well. Each observation well was temporarily sealed from the atmosphere to record the pneumatic influence reading. Groundwater elevations were monitored at the observation wells through down-well pressure transducers connected to a centralized electronic data logger. Hydraulic influence readings were recorded from the data logger.

The vapor stream was periodically screened for VOCs during the SVE and VEGE feasibility tests using a hand-held photoionization detector (PID). A combination explosimeter was used to monitor percent of the lower explosion limit (LEL). Prior to test activities, the PID was calibrated using zero parts per million (ppm) and 100 ppm isobutylene gas. During the SVE feasibility tests and the VEGE feasibility tests vapor samples were collected for analyses of BTEX, MTBE and TPH (C_1-C_4) and ($>C_5$-C_{10}) in accordance with EPA Method TO3 by Accutest Laboratories.

To provide system design data regarding influent groundwater quality and chemistry, groundwater samples were collected during pumping activities on groundwater monitoring wells MW-10 and MW-12. The groundwater samples were analyzed for BTEX, MTBE, TPH-GRO, TPH-DRO, total dissolved solids (TDS), total suspended solids (TSS), lead, and total and dissolved calcium (Ca), iron (Fe), manganese (Mn) and magnesium (Mg). Laboratory analytical results from the feasibility tests are presented in **Appendix A**. Further details for each feasibility test are presented below:

2.2.1 Step Test - Groundwater Pump & Treat (P&T) Test Methodology

Groundwater was removed from groundwater monitoring wells MW-10 and MW-12 by a pneumatic pump on September 8 and 9, 2011. Data collected during the tests was used to evaluate groundwater flow rates and the associated drawdown capacities under non-vacuum conditions, to calculate hydraulic characteristics, and to compare to subsequent vacuum-enhanced groundwater extraction tests. A groundwater sample was collected from MW-10 and MW-12 for laboratory analysis.

2.2.2 Soil Vapor Extraction (SVE) Test Methodology

A stepped SVE test was conducted on groundwater monitoring wells MW-7, MW-10, and tank field well TF-1 on September 8, 2011 and on groundwater monitoring well MW-12 on September 9, 2011. Vacuum was applied to the wells in several steps. During the tests, vacuum propagation and groundwater levels were monitored to estimate vacuum influence and groundwater uplifting. Vapor concentrations were monitored during each step to record a baseline for VOC concentrations and a vapor sample was collected during the step test at each well.

2.2.3 Vacuum Enhanced Groundwater Extraction (VEGE) Test Methodology

A stepped VEGE test was conducted on groundwater monitoring well MW-10 on September 8, 2011 and on MW-12 on September 9, 2011. During the stepped VEGE test, vacuum was applied to the extraction well in several steps while groundwater was extracted via a pneumatic pump. Vacuum influence and groundwater drawdown were monitored at the nearby observation wells to record vacuum influence and to estimate hydraulic and pneumatic characteristics. Vapor concentrations were monitored during the VEGE test and a vapor sample was collected for laboratory analysis.

2.3 Feasibility Test Results

2.3.1 Feasibility Testing at MW-10

Groundwater monitoring well MW-10 was constructed in 2009 with 4-inch diameter PVC. It was measured to have a total depth of 24.4 feet bgs prior to testing. The static water level was 13.4 feet bgs. Groundwater monitoring wells MW-7, MW-9, MW-11, MW-12, MW-13, MW-14, and MW-16 and tank field wells TF-1 and TF-2 served as observation wells. These wells ranged in distance to groundwater monitoring well MW-10 from 10 to 68 feet. The DTW in the groundwater monitoring wells ranged from 10.24 to 14.77 feet bgs. A Site Map is presented as **Figure 3**.

On September 8, 2011 feasibility testing on groundwater monitoring well MW-10 began with a low vacuum SVE test lasting approximately 57 minutes. Vacuum was applied at 32 inches of water (i.w.) to the extraction well. The second SVE step lasted approximately 22 minutes with vacuum applied at 50 i.w. to the extraction well. The vapor flow rate during the first step was approximately 5.59 standard cubic feet per minute (scfm) and the vapor flow rate during the second step increased to 6.36 scfm. The vapor-phase hydrocarbon recovery rate during the second step was calculated to be 0.1 pounds per day (lbs/day). At the conclusion of the SVE test, effective vacuum influence (i.e., greater than 0.10 i.w.) was observed at four (4) observation wells, reaching a maximum of 3.16 i.w. in MW-12, approximately 10 feet from the extraction well. Upwelling in the extraction well reached 3.18 feet during the SVE test.

Following the SVE test, the groundwater P&T test was conducted via a groundwater pumping test (lasting approximately 53 minutes) to expose previously-saturated hydrocarbon-impacted soils and determine the groundwater recovery rate in the absence of vacuum enhancement. A 4-inch diameter, top loading pneumatic pump was placed at the bottom of the well, and the test resulted in a measurable groundwater drawdown of 5.66 feet and an average groundwater recovery rate of 1.08 gallons per minute (gpm). At the conclusion of the groundwater pumping test, drawdown was observed in five (5) observation wells, with a maximum of 0.37 feet in groundwater monitoring well MW-12 (approximately 10 feet from the extraction well).

During VEGE test activities at groundwater monitoring well MW-10, vacuum was applied in four (4) steps. The first step (approximately 48 minutes in duration), a vacuum of 50 i.w. was applied to MW-10. The second step (approximately 38 minutes in duration), a vacuum of 77 i.w. was applied to the extraction well. For the third step, a vacuum of 116 i.w. was applied to MW-10 for approximately 34 minutes. The final step lasted approximately 30 minutes with a vacuum of 210 i.w. applied to MW-10. The first vacuum step yielded a vapor flow rate of approximately 8.1 scfm. Drawdown at the extraction well was 5.65 feet bgs with an average groundwater extraction rate of 1.91 gpm. A groundwater sample was collected during the first VEGE step for laboratory analysis. The second vacuum step yielded a vapor flow rate of approximately 11.0 scfm. Drawdown at the extraction was 5.69 feet bgs with an average groundwater extraction rate of 2.07 gpm. A vapor sample was collect during the second step and the vapor-phase hydrocarbon recovery rate was calculated to be 0.4 lbs/day. The third vacuum step yielded a vapor flow rate of approximately 18.6 scfm. Drawdown at the extraction well increased to approximately 4.59 feet bgs due to the higher applied vacuum. The average groundwater extraction rate was 2.75 gpm for the third step. The final step yielded a vapor flow rate of approximately 28.2 scfm. Groundwater level at the extraction well rose to 2.20 feet above the static water elevation and the average groundwater flow rate decreased to 2.29 gpm.

At the conclusion of VEGE testing at groundwater monitoring well MW-10, groundwater drawdown was observed at six (6) observation wells (MW-12, TF-1, MW-13, MW-16, MW-7, and MW-9). The maximum drawdown of 0.96 feet was observed in groundwater monitoring well MW-12 (approximately 10 feet away). The calculated groundwater area of influence at MW-10 extended to 32 feet. Vacuum

influences were observed at eight (8) observation wells. The maximum vacuum influence of 9.85 i.w. was observed at MW-12. The vacuum radius of influence (ROI) was calculated to be 57 feet, assuming 0.10 i.w. to be the minimal effective vacuum influence.

A summary of the test results is presented below. Field data is presented in **Attachment 1,** and vacuum-versus-flow graphs and ROI graphs are presented in **Attachment 2** and **Attachment 3**, respectively. A vapor analytical data summary is presented in **Attachment 4**.

Influent groundwater laboratory analytical data indicated concentrations of 24,450 micrograms per liter (µg/L), 46,900 µg/L, 135 milligrams per liter (mg/L), and 18.4 mg/L for BTEX, MTBE, TPH-GRO, and TPH-DRO, respectively. The dissolved-phase laboratory analytical data are summarized in **Attachment 5**. A determination of hardness is presented in **Attachment 6**.

Type of Test	Time Period (min)	Applied Vacuum (i.w.)	Vapor Recovery Rate (scfm)	Vapor PID Reading (ppmv)	>C4-C10 Hydrocarbon Conc. (mg/m3)	Vapor-Phase Hydrocarbon Recovery Rate (lbs/day)	Liquid Level Change in Recovery Well (feet)	Groundwater Recovery Rate (gpm)
SVE – Step 1	57	32	5.6	232.5	-	-	+1.93	-
SVE – Step 2	22	50	6.4	284	125	0.1	+3.18	-
P&T	53	-	-	-	-	-	-5.66	1.08
VEGE – Step 1	48	50	8.1	208	-	-	-5.65	1.91
VEGE – Step 2	38	77	11.0	180	347	0.4	-5.69	2.07
VEGE – Step 3	34	116	18.6	160	-	-	-4.59	2.75
VEGE – Step 4	30	210	28.2	174	-	-	+2.20	2.29

Note:
Hydrocarbon recovery rate (lb/day) = conc. (mg/m^3) x flow (scfm) x 1lb/454,000mg x $0.0283 m^3/ft^3$ x 1440 min/day
ppm-v = parts per million (volume)
mg/m3 = milligrams per cubic meter

2.3.2 Feasibility Testing at TF-1

Following feasibility testing on MW-10, a stepped SVE test was conducted on tank field well TF-1. The first step lasted approximately 25 minutes with a vacuum of 15 i.w. applied to the recovery well. The second step lasted approximately 12 minutes with a vacuum of 35 i.w. applied to the recovery well. The final step lasted approximately 7 minutes with a vacuum of 55 i.w. applied to TF-1. The vapor flow rates during the first, second, and third vacuum steps were 58.7, 97.7, and 124.4 scfm, respectively. The vapor-phase hydrocarbon recovery rate during the second step was calculated to be 5.7 lbs/day. At the conclusion of the third vacuum step, upwelling in the extraction well reached 1.01 feet. Vacuum influence was observed at all 6 observation wells (TF-2, MW-7, MW-8, MW-10, MW-11, MW-13, and MW-16), with a maximum of 0.44 i.w. observed at tank field well TF-2 (55 feet from the extraction well). Significant vacuum influence was observed at groundwater monitoring well MW-7 (0.36 i.w.) during testing. The vacuum ROI was calculated to be 54 feet, assuming 0.10 i.w. to be the minimal effective vacuum influence.

A summary of the test results is presented below. Field data is presented in **Attachment 1,** and vacuum-versus-flow graphs and ROI graphs are presented in **Attachment 2** and **Attachment 3**, respectively. A vapor analytical data summary is presented in **Attachment 4**.

Type of Test	Time Period (min)	Applied Vacuum (i.w.)	Vapor Recovery Rate (scfm)	Vapor PID Reading (ppmv)	>C4-C10 Hydrocarbon Conc. (mg/m3)	Vapor-Phase Hydrocarbon Recovery Rate (lbs/day)	Liquid Level Change in Recovery Well (feet)	Groundwater Recovery Rate (gpm)
SVE – Step 1	25	15	58.7	368	-	-	+0.26	-
SVE – Step 2	12	35	97.7	389	557	5.7	+0.63	-
SVE – Step 3	7	55	124.4	270	-	-	+1.01	-

Note:
Hydrocarbon recovery rate (lb/day) = conc. (mg/m^3) x flow (scfm) x 1lb/454,000mg x $0.0283 m^3/ft^3$ x 1440 min/day
ppm-v = parts per million (volume)
mg/m^3 = milligrams per cubic meter

2.3.3 Feasibility Testing at MW-7

Following the feasibility testing on TF-1, a stepped SVE test was conducted at MW-7. The first step lasted approximately 21 minutes with a vacuum of 32 i.w. applied to the recovery well. The second step lasted approximately 24 minutes with a vacuum of 50 i.w. applied to the recovery well. The final step lasted approximately 28 minutes with a vacuum of 68 i.w. applied to MW-7. The vapor flow rates during the first, second, and third vacuum steps were 3.0, 3.9, and 4.2 scfm, respectively. The vapor-phase hydrocarbon recovery rate during the first step was calculated to be 0.3 lbs/day. No significant vacuum influences were observed in any of the four observation wells (TF-2, MW-11, MW-10, and MW-9). At the conclusion of the third vacuum step, upwelling in the extraction well reached 3.21 feet. The vacuum ROI is estimated to be less than 24 feet, the distance to the closest observation well (TF-2), assuming 0.10 i.w. to be the minimal effective vacuum influence.

A summary of the test results is presented below. Field data is presented in **Attachment 1,** and vacuum-versus-flow graphs and ROI graphs are presented in **Attachment 2** and **Attachment 3**, respectively. A vapor analytical data summary is presented in **Attachment 4**.

Type of Test	Time Period (min)	Applied Vacuum (i.w.)	Vapor Recovery Rate (scfm)	Vapor PID Reading (ppmv)	>C4-C10 Hydrocarbon Conc. (mg/m3)	Vapor-Phase Hydrocarbon Recovery Rate (lbs/day)	Liquid Level Change in Recovery Well (feet)	Groundwater Recovery Rate (gpm)
SVE – Step 1	21	32	3.0	404	1280	0.3	+1.15	-
SVE – Step 2	24	50	3.9	357	-	-	+2.14	-
SVE – Step 3	28	68	4.2	303	-	-	+3.21	-

Note:
Hydrocarbon recovery rate (lb/day) = conc. (mg/m^3) x flow (scfm) x 1lb/454,000mg x $0.0283 m^3/ft^3$ x 1440 min/day
ppm-v = parts per million (volume)
mg/m^3 = milligrams per cubic meter

2.3.4 Feasibility Testing at MW-12

Groundwater monitoring well MW-12 was constructed in 2011 with 4-inch diameter PVC. It was measured to have a total depth of 25.0 feet bgs prior to testing. The static water level was 13.15 feet bgs. Groundwater monitoring wells MW-7, MW-8, MW-9, MW-10, MW-11, MW-13, and MW-14 and tank field well TF-1 served as observation wells. These wells ranged in distance to groundwater monitoring well MW-12 from 10 to 61 feet. The DTW in the groundwater monitoring wells ranged from 10.66 to 14.56 feet bgs. A Site Map is presented as **Figure 3**.

On September 9, 2011 feasibility testing on groundwater monitoring well MW-12 began with a low vacuum SVE test lasting approximately 31 minutes. Vacuum was applied at 32 inches of water (i.w.) to the extraction well. The second SVE step lasted approximately 35 minutes with vacuum applied at 50 i.w. to the extraction well. The vapor flow rate during the first step was approximately 6.2 scfm and the vapor flow rate during the second step increased to 7.36 scfm. The vapor-phase hydrocarbon recovery rate during the second step was calculated to be 0.1 lbs/day. Vacuum influence was observed with a maximum of 0.38 i.w. in MW-10, approximately 10 feet from the extraction well. At the conclusion of the second vacuum step, upwelling in the extraction well reached 3.59 feet.

Following the SVE test, a groundwater pumping test (lasting approximately 40 minutes) was conducted to expose previously-saturated hydrocarbon-impacted soils and determine the groundwater recovery rate in the absence of vacuum enhancement. A 4-inch diameter, top loading pneumatic pump was placed at the bottom of the well, and the test resulted in a measurable groundwater drawdown of 7.61 feet and an average groundwater recovery rate of 1.34 gallons per minute (gpm). At the conclusion of the groundwater pumping test, drawdown was observed in three (3) observation wells, with a maximum of 0.66 feet in groundwater monitoring well MW-10 (approximately 10 feet from the extraction well).

During VEGE test activities at groundwater monitoring well MW-12 vacuum was applied in four (4) steps. The first step (approximately 20 minutes in duration), a vacuum of 51 i.w. was applied to MW-12. The second step (approximately 28 minutes in duration), a vacuum of 74 i.w. was applied to the extraction well. For the third step, a vacuum of 136 i.w. was applied to MW-12 for approximately 38 minutes. The final step lasted approximately 42 minutes with a vacuum of 218 i.w. applied to MW-12. The first vacuum step yielded a vapor flow rate of approximately 4.2 scfm. Drawdown at the extraction well remained near the intake of the pump (at approximately 7.61 feet bgs) with an average groundwater extraction rate of 1.55 gpm. The second vacuum step yielded a vapor flow rate of approximately 8.1 scfm. During the second step, drawdown at the extraction well remained near the intake of the pump (at approximately 7.59 feet bgs) with an average groundwater extraction rate of 1.55 gpm. The third vacuum step yielded a vapor flow rate of approximately 15.9 scfm. A vapor sample was collect during the third step and the vapor-phase hydrocarbon recovery rate was calculated to be 0.9 lbs/day. Drawdown at the extraction well remained near the intake of the pump (at approximately 7.50 feet bgs) with an average groundwater extraction rate of 2.03 gpm. The final step yielded a vapor flow rate of approximately 30.9 scfm. The groundwater level at the extraction well rose to 7.45 feet above the static water elevation due to high vacuum and reaching the maximum output of the pneumatic groundwater pump. The average groundwater flow rate was 2.57 gpm.

At the conclusion of VEGE testing at groundwater monitoring well MW-12, groundwater drawdown was observed at six (6) observation wells (MW-10, MW-9, MW-13, MW-14, MW-7, and MW-8). The maximum drawdown of 2.02 feet was observed in groundwater monitoring well MW-10 (approximately 10 feet away). The calculated groundwater area of influence at MW-12 extended to 40 feet. Vacuum influences were observed at seven (7) observation wells (MW-10, MW-9, MW-13, MW-14, MW-7, MW-8, and TF-1). The maximum vacuum influence of 9.76 i.w. was observed at MW-10. The calculated vacuum ROI is 49 feet, assuming 0.10 i.w. to be the minimal effective vacuum influence.

A summary of the test results is presented below. Field data is presented in **Attachment 1,** and vacuum-versus-flow graphs and ROI graphs are presented in **Attachment 2** and **Attachment 3**, respectively. A vapor analytical data summary is presented in **Attachment 4**.

A groundwater sample was collected during this test for laboratory analysis. Influent groundwater laboratory data indicated concentrations of 11,370 µg/L, 89,800 µg/L, 135 mg/L, and 14.3 mg/L for BTEX, MTBE, TPH-GRO, and TPH-DRO, respectively. All dissolved-phase laboratory analytical data are summarized in **Attachment 5**. A determination of hardness is presented in **Attachment 6**.

Type of Test	Time Period (min)	Applied Vacuum (i.w.)	Vapor Recovery Rate (scfm)	Vapor PID Reading (ppmv)	>C4-C10 Hydrocarbon Conc. (mg/m3)	Vapor-Phase Hydrocarbon Recovery Rate (lbs/day)	Liquid Level Change in Recovery Well (feet)	Groundwater Recovery Rate (gpm)
SVE – Step 1	31	32	6.2	27.0	-	-	+2.20	-
SVE – Step 2	35	50	7.4	22.0	58.0	0.1	+3.59	-
P&T	40	-	-	-	-	-	-7.61	1.34
VEGE – Step 1	20	51	4.2	70.0	-	-	-7.61	1.55
VEGE – Step 2	28	74	8.1	68.9	-	-	-7.59	1.55
VEGE – Step 3	38	136	15.9	71.7	248	0.9	-7.50	2.03
VEGE – Step 4	42	218	30.9	50.5	-	-	-7.45	2.57

Note:
Hydrocarbon recovery rate (lb/day) = conc. (mg/m^3) x flow (scfm) x 1lb/454,000mg x $0.0283 m^3/ft^3$ x 1440 min/day
ppm-v = parts per million (volume)
mg/m^3 = milligrams per cubic meter

2.4 Feasibility Test Summary and Conclusions

As previously stated, the primary objective of remediation feasibility test activities was to evaluate the most appropriate remediation strategy for the site. Several specific data collection results were obtained throughout the feasibility testing:

- The groundwater recovery rates at groundwater monitoring wells MW-10 and MW-12 were 1.34 and 1.08 gpm under non-vacuum pumping conditions, respectively, but increased considerably (reaching 2.75 and 2.57 gpm, respectively) with applied vacuum.
- Groundwater quality in the vicinity of groundwater monitoring wells MW-10 and MW-12 under pumping conditions was evaluated. Laboratory analysis of the groundwater extracted from groundwater monitoring wells MW-10 and MW-12 indicates significant hydrocarbon presence in the dissolved-phase.
- The vapor flow rates at groundwater monitoring wells MW-10 and MW-12 ranged from 4.2 to 30.9 scfm. Vacuum/vapor flow relationships were obtained, and vapor flow rates, along with vacuum propagation, increase significantly with increases in applied vacuum.
- The vacuum ROI at groundwater monitoring wells MW-10 and MW-12 reached 57 and 49 feet, respectively, assuming 0.10 i.w. to be the minimal effective vacuum influence.
- Extracted soil vapor concentrations, recorded during SVE and VEGE feasibility tests utilizing a PID, ranged from 160 to 284 parts per million by volume (ppmv) in groundwater monitoring well MW-10 and from 22.0 to 71.7 ppmv in MW-12.

- According to the calculated mass removal rates, less than 1 lb/day of hydrocarbons may initially be recovered from each extraction well during remediation activities.
- During vapor extraction on tank field well TF-1, low to moderate vacuum (15 to 55 i.w.) yielded high vapor flow rates (ranging from 58.7 to 124.4 scfm). Mass removal from TF-1 was estimated to be 5.7 lbs/day.
- During vapor extraction on groundwater monitoring well MW-7, minimal vapor flow rates were obtained (ranging from 3.0 to 4.2 scfm). The low mass removal rate (0.3 lbs/day) was due in large part to the limited ability to recover vapors from the well.

3.0 REMEDIAL TECHNOLOGY FEASIBILITY EVALUATION

Various remediation technologies were screened to determine the most appropriate method to remediate the dissolved-phase and adsorbed-phase hydrocarbon compounds that exist in the subsurface. Remedial technologies selected for consideration were based on the results of feasibility testing, groundwater monitoring well installation activities, groundwater sampling and gauging activities and historic site activities. The potential remedial technologies and site-specific factors associated with each are discussed below.

- *Monitored Natural Attenuation: Natural attenuation* relies upon natural subsurface processes to reduce contaminant concentrations to acceptable levels. *Monitored natural attenuation* would not be considered a viable remedial alternative with the high dissolved concentrations. However, natural attenuation may be considered following contaminant concentration reduction by an aggressive, active remediation technology.

- *Soil Excavation (Ex Situ Treatment):* This remedial option requires the excavation and removal of impacted soil for on site or offsite treatment. A majority of the soil impacts are located greater than 13 feet bgs. Excavation stabilization (e.g., shoring, sheeting) and dewatering would be needed to successfully achieve the depth required to remove the impacts. *Soil excavation* is not considered a viable technology to remediate the impacted soil due to the volume of soil that would need to be removed, the presence of the existing UST infrastructure, and associated dewatering and excavation stabilization.

- *Soil Vapor Extraction (SVE): SVE* is an in-situ remedial technology that is effective in removing volatile constituents from the vadose zone. *SVE* systems utilize blowers to apply vacuums at extraction wells, allowing for the recovery of soil vapors from unsaturated soils. As air moves through contaminated soils in the vadose zone, volatile organic compounds (VOCs), including absorbed- and adsorbed-phase hydrocarbons, are transferred into the vapor stream for recovery. *SVE* systems also promote aerobic bioremediation due to the introduction of oxygen into subsurface soils. The soil must be sufficiently permeable to permit airflow, and the volatility of the constituent to be removed must be sufficiently high. Vapor flow rates during feasibility testing suggest sufficient soil permeability at this Site. *SVE* could be used to remove exposed adsorbed-phase hydrocarbons (APH). However, utilizing *SVE* without groundwater extraction or air sparging is not effective for sites with significant impact in the saturated zone, shallow groundwater, or low permeability materials within the zone of interest. At this Site, the zone of impact extends into the saturated zone, thus rendering an *SVE*-only system inadequate to address residual hydrocarbon impact.

- *Total Fluid Extraction or Pump & Treat (P&T):* Total fluid extraction is a practical remedial technology to gain hydraulic control and to retard downgradient migration of DPH. However, P&T as a stand-alone remediation technology may lead to many years of system operation and maintenance before cleanup standards are achieved. A groundwater extraction system may remediate the groundwater impacted with DPH and LNAPL, but it will not address APH. Due to the extent of hydrocarbon impacts and time requirements associated with this remediation method, *fluid extraction* is eliminated as a stand-alone remedial option.

- *Dual-Phase Extraction (DPE)/Vacuum-Enhanced Groundwater Extraction (VEGE): DPE/VEGE* combines both SVE and fluids extraction remedial technologies. The application of a vacuum to an extraction well creates pressure gradients that enhance total fluid recovery and also serves to remediate impacts in unsaturated and previously-saturated (i.e., prior to fluids recovery) zones. Conventional *DPE/VEGE* extraction systems typically use pneumatic submersible pumps to extract fluids from the well and a surface blower to extract soil vapors. A range of vacuums can be applied using one of several methodologies to optimize fluid and vapor recovery depending on the formation.

  The first option involves the use of low vacuum (<50 i.w.) and submersible pumps (pneumatic or electric). Low vacuum dual-phase/VEGE systems are most effective in high yielding formations. The second option involves the use of mid-range vacuum (50–100 i.w.) and submersible pumps. Mid-range vacuum systems are most effective in medium yielding, medium transmissivity formations. The third type of system involves the use of a high vacuum rotary vane, rotary claw or positive displacement (PD) blower and submersible pumps. Rotary vane, rotary claw and PD blowers are capable of vacuum levels greater than 100 i.w. A high vacuum dual-phase/VEGE system could effectively control the hydraulic gradient and recover the APH, DPH and LNAPL at this site. Soil vapor flow rates significantly increased with high vacuum extraction during the feasibility study. A high vacuum VEGE system is considered a viable remedial alternative to remediate the groundwater and soil at this facility.

- *Total Phase Extraction (TPE): TPE* utilizes a high vacuum blower to extract groundwater and soil vapor simultaneously through the same extraction pipe. High vacuum blowers are capable of high vacuum levels (approaching 30 in. Hg) and are most effective in lower-yield formations. A typical TPE system is applicable where groundwater recovery rates are less than one gpm and vapor recovery rates are less than 15 scfm per extraction well. A TPE system is not considered viable to remediate impacts at this facility due to the fluid recovery rates.

- *Air Sparge/Soil Vapor Extraction (AS/SVE):* Air sparging involves the delivery of air into the saturated zone to volatilize DPH and APH contaminants. Typically, the volatilized compounds are removed from the vadose zone by an SVE system. The effectiveness of air sparging primarily depends on two key factors: vapor-/dissolved-phase partitioning and permeability of the soil. Air sparging would not be considered due to the low permeability of the soil.

- *In-Situ Chemical Oxidation:* Oxidants, such as ozone, hydrogen peroxide and oxygen, may be added to the groundwater to promote both biological activity and chemical oxidation. The oxidation process breaks down the chemical bonds of organic compounds and typically renders harmless by-products, depending upon the strength of the oxidant. *Chemical oxidation* is not considered to be an effective remedial approach at this time due to the low permeability of the soil, the aerial extent of the impacts and proximity to the UST distribution facility.

4.0 RISK EVALUATION SUMMARY

The MDE Oil Control Program (OCP) requires potential risks of harm or loss to be measured at every site that has a reported release. It is anticipated that the determination of these potential risks will aid in establishing the necessity of remediation and, in turn, clean up goals. The MDE MEAT Guidance Document focuses on "seven risk factors". Consideration and discussion of each of these factors is summarized below:

- Light Non-Aqueous Liquid (LNAPL) has been historically detected in former groundwater monitoring wells MW-1 and MW-2, former recovery wells RW-1 and RW-3 and groundwater monitoring well MW-7. The maximum LNAPL was detected in former monitoring well MW-2 on March 3, 1992 with a thickness of 1.35 feet. LNAPL has not been detected on site since June 8, 2006, when a sheen was observed in groundwater monitoring well MW-7.

- Current and future use of impacted groundwater – 92 private domestic supply wells are located within one-half mile of the Site, the closest of which is located approximately 150 feet south of the Site. Available Maryland well records for the area are included in **Appendix C**. The area domestic supply wells range in depths from 125 feet bgs to 400 feet bgs. The closest city municipal supply well is located approximately 2,200-feet southeast of the Site. The current and future use of impacted groundwater is considered a possible concern if shallow groundwater is not confined from deeper area aquifers used for the supply wells.

- Migration of contamination – Three groundwater monitoring wells were installed west of the Site to delineate off-site groundwater impacts. Dissolved groundwater concentrations in these groundwater monitoring wells indicate that the on-site impact has the potential to migrate off-site, as the off-site groundwater monitoring well MW-14 has detectable concentrations of petroleum constituents.

- Human exposure –The risk of human exposure to soil impacts is not a concern due to the depth of impacts being greater than five (5) feet below grade. The risk of human exposure to impacted groundwater is a possible concern, as there are potable wells in the area. The current investigation has only characterized shallow groundwater impacts to maximum of 30 feet below grade. Potable wells in the area have solid riser to an average depth of 70 feet below grade. Access is currently being established to install a deep (90 feet bgs) and shallow (30 feet bgs) groundwater monitoring well to investigate the communication and possible pathway from the shallow aquifer to the deeper aquifer supplying potable water to the area residents.

- Environmental ecological exposure – Ecological receptors in the area appear to be at a minimum, as no significant ecological areas were identified in the vicinity of the Site. The surrounding area is primarily a mixture of commercial and residential properties; therefore the possibility of harmful exposure to animal or plant life is not considered.

- Impact to utilities or buried services – Underground utilities are located along the western, southern and eastern property boundary as confirmed by utility markouts. Storm drains were located along the northern boundary of the Site between Campus Hills shopping center parking lot and the station building. Due to soil and groundwater impacts at depths greater than five (5) feet bgs and depths of typical utility construction of less than five (5) ft bgs, communication between impacted soil and groundwater and these utilities is unlikely.

- Other sensitive receptors – Other sensitive receptors such as surface bodies of water are not likely at risk due to distance from the Site. The nearest surface water is an unnamed stream, located approximately 650 feet northwest of the Site, which feeds into a pond located approximately one-half mile north of the Site.

Of the seven (7) risk factors, only the migration of contamination and human risk through ingestion of groundwater are considered possible risks at this time. The remediation at this Site will be specifically design to address these two (2) risk factors. At the conclusion of remediation activities, the seven (7) risk factors will be readdressed.

5.0 PROPOSED REMEDIAL STRATEGY

Based on the results of feasibility testing, groundwater monitoring well installation activities, the remedial option evaluation, soil and groundwater sampling activities, and site remediation goals, the recommended remedial approach is vacuum enhanced groundwater extraction (VEGE). A VEGE system will address the shallow soil and groundwater impacts identified at the Site. Based upon the current soil and groundwater quality and investigations and assessments completed to date, the primary area of concern is the area to the west of the tank field (in the vicinity of groundwater monitoring wells MW-10 and MW-12). Feasibility testing suggests a high-vacuum VEGE system would be effective in removing dissolved-phase and adsorbed-phase hydrocarbons from the area of concern. The recovery well pumps will be set to lower the water table beneath the elevations of greatest impacts and expose previously submerged soil to SVE. For the SVE system, feasibility testing revealed that higher applied vacuum results in significantly higher vapor recovery rates and groundwater recovery rates. The SVE system is to be designed to apply high vacuum to the formation (i.e. greater than 100 i.w.) to maximize effectiveness of the system.

To address any hydrocarbon mass that may exist adsorbed to the fill material inside the tank field, it is recommended to operate a temporary SVE system, independent of the VEGE system, that extracts vapors from one tank field well. Feasibility testing on tank field well TF-1 suggests that mass removal can be accomplished by venting the tank field. To provide this additional venting, tank field well TF-2 is proposed to be connected to a temporary blower. The temporary SVE blower is expected to operate at low vacuum (less than 40 i.w.) and extract a high vapor flow rate (approximately 100 scfm). The blower would operate until an asymptotic rate of mass removal is observed. This independent temporary blower will target MTBE concentrations in the area of the active tank field, as requested in the MDE Directive dated June 1, 2011.

5.1 Proposed Recovery Well Network

The VEGE recovery well network is to consist of the two (2) existing groundwater monitoring wells MW-10 and MW-12, as well as four (4) additional four-inch diameter recovery wells installed to approximately 25 feet bgs and screened from above the water table to the bottom of the wells. **Figure 5** shows the proposed recovery well network. This well network is evenly distributed and spans the zone of greatest concern. While the ROIs determined during feasibility testing extended greater than 30 feet, the ROI used to determine the extraction well network was 20 feet. Utilizing this dense group of recovery wells will maximize effectiveness, reduce potential dead zones, and minimize the life cycle of the remediation system. The area of expected influence from each recovery well is shown as **Figure 6** (Estimated VEGE ROI Map).

The system components for the treatment of recovered fluids will be designed to treat the maximum

groundwater recovery rate expected from the recovery well network. While feasibility testing resulted in an initial groundwater recovery rate greater than 2 gpm, the characteristics of the formation suggest that as the area of concern is initially dewatered, the groundwater production rate is likely to decrease. The expected sustained pumping rate from each groundwater extraction well is approximately 1.5 gpm or less. The treatment system shall be designed to handle a sustained influent groundwater recovery rate of approximately 10 gpm, based on the 6-pumping-well recovery well network. Sizing the remediation system to handle 10 gpm ensures that the desired drawdown will be achieved, even while applying high vacuum, and provides the flexibility to expand the recovery well network at a later time.

5.2 System Components

A VEGE system includes a P&T component and a SVE component. The P&T component is to be comprised of a pneumatic pumping system for the recovery of groundwater. The remediation system will house a holding tank, an air stripper for primary water treatment, and solids filtration equipment and liquid granular activated carbon (LGAC) vessels for secondary water treatment. Treatment of the air stripper off-gas will be required initially if the expected discharge rate is greater than 20 lbs/day, and will consist of at least two (2) vapor granular activated carbon (VGAC) vessels connected in series, if required.

The SVE component is to be comprised of a SVE vacuum blower for the recovery of soil vapor, a vapor/liquid separator and individual piping to each recovery well. The SVE component will be designed to treat a combined system flow rate of approximately 100 scfm at an anticipated vacuum of greater than 100 i.w. Treatment of the vapor stream will be required initially and will consist of at least two (2) VGAC vessels connected in series. A change in vapor treatment may occur at a later time as mass removal rates change.

A conceptual process flow diagram for the system components is presented as **Figure 7**. These components are representative and revisions may be required during the final design process. Final design specification and engineering calculations for the treatment system will be completed once this CAP is approved.

Note that the installation of the system will depend on:

- The ability to install a recovery well and trenching network that fits the constraints of limited available space onsite;
- Approval of the design by the Building Code Officer; and
- Approval to discharge treated groundwater at the desired flow rate.

5.3 Remedial System Permitting

The enclosure will be constructed to comply with all state and local building codes and requirements.

In addition to building, electric, and occupancy permits, other permits required by the final design specifications may include:

- Air Discharge Permits: Permits from the MDE Air & Radiation Management Administration (ARMA) will be required prior to system installation and operation for both the SVE system and the air stripper discharge. The air discharge permit limits VOC emissions to 20 pounds per day, unless the discharge is reduced by 85 percent or more overall.

- Water Discharge Permit: On approval of this Revised CAP, a formal application to discharge the treated groundwater will be submitted to the appropriate authority. Discharge options at the site include one of the area storm drains. If discharge to a storm drain is permitted and accessible, a NPDES General Discharge permit will be required.
- Water Appropriations Permit: A Water Appropriations Permit will be required as the planned use of ground water on an annual average is greater than 5,000 gallons per day (gpd).
- Construction Permits: Building and electrical permits must be obtained from the County, Town or City municipality prior to installation of any remediation shed or enclosure. Groundwater monitoring well permits are required from the County prior to installation.
- Right-of-Way Permits: State or County Right-of-Way permits may be required to perform work in public space to access the storm sewer network.

6.0 MONITORING, REPORTING, AND CASE CLOSURE

6.1 Monitoring Schedule

Gauging and sampling of the groundwater monitoring wells is currently conducted on a quarterly basis. GES will continue the same schedule for groundwater gauging and sampling events. The groundwater monitoring wells and tank field monitoring wells will be sampled and analyzed in accordance with USEPA Method 8620 for full suite VOCs including fuel oxygenates, TPH-GRO and TPH-DRO.

6.2 Reporting Schedule

GES shall submit *Quarterly Monitoring Reports* to the MDE summarizing site remediation status. Groundwater gauging data, sampling data and remediation system monitoring data will also be included in the report. The report will show the tabulated data gathered during the system O&M events, dissolved hydrocarbon mass removal calculations. The report will also include a groundwater monitoring map summarizing the groundwater sampling data for that quarter.

6.3 Case Closure

The remediation endpoint for LNAPL thickness shall be the removal of LNAPL to less than 0.01 feet in the groundwater monitoring wells and tank field monitoring wells for a period of one year.

The remediation goal for adsorbed-phase hydrocarbons shall be consistent with the generic numeric MDE protection of groundwater standards. Soil analytical data collected during groundwater monitoring well installation activities in 2009 and 2011 show that soil concentrations were above these clean-up standards for MTBE around groundwater monitoring wells MW-10, MW-11, MW-12, MW-14, and MW-16. Benzene concentrations only exceeded soil standards in groundwater monitoring well MW-10. The remediation system will be designed to reduce MTBE and benzene concentration in the soil in the area of these groundwater monitoring wells currently exceeding the protection of groundwater standards.

Since the Site is located in a potential groundwater use area, groundwater remedial goals will be evaluated against site specific risk as it pertains to established MDE regulations. In addition, hydrocarbon recovery rates will be evaluated to determine if recovery is still obtainable and/or if asymptotic recovery has been achieved.

TABLES

LIQUID LEVEL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Well ID	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)
FRW-1	401.19	01/15/2001	NR	-	-	-
	401.19	04/25/2005	9.10	-	-	392.09
	401.19	05/04/2005	9.27	-	-	391.92
	401.19	12/14/2005	13.61	-	-	387.58
	401.19	03/07/2006	10.90	-	-	390.29
	401.19	06/08/2006	12.72	-	-	388.47
	401.19	12/05/2006	11.12	-	-	390.07
	401.19	03/07/2007	10.44	-	-	390.75
	401.19	07/06/2007	11.54	-	-	389.65
	401.19	09/13/2007	14.74	-	-	386.45
	401.19	12/20/2007	15.10	-	-	386.09
	401.19	03/17/2008	13.40	-	-	387.79
	401.19	06/10/2008	12.65	-	-	388.54
	401.19	11/19/2009	10.50	-	-	390.69
	401.19	12/28/2009	10.50	-	-	390.69
Well Abandoned						
FRW-2	400.36	01/15/2001	NR	-	-	-
	400.36	04/25/2005	8.94	-	-	391.42
	400.36	05/04/2005	8.74	-	-	391.62
	400.36	12/14/2005	12.88	-	-	387.48
	400.36	03/07/2006	10.53	-	-	389.83
	400.36	06/08/2006	12.88	-	-	387.48
	400.36	12/05/2006	10.55	-	-	389.81
	400.36	03/07/2007	10.05	-	-	390.31
	400.36	07/06/2007	11.19	-	-	389.17
	400.36	09/13/2007	13.53	-	-	386.83
	400.36	12/20/2007	15.30	-	-	385.06
	400.36	03/17/2008	13.12	-	-	387.24
	400.36	06/10/2008	11.88	-	-	388.48
	400.36	11/19/2009	11.60	-	-	388.76
	400.36	12/28/2009	11.60	-	-	388.76
Well Abandoned						
MW-1	403.01	01/15/2001	NR	-	-	-
	403.01	04/25/2005	10.94	-	-	392.07
	403.01	05/04/2005	11.06	-	-	391.95
	403.01	12/14/2005	15.41	-	-	387.60
	403.01	03/07/2006	12.98	-	-	390.03
	403.01	06/08/2006	15.51	-	-	387.50
	403.01	09/12/2006	14.40	-	-	388.61
	403.01	12/05/2006	13.07	-	-	389.94

LIQUID LEVEL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Well ID	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)
MW-1	403.01	03/07/2007	12.80	-	-	390.21
(cont.)	403.01	07/06/2007	13.75	-	-	389.26
	403.01	09/13/2007	16.20	-	-	386.81
	403.01	12/20/2007	18.10	-	-	384.91
	403.01	03/17/2008	15.51	-	-	387.50
	403.01	06/10/2008	14.55	-	-	388.46
	403.01	11/19/2009	14.80	-	-	388.21
	403.01	12/28/2009	14.80	-	-	388.21
Well Abandoned						
MW-2	403.40	01/15/2001	NR	-	-	-
	403.40	04/25/2005	10.67	-	-	392.73
	403.40	05/04/2005	11.50	-	-	391.90
	403.40	12/14/2005	15.66	-	-	387.74
	403.40	03/07/2006	8.71	-	-	394.69
	403.40	06/08/2006	14.78	-	-	388.62
	403.40	12/05/2006	13.11	-	-	390.29
	403.40	03/07/2007	12.28	-	-	391.12
	403.40	07/06/2007	9.61	-	-	393.79
	403.40	09/13/2007	15.11	-	-	388.29
	403.40	12/20/2007	18.63	-	-	384.77
	403.40	03/17/2008	12.75	-	-	390.65
	403.40	06/10/2008	14.05	-	-	389.35
	403.40	11/19/2009	14.10	-	-	389.30
	403.40	12/28/2009	14.10	-	-	389.30
Well Abandoned						
MW-3	403.71	01/15/2001	NR	-	-	-
	403.71	04/25/2005	11.46	-	-	392.25
	403.71	05/04/2005	11.73	-	-	391.98
	403.71	12/14/2005	16.11	-	-	387.60
	403.71	03/07/2006	13.47	-	-	390.24
	403.71	06/08/2006	15.13	-	-	388.58
	403.71	12/05/2006	13.47	-	-	390.24
	403.71	03/07/2007	13.23	-	-	390.48
	403.71	07/06/2007	14.46	-	-	389.25
	403.71	09/13/2007	16.98	-	-	386.73
	403.71	12/20/2007	18.80	-	-	384.91
	403.71	03/17/2008	16.31	-	-	387.40
	403.71	06/10/2008	15.10	-	-	388.61
	403.71	11/19/2009	14.74	-	-	388.97
	403.71	12/28/2009	14.74	-	-	388.97

LIQUID LEVEL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Well ID	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)
MW-3	403.71	04/23/2010	10.10	-	-	393.61
(cont.)						
MW-4	402.12	01/15/2001	NR	-	-	-
	402.12	04/25/2005	10.07	-	-	392.05
	402.12	05/04/2005	10.31	-	-	391.81
	402.12	03/07/2006	NR	-	-	-
Well Abandoned						
MW-5	403.10	01/15/2001	NR	-	-	-
	403.10	04/25/2005	11.32	-	-	391.78
	403.10	05/04/2005	11.51	-	-	391.59
	403.10	12/14/2005	15.75	-	-	387.35
	403.10	03/07/2006	13.27	-	-	389.83
	403.10	06/08/2006	14.70	-	-	388.40
	403.10	12/05/2006	13.31	-	-	389.79
	403.10	03/07/2007	13.00	-	-	390.10
	403.10	07/06/2007	14.00	-	-	389.10
	403.10	09/13/2007	16.41	-	-	386.69
	403.10	12/20/2007	18.20	-	-	384.90
	403.10	03/17/2008	15.97	-	-	387.13
	403.10	06/10/2008	14.72	-	-	388.38
	403.10	11/19/2009	14.50	-	-	388.60
	403.10	12/28/2009	14.50	-	-	388.60
Well Abandoned						
MW-6	400.13	04/25/2005	8.68	-	-	391.45
	400.13	05/04/2005	8.77	-	-	391.36
	400.13	03/07/2006	NR	-	-	-
	400.13	06/08/2006	11.85	-	-	388.28
	400.13	09/12/2006	11.00	-	-	389.13
	400.13	12/05/2006	10.60	-	-	389.53
	400.13	03/07/2007	10.16	-	-	389.97
	400.13	07/06/2007	10.97	-	-	389.16
	400.13	09/13/2007	13.10	-	-	387.03
	400.13	12/20/2007	14.90	-	-	385.23
	400.13	03/17/2008	12.95	-	-	387.18
	400.13	06/10/2008	11.69	-	-	388.44
	400.13	11/19/2009	11.55	-	-	388.58
	400.13	12/28/2009	11.55	-	-	388.58
Well Abandoned						

LIQUID LEVEL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Well ID	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)
MW-7	402.73	01/15/2001	NR	-	-	-
	402.73	04/25/2005	10.88	-	-	391.85
	402.73	05/04/2005	10.91	-	-	391.82
	402.73	12/14/2005	15.21	-	-	387.52
	402.73	03/07/2006	12.80	-	-	389.93
	402.73	06/08/2006	14.15	-	-	388.58
	402.73	09/12/2006	13.92	-	-	388.81
	402.73	12/05/2006	12.88	-	-	389.85
	402.73	03/07/2007	12.55	-	-	390.18
	402.73	07/06/2007	13.46	-	-	389.27
	402.73	09/13/2007	15.80	-	-	386.93
	402.73	12/20/2007	17.18	-	-	385.55
	402.73	03/17/2008	15.52	-	-	387.21
	402.73	06/10/2008	14.25	-	-	388.48
	402.73	11/19/2009	14.52	-	-	388.21
	402.73	12/28/2009	11.91	-	-	390.82
	402.73	02/15/2010	11.72	-	-	391.01
	402.73	04/23/2010	10.10	-	-	392.63
	402.73	04/11/2011	13.08	-	-	389.65
	402.73	09/12/2011	14.25	-	-	388.48
MW-8	401.13	09/12/2011	13.83	-	-	387.30
MW-9A	400.00	04/25/2005	8.61	-	-	391.39
	400.00	05/04/2005	8.65	-	-	391.35
	400.00	03/07/2006	10.25	-	-	389.75
	400.00	06/08/2006	DRY	-	-	-
	400.00	12/05/2006	10.37	-	-	389.63
	400.00	03/07/2007	9.99	-	-	390.01
	400.00	07/06/2007	10.72	-	-	389.28
	400.00	09/13/2007	DRY	-	-	-
	400.00	12/20/2007	DRY	-	-	-
	400.00	03/17/2008	12.66	-	-	387.34
	400.00	06/10/2008	11.44	-	-	388.56
	400.00	11/19/2009	DRY	-	-	-
Well Abandoned						
MW-9	399.97	01/15/2001	NR	-	-	-
	399.97	04/25/2005	8.53	-	-	391.44
	399.97	05/04/2005	8.44	-	-	391.53
	399.97	03/07/2006	NR	-	-	-
	399.97	06/08/2006	12.41	-	-	387.56

LIQUID LEVEL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Well ID	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)
MW-9	399.97	09/12/2006	11.15	-	-	388.82
(cont.)	399.97	12/05/2006	11.37	-	-	388.60
	399.97	03/07/2007	10.93	-	-	389.04
	399.97	07/06/2007	11.70	-	-	388.27
	399.97	09/13/2007	13.92	-	-	386.05
	399.97	12/20/2007	15.70	-	-	384.27
	399.97	03/17/2008	13.70	-	-	386.27
	399.97	06/10/2008	12.48	-	-	387.49
	399.97	12/28/2009	11.92	-	-	388.05
	399.97	02/15/2010	10.31	-	-	389.66
	399.97	04/23/2010	8.78	-	-	391.19
	399.97	04/11/2011	11.52	-	-	388.45
	399.97	09/12/2011	12.75	-	-	387.22
MW-10	400.36	11/19/2009	12.61	-	-	387.75
	400.36	12/28/2009	11.84	-	-	388.52
	400.36	02/15/2010	10.40	-	-	389.96
	400.36	04/23/2010	8.78	-	-	391.58
	400.36	04/11/2011	11.75	-	-	388.61
	400.36	09/12/2011	12.98	-	-	387.38
MW-11	401.07	12/28/2009	11.85	-	-	389.22
	401.07	02/15/2010	10.93	-	-	390.14
	401.07	04/23/2010	9.45	-	-	391.62
	401.07	04/11/2011	12.28	-	-	388.79
	401.07	09/12/2011	13.47	-	-	387.60
MW-12	400.12	09/12/2011	12.85	-	-	387.27
MW-13	401.90	09/12/2011	14.35	-	-	387.55
MW-14	400.45	09/12/2011	12.67	-	-	387.78
MW-16	401.03	09/12/2011	13.47	-	-	387.56
PW-A	-	03/07/2006	-	-	-	-
	-	09/13/2007	-	-	-	-
RW-3	403.14	01/15/2001	NR	-	-	-
	403.14	04/25/2005	11.06	-	-	392.08
	403.14	05/04/2005	11.24	-	-	391.90
	403.14	12/14/2005	15.57	-	-	387.57

LIQUID LEVEL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Well ID	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Groundwater Elevation (feet)
RW-3	403.14	03/07/2006	13.05	-	-	390.09
(cont.)	403.14	06/08/2006	14.58	-	-	388.56
	403.14	09/12/2006	14.23	-	-	388.91
	403.14	12/05/2006	13.05	-	-	390.09
	403.14	03/07/2007	12.71	-	-	390.43
	403.14	07/06/2007	13.91	-	-	389.23
	403.14	09/13/2007	16.40	-	-	386.74
	403.14	12/20/2007	18.15	-	-	384.99
	403.14	03/17/2008	13.87	-	-	389.27
	403.14	06/10/2008	14.58	-	-	388.56
	403.14	11/19/2009	13.00	-	-	390.14
	403.14	12/28/2009	13.00	-	-	390.14
Well Abandoned						
TF-1	400.62	03/07/2006	DRY	-	-	-
	400.62	06/08/2006	DRY	-	-	-
	400.62	12/05/2006	DRY	-	-	-
	400.62	03/07/2007	DRY	-	-	-
	400.62	07/06/2007	DRY	-	-	-
	400.62	09/13/2007	DRY	-	-	-
	400.62	12/20/2007	DRY	-	-	-
	400.62	03/17/2008	DRY	-	-	-
	400.62	06/10/2008	11.48	-	-	389.14
	400.62	02/15/2010	10.42	-	-	390.20
	400.62	06/17/2010	10.51	-	-	390.11
	400.62	09/12/2011	10.98	-	-	389.64
TF-2	401.64	03/07/2006	NR	-	-	-
	401.64	06/08/2006	DRY	-	-	-
	401.64	12/05/2006	12.63	-	-	389.01
	401.64	07/06/2007	DRY	DRY	DRY	-
	401.64	09/13/2007	DRY	-	-	-
	401.64	12/20/2007	DRY	-	-	-
	401.64	03/17/2008	DRY	-	-	-
	401.64	06/10/2008	DRY	-	-	-
	401.64	02/15/2010	11.41	-	-	390.23
	401.64	06/17/2010	11.51	-	-	390.13
	401.64	09/12/2011	DRY	-	-	-

LNAPL = Light Non-Aqueous Phase Liquids
NR = Not Recorded

Table 2

SOIL ANALYTICAL DATA SUMMARY

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Soil Sample ID	Date	Depth (ft)	Benzene (µg/kg)	Toluene (µg/kg)	Ethylbenzene (µg/kg)	Total Xylenes (µg/kg)	Total BTEX (µg/kg)	MTBE (µg/kg)	TPH-DRO (µg/kg)	TPH-GRO (µg/kg)
MDE Protection of Groundwater Standards		**-**	**1.9**	**27,000**	**15,000**	**3,000**	**-**	**12**	**230,000**	**230,000**
MDE Non- Residential Standards		**-**	**1.9**	**27,000**	**15,000**	**3,000**	**-**	**12**	**620,000**	**620,000**
MW-12 16.0-18.0	08/24/2011	16-18	ND<0.18	ND<0.52	ND<0.20	ND<0.25	ND<1.15	**2,420**	ND<380	ND<2,500
MW-13 17.5-19.0	08/29/2011	17.5-19	ND<0.18	ND<0.53	ND<0.21	ND<0.26	ND<1.18	ND<0.25	161,000	ND<2,400
MW-14 17.0-19.0	08/24/2011	17-19	ND<0.18	ND<0.51	ND<0.20	ND<0.25	ND<1.14	**104**	ND<350	ND<2,400
MW-16 17.0-18.0	08/29/2011	17-18	ND<0.17	ND<0.48	ND<0.19	ND<0.24	ND<1.08	**365**	27,200	ND<2,400
MW-10	11/19/09	18-20	***44.9***	612	109	726	1,492	***54,400***	<3.8	50.9
MW-11	12/14/09	23 - 25	<0.46	<0.39	<0.50	0.70	0.70	***52.8***	<3.7	<1.5

Bolded values indicate concentrations above MDE standards.
ND< = Analyte was not detected, the method detection limit is given.
J = Indicates an estimated value, between the detection limit and the reporting limit
Total BTEX = Sum of Benzene, Toluene, Ethylbenzene and Total Xylenes
MTBE = Methyl-tertiary Butyl Ether
MDE Standards are Clean Up Standards for Soil and Groundwater, *June 2008*

ft = Feet
MW = Monitoring Well
µg/kg= micrograms per kilogram
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics

Table 3

HISTORIC GROUNDWATER DATA

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TPH-DRO (µg/L)	TPH-GRO (µg/L)
GW Clean-up Standards for Type I and II Aquifers		**5**	**1,000**	**700**	**10,000**	**NA**	**20**	**NA**	**47**	**47**
FRW-1	01/15/2001	***770***	***2,100***	***1,900***	***12,000***	16,770	***750***	-	***43,000***	***53,000***
	04/25/2005	***50***	7.0	47	57	161.0	***110***	-	-	-
	12/14/2005	***153***	18.6	299	246	716.6	***188***	-	***4,750***	***6,230***
	12/05/2006	***63.7***	12.6	105	62.6	243.9	***125***	-	1.57	2.45
	07/06/2007	***25.1***	4.0	111	116	256.1	18.3	25.5	***60,800***	***1,650***
	06/10/2008	***57.5***	3.3	183	79.8	323.6	***72.9***	86.9	***4,550***	***4,040***
FRW-2	01/15/2001	<2.0	<2.0	<2.0	<2.0	<8.0	***120***	-	***600***	***600***
	04/25/2005	1.0	<0.7	1.0	1.0	3.0	14	-	-	-
	12/14/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	-	***439***	<200
	12/05/2006	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(4.0)	ND(1.0)	-	ND(0.10)	ND(0.20)
	07/06/2007	ND<1.0	0.24 J	ND<1.0	ND<1.0	0.24	ND<1.0	ND<25	***477***	ND<200
	06/10/2008	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	ND<1.0	ND<25	***191***	ND<200
MW-1	01/15/2001	***13,000***	***11,000***	***1,300***	9,700	35,000	***8,400***	-	***11,000***	***89,000***
	04/25/2005	***3,700***	***8,000***	***1,700***	***13,000***	26,400	***650***	-	-	-
	12/14/2005	0.7	1.4	0.57	24	26.67	0.78	-	***3,760***	***841***
	03/07/2006	***130***	266	57.6	230	683.6	***104***	-	-	-
	09/12/2006	4.6	ND<1.0	ND<1.0	ND<1.0	4.6	***246***	-	-	-
	12/05/2006	***11.8***	4.9	3.9	8.3	28.9	***25.1***	-	0.526	0.240
	03/07/2007	0.82 J	0.68 J	0.20 J	1.1	2.80	ND<1.0	-	-	-
	07/06/2007	1.2	1.7	1.9	4.9	9.7	1.2	ND<25	***1,540***	ND<200
	09/13/2007	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	0.77 J	-	-	-
	03/17/2008	0.44 J	1.9	1.1	13.0	16.44	5.1	-	-	-
	06/10/2008	***5.2***	2.0	0.89 J	2.0	10.09	4.3	ND<25	***833***	ND<200
MW-2	01/15/2001	<2.0	<2.0	<2.0	<2.0	<8.0	13	-	<600	<200
	04/25/2005	4.0	5.0	8.0	21	38.0	2.0	-	-	-
	12/14/2005	2.2	5.0	6.5	11.4	25.1	3.4	-	***8,400***	<200
	12/05/2006	3.5	17.2	4.6	5.6	30.9	0.44	-	0.620	ND(0.20)
	07/06/2007	ND<1.0	2.7	ND<1.0	ND<1.0	2.7	ND<1.0	ND<25	***1,660***	ND<200
	06/10/2008	ND<1.0	1.1	ND<1.0	ND<1.0	1.1	ND<1.0	ND<25	***2,080***	ND<200
MW-3	01/15/2001	<1.0	<1.0	<1.0	<1.0	<4.0	3.0	-	<500	<100
	04/25/2005	<0.5	<0.7	<0.8	<0.8	<2.8	2.0	-	-	-
	12/14/2005	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	-	<100	<200
	12/05/2006	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(4.0)	2.1	-	ND(0.11)	ND(0.20)
	07/06/2007	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	0.35 J	ND<25	ND<100	ND<200
	06/10/2008	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	0.36 J	ND<25	***212***	ND<200
MW-4	01/15/2001	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	-	<500	<100
	04/25/2005	5.0	<0.7	<0.8	1	6.0	**39**	-	-	-

Table 3

HISTORIC GROUNDWATER DATA

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TPH-DRO (µg/L)	TPH-GRO (µg/L)
GW Clean-up Standards for Type I and II Aquifers		**5**	**1,000**	**700**	**10,000**	**NA**	**20**	**NA**	**47**	**47**
MW-5	01/15/2001	***150***	25	11	150	336	***1,500***	-	***2,700***	***5,400***
	05/04/2005	***11***	<0.7	<0.8	<0.8	11	***300***	-	-	-
	12/14/2005	***7.5***	0.39	0.92	1.6	10.41	***186***	-	***597***	***543***
	12/05/2006	***18.2***	ND(2.5)	3.9	5.1	27.2	***280***	-	0.194	0.478
	07/06/2007	***18.1***	ND<2.0	ND<2.0	1.3 J	19.4	***729***	69.6	***314***	***846***
	06/10/2008	***6.6***	ND<1.0	ND<1.0	ND<1.0	6.6	***78.9***	72.4	***291***	***213***
MW-6	05/04/2005	<3.0	<4.0	<4.0	<5.0	<16.0	***6,400***	-	-	-
	09/12/2006	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	***380***	-	-	-
	12/05/2006	ND(10)	ND(10)	ND(10)	ND(10)	ND(40)	***1,130***	-	ND(0.11)	1.02
	03/07/2007	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	ND<1.0	-	-	-
	07/06/2007	***10.7***	ND<10	ND<10	ND<10	10.7	***3,050***	1,080	ND<100	***2,530***
	09/13/2007	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	***30.0***	-	-	-
	03/17/2008	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	***26.3***	-	-	-
	06/10/2008	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	***151***	91.1	ND<100	***273***
MW-7	01/15/2001	***1,600***	***4,600***	450	9,700	16,350	***220,000***	-	***30,000***	***190,000***
	04/25/2005	***2,000***	***9,600***	***2,000***	***18,000***	31,600	***84,000***	-	-	-
	03/07/2006	***2,600***	***12,800***	***2,690***	***23,300***	41,390	***31,400***	-	-	-
	09/12/2006	***1,180***	***7,530***	***1,820***	***17,500***	28,030	***40,200***	-	-	-
	12/05/2006	***1,640***	***7,150***	***1,820***	***15,400***	26,010	***26,100***	-	13.2	***100***
	03/07/2007	***654***	***4,700***	***1,060***	9,910	16,324	***21,400***	-	-	-
	07/06/2007	***874***	***3,900***	***1,250***	***10,100***	16,124	***24,400***	9,790	***13,700***	***65,600***
	09/13/2007	***1,170***	***9,360***	***1,480***	***12,200***	24,210	***26,100***	-	-	-
	03/17/2008	***637***	***2,420***	***933***	***11,400***	15,390	***16,600***	-	-	-
	06/10/2008	***1,500***	***6,400***	***843***	***12,200***	20,943	***31,000***	8,770	***23,300***	***77,800***
	12/28/2009	***398***	***1,970***	***995***	5,600	8,963	***4,950A***	7,270	-	***36,200***
	02/15/2010	***1,000***	***3,410***	***1,550***	9,340	15,300	***5,000***	7,220	***8,350***	***48,700***
	04/23/2010	***863***	***2,720***	***1,660***	***10,400***	15,643	***4,390***	5,360	43.2	15.5
	04/11/2011	***867***	***2,560***	***1,750***	7,460	12,637	***1,590***	2,320	***17,400***	***50,800***
	09/12/2011	***336***	***1,360***	***1,210***	4,540	7,446	***771***	599	***24,800***	***28,300***
MW-8	09/12/2011	0.56 J	ND<0.15	ND<0.21	ND<0.17	0.56	***54.9***	28.7	ND<3.5	ND<16
MW-9A	05/04/2005	5.0	12	<8.0	<8.0	17.0	***16,000***	-	-	-
	12/05/2006	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(4.0)	***602***	-	0.307	0.917
	07/06/2007	ND<100	ND<100	ND<100	ND<100	ND<400	***24,100***	10,700	***193***	***19,800***
	09/13/2007	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	06/10/2008	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<4.0	0.83 J	ND<25	ND<100	ND<200
MW-9	01/15/2001	3.0	<1.0	<1.0	<1.0	3.0	***2,300***	-	<500	1,400
	05/04/2005	***180***	120	120	280	700	***56,000***	-	-	-

Table 3

HISTORIC GROUNDWATER DATA

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TPH-DRO (µg/L)	TPH-GRO (µg/L)
GW Clean-up Standards for Type I and II Aquifers		**5**	**1,000**	**700**	**10,000**	**NA**	**20**	**NA**	**47**	**47**
MW-9	09/12/2006	0.25 J	ND<1.0	ND<1.0	ND<1.0	0.25	***205***	-	-	-
(cont.)	12/05/2006	***67.3***	16.1	80.0	115	278.4	***50,900***	-	1.51	***52.9***
	03/07/2007	***5.9***	0.80 J	0.92 J	5.0	12.62	***3,210***	-	-	-
	07/06/2007	***118***	20.3 J	222	631	991.3	***7,150***	20,900	***1,590***	***10,600***
	09/13/2007	***9.4***	0.76 J	12.8	27.9	50.86	***473***	-	-	-
	03/17/2008	0.36 J	ND<1.0	ND<1.0	ND<1.0	0.36	***243***	-	-	-
	06/10/2008	0.48 J	ND<1.0	ND<1.0	ND<1.0	0.48	***175***	8,630	***182***	***1,130***
	12/28/2009	<1.0	<1.0	<1.0	0.34	0.34	0.68	25.3	-	<32
	02/15/2010	***22.9***	4.2	80.3	19.5	126.9	***79.8***	13,900	***858***	***1,380***
	04/23/2010	***19.5***	5.4	22.3	60.6	107.8	***187***	4,830	0.367	0.848
	04/11/2011	ND<0.23	ND<0.30	ND<0.27	ND<0.25	ND<1.05	15.5	1,040	ND<39	ND<11
	09/12/2011	0.57 J	ND<0.15	1.7	ND<0.17	2.27	10.8	834	439	ND<16
MW-10	12/28/2009	***1,200***	***13,800***	***2,590***	***17,000***	34,590	***163,000A***	316,000	-	***245,000***
	02/15/2010	***2,310***	***11,800***	***2,650***	***15,500***	32,260	***139,000***	173,000	***12,800***	***246,000***
	04/23/2010	***1,780***	***14,700***	***3,010***	***19,200***	38,690	***162,000***	179,000	15.2	***192***
	04/11/2011	***2,570***	***6,450***	***3,040***	***14,300***	26,360	***75,800***	108,000	***15,300***	***149,000***
	09/12/2011	***2,680***	***7,970***	***2,970***	***14,800***	28,360	***65,900***	87,100	***20,100***	***148,000***
MW-11	12/28/2009	***513***	317	278	726	1,834	***1,590***	2,220	-	***9,430***
	02/15/2010	***1,010***	***1,550***	***759***	2,510	5,829	***2,690***	2,110	***4,430***	***24,300***
	04/23/2010	***936***	772	***724***	1,990	4,422	***1,920***	914	5.53	12.1
	04/11/2011	***175***	125	140	245	685	***1,480***	2,500	***2,210***	***5,440***
	09/12/2011	***16.4***	2.3	10.4	21.6	50.7	***596***	665	***1,660***	***1,230***
MW-12	09/12/2011	***1,150***	**4,460**	**2,140**	**10,700**	18,450	***95,900***	126,000	***16,800***	***161,000***
MW-14	09/12/2011	***8.8***	ND<0.73	ND<1.1	ND<0.87	8.8	***5,360***	15,300	***537***	***6,150***
PW-A	03/07/2006	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<2.00	ND<0.50	-	-	-
	09/13/2007	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<2.00	ND<0.50	-	-	-
RW-3	01/15/2001	***700***	190	<2.0	780	1,670	***5,700***	-	***5,500***	***11,000***
	04/25/2005	***52***	59	120	800	1,031	***490***	-	-	-
	12/14/2005	***160***	57.7	46.1	389	652.8	***134***	-	***1,770***	***3,630***
	03/07/2006	***55***	21.9	55.3	255	387.2	***419***	-	-	-
	09/12/2006	***10.5***	7.4	27.7	145	190.6	***54.0***	-	-	-
	12/05/2006	***48.1***	49.4	62.6	188	348.1	***271***	-	0.890	2.71
	03/07/2007	0.50 J	0.29 J	1.4	5.9	8.09	6.6	-	-	-
	07/06/2007	***477***	150	258	715	1,600	***299***	96.0 J	***1,990***	***6,190***
	09/13/2007	***236***	35.2	68.5	196	535.7	***172***	-	-	-
	03/17/2008	***70.1***	24.7	121	358	573.8	***75.5***	-	-	-

Table 3

HISTORIC GROUNDWATER DATA

Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TPH-DRO (µg/L)	TPH-GRO (µg/L)
GW Clean-up Standards for Type I and II Aquifers		**5**	**1,000**	**700**	**10,000**	**NA**	**20**	**NA**	**47**	**47**
RW-3 (cont.)	06/10/2008	***63.6***	14.3	59.7	202	339.6	***243***	70.5	***3,690***	***5,160***
TF-1	03/07/2006	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	12/05/2006	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	03/07/2007	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	07/06/2007	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY
	09/13/2007	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	03/17/2008	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	02/15/2010	0.23 J	4.3	1.8	87.7	94.03	0.83 J	ND<2.0	***4,750***	***1,140***
	09/12/2011	3.4	127	28.2	1,270	1,428.6	3.6	ND<3.7	-	**4,410**
TF-2	07/06/2007	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	09/13/2007	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	03/17/2008	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	02/15/2010	ND<0.23	0.55 J	0.96 J	5.3	6.81	7.7	ND<2.0	***2,160***	ND<32
	09/12/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Notes:

ND = Not detected above laboratory method detection limits
NR = Not reported
NA = Not Available or not analyzed for that specific compound
<# or (#) = Less than the method detection limit of #
µg/l = micrograms per liter
BTEX = Benzene, toluene, ethylbenzene, xylenes
MTBE = Methyl tert-Butyl Ether
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics
TBA = tert-Butyl Alcohol
DRY = Insufficient water for sampling
J = Estimated Concentration
- = Data not available

Table 4

POTABLE GROUNDWATER DATA

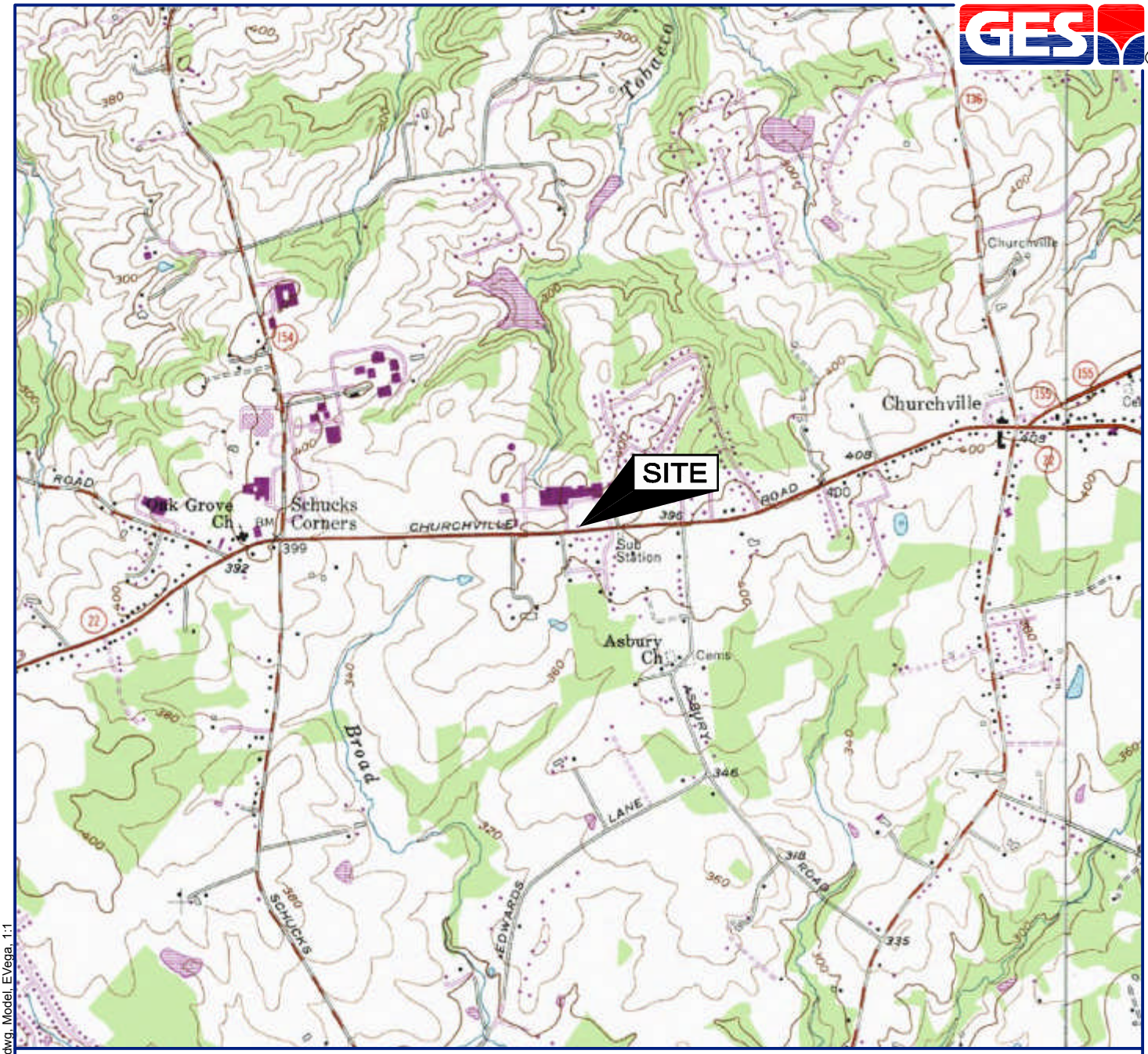
Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, Maryland

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
GW Clean-up Standards for Type I and II Aquifers		**5**	**1,000**	**700**	**10,000**	**NA**	**20**	**NA**	**NA**	**NA**	**NA**
2319 CHURCHVILLE RD	08/29/2011	ND<0.034	ND<0.067	ND<0.20	ND<0.044	ND<0.345	0.45 J	ND<0.16	ND<0.10	ND<0.076	ND<0.14
2317 CHURCHVILLE RD	09/08/2011	ND<0.034	ND<0.067	ND<0.20	ND<0.044	ND<0.345	0.98	ND<1.2	ND<0.10	ND<0.076	ND<0.14

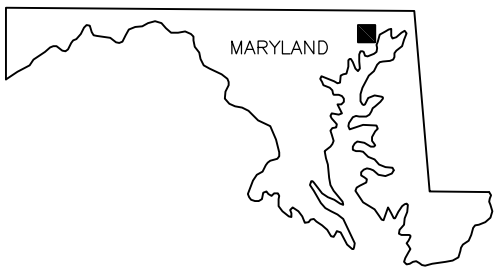
Notes:

ND = Not detected above laboratory method detection limits
NR = Not reported
NA = Not Available or not analyzed for that specific compound
<# = Less than the method detection limit of #
µg/l = micrograms per liter
BTEX = Benzene, toluene, ethylbenzene, xylenes
MTBE = Methyl tert-Butyl Ether
DIPE = Diisopropyl Ether
ETBE = Ethyl tert-Butyl Ether
TAME = tert-Amyl Methyl Ether
TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics
TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics
TBA = tert-Butyl Alcohol
DRY = Insufficient water for sampling
J = Estimated Concentration
- = Data not available

FIGURES



SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1986
BEL AIR, MARYLAND
CONTOUR INTERVAL = 20'



QUADRANGLE LOCATION

DRAFTED BY: E.V. (N.J.)	SITE LOCATION MAP
CHECKED BY: NK	BEL AIR XTRA FUELS 2476 CHURCHVILLE ROAD BEL AIR, MARYLAND
REVIEWED BY: ATC	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114
NORTH	SCALE IN FEET: 0 — 2000 / DATE: 7-6-11 / FIGURE: 1

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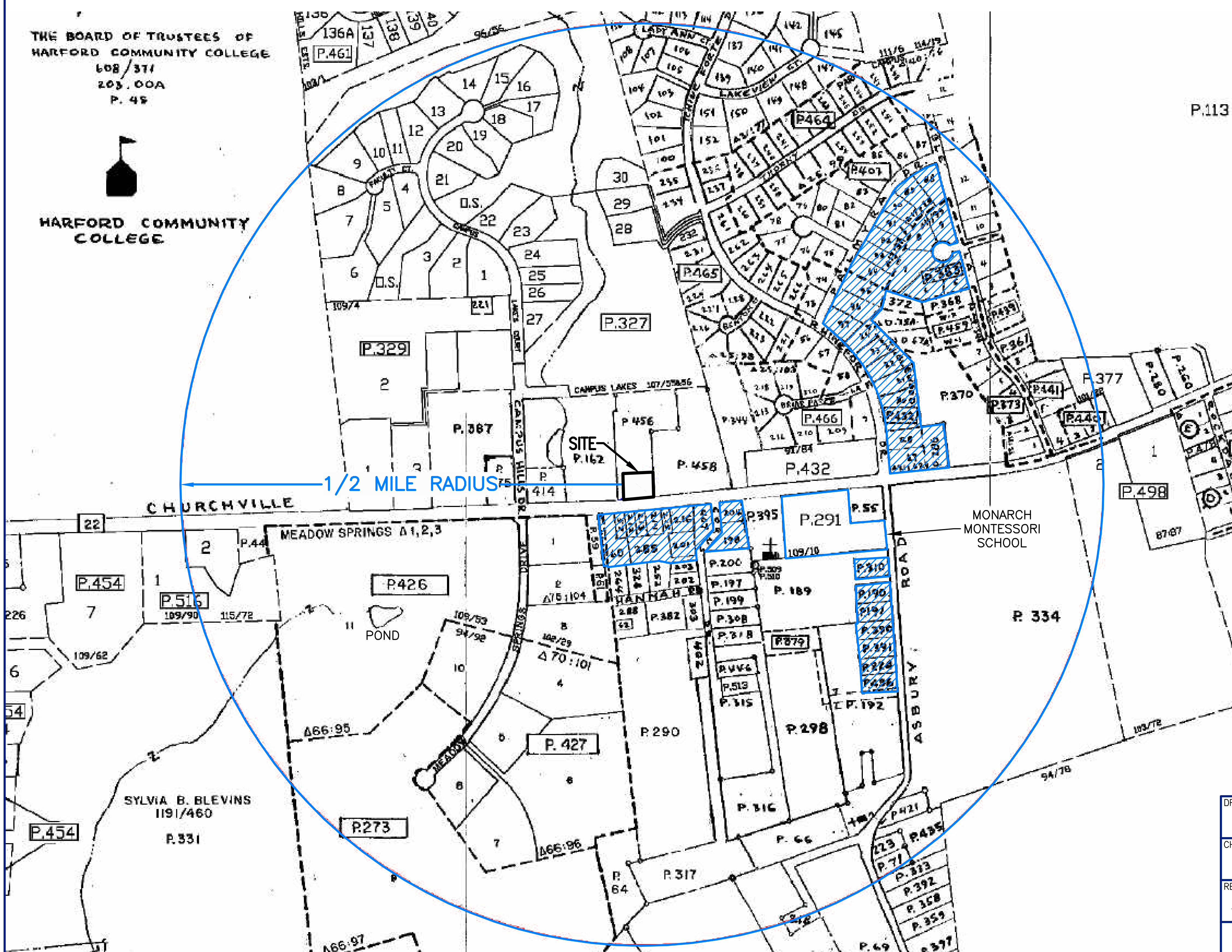

LEGEND

PROPERTY WITH VISUALLY VERIFIED POTABLE WELL

DRAFTED BY: E.V. (N.J.)	ONE HALF-MILE RADIUS MAP		
CHECKED BY: NK	BEL AIR XTRA FUELS 2476 CHURCHVILLE ROAD BEL AIR, MARYLAND		
REVIEWED BY: ATC			
NORTH	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114		
	SCALE IN FEET (APPROXIMATE) 0 600	DATE 7-6-11	FIGURE 2

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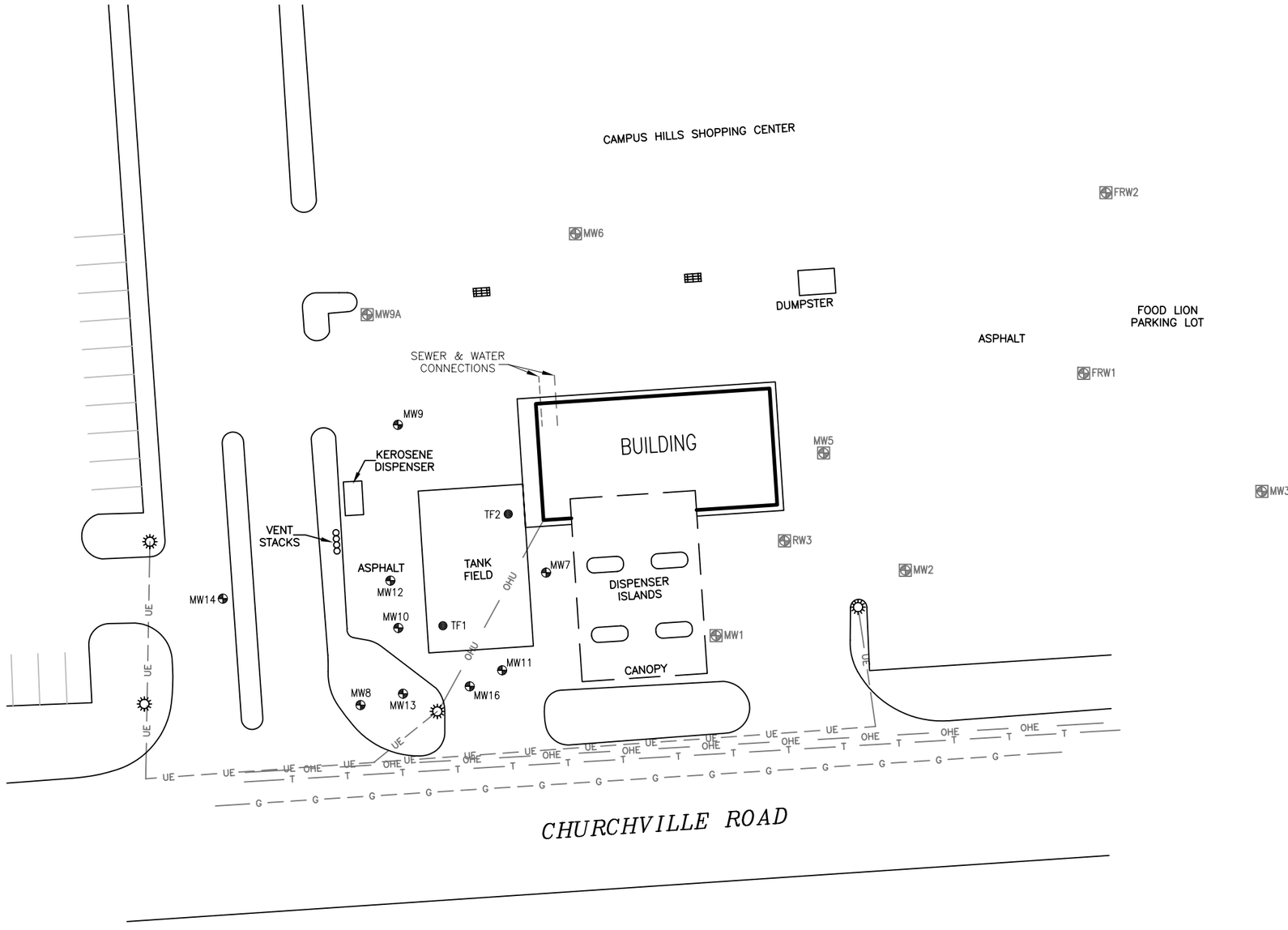

LEGEND

- CATCH BASIN
- LIGHT POLE
- MONITORING WELL
- ABANDONED MONITORING WELL
- TANK FIELD WELL
- SS — UNDERGROUND SANITARY SEWER
- W — UNDERGROUND WATER LINE
- G — UNDERGROUND GAS LINE
- T — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- OHU — OVERHEAD UTILITIES

DRAFTED BY: B.C.S. (N.J.)	**SITE MAP**
CHECKED BY: NK	**BEL AIR XTRA FUELS** **2476 CHURCHVILLE ROAD** **BEL AIR, MARYLAND**
REVIEWED BY: ATC	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114
NORTH	SCALE IN FEET: 0 APPROXIMATE 40 / DATE: 9–14–11 / FIGURE: 3

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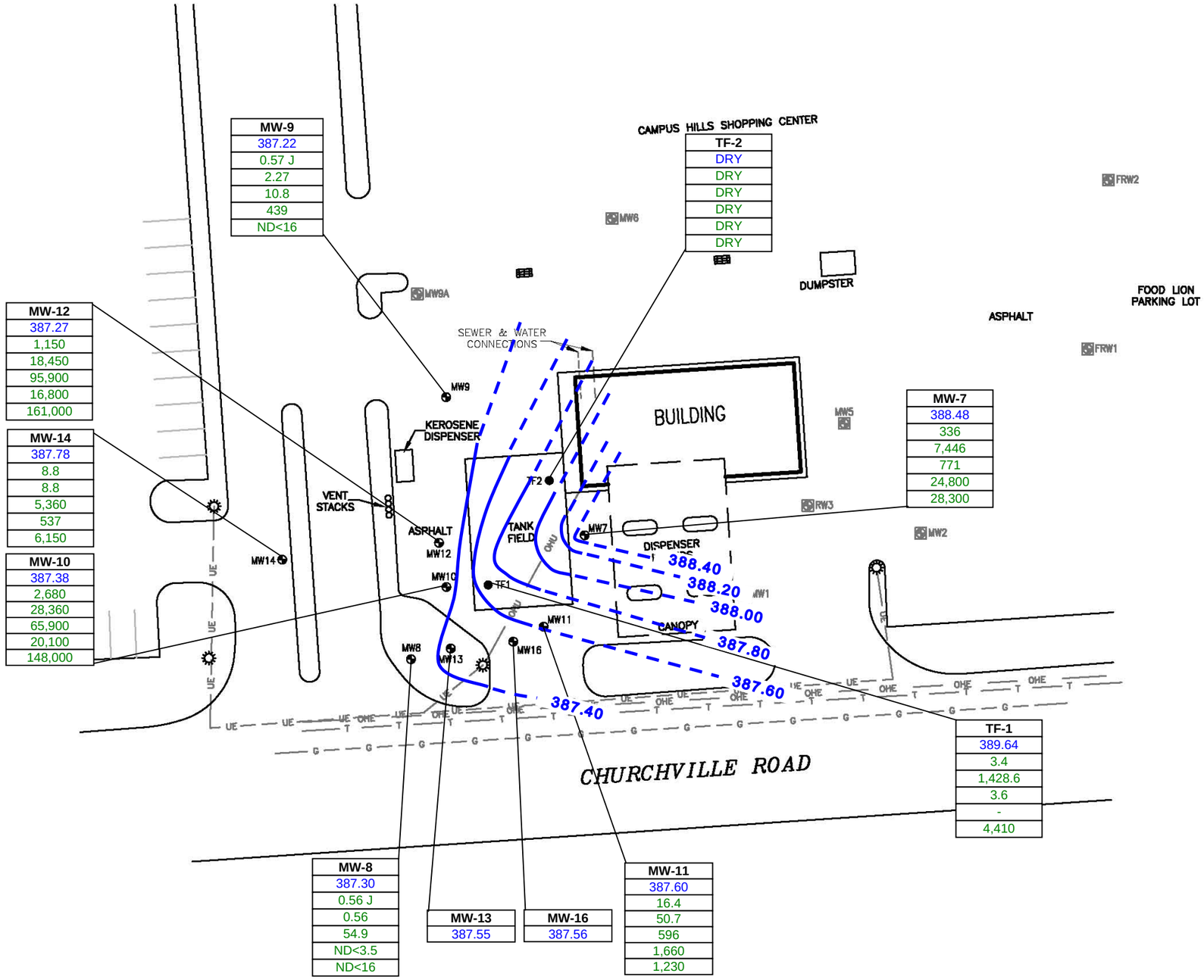

LEGEND

- CATCH BASIN
- LIGHT POLE
- MONITORING WELL
- ABANDONED MONITORING WELL
- TANK FIELD WELL
- SS — UNDERGROUND SANITARY SEWER
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- G — UNDERGROUND GAS LINE
- T — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- OHU — OVERHEAD UTILITIES

Well ID	ENTIFICATION
GW Elevation	WATER ELEVATION (Feet)
Benzene	E CONCENTRATION (µg/L)
BTEX	TEX CONCENTRATION (µg/L)
MTBE	ONCENTRATION (µg/L)
TPH-DRO	D CONCENTRATION (µg/L)
TPH-GRO	D CONCENTRAITON (µg/L)

µg/L	MICROGRAMS PER LITER
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
MTBE	METHY tert-BUTYL ETHER
TPH	TOTAL PETROLEUM HYDROCARBONS
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
ND< #	WHERE AN ANALYTE IS NOT DETECTED, THE REPORTING LIMIT IS GIVEN
J	AN ESITMATED VALUE BETWEEN REPORTING LIMIT AND METHOD DETECTION LIMIT
NS	NOT SAMPLED
-	DATA NOT AVAILABLE
	GROUNDWATER CONTOUR INTERVAL (feet)
	INFERRED GW CONTOUR INTERVAL (feet)

Note: TF-1 and MW-14 were not used in contouring as they did not agree with regional groundwater flow. TPH-DRO was not collected from TF-1 due to insufficient amount of water.

DRAFTED BY: NK

CHECKED BY: MKM

REVIEWED BY: ATC

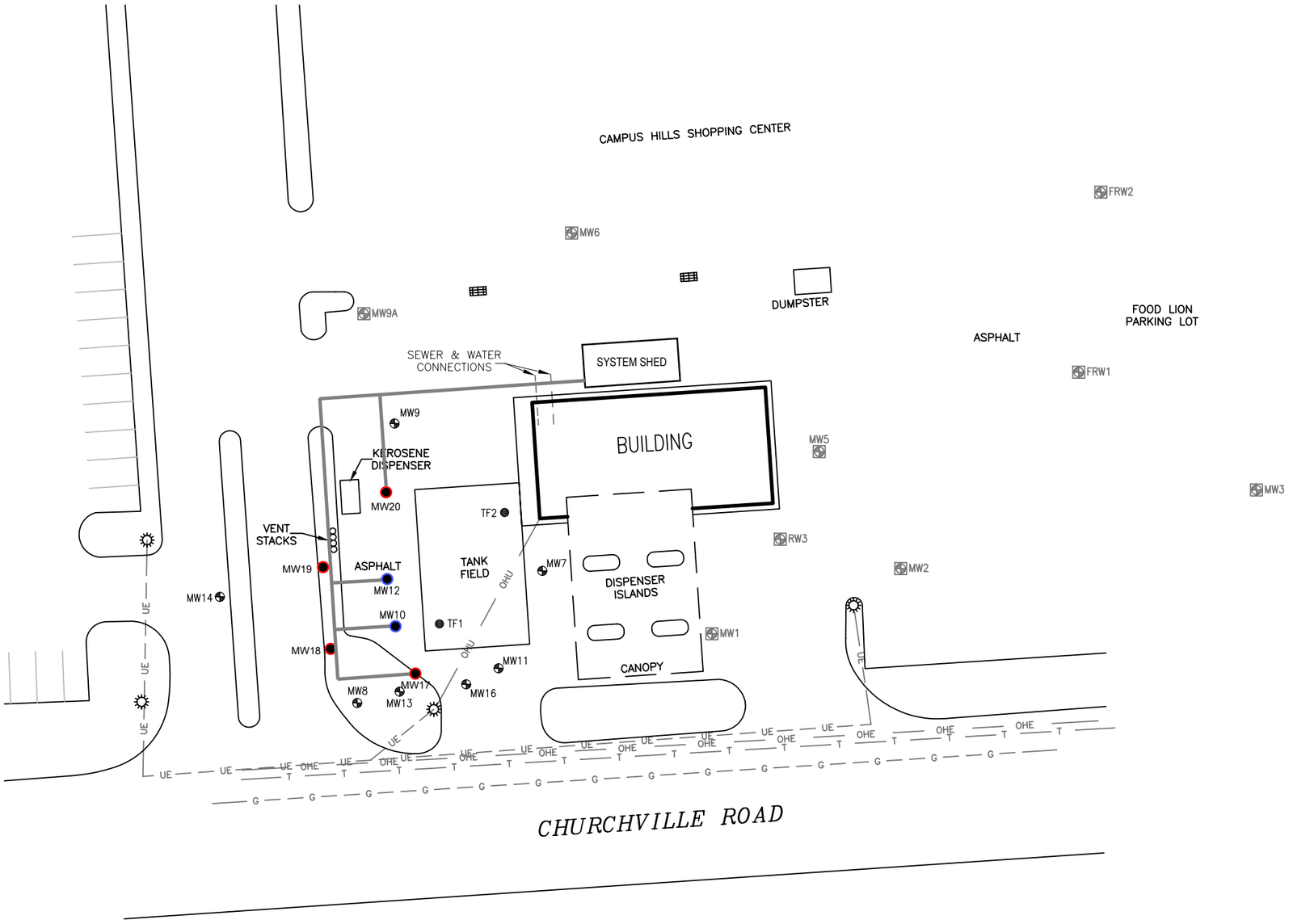
NORTH

GROUNDWATER MONITORING MAP
September 12, 2011

BEL AIR XTRA FUELS
2476 CHURCHVILLE ROAD
BEL AIR, MARYLAND

Groundwater & Environmental Services, Inc.
2142 Priest Bridge Ct. Suite 1, Crofton, Maryland 21114

SCALE IN FEET	DATE	FIGURE
0 — 40	09-23-11	4



LEGEND

- CATCH BASIN
- LIGHT POLE
- MONITORING WELL
- ABANDONED MONITORING WELL
- TANK FIELD WELL
- SS — UNDERGROUND SANITARY SEWER
- W — UNDERGROUND WATER LINE
- G — UNDERGROUND GAS LINE
- T — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- OHU — OVERHEAD UTILITIES
- TRENCH LAYOUT
- PROPOSED VEGE WELL
- EXISTING WELL PROPOSED FOR VEGE

DRAFTED BY: B.C.S. (N.J.)	RECOVERY WELL NETWORK MAP
CHECKED BY: NK	**BEL AIR XTRA FUELS** **2476 CHURCHVILLE ROAD** **BEL AIR, MARYLAND**
REVIEWED BY: ATC	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114
NORTH	SCALE IN FEET: 0 APPROXIMATE 40 / DATE: 9–14–11 / FIGURE: 5

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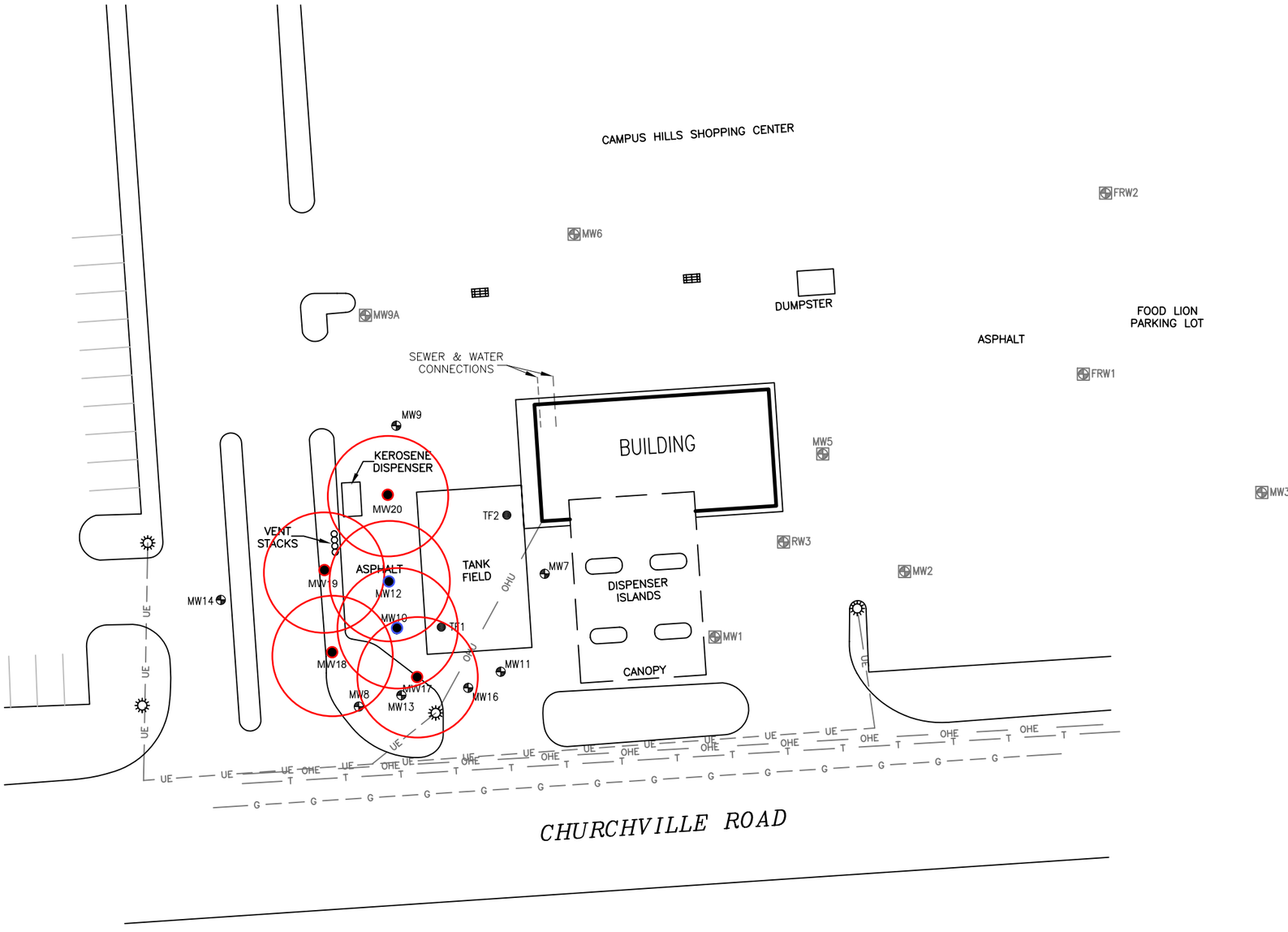

LEGEND

- CATCH BASIN
- LIGHT POLE
- MONITORING WELL
- ABANDONED MONITORING WELL
- TANK FIELD WELL
- SS — UNDERGROUND SANITARY SEWER
- W — UNDERGROUND WATER LINE
- G — UNDERGROUND GAS LINE
- T — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- OHU — OVERHEAD UTILITIES
- PROPOSED VEGE WELL
- VEGE RADIUS OF INFLUENCE
- EXISTING WELL PROPOSED FOR VEGE

DRAFTED BY: B.C.S. (N.J.)	ESTIMATED VEGE ROI MAP
CHECKED BY: NK	**BEL AIR XTRA FUELS** **2476 CHURCHVILLE ROAD** **BEL AIR, MARYLAND**
REVIEWED BY: ATC	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114
NORTH	SCALE IN FEET: 0 APPROXIMATE 40 / DATE: 9–14–11 / FIGURE: 6

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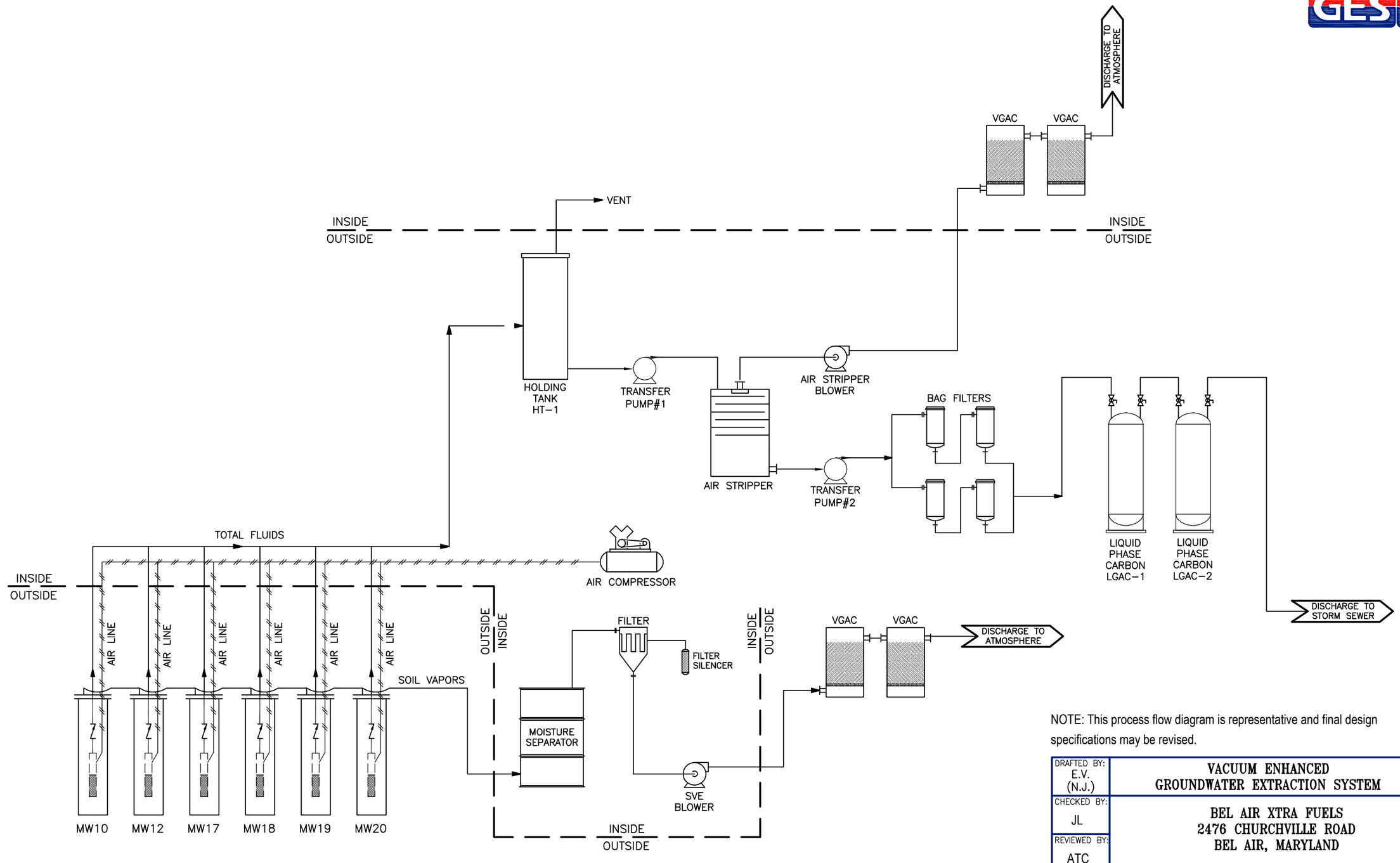


NOTE: This process flow diagram is representative and final design specifications may be revised.

DRAFTED BY: E.V. (N.J.)	VACUUM ENHANCED GROUNDWATER EXTRACTION SYSTEM
CHECKED BY: JL	BEL AIR XTRA FUELS 2476 CHURCHVILLE ROAD BEL AIR, MARYLAND
REVIEWED BY: ATC	Groundwater & Environmental Services, Inc. 2142 PRIEST BRIDGE COURT, SUITE 1, CROFTON, MD 21114
NOT TO SCALE	DATE 10–27–11 / FIGURE 7

M:\Graphics\0400-Crofton\Drake Petroleum\Bel Air\Engineering\Bel Air PID-VE-GWES.dwg, Model, EVega, 1:1

APPENDIX A

SOIL BORING LOGS (MW-12, MW-13, MW-14 AND MW-16)

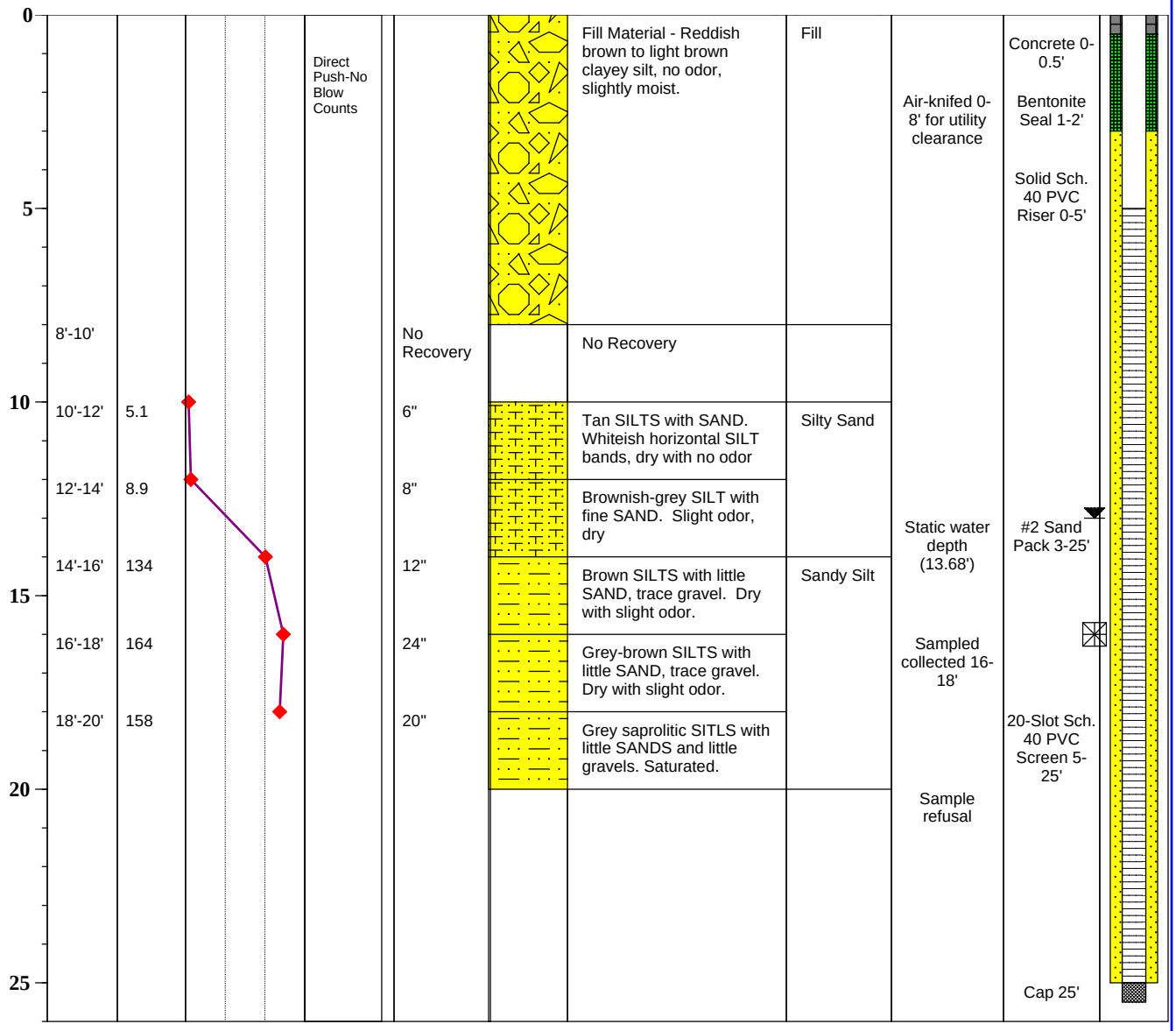
WELL LOG

ID NO. **MW-12**

Groundwater and Environmental Services, Inc.

PROJECT:	**Drake Bel Air**	WATER DEPTH:	**13.68**	TOTAL DEPTH:	**25'**
ADDRESS:	**2476 Churchville Road, Bel Air, Maryland**			CASING EL.:	
JOB NO.	**0402652**	BOREHOLE DIA.:	**8"**	WELL DIA.:	**4"**

Logged By:	**Scott Andresini**	Drilling Method:	**Hollow Stem Auger/Air Rotary**
Dates Drilled:	**8/24/2011**	Sampling Method:	**Direct Push Split Spoon**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:		Field Screening:	**PID, 10.2 eV Lamp (results in ppm)**



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

Well ID: MW-12

Groundwater & Environmental Services, Inc.
2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

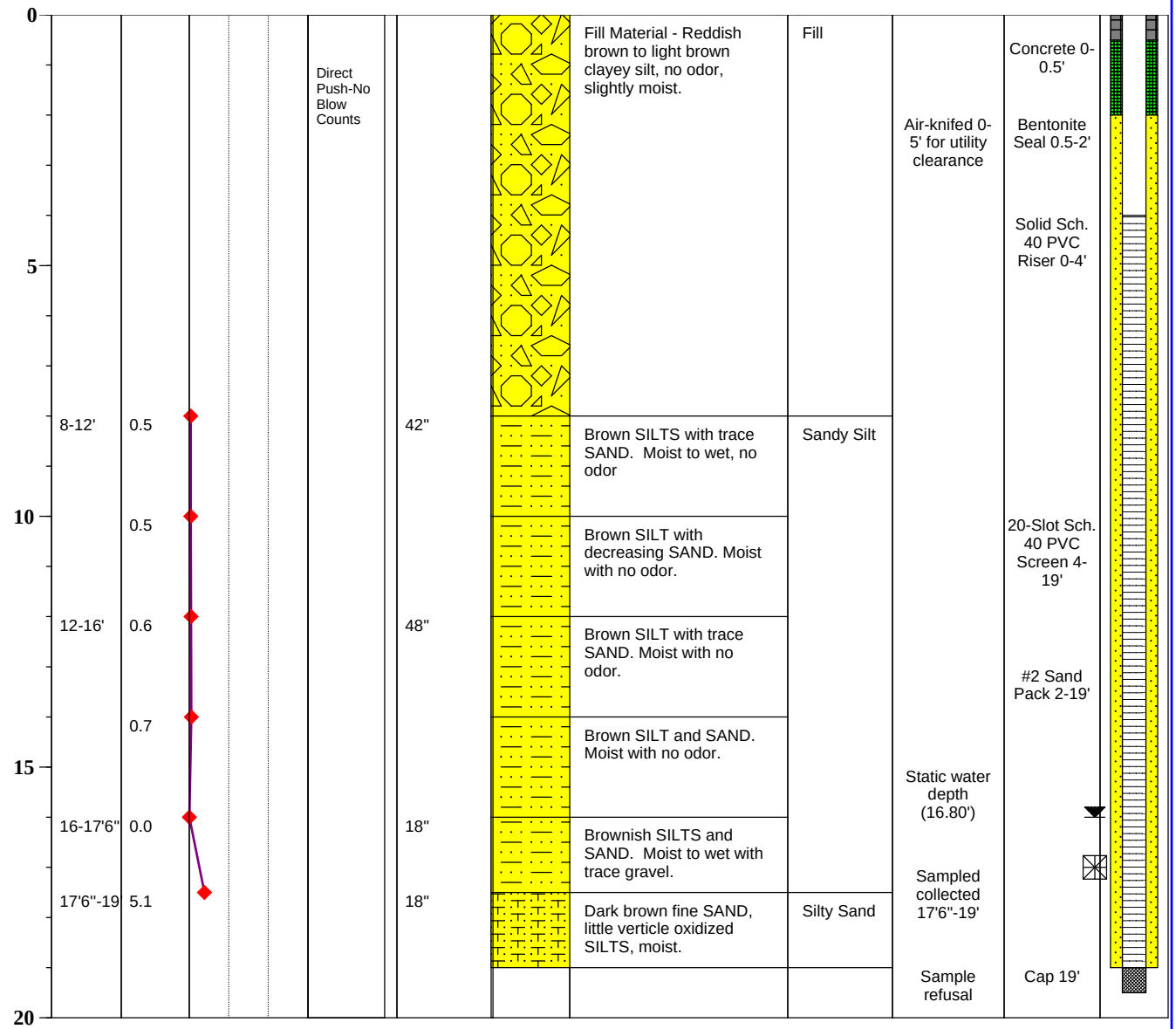
WELL LOG

ID NO. **MW-13**

Groundwater and Environmental Services, Inc.

PROJECT:	**Drake Bel Air**	WATER DEPTH:	**16.80**	TOTAL DEPTH:	**19'**
ADDRESS:	**2476 Churchville Road, Bel Air, Maryland**			CASING EL.:	
JOB NO.	**0402652**	BOREHOLE DIA.:	**2"**	WELL DIA.:	**1"**

Logged By:	**Scott Andresini**	Drilling Method:	**Truck Mounted Geoprobe**
Dates Drilled:	**8/29/2011**	Sampling Method:	**Direct Push 4' Macrocore**
Drilling Company:	**B.L. Myers**	Soil Class. System:	**Unified Soil Classification System**
Well Permit #:		Field Screening:	**PID, 10.2 eV Lamp (results in ppm)**



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade
NA = not available
ppm = parts per million
in. = inches

Groundwater & Environmental Services, Inc.
2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

WELL LOG

ID NO. **MW-14**

Groundwater and Environmental Services, Inc.

PROJECT: **Drake Bel Air** | WATER DEPTH: **13.34** | TOTAL DEPTH: **25'**

ADDRESS: **2476 Churchville Road, Bel Air, Maryland** | CASING EL.:

JOB NO. **0402652** | BOREHOLE DIA.: **8"** | WELL DIA.: **4"**

Logged By: **Scott Andresini**

Dates Drilled: **8/24/2011**

Drilling Company: **B.L. Myers**

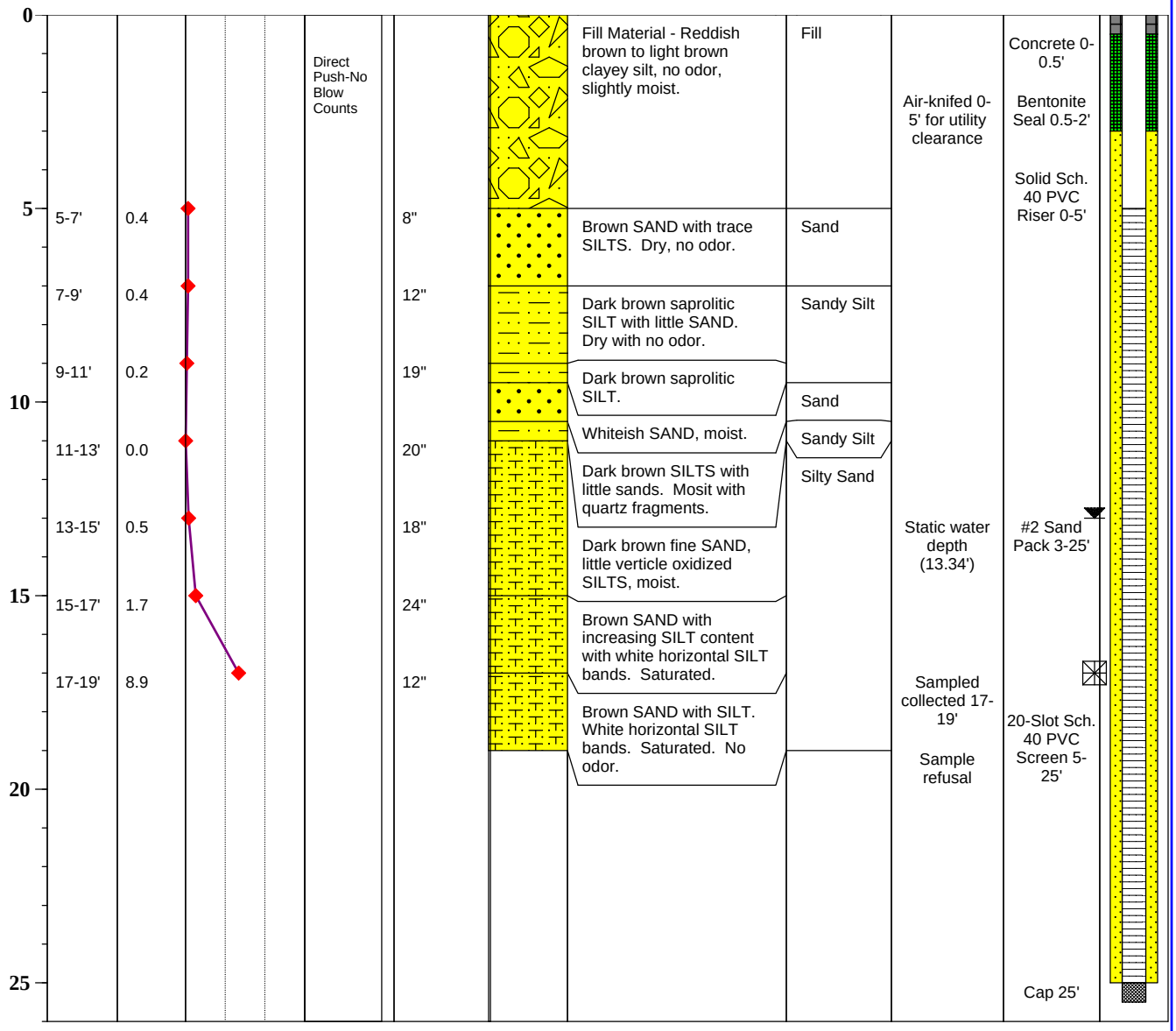
Well Permit #:

Drilling Method: **Hollow Stem Auger/Air Rotary**

Sampling Method: **Direct Push Split Spoon**

Soil Class. System: **Unified Soil Classification System**

Field Screening: **PID, 10.2 eV Lamp (results in ppm)**



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade

NA = not available

ppm = parts per million

in. = inches

Groundwater & Environmental Services, Inc.

2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

WELL LOG

ID NO. **MW-16**

Groundwater and Environmental Services, Inc.

PROJECT: **Drake Bel Air** | WATER DEPTH: **14.50** | TOTAL DEPTH: **18'**

ADDRESS: **2476 Churchville Road, Bel Air, Maryland** | CASING EL.:

JOB NO. **0402652** | BOREHOLE DIA.: **2"** | WELL DIA.: **1"**

Logged By: **Scott Andresini**

Dates Drilled: **8/29/2011**

Drilling Company: **B.L. Myers**

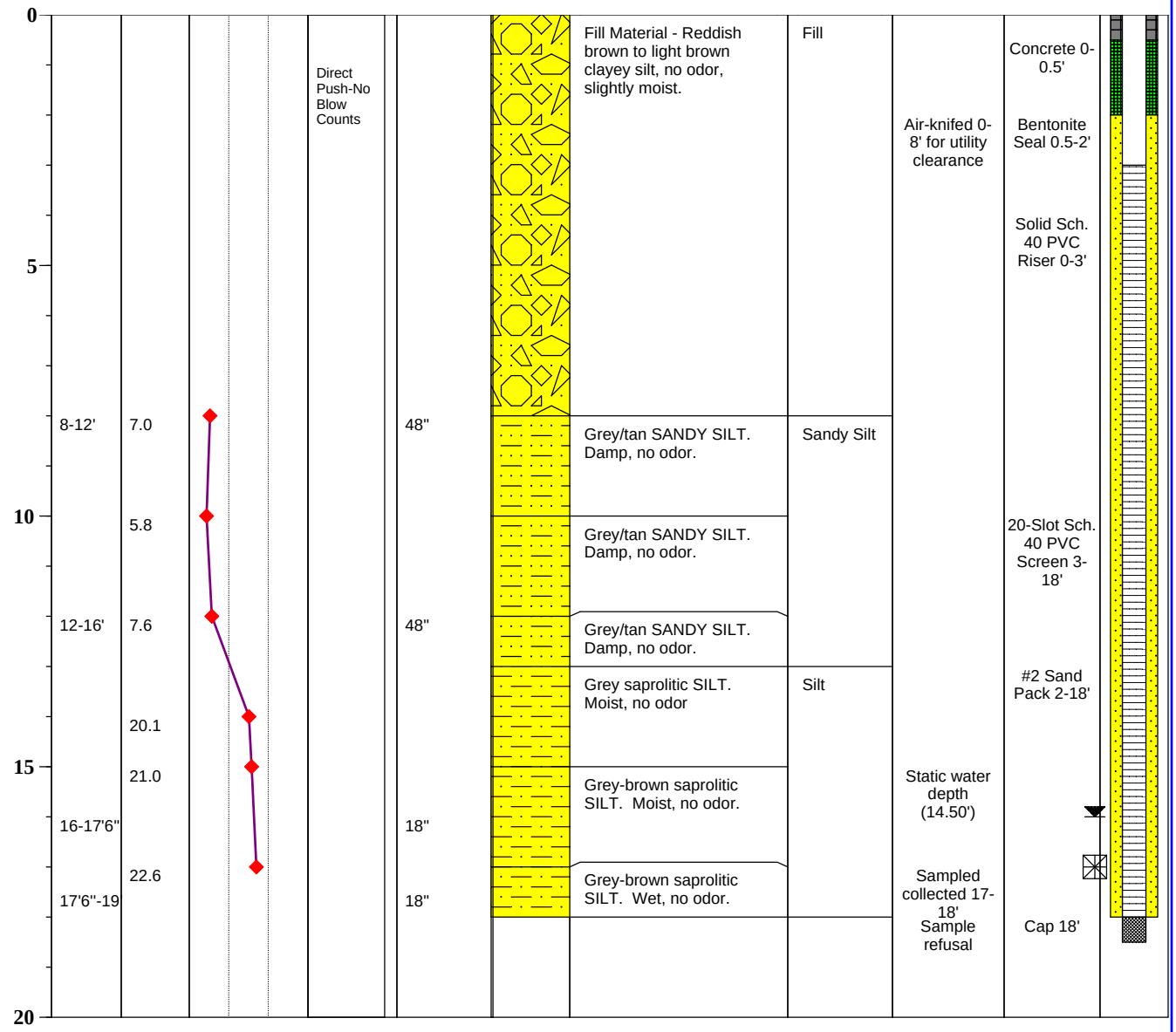
Well Permit #:

Drilling Method: **Truck Mounted Geoprobe**

Sampling Method: **Direct Push 4' Macrocore**

Soil Class. System: **Unified Soil Classification System**

Field Screening: **PID, 10.2 eV Lamp (results in ppm)**



LEGEND

Proportion Descriptions:

Trace = <10% Some = <50%

Little = <25% And = 50%

Symbol Key:

Water Level

Sample Location

fbg = feet below grade

NA = not available

ppm = parts per million

in. = inches

Well ID: MW-16

Groundwater & Environmental Services, Inc.

2142 Priest Bridge Court, Crofton, Maryland 800.220.3606 Fax 410.721.3733

APPENDIX B

LABORATORY ANALYTICAL REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

New Jersey ACCUTEST LABORATORIES

09/09/11

Technical Report for

Drake Petroleum Company, Inc.

GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD 0402652

Accutest Job Number: JA84895

Sampling Dates: 08/24/11 - 08/29/11

Report to:

Groundwater & Environmental Services

nkurtz@gesonline.com

ATTN: Nicholas Kurtz

Total number of pages in report: **30**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

David N. Speis
VP, Laboratory Director

Client Service contact: Tony Esposito 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, PA, RI, SC, TN, VA, WV

Sections: 1 2 3

Table of Contents

Sample Summary

Drake Petroleum Company, Inc.

Job No: JA84895

GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD
Project No: 0402652

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JA84895-1	08/24/11	14:07	SA	08/30/11	SO	Soil	MW-14 17-19'
JA84895-2	08/24/11	10:59	SA	08/30/11	SO	Soil	MW-12 16-18'
JA84895-3	08/29/11	13:57	SA	08/30/11	SO	Soil	MW-16 17-18'
JA84895-4	08/29/11	11:10	SA	08/30/11	SO	Soil	MW-13 17.5-19'
JA84895-5	08/29/11	08:10	SA	08/30/11	DW	Drinking Water	2319 CHURCHVILLE RD

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: MW-14 17-19'
Lab Sample ID: JA84895-1 **Date Sampled:** 08/24/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8260B **Percent Solids:** 86.7
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G141451.D	1	08/31/11	SJM	n/a	n/a	VG6622
Run #2	E181940.D	1	09/01/11	OTR	n/a	n/a	VE8012

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.3 g		
Run #2	10.0 g	10.0 ml	100 ul

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	13	8.9	ug/kg	
71-43-2	Benzene	ND	1.3	0.18	ug/kg	
108-86-1	Bromobenzene	ND	6.7	0.26	ug/kg	
74-97-5	Bromochloromethane	ND	6.7	0.70	ug/kg	
75-27-4	Bromodichloromethane	ND	6.7	0.30	ug/kg	
75-25-2	Bromoform	ND	6.7	1.0	ug/kg	
74-83-9	Bromomethane	ND	6.7	0.53	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	5.8	ug/kg	
104-51-8	n-Butylbenzene	ND	6.7	0.32	ug/kg	
135-98-8	sec-Butylbenzene	ND	6.7	0.21	ug/kg	
98-06-6	tert-Butylbenzene	ND	6.7	0.19	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.7	0.46	ug/kg	
108-90-7	Chlorobenzene	ND	6.7	0.43	ug/kg	
75-00-3	Chloroethane	ND	6.7	0.55	ug/kg	
67-66-3	Chloroform	ND	6.7	0.65	ug/kg	
74-87-3	Chloromethane	ND	6.7	0.84	ug/kg	
95-49-8	o-Chlorotoluene	ND	6.7	0.50	ug/kg	
106-43-4	p-Chlorotoluene	ND	6.7	0.28	ug/kg	
108-20-3	Di-Isopropyl ether	ND	6.7	0.17	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	13	2.0	ug/kg	
124-48-1	Dibromochloromethane	ND	6.7	0.23	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.32	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	6.7	0.37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	6.7	0.26	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	6.7	0.23	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.7	0.43	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.7	0.29	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.24	ug/kg	
75-35-4	1,1-Dichloroethene	ND	6.7	0.82	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	6.7	0.43	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	6.7	0.57	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.7	0.36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-14 17-19'		
Lab Sample ID:	JA84895-1	**Date Sampled:**	08/24/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	86.7
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	ND	6.7	0.50	ug/kg	
594-20-7	2,2-Dichloropropane	ND	6.7	0.23	ug/kg	
563-58-6	1,1-Dichloropropene	ND	6.7	0.28	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.7	0.20	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.7	0.45	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	6.7	0.70	ug/kg	
98-82-8	Isopropylbenzene	ND	6.7	0.18	ug/kg	
99-87-6	p-Isopropyltoluene	ND	6.7	0.40	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	104	1.3	0.24	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.7	3.5	ug/kg	
74-95-3	Methylene bromide	ND	6.7	0.76	ug/kg	
75-09-2	Methylene chloride	4.1	6.7	0.31	ug/kg	J
91-20-3	Naphthalene	ND	6.7	1.4	ug/kg	
103-65-1	n-Propylbenzene	ND	6.7	0.46	ug/kg	
100-42-5	Styrene	ND	6.7	0.25	ug/kg	
75-65-0	Tert Butyl Alcohol	3870 [a]	1600	380	ug/kg	
994-05-8	tert-Amyl Methyl Ether	3.4	6.7	0.20	ug/kg	J
637-92-3	tert-Butyl Ethyl Ether	ND	6.7	0.19	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	6.7	0.25	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.7	0.24	ug/kg	
127-18-4	Tetrachloroethene	ND	6.7	0.26	ug/kg	
108-88-3	Toluene	ND	1.3	0.51	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.7	0.59	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.7	0.46	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.7	0.32	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.7	0.58	ug/kg	
79-01-6	Trichloroethene	ND	6.7	0.33	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.7	0.65	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	6.7	1.4	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	6.7	1.5	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	6.7	0.17	ug/kg	
75-01-4	Vinyl chloride	ND	6.7	0.62	ug/kg	
	m,p-Xylene	ND	1.3	0.42	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.25	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%	98%	67-131%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-14 17-19'		
Lab Sample ID:	JA84895-1	**Date Sampled:**	08/24/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	86.7
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	78%	102%	66-130%
2037-26-5	Toluene-D8	110%	94%	76-125%
460-00-4	4-Bromofluorobenzene	102%	91%	53-142%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-14 17-19'
Lab Sample ID: JA84895-1 **Date Sampled:** 08/24/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C **Percent Solids:** 86.7
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	PF92006.D	1	09/01/11	XPL	n/a	n/a	GPF2505
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.0 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	2.4	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	79%		66-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-14 17-19'
Lab Sample ID: JA84895-1 **Date Sampled:** 08/24/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C SW846 3545A **Percent Solids:** 86.7
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZZ65143.D	1	09/06/11	VDT	09/01/11	OP51617	GZZ2210
Run #2							

	Initial Weight	Final Volume
Run #1	10.4 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	11	0.35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	62%		19-151%
16416-32-3	Tetracosane-d50	62%		18-146%
438-22-2	5a-Androstane	56%		14-147%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID:	MW-12 16-18'		
Lab Sample ID:	JA84895-2	**Date Sampled:**	08/24/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	84.2
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G141452.D	1	08/31/11	SJM	n/a	n/a	VG6622
Run #2	E181941.D	1	09/01/11	OTR	n/a	n/a	VE8012

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.3 g		
Run #2	10.0 g	10.0 ml	100 ul

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	44.8	14	9.1	ug/kg	
71-43-2	Benzene	ND	1.4	0.18	ug/kg	
108-86-1	Bromobenzene	ND	6.9	0.27	ug/kg	
74-97-5	Bromochloromethane	ND	6.9	0.72	ug/kg	
75-27-4	Bromodichloromethane	ND	6.9	0.31	ug/kg	
75-25-2	Bromoform	ND	6.9	1.0	ug/kg	
74-83-9	Bromomethane	ND	6.9	0.54	ug/kg	
78-93-3	2-Butanone (MEK)	17.3	14	6.0	ug/kg	
104-51-8	n-Butylbenzene	ND	6.9	0.32	ug/kg	
135-98-8	sec-Butylbenzene	ND	6.9	0.22	ug/kg	
98-06-6	tert-Butylbenzene	ND	6.9	0.19	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.9	0.48	ug/kg	
108-90-7	Chlorobenzene	ND	6.9	0.44	ug/kg	
75-00-3	Chloroethane	ND	6.9	0.56	ug/kg	
67-66-3	Chloroform	ND	6.9	0.67	ug/kg	
74-87-3	Chloromethane	ND	6.9	0.86	ug/kg	
95-49-8	o-Chlorotoluene	ND	6.9	0.52	ug/kg	
106-43-4	p-Chlorotoluene	ND	6.9	0.29	ug/kg	
108-20-3	Di-Isopropyl ether	3.4	6.9	0.18	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	14	2.1	ug/kg	
124-48-1	Dibromochloromethane	ND	6.9	0.23	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.4	0.33	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	6.9	0.38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	6.9	0.27	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	6.9	0.23	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.9	0.44	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.9	0.30	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.25	ug/kg	
75-35-4	1,1-Dichloroethene	ND	6.9	0.85	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	6.9	0.44	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	6.9	0.59	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.9	0.37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-12 16-18'		
Lab Sample ID:	JA84895-2	**Date Sampled:**	08/24/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	84.2
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	ND	6.9	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	6.9	0.24	ug/kg	
563-58-6	1,1-Dichloropropene	ND	6.9	0.29	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.9	0.21	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.9	0.46	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	6.9	0.72	ug/kg	
98-82-8	Isopropylbenzene	ND	6.9	0.19	ug/kg	
99-87-6	p-Isopropyltoluene	ND	6.9	0.41	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	2420 [a]	69	12	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.9	3.6	ug/kg	
74-95-3	Methylene bromide	ND	6.9	0.78	ug/kg	
75-09-2	Methylene chloride	2.8	6.9	0.32	ug/kg	J
91-20-3	Naphthalene	8.6	6.9	1.5	ug/kg	
103-65-1	n-Propylbenzene	ND	6.9	0.48	ug/kg	
100-42-5	Styrene	ND	6.9	0.26	ug/kg	
75-65-0	Tert Butyl Alcohol	24600 [a]	1700	400	ug/kg	
994-05-8	tert-Amyl Methyl Ether	25.8	6.9	0.21	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	1.5	6.9	0.19	ug/kg	J
630-20-6	1,1,1,2-Tetrachloroethane	ND	6.9	0.25	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.9	0.25	ug/kg	
127-18-4	Tetrachloroethene	ND	6.9	0.26	ug/kg	
108-88-3	Toluene	ND	1.4	0.52	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.9	0.60	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.9	0.47	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.9	0.33	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.9	0.60	ug/kg	
79-01-6	Trichloroethene	ND	6.9	0.34	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.9	0.67	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	6.9	1.5	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	6.9	1.5	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	6.9	0.18	ug/kg	
75-01-4	Vinyl chloride	ND	6.9	0.64	ug/kg	
	m,p-Xylene	ND	1.4	0.43	ug/kg	
95-47-6	o-Xylene	ND	1.4	0.25	ug/kg	
1330-20-7	Xylene (total)	ND	1.4	0.25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%	98%	67-131%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-12 16-18'		
Lab Sample ID:	JA84895-2	**Date Sampled:**	08/24/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	84.2
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	78%	102%	66-130%
2037-26-5	Toluene-D8	110%	96%	76-125%
460-00-4	4-Bromofluorobenzene	100%	93%	53-142%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-12 16-18'
Lab Sample ID: JA84895-2 **Date Sampled:** 08/24/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C **Percent Solids:** 84.2
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	PF92007.D	1	09/01/11	XPL	n/a	n/a	GPF2505
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.0 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	2.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	80%		66-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-12 16-18'
Lab Sample ID: JA84895-2 **Date Sampled:** 08/24/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C SW846 3545A **Percent Solids:** 84.2
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZZ65141.D	1	09/06/11	VDT	09/01/11	OP51617	GZZ2210
Run #2							

	Initial Weight	Final Volume
Run #1	10.1 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	12	0.38	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		19-151%
16416-32-3	Tetracosane-d50	99%		18-146%
438-22-2	5a-Androstane	89%		14-147%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-16 17-18'
Lab Sample ID: JA84895-3 **Date Sampled:** 08/29/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8260B **Percent Solids:** 83.1
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G141453.D	1	08/31/11	SJM	n/a	n/a	VG6622
Run #2	G141488.D	1	09/01/11	SJM	n/a	n/a	VG6623

	Initial Weight
Run #1	4.7 g
Run #2	1.0 g

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	16.3	13	8.5	ug/kg	
71-43-2	Benzene	ND	1.3	0.17	ug/kg	
108-86-1	Bromobenzene	ND	6.4	0.25	ug/kg	
74-97-5	Bromochloromethane	ND	6.4	0.66	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	0.29	ug/kg	
75-25-2	Bromoform	ND	6.4	0.97	ug/kg	
74-83-9	Bromomethane	ND	6.4	0.50	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	5.5	ug/kg	
104-51-8	n-Butylbenzene	ND	6.4	0.30	ug/kg	
135-98-8	sec-Butylbenzene	ND	6.4	0.20	ug/kg	
98-06-6	tert-Butylbenzene	ND	6.4	0.18	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	0.44	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	0.41	ug/kg	
75-00-3	Chloroethane	ND	6.4	0.52	ug/kg	
67-66-3	Chloroform	ND	6.4	0.62	ug/kg	
74-87-3	Chloromethane	ND	6.4	0.80	ug/kg	
95-49-8	o-Chlorotoluene	ND	6.4	0.48	ug/kg	
106-43-4	p-Chlorotoluene	ND	6.4	0.27	ug/kg	
108-20-3	Di-Isopropyl ether	ND	6.4	0.16	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	13	1.9	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	0.22	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.30	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	6.4	0.35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	6.4	0.25	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	6.4	0.22	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.4	0.41	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	0.28	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.23	ug/kg	
75-35-4	1,1-Dichloroethene	ND	6.4	0.78	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	6.4	0.41	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	6.4	0.54	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	0.34	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-16 17-18'		
Lab Sample ID:	JA84895-3	**Date Sampled:**	08/29/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	83.1
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	ND	6.4	0.48	ug/kg	
594-20-7	2,2-Dichloropropane	ND	6.4	0.22	ug/kg	
563-58-6	1,1-Dichloropropene	ND	6.4	0.27	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	0.19	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	0.43	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.19	ug/kg	
87-68-3	Hexachlorobutadiene	ND	6.4	0.67	ug/kg	
98-82-8	Isopropylbenzene	ND	6.4	0.18	ug/kg	
99-87-6	p-Isopropyltoluene	ND	6.4	0.38	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	365 [a]	6.0	1.1	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.4	3.4	ug/kg	
74-95-3	Methylene bromide	ND	6.4	0.73	ug/kg	
75-09-2	Methylene chloride	2.7	6.4	0.29	ug/kg	J
91-20-3	Naphthalene	ND	6.4	1.4	ug/kg	
103-65-1	n-Propylbenzene	ND	6.4	0.44	ug/kg	
100-42-5	Styrene	ND	6.4	0.24	ug/kg	
75-65-0	Tert Butyl Alcohol	204	32	7.4	ug/kg	
994-05-8	tert-Amyl Methyl Ether	19.8	6.4	0.19	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	6.4	0.18	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	6.4	0.24	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	0.23	ug/kg	
127-18-4	Tetrachloroethene	ND	6.4	0.24	ug/kg	
108-88-3	Toluene	ND	1.3	0.48	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.4	0.56	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.4	0.44	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	0.31	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	0.55	ug/kg	
79-01-6	Trichloroethene	ND	6.4	0.32	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.4	0.62	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	6.4	1.4	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	6.4	1.4	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	6.4	0.16	ug/kg	
75-01-4	Vinyl chloride	ND	6.4	0.59	ug/kg	
	m,p-Xylene	ND	1.3	0.40	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.24	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	110%	67-131%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-16 17-18'		
Lab Sample ID:	JA84895-3	**Date Sampled:**	08/29/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	83.1
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	72%	102%	66-130%
2037-26-5	Toluene-D8	110%	116%	76-125%
460-00-4	4-Bromofluorobenzene	102%	106%	53-142%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID:	MW-16 17-18'		
Lab Sample ID:	JA84895-3	**Date Sampled:**	08/29/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8015C	**Percent Solids:**	83.1
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	PF92008.D	1	09/01/11	XPL	n/a	n/a	GPF2505
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.0 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	2.5	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	81%		66-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-16 17-18'
Lab Sample ID: JA84895-3 **Date Sampled:** 08/29/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C SW846 3545A **Percent Solids:** 83.1
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ZZ65142.D	1	09/06/11	VDT	09/01/11	OP51617	GZZ2210
Run #2							

	Initial Weight	Final Volume
Run #1	10.3 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	27.2	12	0.37	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	64%		19-151%
16416-32-3	Tetracosane-d50	66%		18-146%
438-22-2	5a-Androstane	57%		14-147%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-13 17.5-19'
Lab Sample ID: JA84895-4 **Date Sampled:** 08/29/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8260B **Percent Solids:** 85.7
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G141454.D	1	08/31/11	SJM	n/a	n/a	VG6622
Run #2							

	Initial Weight
Run #1	4.2 g
Run #2	

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	14	9.2	ug/kg	
71-43-2	Benzene	ND	1.4	0.18	ug/kg	
108-86-1	Bromobenzene	ND	6.9	0.27	ug/kg	
74-97-5	Bromochloromethane	ND	6.9	0.72	ug/kg	
75-27-4	Bromodichloromethane	ND	6.9	0.31	ug/kg	
75-25-2	Bromoform	ND	6.9	1.0	ug/kg	
74-83-9	Bromomethane	ND	6.9	0.55	ug/kg	
78-93-3	2-Butanone (MEK)	ND	14	6.0	ug/kg	
104-51-8	n-Butylbenzene	ND	6.9	0.33	ug/kg	
135-98-8	sec-Butylbenzene	ND	6.9	0.22	ug/kg	
98-06-6	tert-Butylbenzene	ND	6.9	0.19	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.9	0.48	ug/kg	
108-90-7	Chlorobenzene	ND	6.9	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.9	0.57	ug/kg	
67-66-3	Chloroform	ND	6.9	0.67	ug/kg	
74-87-3	Chloromethane	ND	6.9	0.87	ug/kg	
95-49-8	o-Chlorotoluene	ND	6.9	0.52	ug/kg	
106-43-4	p-Chlorotoluene	ND	6.9	0.29	ug/kg	
108-20-3	Di-Isopropyl ether	ND	6.9	0.18	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	14	2.1	ug/kg	
124-48-1	Dibromochloromethane	ND	6.9	0.23	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.4	0.33	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	6.9	0.38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	6.9	0.27	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	6.9	0.24	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.9	0.45	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.9	0.30	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.25	ug/kg	
75-35-4	1,1-Dichloroethene	ND	6.9	0.85	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	6.9	0.45	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	6.9	0.59	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.9	0.37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-13 17.5-19'		
Lab Sample ID:	JA84895-4	**Date Sampled:**	08/29/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	85.7
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Compound	Result	RL	MDL	Units	Q
142-28-9	1,3-Dichloropropane	ND	6.9	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	6.9	0.24	ug/kg	
563-58-6	1,1-Dichloropropene	ND	6.9	0.29	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.9	0.21	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.9	0.47	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	6.9	0.72	ug/kg	
98-82-8	Isopropylbenzene	ND	6.9	0.19	ug/kg	
99-87-6	p-Isopropyltoluene	ND	6.9	0.41	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.4	0.25	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.9	3.7	ug/kg	
74-95-3	Methylene bromide	ND	6.9	0.79	ug/kg	
75-09-2	Methylene chloride	ND	6.9	0.32	ug/kg	
91-20-3	Naphthalene	ND	6.9	1.5	ug/kg	
103-65-1	n-Propylbenzene	ND	6.9	0.48	ug/kg	
100-42-5	Styrene	ND	6.9	0.26	ug/kg	
75-65-0	Tert Butyl Alcohol	ND	35	8.0	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	6.9	0.21	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	6.9	0.19	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	6.9	0.26	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.9	0.25	ug/kg	
127-18-4	Tetrachloroethene	ND	6.9	0.27	ug/kg	
108-88-3	Toluene	ND	1.4	0.53	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.9	0.61	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.9	0.47	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.9	0.33	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.9	0.60	ug/kg	
79-01-6	Trichloroethene	ND	6.9	0.34	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.9	0.67	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	6.9	1.5	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	6.9	1.6	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	6.9	0.18	ug/kg	
75-01-4	Vinyl chloride	ND	6.9	0.64	ug/kg	
	m,p-Xylene	ND	1.4	0.44	ug/kg	
95-47-6	o-Xylene	ND	1.4	0.26	ug/kg	
1330-20-7	Xylene (total)	ND	1.4	0.26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		67-131%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-13 17.5-19'		
Lab Sample ID:	JA84895-4	**Date Sampled:**	08/29/11
Matrix:	SO - Soil	**Date Received:**	08/30/11
Method:	SW846 8260B	**Percent Solids:**	85.7
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA Full List + Oxygenates

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	73%		66-130%
2037-26-5	Toluene-D8	107%		76-125%
460-00-4	4-Bromofluorobenzene	101%		53-142%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-13 17.5-19'
Lab Sample ID: JA84895-4 **Date Sampled:** 08/29/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C **Percent Solids:** 85.7
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	PF92009.D	1	09/01/11	XPL	n/a	n/a	GPF2505
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.0 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	2.4	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	80%		66-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest LabLink@633162 08:59 09-Sep-2011

Report of Analysis

Client Sample ID: MW-13 17.5-19'
Lab Sample ID: JA84895-4 **Date Sampled:** 08/29/11
Matrix: SO - Soil **Date Received:** 08/30/11
Method: SW846 8015C SW846 3545A **Percent Solids:** 85.7
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Z34267.D	1	09/06/11	VDT	09/01/11	OP51617	G3Z1050
Run #2							

	Initial Weight	Final Volume
Run #1	10.2 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	161	11	0.37	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		19-151%
16416-32-3	Tetracosane-d50	82%		18-146%
438-22-2	5a-Androstane	86%		14-147%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: 2319 CHURCHVILLE RD
Lab Sample ID: JA84895-5 **Date Sampled:** 08/29/11
Matrix: DW - Drinking Water **Date Received:** 08/30/11
Method: EPA 524.2 REV 4.1 **Percent Solids:** n/a
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1B59730.D	1	09/01/11	MFH	n/a	n/a	V1B2746
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
67-64-1	Acetone	ND		5.0	1.5	ug/l	
78-93-3	2-Butanone	ND		5.0	0.91	ug/l	
71-43-2	Benzene	ND	5.0	0.50	0.034	ug/l	
108-86-1	Bromobenzene	ND		0.50	0.086	ug/l	
74-97-5	Bromochloromethane	ND		0.50	0.15	ug/l	
75-27-4	Bromodichloromethane	ND		0.50	0.063	ug/l	
75-25-2	Bromoform	ND		0.50	0.11	ug/l	
74-83-9	Bromomethane	ND		0.50	0.21	ug/l	
104-51-8	n-Butylbenzene	ND		0.50	0.086	ug/l	
135-98-8	sec-Butylbenzene	ND		0.50	0.19	ug/l	
98-06-6	tert-Butylbenzene	ND		0.50	0.052	ug/l	
75-15-0	Carbon disulfide	ND		0.50	0.042	ug/l	
108-90-7	Chlorobenzene	ND	100	0.50	0.067	ug/l	
75-00-3	Chloroethane	ND		0.50	0.22	ug/l	
67-66-3	Chloroform	0.12		0.50	0.075	ug/l	J
74-87-3	Chloromethane	0.25		0.50	0.082	ug/l	J
95-49-8	o-Chlorotoluene	ND		0.50	0.093	ug/l	
106-43-4	p-Chlorotoluene	ND		0.50	0.058	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	0.50	0.086	ug/l	
75-34-3	1,1-Dichloroethane	ND		0.50	0.072	ug/l	
75-35-4	1,1-Dichloroethylene	ND	7.0	0.50	0.20	ug/l	
563-58-6	1,1-Dichloropropene	ND		0.50	0.13	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.20	1.0	0.23	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.050	0.50	0.069	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	0.50	0.073	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	0.50	0.12	ug/l	
142-28-9	1,3-Dichloropropane	ND		0.50	0.073	ug/l	
594-20-7	2,2-Dichloropropane	ND		0.50	0.18	ug/l	
124-48-1	Dibromochloromethane	ND		0.50	0.092	ug/l	
74-95-3	Dibromomethane	ND		0.50	0.12	ug/l	
75-71-8	Dichlorodifluoromethane	ND		1.0	0.20	ug/l	
541-73-1	m-Dichlorobenzene	ND		0.50	0.049	ug/l	

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: 2319 CHURCHVILLE RD
Lab Sample ID: JA84895-5 **Date Sampled:** 08/29/11
Matrix: DW - Drinking Water **Date Received:** 08/30/11
Method: EPA 524.2 REV 4.1 **Percent Solids:** n/a
Project: GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD

VOA List

CAS No.	Compound	Result	MCL	RL	MDL	Units	Q
95-50-1	o-Dichlorobenzene	ND	600	0.50	0.069	ug/l	
106-46-7	p-Dichlorobenzene	ND	75	0.50	0.062	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	100	0.50	0.11	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	70	0.50	0.14	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.085	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.051	ug/l	
108-20-3	Di-Isopropyl ether	ND		0.50	0.10	ug/l	
100-41-4	Ethylbenzene	ND	700	0.50	0.20	ug/l	
637-92-3	Ethyl tert Butyl Ether	ND		0.50	0.076	ug/l	
87-68-3	Hexachlorobutadiene	ND		2.0	0.077	ug/l	
110-54-3	Hexane	ND		0.50	0.13	ug/l	
591-78-6	2-Hexanone	ND		2.0	0.37	ug/l	
98-82-8	Isopropylbenzene	ND		0.50	0.16	ug/l	
99-87-6	p-Isopropyltoluene	ND		0.50	0.096	ug/l	
75-09-2	Methylene chloride	ND	5.0	0.50	0.13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.45		0.50	0.058	ug/l	J
108-10-1	4-Methyl-2-pentanone	ND		2.0	0.28	ug/l	
91-20-3	Naphthalene	ND		0.50	0.12	ug/l	
103-65-1	n-Propylbenzene	ND		0.50	0.064	ug/l	
100-42-5	Styrene	ND	100	0.50	0.052	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND		0.50	0.14	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.065	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	200	0.50	0.078	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.10	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	0.50	0.12	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND		0.50	0.058	ug/l	
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.24	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	70	0.50	0.14	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.089	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.19	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	0.50	0.085	ug/l	
108-88-3	Toluene	ND	1000	0.50	0.067	ug/l	
79-01-6	Trichloroethylene	ND	5.0	0.50	0.083	ug/l	
75-69-4	Trichlorofluoromethane	ND		1.0	0.13	ug/l	
75-65-0	Tertiary Butyl Alcohol	ND		5.0	1.2	ug/l	
75-01-4	Vinyl chloride	ND	2.0	0.50	0.12	ug/l	
	m,p-Xylene	ND		1.0	0.26	ug/l	
95-47-6	o-Xylene	ND		0.50	0.044	ug/l	
1330-20-7	Xylenes (total)	ND	10000	0.50	0.044	ug/l	

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	2319 CHURCHVILLE RD		
Lab Sample ID:	JA84895-5	**Date Sampled:**	08/29/11
Matrix:	DW - Drinking Water	**Date Received:**	08/30/11
Method:	EPA 524.2 REV 4.1	**Percent Solids:**	n/a
Project:	GESMD:PC# 007805 Bel Air Xtra Fuels, 2476 Churchville Road, Bel Air, MD		

VOA List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2199-69-1	1,2-Dichlorobenzene-d4	93%		78-114%
460-00-4	4-Bromofluorobenzene	93%		77-115%

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 141)
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST

50 DW

CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
732-329-0200 FAX: 732-329-3499/3479

Accutest Job #: JA84895

Client Information	Facility Information
DRAKE	
Consultants Name: Groundwater & Environmental Services, Inc.	Project Name: Drake- Bel Air
Address: 2142 Priest Bridge Court Suite 1	Street: 2476 Churchville Rd.
City: Crofton, State: MD Zip: 21114	City: Bel Air State: MD
PM / CM: Andrea Taylorson-Collins	PO: Bill Drake Direct
Phone #: (800) 220-3606, ext. 3:3703	
Fax #: (410) 721-3733	Project Number: ~~0408826~~ 0402652
atayloroncollins@gesonline.com	AFE#
Sandrasini@gesonline.com	

Analytical Information

Field ID / Point of Collection	Date	Time	Sampled By	Matrix	# of bottles	Preservation: HCL	NaOH	HNO3	H2SO4	None	Full Suite VOC's Plus 7 Oxygenates (8260)	Napthalene (8260)	10 TICs (8260)	TPH-GRO 8015B	TPH-DRO 8015B	Full Suite VOC's w/ Fuel Oxygenates 8260C	Full Suite VOC's w/ Fuel Oxygenates EPA Method 524.2
1 MW-14 17-19'	8/24/11	1407	SA	Soil	2					X				X	X	X	
2 MW #12 16-18'	8/24/11	1059	SA	Soil	2					X				X	X	X	
3 MW-16 17-18'	8/29/11	1357	SA	Soil	2					X				X	X	X	
4 MW-13 17.5-19'	8/29/11	1110	SA	Soil	2					X				X	X	X	
5 2319 Churchville RD	8/29/11	0810	SA	PW	6	X											X

Turnaround Information

- [ ] Std. 14 Day Turnaround
- [X] 7 Day Standard
- [ ] 4 Day EMERGENCY
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Approved By:

Emergency T/A is for FAX or Lablink Data

Data Deliverable Information

- [X] Commercial "A"
- [ ] Commercial "B"
- [ ] Full Deliverables
- [ ] Other
- [ ] FULL CLP
- [ ] State Forms
- [ ] Disk Deliverable Format

Commercial "A" = Results Only

Accutest Log-in Information

- PA unloaded = V8260PAUG*
- Soil- PA unleaded + EDB +EDC = V8260PALG*
- AQ- PA unleaded + EDB +EDC = V8260PALG* + V8011EDB
- PA used Motor oil = V8260PAUMO*, B8270PAUMO
- PA Diesel parameters = V8260PADF*, B8270PADF
- PA Diesel parameters = V8260PADF*, B8270PADF
- Lead = Dissolved for AQ , Total for Soil, All Method 6010
- * Replace 8260 with method 524.2 for DW matrix

EX38, 19A, 436

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		8/30/11 954	Storage 8/30/11	EMKMellA	8/30/11 1105	
2						8/30/11 1100
3						
4						
5						

Seal # ____ Preserve where applicable ☐ On Ice ☑ Temp. 6.0°C

G-G

No Trip Blank Received

1A

JA84895: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number JA84895 **Client:**

Date / Time Received: 8/30/2011 **Project:**

No. Coolers: 1 **Airbill #'s:** **Delivery Method:**

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

JA84895: Chain of Custody
Page 2 of 2

APPENDIX C

POTABLE WELL LOGS

XOM 2476 Churchville Rd. 26 pages printed from CDs
2 copier copies
1 copy from microfilm
29 total

PERMIT	MGS_ID	OWNER_NAME	ADDRESS1	CITY	STATE	ZIP	DRILLER_NAME	DRILLER ID	EST GPM NEEDED	USE FOR WATER	DRILL METHOD	REPLACEMENT	REPLACE PERMIT	WAPID	PWSID	USE CODE	SUBDIVISION	SECTION	LOT	NEAREST TOWN	TOWN DISTANCE	TOWN DIRECTION	ROAD NAME	TAX MAP	BLOCK	PARCEL	N_GRID27	E_GRID27
HA943264		COOK R RUBY	2305 CALVARY RD	BELAIR	MD	21015	RICKY C BARBER	MWD 368	500 D		AIR-PER	Y								CRESWELL	.5	S	2305 CALVARY RD	57	7C	21	628000	1005000
HA733108		BLIND ROBINS CRAB HS	CHURCHVILLE RD	CHURCHVILLE	MD		HARR, G EDGAR & SONS	MWD0120	3000 I		AIR-PER	Y		HA1976G025	1121071	P				CHURCHVILLE	2 MI	SW	CHURCHVILLE RD	42		44	627898	1002711
HA811261		GERETY CHRIS	110 IDLEWILD ST 3A	BEL AIR	MD	21014	HAMILTON, CHARLES JR	MWD0112	500 D		AIR-PER	N		HA2002G011						CHURCHVILLE	.8 MI	SW	ASBURY RD	42	4C	54	627000	1006000
~~HA941609~~		BREECE PHILLIP	2319 CHURCHVILLE RD	BEL AIR	MD	21015	DAVID KELLY	MWD 304	400 D		AIR-PER	Y								CHURCHVILLE	1	W	2319 CHURCHVILLE RD	42	3C	60	628000	1004000
~~HA946202~~		BURNHAM CONTRACTOR	400 PROSPECT MILL RD	BEL AIR	MD	21015	CRIAG A NEMEC	MWD 513	500 D		AIR-PER	N								FULFORD		T	2401 A CHURCHVILLE R	42	3C	213	628000	1005000
HA881908		GULLION STONEY	17A CARNS DR	CHURCHVILLE	MD	21015	SHERMAN BARBER JR	MWD 367	1000 D		AIR-PER	N								CHURCHVILLE		T	CHURCHVILLE ROAD	42		290	627000	1005000
HA920729		UNITARIAN UNIVERSALI	210 LEE WAY	BEL AIR	MD	21014	RICKY BARBER	MWD 368	500 I		AIR-PER	N		HA1993G001	1121289	P				CHURCHVILLE	1	SW	CHURCHVILLE RD	42	3C	291	627895	1006076
~~HA950622~~	Hacd179	CAMPUS WATER CO		TOWSON	MD		WM LEONARD	MWD0000	P		ROTARY	N		HA1969G015	0120007	P	CAMPUS HILLS		WELL #4	CHURCHVILLE			RT 22	42		327	629473	1004472
~~HA944154~~		CAMPUS HILLS WATER W	3907 GREENWAY	BALTIMORE	MD	21218	DAVID KELLY	MWD 304	10000 T		AIR-PER	S		HA1969G015	0120007	P				CHURCHVILLE	1	W	CAMPUS HILL DR	42	C3	327	630211	1003324
~~HA946935~~		CAMPUS HILLS WATER W	3907 GREENWAY	BALTIMORE	MD	21218	DAVID KELLY	MWD 304	10000 T		AIR-PER	S			0120007	U				CHURCHVILLE	1	W	CAMPUS HILLS DR	42	C3	327	630264	1003379
HA930410		CAMPUS HILLS WATER	3907 GREENWAY	BALTO	MD	21218	DAVID KELLY	MWD 304	10000 P		AIR-PER	Y	HA690620	HA1969G015	0120007	P				CHURCHVILLE	1	W	CAMPUS HILLS DR	42		327	629758	1004108
~~HA943764~~		CAMPUS HILLS WATCH C	1755 ROSALIND DRIVE	ATLANTA	GA	30329	DAVID KELLY	MWD 304	400 T		AIR-PER	N		HA1969G015	0120007	P				CHURCHVILLE		W	CAMPUS HILLS DR	42	3C	327	629135	1003550
~~HA943488~~		CAMPUS HILLS MD	333 JERICHO TURNPIKE	JERICHO	NY	11753	DAVID KELLY	MWD 304	T		AIR-PER	N								CHURCHVILLE	2	W	CHURCHVILLE RD	42	2C	327	629000	1005000
HA943187		CAMPUS HILLS MD	333 JERICHO TURNPIKE	JERICHO	NY	11753	DAVID KELLY	MWD 304	T		AIR-PER	N								CHURCHVILLE	2	W	CHURCHVILLE RD	42	2C	327	629000	1005000
~~HA943186~~		CAMPUS HILLS MD	333 JERICHO TURNPIKE	JERICHO	NY	11753	DAVID KELLY	MWD 304	T		AIR-PER	N								CHURCHVILLE	2	W	CHURCHVILLE RD	42	2C	327	629000	1005000
~~HA944442~~		WAWA INC	260 W BALTIMORE PIKE	WAWA	PA	19063	GREGG P MYERS	MWD 523	T		AIR-ROT	D		HA1969G015	0120007	P								42		327	629995	1004416
~~HA944444~~		WAWA INC	260 W BALTIMORE PIKE	WAWA	PA	19063	GREGG P MYERS	MWD 523	T		AIR-ROT	N								CAMPUS HILLS		T	CHURCHVILLE RD	42	3B	329	628000	1003000
~~HA944449~~		WAWA INC	260 W BALTIMORE PIKE	WAWA	PA	19063	GREGG P MYERS	MWD 523	T		AIR-ROT	N								CAMPUS HILLS		T	CHURCHVILLE RD	42	3B	329	628000	1003000
~~HA944949~~		ISGOOD LLC	2700 PHILADELPHIA RD	EDGEWOOD	MD	21040	RICHARD KIMES	MGD 63	T		BORED	N								CAMPUS HILLS		T	CHURCHVILLE RD	42	3B	329	628000	1003000
~~HA944950~~		ISGOOD LLC	2700 PHILADELPHIA RD	EDGEWOOD	MD	21040	RICHARD KIMES	MGD 63	T		BORED	N							MW1	ABERDEEN	1	NW	RT 22	42	3B	329	629000	1004000
~~HA944951~~		ISGOOD LLC	2700 PHILADELPHIA RD	EDGEWOOD	MD	21040	RICHARD KIMES	MGD 63	T		BORED	N							MW2	ABERDEEN	1	NW	RT 22	42	3B	329	629000	1004000
HA945276		BLEVINS FAMILY PARTN	107 SHUCKS RD	BEL AIR	MD	21015	GURVIS JONES	MWD 47	500 D		AIR-PER	S							MW3	ABERDEEN	1	NW	RT 22	42	3B	329	629000	1004000
HA950426		GILBERT WILLIAM	2613 CHURCHVILLE RD	CHURCHVILLE	MD	21028	GURVIS JONES	MWD 047	500 F		AIR-PER	N								CHURCHVILLE	1	W	107 SCHUCKS RD	42	4B	331	628000	1003000
HA944244		UNITED METHODIST CHU	2503 CHURCHVILLE RD	BEL AIR	MD	21015	RICKY C BARBER	MWD 368	500 D		AIR-PER	Y								CHURCHVILLE		W	2613 CHURCHVILLE RD	42	3D	334	628000	1007000
HA940597		GRACE ASSEMBLY OF GO	PO BOX 356	ABINGDON	MD	21009	GURVIS JONES	MWD 47	500 I		AIR-PER	N		HA1995G032	1121228	P	MEADOW SPRINGS		11	CHURCHVILLE	2	W	2503 CHURCHVILLE RD	42		395	628000	1006000
HA944506		BRAZZON ROBERT	8 RHINEFORTE DR	CHURCHVILLE	MD	21028	GURVIS JONES	MWD 47	500 D		AIR-PER	Y	HA720339				BRAMBLEWOOD		59	CHURCHVILLE	1	W	MEADOW SPRINGS DR	42	B4	426	627475	1003672
HA930596		MCCORMACK ROBERT	9 BRAMBLE LN	CHURCHVILLE	MD	21028	CHARLES H HAMILTON J	MWD 112	500 D		AIR-PER	Y					NEWTON HEIGHTS	2	7&8	CHURCHVILLE	1	W	8 RHINEFORTE DR	42	3C	432	629000	1006000
HA920173		ORANGE LAWRENCE	19 CORNS DR	CHURCHVILLE	MD	21028	GURVIS JONES	MWD 47	500 D		AIR-PER	Y								CHURCHVILLE	1	W	9 BRAMBLE LANE	42	3D	441	628000	1007000
HA940541		UNCLE MARVINS OASIS	2476 CHURCHVILLE RD	BEL AIR	MD	21013	WALTER T CONNELLY	MGD 035	T		BORED	N								CHURCHVILLE	1	SW	CORNS DR	42		446	627000	1005000
HA882019		MEINTZER & SONS J E	404 S AURORA ST PO 6	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	1 T		BORED	N								BEL AIR	2	E	CHURCHVILLE RD	42	C3	457	628000	1005000
HA882018		MEINTZER & SONS J E	404 S AURORA ST PO 6	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE	42		457	628000	1005000
HA882017		MEINTZER & SONS J E	404 S AURORA ST PO 6	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	1 T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD	42		457	628000	1005000
HA882016		MEINTZER & SONS J E	404 S AURORA ST PO 6	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	1 T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD	42		457	628000	1005000
HA930248		EASTON PETROLEUM COM	2476 CHURCHVILLE RD	BEL AIR	MD	21015	DAVE KELLY	MWD 304	T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD	42		457	628000	1005000
HA882149		EASTON PETRO CO INC	PO BOX 666	EASTON	MD	21606	PAT MIRFIELD	MWD 379	T		BORED	N								CHURCHVILLE	1	SW	2476 CHURCHVILLE RD	42	3C	457	628000	1005000
HA882150		EASTON PETRO CO INC	PO BOX 666	EASTON	MD	20695	PAT MIRFIELD	MWD 379	T		BORED	N								CHURCHVILLE	1	SW	MD22 CHURCHVILLE ROA	42		457	628000	1004000
HA882151		EASTON PETRO CO INC	PO BOX 666	EASTON	MD	21606	PAT MIRFIELD	MWD 379	T		BORED	N								CHURCHVILLE	1	SW	CHURCHVILLE ROAD	42		457	628000	1004000
HA734852		YURMAN, THOMAS	P O BX 633	EDGEWOOD	MD		BARBER, SHERMAN	MWD0216	1000 D		AIR-PER	N								CHURCHVILLE	1 MI	NW	WESLEYAN DR				630000	1005000
HA734158		WILSON, THOMAS		CHURCHVILLE	MD		JONES, EARL D JR	MWD0009	400 D		AIR-PER	Y		HA1974G011			PRIESTFORD HILLS		17	CHURCHVILLE	1 MI	NW	WESLEYAN DR				630000	1005000
HA733242		WEBER, WILLIAM C	201 WHITEFIELD CT	CHURCHVILLE	MD		REIDER, A C & SONS	MWD0088	600 D		AIR-ROT	N		HA1974G071			PRIEST FORD HILLS	III	50	PRIEST FORD HILLS	0 MI		WHEATON LA				630000	1005000
HA734566		TRI ARC	9 LEXINGTON RD	BEL AIR	MD		JONES, EARL D JR	MWD0009	400 D		AIR-PER	N		HA1974G071			PRIESTFORD HILLS	3	60	CHURCHVILLE	2 MI	N	GOUCHER DR				630000	1005000
HA733502		STEARNS, DAVID	519 COURTLAND PL	BEL AIR	MD		JONES, GURVIS	MWD0047	500 D		AIR-PER	N		HA1974G071			PRIESTFORD HILLS	I	44	CHURCHVILLE	1 MI	NW	COLLEGE VIEW DR				630000	1005000
HA880350		SMITH SONIA	100 ASBURY RD	CHURCHVILLE	MD	21028	CHARLES H. HAMILTON	MWD0112	1000 D		AIR-PER	N								CHURCHVILLE	1	E	ASBURY				626000	1006000
HA880622		SMITH LEWIS	28 ASBURY RD	CHURCHVILLE	MD	21028	GURVIS JONES	MWD0047	500 D		AIR-PER	N								CHURCHVILLE	1	SW	ASBURY RD.				627000	1006000
HA811490		SMITH C	300 N UNION AVE	HAVRE DE GRAC	MD	21078	HAMILTON, CHARLES JR	MWD0112	1000 D		AIR-PER	N								CHURCHVILLE	1.1 MI	W	MD 22				627000	1005000
HA731022		SLIGH, RICHARD		BALTIMORE	MD		JONES, GURVIS	MWD0047	500 D		AIR-PER	N					COOL SPRING	1	1	THOMAS RUN	1 MI	SE	THOMAS RUN RD				630000	1005000
HA731023		SLIGH, RICHARD		BALTIMORE	MD		JONES, GURVIS	MWD0047	500 D		AIR-PER	N					COOL SPRING	1	16	THOMAS RUN	1 MI	SE	COOL SPRING RD				630000	1005000
HA734822		RUDOLPH, ROBERT	503 WINTER VIEW DR	BEL AIR	MD		LEONARD WELL DRLG	MWD0032	750 D		AIR-PER	N		HA1974G011			PRIEST FORD HILLS	II	123	CHURCHVILLE	1 MI	NW	WESLEYAN DR				630000	1005000
HA733636		ROYSE, DOUGLAS J	1725 DETHS FORD RD	HAVRE DE GRACE	MD		PRESTON & HAMILTON	MWD0112	1000 D		ROTARY	N		HA1974G071			PRIESTS FORD HILLS	2	66	CHURCHVILLE	1 MI	N	GOUCHER WAY				630000	1005000
HA734696		REMSNYDER, STEPHEN		JOPPA	MD		JONES, GURVIS	MWD0047	500 D		AIR-PER	N					PRIESTFORD HILLS		104	CHURCHVILLE	1 MI	NW	WHEATON LANE				630000	1005000
HA880511		PAUL GUSSIN COMPANY	7200 WISCONSIN AVE	BETHESDA	MD	20814	PAUL M. FABISZAK	MWD399	24000 T		AIR-PER	N					WELL #102			CHURCHVILLE	1	W	CHURCHVILLE RD				629000	1004000
HA880512		PAUL GUSSIN COMPANY	7200 WISCONSIN AVE	BETHESDA	MD	20814	PAUL M. FABISZAK	MWD0399	24000 T		AIR-PER	N					WELL #103			CHURCHVILLE	1	W	CHURCHVILLE RD				629000	1004000
HA880513		PAUL GUSSIN COMPANY	7200 WISCONSIN AVE	BETHESDA	MD	20814	PAUL M. FABISZAK	MWD0399	24000 T		AIR-PER	N					WELL #104			CHURCHVILLE	1	W	CHURCHVILLE RD				629000	1004000
HA880514		PAUL GUSSIN COMPANY	7200 WISONSIN AVE	BETHESDA	MD	20814	PAUL M. FABISZAK	MWD0399	24000 T		AIR-PER	N					WELL #105			CHURCHVILLE	1	W	CHURCHVILLE RD				629000	1004000
HA735959		OSTERIA, VINCENT M	GOUCHER WAY	CHURCHVILLE	MD		REIDER, A C & SONS	MWD0088	600 D		AIR-ROT	Y					PRIEST FORD HILLS		116	PRIEST FORD HILLS	0 MI		GOUCHER WAY				630000	1005000
HA881201		ORANGE LAWRENCE	10 CORNS DR.	BEL AIR	MD	21014	GURVIS JONES	MWD0047	500 D		AIR-PER	Y								CHURCHVILLE	1	SW	CORNS DR				627000	1005000
HA731913		MONK, BILL	16 SOUTH PARK ST	ABERDEEN	MD		BARBER, SHERMAN E	MWD0216	1000 D		AIR-PER	N		HA1974G071			PRIEST FORD HILLS		43	CHURCHVILLE	1 MI	N	COLLEGEVIEW DR				630000	1005000
HA733621		MONAHAN, JUNE	1725 DETHS FORD RD	HAVRE DE GRACE	MD		PRESTON & HAMILTON	MWD0112	1000 D		ROTARY	N		HA1974G011			PRIEST FORD HILLS	I	6	CHURCHVILLE	1 MI		COLLEGE VIEW DR				630000	1005000
HA881188		MANN ARCHIE	839 ERIE ST	HAVRE DE GRAC	MD	21078	GURVIS JONES	MWD0047	500 D		AIR-PER	N					CORNS MANOR		1	CHURCHVILLE	1	SW	CORNS DRIVE				627000	1005000
HA733637		KOOKER, DOUGLAS	601 EVERGREEN DR	BEL AIR	MD		PRESTON & HAMILTON	MWD0112	1000 D		ROTARY	N		HA1974G071			PRIEST FORD HILLS	5	104	CHURCHVILLE	1 MI	N	131 WHEATON LA				630000	1005000
HA881607		J E MEINTZER & SONS	404 S AURORA ST PO B	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD				628000	1005000
HA881608		J E MEINTZER & SONS	404 S AURORA ST PO B	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD				628000	1005000
HA881606		J E MEINTZER & SONS	404 S AURORA ST PO B	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD				628000	1005000
HA881605		J E MEINTZER & SONS	404 S AURORA ST PO B	EASTON	MD	21601	RICHARD L SHOCKLEY	MWD 486	T		BORED	N								CHURCHVILLE	1.1	W	CHURCHVILLE RD				628000	1005000
HA814242		INGRAM RITA	2417 CONOWINGO RD	BEL AIR	MD	21014	JONES, GURVIS	MWD0047	500 D		AIR-PER	N					BRAMBLE WOOD		1	CHURCHVILLE	1.7 MI	W	BRAMBLE LA				628000	1007000
HA731229		HENDERSON, THOMAS		BEL AIR	MD		JONES, GURVIS	MWD0047	500 D		AIR-PER	N					CAMPUS HILLS ESTS	1	156	CHURCHVILLE	3 MI	NW	CAMPUS HILLS DR				630000	1005000
HA881314		HARFORD HOMES INC	2800 PULASKI HIGHWAY	EDGEWOOD	MD	21040	DAVE KELLY	MWD0304	400 D		AIR-PER	N		HA1988G084			MEADOW SPRINGS		2	CHURCHVILLE	1	NE	MEADOW SPRINGS DR				627000	1004000
HA881147		HARFORD HOMES INC	2800 PULASKI HIGHWAY	EDGEWOOD	MD	21040	DAVE KELLY	MWD0304	400 D		AIR-PER	N		HA1988G084			MEADOW SPRINGS		3	CHURCHVILLE	1	NE	MEADOW SPRINGS CT				627000	1004000
HA881315		HARFORD HOMES INC	2800 PULASKI HIGHWAY	EDGEWOOD	MD	21040	DAVE KELLY	MWD0304	400 D		AIR-PER	N		HA1988G084			MEADOW SPRINGS		5	CHURCHVILLE	1	NE	MEADOW SPRINGS DR				627000	1004000
HA881316		HARFORD HOMES INC	2800 PULASKI HIGHWAY	EDGEWOOD	MD	21040	DAVE KELLY	MWD0304	400 D		AIR-PER	N		HA1988G084			MEADOW SPRINGS		8	CHURCHVILLE	1	NE	MEADOW SPRINGS DR				627000	1004000

N_GRID83	E_GRID83	LAT DEC DEG	LON DEC DEG	ISSUE DATE	COMPLETION DATE	TOTAL DEPTH	HYDRO FRACTURE	GROUTED	GROUT TYPE	GROUT BOTTOM	CASING TYPE	CASING DIAM	CASING DEPTH	SCREEN TYPE 1	TOP SCREEN 1	BOTTOM SCREEN 1	SCREEN DIAM	TELE SCOPING	HRS PUMPED	PUMPING RATE	LEVEL BEFORE	LEVEL DURING	PUMP INSTALLED	CAPACITY	PUMP HP	COLUMN LENGTH	CLOSED	ABANDONED	ABANDON DATE	REMARK
209932	462510	39.555555	76.272681	13-Aug-99	01-Sep-99	100	N	Y	CM	24	PL	6	25	HO	24	100			3	40	10	75	N				A			
209840	461812	39.554775	76.280808	29-Jun-76	14-Jul-76	125		Y	CM	42	ST	6	42	HO	42	125			6	15	12	20								
209627	462815	39.552788	76.269163	09-Apr-84	13-Apr-84	150		Y	CM	42	ST	6	42	HO	42	150			3	8	20	57								GAP INFO ADDED 6/24/2002 - FOR MONARCH MONTESSORI SCHOOL
209932	462205	39.555577	76.276227	15-May-97	30-May-97	300	N	Y	CM	70	PL	6	72	HO	70	300			1	3	13	290	N							
209932	462510	39.555555	76.272681	22-Jan-04	18-Feb-04	125	N	Y	CM	81	ST	6	81	HO	81	125			3	12	15	18	N							
209627	462510	39.55281	76.272709	07-Aug-91	26-Aug-91	300		Y	CM	54	ST	6	55	HO	54	300	6		3	9	21	113	N							
209900	462838	39.555243	76.268867	19-Jan-93	22-Jan-93	125		Y	CM	49	PL	6	50	HO	49	125			3	15	27	38	N							
210381	462349	39.55961	76.274512		12-Sep-69	95						6	48		48	95			20	25	15	43								NO COMPLETION ON FILE
210606	461999	39.561661	76.278564	11-Jul-96	11-Nov-96	300		Y	CM	50	PL	6	52	HO	50	300			6	36	9	27	N				R			
210622	462016	39.561804	76.278365	12-Mar-96	02-Apr-96	400	N	Y	CM	20	ST	6	24	HO	20	400			1	30	4	390	N							
210468	462238	39.560402	76.275796	21-Mar-94	14-Apr-94	200		Y	CM	61	ST	6	62	HO	61	200			3	75		195	Y	60	3	80	A			
210278	462068	39.558702	76.277791	12-May-00	16-Oct-00	375	N	Y	CM	58	ST	8	60	HO	58	375			72	65	13		N							
210237	462510	39.5583	76.272653	23-Jun-99	20-Jul-99	28	N	Y	CM	7	PL	4	8	PL	8	28	4		1	10	13	17	N							
210237	462510	39.5583	76.272653	23-Jun-99	20-Jul-99	43	N	Y	CM	11	PL	4	12	PL	12	42	4		1	4	16	38								
210237	462510	39.5583	76.272653	23-Jun-99	20-Jul-99	33	N	Y	CM	11	PL	4	12	PL	12	32	4		1	2	16	30	N							
210540	462332	39.561043	76.274695			86																							
209932	461900	39.555598	76.279773	17-Aug-01	21-Aug-01	35	N	Y	CM	13	PL	4	15	PL	15	35	4						N							
209932	461900	39.555598	76.279773	17-Aug-01	21-Aug-01	25	N	Y	CM	3	PL	4	5	PL	5	25	4						N							
209932	461900	39.555598	76.279773	17-Aug-01	21-Aug-01	35	N	Y	CM	13	PL	4	15	PL	15	35	4						N							
210237	462205	39.558322	76.276199	29-Mar-02	01-Apr-02	33	N	Y	CM	19	PL	4	423	PL	23	33	4						N							
210237	462205	39.558322	76.276199	29-Mar-02	29-Apr-02	33	N	Y	CM	19	PL	4	23	PL	23	33	4													
210237	462205	39.558322	76.276199	29-Mar-02	01-Apr-02	47	N	Y	CM	32	PL	4	37	PL	37	47	4						N							
209322	461900	39.550108	76.279829	29-Aug-02	21-Sep-02	400	N	Y	CM	63	PL	6	63	HO	63	400			3	5	32	122	N				A			
209932	463120	39.555511	76.265588	14-Aug-06	16-Aug-06	425		Y	CM	62	PL	6	62	HO	62	425			3	15	55	380	N							
209932	462815	39.555533	76.269134	17-May-01	18-Jul-01	200	N	Y	CM	60	PL	6	61	HO	91	200		T	2	10	20	160	N				A			
209772	462105	39.554142	76.277406	12-Jul-95	20-Jul-95	125	N	Y	CM	86	PL	6	86	HO	86	125			3	15	14	38	N							
210237	462815	39.558278	76.269106	03-Oct-01	08-Oct-01	130	N	Y	BC	32	PL	6	32	HO	32	130			3	15	17	21	N							
209932	463120	39.555511	76.265588	20-May-94	07-Jun-94	300		Y	CM	70	PL	6	70	HO	70	300			6	2	22	101	N							
209627	462510	39.55281	76.272709	21-Apr-92	02-May-92	270		Y	CM	60	PL	6	60	HO	60	270			6	3	15	180	N							
209932	462510	39.555555	76.272681	16-Jun-95	30-Jun-95	25			CM	3	PL	4	5	PL	5	15	4		1	1	1	1	N							
209932	462510	39.555555	76.272681	02-Oct-91	27-Aug-91	17		Y	BC	6	PL	4	7	PL	7	17	4						N							
209932	462510	39.555555	76.272681	02-Oct-91	27-Aug-91	22		Y	BC	10	PL	4	12	PL	12	22	4						N							
209932	462510	39.555555	76.272681	02-Oct-91	27-Aug-91	21		Y	BC	10	PL	4	11	PL	11	21	4						N							
209932	462510	39.555555	76.272681	02-Oct-91	27-Aug-91	23		Y	BC	12	PL	4	13	PL	13	23	4						N							
209932	462510	39.555555	76.272681	13-Dec-93	24-Jan-94	33		Y	BC	4	PL	6	8	PL	8	33	6						N							
209932	462205	39.555577	76.276227	03-Dec-91	13-Nov-91	22		Y	BC	12	PL	4	12	PL	12	22	4		1	1	17		N							
209932	462205	39.555577	76.276227	03-Dec-91	13-Nov-91	22		Y	BC	10	PL	4	12	PL	12	22	4		1	1	17		N							
209932	462205	39.555577	76.276227	03-Dec-91	13-Nov-91	22		Y	BC	10	PL	4	12	PL	12	22	4		1	1	17		N							
210542	462510	39.561045	76.272624	28-Apr-78	13-May-78	120		Y	CM	20	ST	6	21	HO	20	120			6	30	30	100								
210542	462510	39.561045	76.272624	28-Jul-77	01-Aug-77	98		Y	CM	24	ST	6	24	HO	24	98			6	5	12	45								
210542	462510	39.561045	76.272624	26-Aug-76	18-Sep-76	110		Y	CM	41	ST	6	43	HO	43	110			6	2	38	44								
210542	462510	39.561045	76.272624	05-Dec-77	07-Jan-78	175		Y	CM	64	ST	6	65	HO	64	175			6	10	37	150								
210542	462510	39.561045	76.272624	04-Jan-77	19-Jan-77	98		Y	CM	50	ST	6	50	HO	50	98			6	12	45	75								
209322	462815	39.550043	76.269191	20-Apr-89	30-May-89	195		Y	CM	95	ST	6	95	HO	95	195			3	4	5	105	N							
209627	462815	39.552788	76.269163	01-Sep-89	26-Sep-89	74		Y	CM	60	PL	6	60	HO	60	74			3	15	5	11	N							
209627	462510	39.55281	76.272709	20-Aug-84	29-Aug-84	120		Y	CM	41	ST	6	41	HO	41	120			3	15	18	38								
210542	462510	39.561045	76.272624	25-Jul-73	29-Aug-73	98		Y	CM	54	ST	6	54	HO	54	98			4	7	40	80								
210542	462510	39.561045	76.272624	25-Jul-73	31-Aug-73	192		Y	CM	55	ST	6	55	HO	55	192			5	3	30	150								
210542	462510	39.561045	76.272624	18-Apr-78	28-Apr-78	150		Y	CM	41	ST	6	42	HO	41	150			6	10	24	39								
210542	462510	39.561045	76.272624	04-May-77		104		Y	CM	24	ST	6	24	HO	24	104			6	20	25	104								
210542	462510	39.561045	76.272624	17-Mar-78	23-Mar-78	86		Y	CM	25	ST	6	25	HO	25	86			6	8	33	70								
210237	462205	39.558322	76.276199	18-Jul-89	28-Jul-89	300																				U			
210237	462205	39.558322	76.276199	18-Jul-89	24-Jul-89	300		Y	CM	22	ST	6	22	HO	22	300			3	12	38	250	N							
210237	462205	39.558322	76.276199	18-Jul-89	26-Jul-89	300		Y	CM	42	ST	6	42	HO	42	300			3	80	4	250	N							
210237	462205	39.558322	76.276199	18-Jul-89	28-Jul-89	300		Y	CM	36	ST	6	36	HO	36	300			3	65	17	250	N							
210542	462510	39.561045	76.272624	28-Jan-80	06-Feb-80	260		Y	CM	102	ST	6	102	HO	102	260			6	3	46	258								
209627	462510	39.55281	76.272709	11-Jul-90	12-Jul-90	98		Y	CM	46	PL	6	46	HO	46	98			2	15	25	45	N							
210542	462510	39.561045	76.272624	25-Oct-74																						C			
210542	462510	39.561045	76.272624	02-Mar-77	29-Mar-77	127		Y	CM	36	ST	6	36	HO	36	127			6	20	25	127								
209627	462510	39.55281	76.272709	02-Jul-90	12-Jul-90	120		Y	CM	54	PL	6	54	HO	54	120			3	8	18	35	N							
210542	462510	39.561045	76.272624	04-Mar-77	08-Apr-77	100		Y	CM	20	ST	6	20	HO	20	100			6	14	30	100								
209932	462510	39.555555	76.272681	13-Mar-91	07-Mar-91	21		Y	BC	10	PL	4	11	PL	11	21	4		1	1	1	1	N							
209932	462510	39.555555	76.272681	13-Mar-91	07-Mar-91	13		Y	BC	2	PL	4	3	PL	3	13	4		1	1	1	1	N							
209932	462510	39.555555	76.272681	13-Mar-91	07-Mar-91	22		Y	BC	11	PL	4	12	PL	12	22	4		1	1	1	1	N							
209932	462510	39.555555	76.272681	13-Mar-91	07-Mar-91	18		Y	BC	7	PL	4	8	PL	8	18	4		1	1	1	1	N							
209932	463120	39.555511	76.265588	24-Nov-87	12-Dec-87	175		Y	CM	71	ST	6	71	HO	71	175			3	10	23	56								
210542	462510	39.561045	76.272624	25-Oct-73	04-Feb-74	190		Y	CM	38	ST	6	38	HO	38	190			4	5	40	140								
209627	462205	39.552832	76.276255	13-Sep-90	19-Sep-90	200		Y	CM	70	PL	6	72	HO	70	200			3	11	14	107	N							
209627	462205	39.552832	76.276255	03-Jun-90	12-Jun-90	200		Y	CM	64	PL	6	66	HO	65	200			3	28	11	64	N							
209627	462205	39.552832	76.276255	13-Sep-90	19-Sep-90	200		Y	CM	60	PL	6	61	HO	110	200		T	3	13	16	24	N							
209627	462205	39.552832	76.276255	13-Sep-90	19-Sep-90	150		Y	CM	51	PL	6	53	HO	51	150			3	15	18	60	N							

EMERGENCY/TEMP NO. IF ANY

B 1 | 9973 | SEQUENCE NO. (MDE USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please print or type

STATE PERMIT NUMBER: HA-94-1603
fill in this form completely

Date Received (APA): 05/07/97

OWNER INFORMATION
BREECE PHILLIP
Last Name / First Name
23119 CHURCHVILLE RD
Street or RFD
BEL AIR MD 21015
Town / State / Zip

DRILLER INFORMATION
CIRCLE: MSD / MGD / MWD
David Kelly 692-698 3047
Driller's Name / License No.
Jones Well Drilling Inc
Firm Name
3700 Rush Rd Darrettsville 21084
Address
David Kelley 5-6-97
Signature / Date

WELL INFORMATION
APPROX. PUMPING RATE (GAL. PER MIN.): 4
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 400

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- D — HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F — FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- I — INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- P — PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT AND STATE HEALTH DEPARTMENT APPROVAL)
- T — TEST, OBSERVATION, MONITORING (MAY REQUIRE APPROPRIATION PERMIT)

APPROXIMATE DEPTH OF WELL: 200 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) JETTED Jetted & DRIVEN
AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- N — THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y — THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S — THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY - CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D — THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)
APPROP. PERMIT NUMBER: GAP
FORCE: WRITE INITIALS IN BOX
PERMIT No. HA-94-1603

LOCATION OF WELL
HARFORD
COUNTY
SUBDIVISION
SECTION / LOT: 03062066
CHURCHVILLE
NEAREST TOWN
MILES FROM TOWN (enter 0 if in town): MI

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): N, NE, E, SE, S, SW, W, TOWN

2319 Churchville Rd
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH
DISTANCE FROM ROAD: 145
ENTER FT OR MI: FT

TAX MAP: 42 BLK: 3C PARCEL 60

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford / 12
COUNTY NAME / COUNTY NO.

STATE SIGNATURE / INSERT S
DATE ISSUED: 05/15/97 CO SIGNATURE: Bradley EXP. DATE: 5/15/98

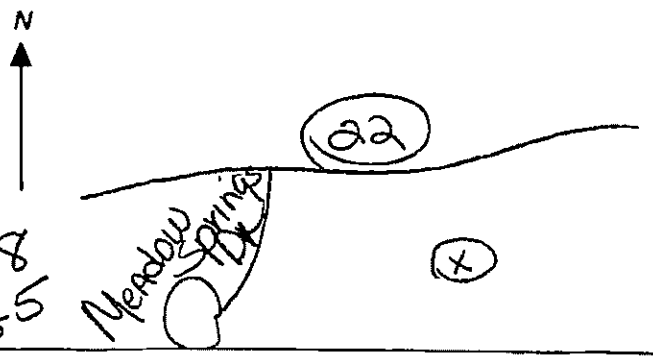
NORTH GRID: 628000 EAST GRID: 1004000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620
000 000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED -

ORIGINAL - STATE

410 734-7054

C 1 | 2842 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received JUN 23 1997

DATE WELL COMPLETED: MM 5 DD 30 YY 97

Depth of Well: 300 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-94-1603

OWNER Breece Phillip

STREET OR RFD 2319 Churchville Rd (last name / first name) TOWN Churchville

SUBDIVISION _____ SECTION _____ LOT _____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	8	
soft brown rock	8	68	x
hard gray rock	68	81	
med hard brown rock	81	84	x
hard gray rock	84	94	
hard light gray rock	94	98	
hard gray rock	98	185	
hard tan rock	185	190	
hard light gray rock	190	219	
med hard gray rock	219	221	x
hard gray rock	221	300	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [ ] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M W D 304
David Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M __ D ____
Arnold Garrison
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 37 NO. OF POUNDS 3700

GALLONS OF WATER 222

DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. (TOP) to 70 ft. (BOTTOM)
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	6	72

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below

[ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	HO	70	300
2			
3			

SLOT SIZE 1 ____ 2 ____ 3 ____

DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 ____ from ____ to ____

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T ____ (E.R.O.S.) ____ W O ____

TELESCOPE CASING ____ LOG INDICATOR ____ OTHER DATA ____

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 1

PUMPING RATE (gal. per min.) 3

METHOD USED TO MEASURE PUMPING RATE timer

WATER LEVEL (distance from land surface)

BEFORE PUMPING 13 ft.

WHEN PUMPING 290 ft.

TYPE OF PUMP USED (for test)
- [A] air
- [P] piston
- [T] turbine
- [C] centrifugal
- [R] rotary
- [O] other (describe below)
- [J] jet
- [S] submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ____

CAPACITY: GALLONS PER MINUTE (to nearest gallon) ____

PUMP HORSE POWER ____

PUMP COLUMN LENGTH (nearest ft.) ____

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above LAND SURFACE
- [–] below

2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

N

104' neighbors septic
100'+ Drainfields

Churchville Rd

ORIGINAL-STATE

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION
2500 BROENING HIGHWAY, BALTIMORE, MARYLAND 21224, (410) 631-3784

WATER WELL ABANDONMENT-SEALING REPORT FORM

SEP 1997 Received Ind. Septic Systems

SUBMIT COPIES OF COMPLETED FORM TO:
- COUNTY ENVIRONMENT AGENCY (contact MDE, WMA if address needed)
- WELL OWNER
- MDE, WATER MANAGEMENT ADMINISTRATION, WELL PROGRAM

DATE WELL ABANDONED: 8/26/97 (month/day/year)

- PERMIT NUMBER OF ABANDONED WELL (if any)
- PERMIT NUMBER OF REPLACEMENT WELL: HA-94-1603

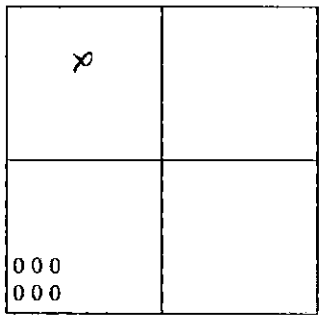
- PERSON ABANDONING WELL: Owner
- OWNER'S NAME: Phillip Breece

WELL DRILLERS LICENSE NUMBER: _____
CIRCLE: MWD/MSD/MGD

- WELL LOCATION: 2319 Churchville Rd

COUNTY: Harford
NEAREST TOWN: Churchville
TAX MAP 42 BLOCK 2C PARCEL 60
SUBDIVISION: _____
SECTION: _____ LOT: _____

MARYLAND GRID COORDINATES
E 1000
BOX NUMBER
N 620 <---



SHOW WELL LOCATION BY X WITHIN BOX

- TYPE OF WELL BEING ABANDONED:

_____ DRILLED _____ JETTED
_____ BORED/AUGUERED _____ HAND DUG
_____ OTHER (specify) _____

- USE CODE:

_____ DOMESTIC _____ MUNICIPAL/PUBLIC
_____ IRRIGATION _____ INDUSTRIAL
_____ TEST/OBSERVATION

- TYPE OF CASING:

_____ STEEL _____ PLASTIC
_____ CONCRETE _____ OTHER (specify)
_____

- SIZE OF CASING: 36 INCHES IN DIAMETER
- DEPTH OF WELL: 20 FEET DEEP
- WAS ANY CASING REMOVED? ___ YES _____ NO
  if yes, length removed, in feet: _____
- WAS CASING RIPPED OR PERFORATED? ___ YES _____ NO

LOG OF SEALING MATERIAL

MATERIAL	FEET FROM	FEET TO
Crusher Run	0	20'

Paul Jung Sanitarian
SIGNATURE-MASTER WELL DRILLER OR SUPERVISING SANITARIAN | LICENSE # | MWD/MSD/MGD CIRCLE ONE | 8/26/97 DATE

DENV 828 JULY 1993

EMERGENCY/TEMP NO IF ANY

B 1 | 12994 | SEQUENCE NO (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-94-3704

fill in this form completely

Date Received (APA): 02-23-00

OWNER INFORMATION

Campus Hills Water Company (Last Name / First Name)

1755 Rosalind Drive (Street or RFD)

Atlanta GA 30329 (Town / State / Zip)

DRILLER INFORMATION

David Kelly (Driller's Name) MD 304 (License No)

Jones Well Drilling Inc (Firm Name)

3700 Rush Rd Darrettsville 21084 (Address)

David Kelly (Signature) 2-22-00 (Date)

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL PER MIN.): 4

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 400

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 300 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN

AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)

CABLE | REVerse-ROTary | DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: HA69 GAP 015

PERMIT No. HA-94-3704

B 3 LOCATION OF WELL

COUNTY: Harford

SUBDIVISION

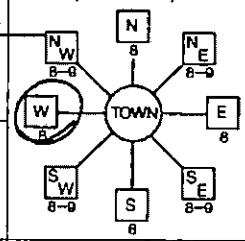
SECTION | LOT

NEAREST TOWN: Churchville

MILES FROM TOWN (enter 0 if in town): M I

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



NEAR WHAT ROAD: Campus Hills Dr

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): 03068579

NORTH / WEST / EAST / SOUTH

DISTANCE FROM ROAD: FT

ENTER FT OR MI

TAX MAP: 42 BLK: 35 PARCEL 327

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Harford COUNTY NO.: 12

STATE SIGNATURE: Mark A. Hajja INSERT S

DATE ISSUED: 05/10/00 CO SIGNATURE: Woody Williams EXP. DATE: 5/12/01

NORTH GRID: 629 000 EAST GRID: 1003 000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

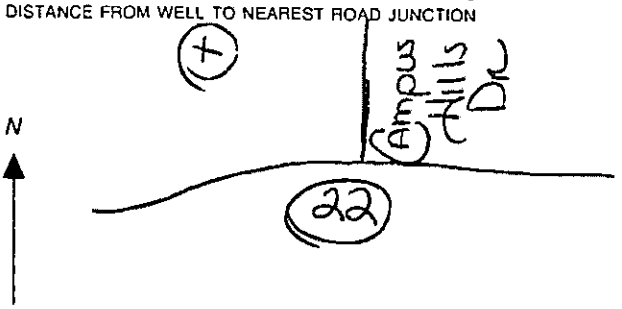
WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000

N 620

000
000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS (NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED -): SEE ATTACHMENT

DENV-Permit 97

ORIGINAL

c/o Charles Edwards 404-634-5287

C 1 6898 — SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received DEC 18 2000

DATE WELL COMPLETED: 10 16 2000

8" to 180' 375
6" to 375'
Depth of Well (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA - 94 - 3704

OWNER Campus Hills Water Company (last name / first name)
STREET OR RFD _____ TOWN _____
SUBDIVISION Campus Hills Drive SECTION _____ LOT _____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	8	
soft brown rock	8	56	
hard gray rock	56	72	
med hard gray rock	72	79	
hard gray rock	79	84	
med hard gray rock	84	85	X
hard gray rock	85	94	
med hard gray rock	94	97	
hard gray rock	97	118	
med hard gray rock	118	120	X
hard gray rock	120	129	
hard light gray rock	129	152	
hard gray rock	152	162	
med hard gray rock	162	169	
hard gray rock	169	375	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes Y / no (N)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD 304
Dave Kelley
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MD 075
Arnold Harrison
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes (Y) / no (N)
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (CM) BENTONITE CLAY (BC)
NO. OF BAGS 29 NO. OF POUNDS 2900
GALLONS OF WATER 145
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 58 ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
ST	8	60

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole insert appropriate code below: ST STEEL, BR BRASS BRONZE, HO OPEN HOLE, PL PLASTIC, OT OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)		
1	HO	58	375
2			
3			

SLOT SIZE 1 _____ 2 _____ 3 _____
DIAMETER OF SCREEN _____ (NEAREST INCH)

	from	to
GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68		

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING / LOG INDICATOR / OTHER DATA

C 3

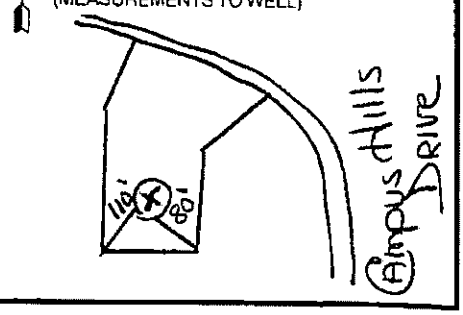
PUMPING TEST
HOURS PUMPED (nearest hour) 72
PUMPING RATE (gal. per min.) 65.00
METHOD USED TO MEASURE PUMPING RATE timer

WATER LEVEL (distance from land surface)
BEFORE PUMPING 13 ft.
WHEN PUMPING _____ ft.

TYPE OF PUMP USED (for test)
- A air
- P piston
- T turbine
- C centrifugal
- R rotary
- O other (describe below)
- J jet
- S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / (NO)
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height): (+) above / (–) below LAND SURFACE: 2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR97 ① ORIGINAL

EMERGENCY/TEMP NO. IF ANY

B 1 | 10053 (1 2 3 6) SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 94 - 3186 (70 79) fill in this form completely

Date Received (APA): 6/21/99 (8 MM DD YY 13)

OWNER INFORMATION
Campus Hills Rd (14 Last Name / Owner / First Name 34)
333 Jericho Turnpike (36 Street or RFD 55)
Jericho New York 11753 (57 Town 70 State 72 Zip 76)

DRILLER INFORMATION
David Kelly MWD 304 (Driller's Name 76 License No. 81)
Jones Well Drilling Inc (Firm Name)
3700 Rush Rd Jarrettsville 21084 (Address)
David Kelly 6-16-99 (Signature / Date)

B 2 (1 2) **WELL INFORMATION**
APPROX. PUMPING RATE (GAL. PER MIN.): 0 (8 12)
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0 (14 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- 22 [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION (MONITORING) monitor groundwater for S.S.
- [G] GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 (24 28) FEET

APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)
BORED (or Augered) | JETTED | Jetted & DRIVEN
30 AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
37 CABLE | REVerse-ROTary | DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- 39 [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) 41 ___ - ___ - ___ 52

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: GAP (54 63)
PERMIT No. HA - 94 - 3186 (70 71 72 73 74 75 76 77 78 79)

B 3 **LOCATION OF WELL** MW-2
Harford (8 COUNTY 21)
23 SUBDIVISION 42
SECTION (44 46) LOT (48 50) 030068579
Churchville (52 NEAREST TOWN 71)
MILES FROM TOWN (enter 0 if in town): 2 M (73 76 77 78)

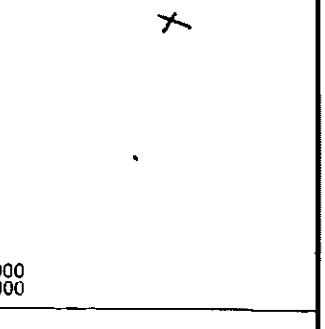
B 4 (1 2) DIRECTION OF WELL FROM TOWN (CIRCLE BOX)
NW 8-9 | N 8 | NE 8-9
W 8 | TOWN | E 8
SW 8-9 | S 8 | SE 8-9

Churchville Rd (11 NEAR WHAT ROAD 30)
ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH / WEST / EAST / SOUTH
34 1200 37 DISTANCE FROM ROAD
ENTER FT OR MI: FT (38 39)
TAX MAP: 42 BLK: 2C PARCEL 327

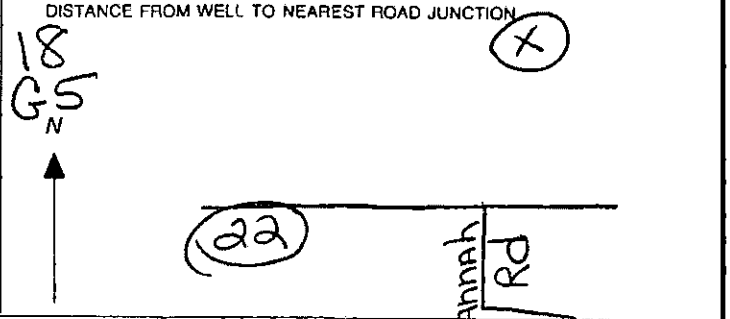
NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
Harford (COUNTY NAME) 12 (COUNTY NO.)
STATE SIGNATURE _____ INSERT S → (41)
DATE ISSUED 06/23/99 (43 MM DD YY 48) CO SIGNATURE 6/23/00 EXP. DATE
NORTH GRID 629 000 (50 55) EAST GRID 1005 000 (57 63)

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X →
SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED -

C 1 | 3451 — SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER: 12

ST/CO USE ONLY
DATE Received: APR 20 2000

DATE WELL COMPLETED: MM 7 DD 20 YY 99

Depth of Well: 28 (TO NEAREST FOOT)

MW-2

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-94-3186

OWNER: Campus Hills
STREET OR RFD: Churchville Rd
TOWN: Churchville
SUBDIVISION: 2458 Churchville Rd. SECTION: LOT:

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
med hard tan	0	9	
hard tan rock	9	15	
med hard tan	15	16	x
hard tan rock	16	20	
med hard tan rock	20	22	x
hard tan/gray rock	22	27	
med hard tan rock	27	28	x

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes (Y) / no (N)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MWD304
David Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: D
Arnold Jones
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes (Y) / no (N)
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT (CM) BENTONITE CLAY (BC)
NO. OF BAGS 3 NO. OF POUNDS 300
GALLONS OF WATER 15
DEPTH OF GROUT SEAL (to nearest foot)
from 0 TOP ft. to 7 BOTTOM ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
STEEL (ST) CONCRETE (CO) PLASTIC (PL) OTHER (OT)

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	4	8

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below
STEEL (ST) BRASS (BR) BRONZE OPEN HOLE (HO) PLASTIC (PL) OTHER (OT)

C 2 — DEPTH (nearest ft.)

EACH SCREEN		DEPTH (nearest ft.) from	to
1	PL	8	28
2			
3			

SLOT SIZE 1 .020 2 3

DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK from 7 to 28
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour): 1
PUMPING RATE (gal. per min.): 10.00
METHOD USED TO MEASURE PUMPING RATE: timer

WATER LEVEL (distance from land surface)
BEFORE PUMPING: 13 ft.
WHEN PUMPING: 17 ft.

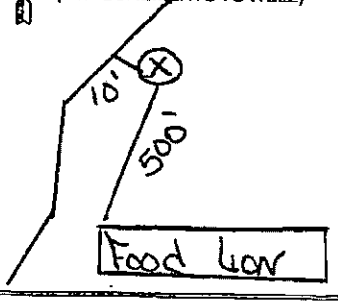
TYPE OF PUMP USED (for test)
A air | P piston | T turbine | C centrifugal | R rotary | O other (describe below) | J jet | S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height): + above / – below LAND SURFACE: 2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



EMERGENCY/TEMP NO. IF ANY

B 1 | 10052 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA - 94 - 3185

fill in this form completely

Associates Limited Partnership

OWNER INFORMATION

Date Received (APA): 6 21 99

Campus Hills 4d
Last Name / Owner / First Name

333 Jericho Turnpiken
Street or RFD

Jericho New York 11753
Town / State / Zip

DRILLER INFORMATION

David Kelly — MD D 304
Driller's Name / License No.

Jones Well Drilling Inc
Firm Name

3700 Rush Rd Jarrettsville 21084
Address

David Kelly 6-16-99
Signature / Date

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 0

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 0

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION (MONITORING) — monitor groundwater for S.S.
- [G] GEO-THERMAL

B 3 LOCATION OF WELL

Harford — MW-1
COUNTY

SUBDIVISION

SECTION / LOT: 03068579

Churchville
NEAREST TOWN

MILES FROM TOWN (enter 0 if in town): 2 MI

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX): N, NE, E, SE, S, SW, W, NW, TOWN

Churchville Rd
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH

DISTANCE FROM ROAD: 800 FT (ENTER FT OR MI)

TAX MAP: 42 BLK: 2C PARCEL 317

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford — 12
COUNTY NAME / COUNTY NO.

STATE SIGNATURE _____ INSERT S

DATE ISSUED: 06/23/99 — COSIGNATURE — EXP. DATE: 6/23/00

NORTH GRID: 629 000 — EAST GRID: 1005 000

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) / JETTED / Jetted & DRIVEN
AIR-ROTary / AIR-PERcussion / ROTARY (Hydraulic Rotary)
CABLE / REVerse-ROTary / DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000
N 620

000
000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: GAP

PERMIT No. HA - 94 - 3185

SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

DENV-Permit 97

ORIGINAL

C 1 | 3453 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received APR 26 2000

DATE WELL COMPLETED MM 7 DD 20 YY 99

Depth of Well 33 (TO NEAREST FOOT)

MW-1

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA - 94 - 3185

OWNER Campus Hills (last name)
STREET OR RFD Churchville (first name) TOWN Churchville
SUBDIVISION 2458 Churchville Rd. SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	6	
hard tan rock	6	13	
med hard tan rock	13	15	
hard tan rock	15	27	
med hard tan rock	27	28	x
hard tan/gray rock	28	33	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y / no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MW0304
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION): David Kelly

LIC. NO.: D
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee): Arnold Harrison

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y / no N

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM BENTONITE CLAY BC
NO. OF BAGS 5 NO. OF POUNDS 500
GALLONS OF WATER 25
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. TOP to 11 ft. BOTTOM
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	4	12

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole: insert appropriate code below: ST STEEL, BR BRASS BRONZE, PL PLASTIC, HO OPEN HOLE, OT OTHER

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL	12	32
2			
3			

SLOT SIZE 1 .020 2 3
DIAMETER OF SCREEN 4 (NEAREST INCH)

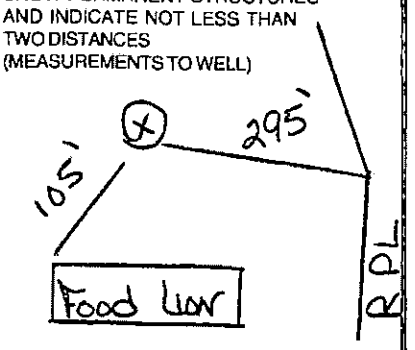
GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 11 to 33

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E R O.S.) (72) W Q
TELESCOPE CASING | LOG INDICATOR | (74 75 76) OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour) 1
PUMPING RATE (gal. per min.) 2.00
METHOD USED TO MEASURE PUMPING RATE timer
WATER LEVEL (distance from land surface)
BEFORE PUMPING 16 ft.
WHEN PUMPING 30 ft.
TYPE OF PUMP USED (for test)
A air | P piston | T turbine | C centrifugal | R rotary | O other (describe below) | J jet | S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES / NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height) + above / – below LAND SURFACE: 2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR97 ① ORIGINAL

EMERGENCY/TEMP NO. IF ANY

B 1 | 7814 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA -94 -4442
fill in this form completely

Date Received (APA): 8-10-01

OWNER INFORMATION

Owner Last Name: Wawa, INC
First Name:
Street or RFD: 260 W. Baltimore Pike
Town: Wawa
State: PA
Zip: 19063

DRILLER INFORMATION

Driller's Name: Greg P Myers
License No: MWD523
Firm Name: B. L. Myers Bros
Address: 5112 Peyton Ct Suite V Frederick MD 21704
Signature:
Date:

LOCATION OF WELL

B 3
COUNTY: Harford
SUBDIVISION:
SECTION:
LOT:
NEAREST TOWN: Campus Hills
MILES FROM TOWN (enter 0 if in town): 0

B 4
DIRECTION OF WELL FROM TOWN (CIRCLE BOX): NW 8-9, N 8, NE 8-9, W 9, TOWN, E 8, SW 8-9, S 8, SE 8-9

NEAR WHAT ROAD: Churchille Rd

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH

DISTANCE FROM ROAD: 0317 6665 ENTER FT OR MI

TAX MAP: 42 BLK: 3B PARCEL 329

WELL INFORMATION

B 2
APPROX. PUMPING RATE (GAL. PER MIN.):
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY):

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- X TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Harford
COUNTY NO.: 12
STATE SIGNATURE:
INSERT S
DATE ISSUED: 8/17/01 SIGNATURE: Peter O Smith EXP DATE: 8/17/02
NORTH GRID: 628 000
EAST GRID: 1003 000

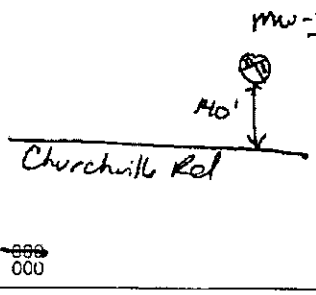
APPROXIMATE DEPTH OF WELL: 30 FEET
APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN
AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT
other

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.



WRITE THE BOX NUMBER FROM THE MAP HERE

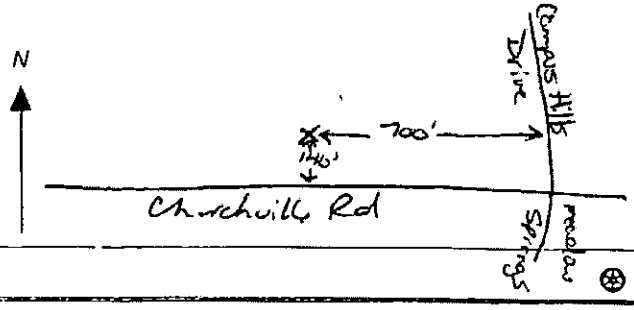
E 627,505
N 1014

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- X N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: G
PERMIT No. HA-94-4442

SPECIAL CONDITIONS
NOTE: APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED.

DENV-Permit 97

ORIGINAL

C 1 | 00329 | SEQUENCE NO. (MDE USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received SEP 20 1994

DATE WELL COMPLETED: MO 8 DD 21 YY 01

Depth of Well: 35 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-94-4442

OWNER Wawa, Inc.
STREET OR RFD Churchville Rd. TOWN Campus Hills
SUBDIVISION Map 42, Par 329 SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Light Brown Silty Sand	0	35	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes Y / no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MGD523
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MGD039
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes Y / no N
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT CM BENTONITE CLAY BC
NO. OF BAGS 2 NO. OF POUNDS 188
GALLONS OF WATER 12
DEPTH OF GROUT SEAL (to nearest foot)
from 0 TOP ft. to 13 BOTTOM ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
ST STEEL, CO CONCRETE, PL PLASTIC, OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	4	15

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole insert appropriate code below
ST STEEL, BR BRASS, BRONZE, PL PLASTIC, HO OPEN HOLE, OT OTHER

C 2 — DEPTH (nearest ft.) — EACH SCREEN

		from	to
1	PL	15	35
2			
3			

SLOT SIZE 1 020 2 ____ 3 ____
DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK from 13 to 35
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q
TELESCOPE CASING | LOG INDICATOR | OTHER DATA

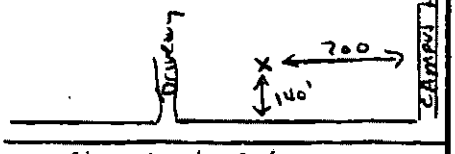
C 3

PUMPING TEST
HOURS PUMPED (nearest hour) NOT
PUMPING RATE (gal. per min.) PUMPED
METHOD USED TO MEASURE PUMPING RATE
WATER LEVEL (distance from land surface)
BEFORE PUMPING ft.
WHEN PUMPING ft.

TYPE OF PUMP USED (for test)
A air, P piston, T turbine, C centrifugal, R rotary, O other (describe below), J jet, S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES / NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.
CAPACITY: GALLONS PER MINUTE (to nearest gallon)
PUMP HORSE POWER
PUMP COLUMN LENGTH (nearest ft.)
CASING HEIGHT (circle appropriate box and enter casing height)
+ above / – below LAND SURFACE
2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 STATE

EMERGENCY/TEMP NO. IF ANY

B 1 | 7816 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-94-4444

fill in this form completely

Date Received (APA): 8-10-01

OWNER INFORMATION

Wawa, Inc
Last Name / Owner / First Name

260 W Baltimore Pike
Street or RFD

Wawa | PA | 19063
Town | State | Zip

DRILLER INFORMATION

Gregg P Myers | MWD523
Driller's Name | License No

B.L. Myers Bros
Firm Name

5112 Pegasus Ct Suite V Frederick MD 21703
Address

Signature | Date

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.)

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY)

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [X] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS (CIRCLE APPROPRIATE BOX)

- [X] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP PERMIT NUMBER: G

PERMIT No: HA-94-4444

B 3 LOCATION OF WELL

Harford
COUNTY

SUBDIVISION

SECTION | LOT

Camps Hills
NEAREST TOWN

MILES FROM TOWN (enter 0 if in town): 0 M I

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)

Churchville Rd
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

DISTANCE FROM ROAD: 30 FT

03176665 ENTER FT OR MI

TAX MAP: 42 BLK: 3B PARCEL 329

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford | 12
COUNTY NAME | COUNTY NO.

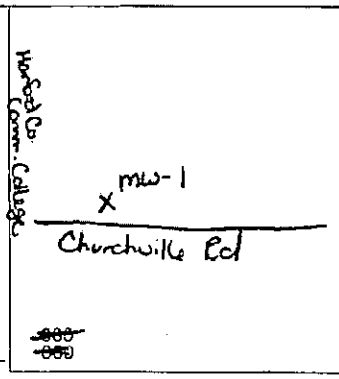
STATE SIGNATURE | INSERT S

DATE ISSUED: 8/17/01 | CO-SIGNATURE: Peter D. Smith | EXP. DATE: 8/17/02

NORTH GRID: 628000 | EAST GRID: 1003000

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

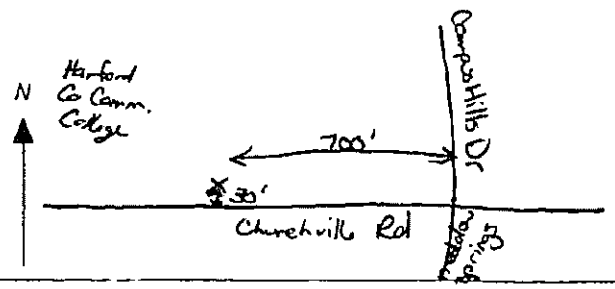


WRITE THE BOX NUMBER FROM THE MAP HERE

E 627,500

N 1,014,000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS

DENV-Permit 97

① ORIGINAL

C 1 | 00331 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received SEP 20 2001

DATE WELL COMPLETED MM 8 DD 21 YY 01

Depth of Well 25 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-94-4444

OWNER Wawa, Inc.

STREET OR RFD Churchville Rd. TOWN Campus Hills

SUBDIVISION Map 42, Par 329 SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Light Brown Silty Sand	0	25	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes Y no N

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD0523

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MD0394

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes Y no N

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT CM BENTONITE CLAY BC

NO. OF BAGS ____ NO. OF POUNDS 94

GALLONS OF WATER 6

DEPTH OF GROUT SEAL (to nearest foot)

from 0 ft. (TOP) to 3 ft. (BOTTOM)

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

ST STEEL CO CONCRETE PL PLASTIC OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	4	5

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole insert appropriate code below

ST STEEL BR BRASS BRONZE HO OPEN HOLE PL PLASTIC OT OTHER

C 2

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL	5	25
2			
3			

SLOT SIZE 1 020 3 ____

DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 3 to 25

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T ____ (E.R.O.S.) ____ W O ____

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) NOT

PUMPING RATE (gal. per min.) PUMPED

METHOD USED TO MEASURE PUMPING RATE ____

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ ft.

WHEN PUMPING ____ ft.

TYPE OF PUMP USED (for test)

A air P piston T turbine C centrifugal R rotary O other (describe below) J jet S submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ____

CAPACITY: GALLONS PER MINUTE (to nearest gallon) ____

PUMP HORSE POWER ____

PUMP COLUMN LENGTH (nearest ft.) ____

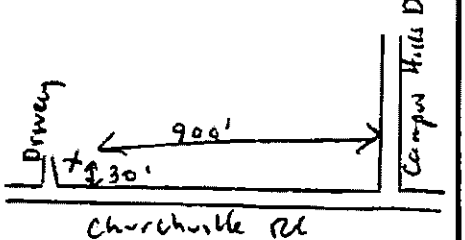
CASING HEIGHT (circle appropriate box and enter casing height)

+ above LAND SURFACE

− below

2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00

STATE

EMERGENCY/TEMP NO. IF ANY

B 1 | 7815 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-94-4443

fill in this form completely

Date Received (APA): 8-10-01

OWNER INFORMATION

Owner: Wawa, Inc.

Street or RFD: 260 W. Baltimore Pike

Town: Wawa | State: PA | Zip: 19063

DRILLER INFORMATION

Driller's Name: Gary P Myers | License No.: MWD523

Firm Name: B.L. Myers Bros

Address: 5111 Pegasus Ct Suite V Frederick MD 21704

Signature: Gary P Myers | Date:

LOCATION OF WELL

B 3

County: Harford

Subdivision:

Section: | Lot:

Nearest Town: Campus Hills

Miles from Town (enter 0 if in town): 0 M I

B 4

Direction of well from town (circle box): N, NW, NE, W, TOWN, E, SW, SE, S (8–9)

Near what road: Churchville Rd

On which side of road (circle appropriate box): NORTH, WEST, EAST, SOUTH

Distance from road: 340 ENTER FT OR MI: 57

TAX MAP: 42 BLK: 38 PARCEL: 329

WELL INFORMATION

B 2

Approx. pumping rate (gal. per min.):

Average daily quantity needed (gal. per day):

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [X] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

County Name: Harford | County No.: 12

State Signature: | Insert S:

Date Issued: 8/17/01 | Co-Signature: Peter O Smith | Exp. Date: 8/17/02

North Grid: 628000 | East Grid: 1003000

Approximate depth of well: 30 feet

Approximate diameter of well: 4 nearest inch

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN

AIR ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)

CABLE | REVerse-ROTary | DRive-POINT

other

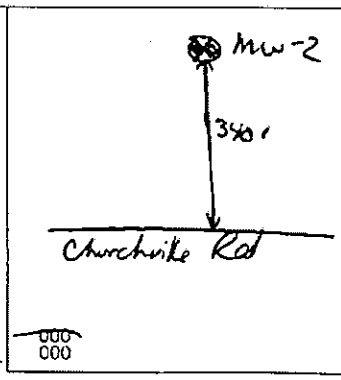
REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- [X] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE):

Show major features of box & locate well with an X

Sources of drilling water
1.
2.
3.

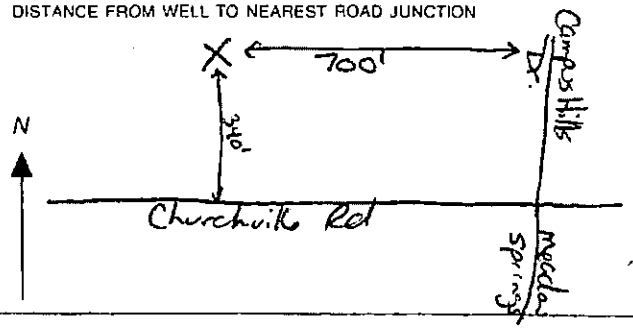


Write the box number from the map here

E 627.500

N 1014

Draw a sketch below showing location of well in relation to nearby towns and roads and give distance from well to nearest road junction



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: ------G---

PERMIT No. HA-94-4443

SPECIAL CONDITIONS

DENV-Permit 97

ORIGINAL

C 1 | 00330 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received SEP 20 01

DATE WELL COMPLETED MO 8 DD 21 YY 01

Depth of Well 35 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-94-4443

OWNER Wawa, Inc

STREET OR RFD Churchville Rd. TOWN Campus Hills

SUBDIVISION Map 42, Par 329 SECTION LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Light Brown Silty Sand	0	35	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes (Y) no (N)

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD D523

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M6 D039

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes (Y) no (N)

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT (CM) BENTONITE CLAY (BC)

NO. OF BAGS 2 NO. OF POUNDS 188

GALLONS OF WATER 12

DEPTH OF GROUT SEAL (to nearest foot)

from 0 TOP ft. to 13 BOTTOM ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

(ST) STEEL (CO) CONCRETE (PL) PLASTIC (OT) OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	4	15

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole insert appropriate code below

(ST) STEEL (BR) BRASS BRONZE (HO) OPEN HOLE (PL) PLASTIC (OT) OTHER

DEPTH (nearest ft.)

EACH SCREEN		from	to
1	PL	15	35
2			
3			

SLOT SIZE 1 .029 2 3

DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 13 to 35

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

70 72 74 75 76

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour) NOT PUMPED

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE —

WATER LEVEL (distance from land surface)

BEFORE PUMPING — ft.

WHEN PUMPING — ft.

TYPE OF PUMP USED (for test)
- (A) air
- (P) piston
- (T) turbine
- (C) centrifugal
- (R) rotary
- (O) other (describe below)
- (J) jet
- (S) submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

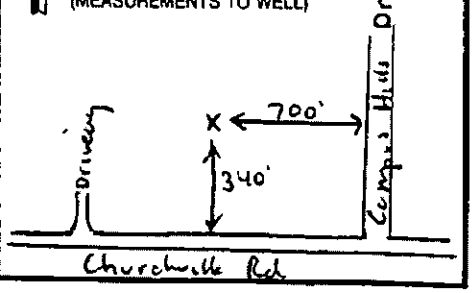
PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
- (+) above LAND SURFACE
- (−) below

2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 STATE

EMERGENCY/TEMP NO. IF ANY

B 1 | 6787 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL

please type

STATE PERMIT NUMBER: HA-94-4949

fill in this form completely

Date Received (APA): 032602

OWNER INFORMATION

Isgood LLC (Last Name / Owner / First Name)

2700 Philadelphia Rd (Street or RFD)

Edgewood Md 21040 (Town / State / Zip)

DRILLER INFORMATION

Richard Kimes MG D063 (Driller's Name / License No.)

Summit Site Services Inc (Firm Name)

101 Nansla Baltimore MD 21222 (Address)

Signature: Richard Kimes Date: 3/26/02

LOCATION OF WELL

B 3 | Harford (COUNTY)

SUBDIVISION

SECTION | LOT MW1

Aberdeen Aberdeen (NEAREST TOWN)

MILES FROM TOWN (enter 0 if in town)

B 4 | DIRECTION OF WELL FROM TOWN (CIRCLE BOX): N, NE 6-9, E 6, SE 6-9, S 6, SW 6-9, W 6, NW 6, TOWN

Rt 22 (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH

DISTANCE FROM ROAD: 1000 Ft

ENTER FT OR MI: 03176665

TAX MAP: 42 BLK: 3B PARCEL 329

WELL INFORMATION

B 2 | APPROX. PUMPING RATE (GAL. PER MIN.)

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY)

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- I INDUSTRIAL, COMMERICIAL, DEWATERING
- P PUBLIC WATER SUPPLY WELL
- T TEST, OBSERVATION, MONITORING
- G GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford | 12 (COUNTY NAME / COUNTY NO)

STATE SIGNATURE _____ INSERT S

DATE ISSUED: 3/29/02 Peter J Smith 3/29/03 (CO-SIGNATURE / EXP. DATE)

NORTH GRID: 629000 EAST GRID: 1004000

APPROXIMATE DEPTH OF WELL: 30 FEET

APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN

AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)

CABLE REVerse-ROTary DRive-POINT

other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

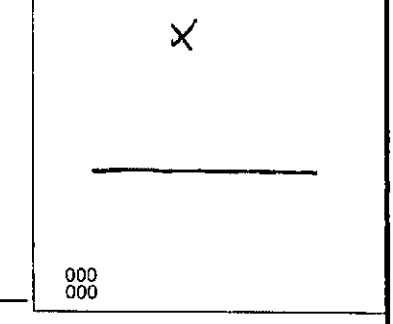
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1. municipal
2.
3.

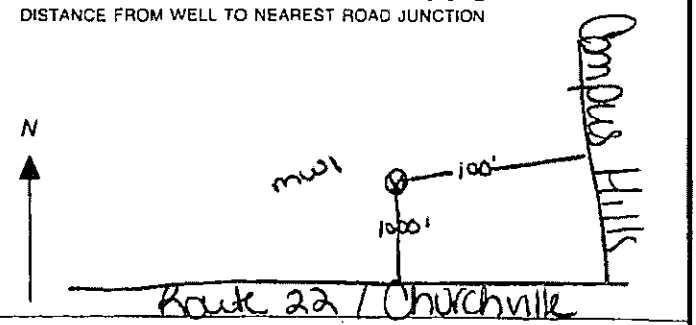
WRITE THE BOX NUMBER FROM THE MAP HERE

E 1,000

N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ------G---

PERMIT No. HA-94-4949

SPECIAL CONDITIONS

(NOTE: APPROVING AUTHORITY SHOULD USE SEPARATE SHEET IF NEEDED.)

DENV-Permit 97

ORIGINAL

C 1 | 4550 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED AFTER WELL IS COMPLETED.

COUNTY NUMBER: Kent 12 03 1766 65

ST/CO USE ONLY
DATE Received: APR 19 2002

DATE WELL COMPLETED: 4 / 1 / 02

Depth of Well: 33 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA 94-4949

OWNER: Isaacs (last name) LLC (first name)

STREET OR RFD: 2700 Philadelphia Rd TOWN: Edgewood MD

SUBDIVISION: M-92, L-33, P-329 SECTION: LOT:

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Top soil	0	1	
Brown Dry Silt F Sand	1	25	
Brown wet Silt F Sand	25	33	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MGD063

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: JED066

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [C M] BENTONITE CLAY [B C]

NO. OF BAGS: 4 NO. OF POUNDS: 376

GALLONS OF WATER: 24

DEPTH OF GROUT SEAL (to nearest foot) from 0 ft. (TOP) to 19 ft. (BOTTOM)
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	4	23

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[S T] STEEL [B R] BRASS [H O] OPEN HOLE [P L] PLASTIC BRONZE [O T] OTHER

EACH SCREEN	DEPTH (nearest ft.)		
1	PL	23	33
2			
3			

SLOT SIZE 1: 0 2: 2 3: 0

DIAMETER OF SCREEN: 4 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 21 to 33

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T | (E.R.O.S.) | W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour)

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft.

WHEN PUMPING ft.

TYPE OF PUMP USED (for test)

[A] air [P] piston [T] turbine [C] centrifugal [R] rotary [O] other (describe below) [J] jet [S] submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above [–] below LAND SURFACE

2.5 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURES AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

N

mw1 & 100'

1000'

RT 22 Churchville

11th Subdiv

DENV-CR97 ① ORIGINAL

EMERGENCY/TEMP NO IF ANY

B 1 | 6788 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-94-4950

fill in this form completely

Date Received (APA): 03/26/02

OWNER INFORMATION

Last Name / Owner: Isgood LLC
First Name:
Street or RFD: 2700 Philadelphia Rd
Town: Edgewood
State: Md
Zip: 21040

DRILLER INFORMATION

Driller's Name: Richard Kimes
License No.: MGD 063
Firm Name: Summit Site Services Inc
Address: 101 Norris La Bath MD 21822
Signature:
Date: 3/26/02

LOCATION OF WELL

B 3
County: Harford
Subdivision:
Section:
Lot: MW2
Nearest Town: Aberdeen
Miles from Town (enter 0 if in town): M 1

B 4
Direction of well from town (circle box): NW 8-9, N 6, NE 8-9, W 8, TOWN, E 8, SW 8-9, S 8, SE 8-9
Near what road: Rt 22
On which side of road (circle appropriate box): NORTH, WEST, EAST, SOUTH
Distance from road: 1050 FT
ENTER FT OR MI: 0317666S
Tax Map: 42 Blk: 3B Parcel: 329

B 2 — WELL INFORMATION
Approx. pumping rate (gal. per min.):
Average daily quantity needed (gal. per day):

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

COUNTY NAME: Harford
COUNTY NO.: 12
STATE SIGNATURE:
INSERT S
DATE ISSUED: 3/29/02
CO SIGNATURE: Peter J Smith
EXP. DATE: 3/29/03
NORTH GRID: 629 000
EAST GRID: 1004 000

APPROXIMATE DEPTH OF WELL: 30 FEET
APPROXIMATE DIAMETER OF WELL: 4 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) | JETTED | Jetted & DRIVEN
AIR-ROTary | AIR-PERcussion | ROTARY (Hydraulic Rotary)
CABLE | REVerse-ROTary | DRive-POINT
other

SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1. municipal
2.
3.

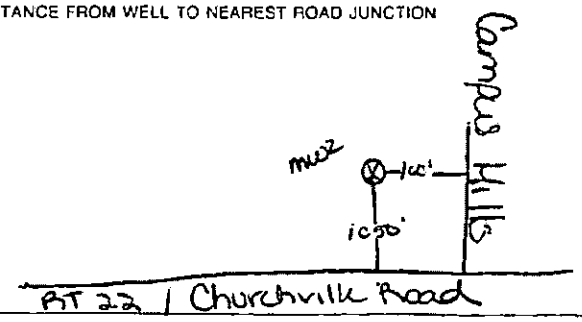
WRITE THE BOX NUMBER FROM THE MAP HERE
E 1,000
N 620
000
000

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: ------G---
PERMIT No. HA-94-4950

SPECIAL CONDITIONS

DENV-Permit 97

ORIGINAL

C 1 | 11549 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12 Tax # 03176665

ST/CO USE ONLY
DATE Received APR 19 2002

DATE WELL COMPLETED MM 4 DD 29 YY 02

Depth of Well 33 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-94-4950

OWNER Isgood L.L.C. (last name) (first name)

STREET OR RFD R+22 TOWN Aberdeen

SUBDIVISION M-42, 6-38 P-329 SECTION ____ LOT ____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
topsoil	0	1	
Brown Dry Silty Sand	1	33	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE

DRILLERS LIC. NO.: MD 0163

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: JR DC 66

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 4 NO. OF POUNDS 376

GALLONS OF WATER 24

DEPTH OF GROUT SEAL (to nearest foot)

from 0 (TOP) ft. to 19 (BOTTOM) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	4	33

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole insert appropriate code below

[ST] STEEL [BR] BRASS/BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

EACH SCREEN	SCREEN TYPE	DEPTH (nearest ft.)	
1	PL	23	33
2			
3			

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 21 to 33

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T ____ (E.R.O.S.) ____ W Q ____

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour) ____

PUMPING RATE (gal. per min.) ____

METHOD USED TO MEASURE PUMPING RATE ____

WATER LEVEL (distance from land surface)

BEFORE PUMPING ____ ft.

WHEN PUMPING ____ ft.

TYPE OF PUMP USED (for test)

[A] air [P] piston [T] turbine [C] centrifugal [R] rotary [O] other (describe below) [J] jet [S] submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES NO

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ____

CAPACITY: GALLONS PER MINUTE (to nearest gallon) ____

PUMP HORSE POWER ____

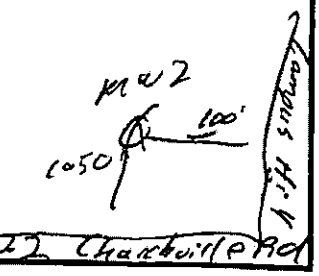
PUMP COLUMN LENGTH (nearest ft.) ____

CASING HEIGHT (circle appropriate box and enter casing height)

[+] above LAND SURFACE [−] below

3.5 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 STATE

EMERGENCY/TEMP NO. IF ANY

B 1 | 6789 | SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER: HA-94-4951

fill in this form completely

Date Received (APA): 032602

OWNER INFORMATION
Isagood LLC (Last Name / Owner / First Name)
2700 Philadelphia Rd
Edgewood Md 21040 (Town / State / Zip)

DRILLER INFORMATION
Richard Kimes MG D063 (Driller's Name / License No.)
Summit Site Services Inc (Firm Name)
101 Norris La Bel Air MD 21014 (Address)
Signature ____ Date 3/26/02

LOCATION OF WELL
B 3
County: Harford
Subdivision:
Section: ____ Lot: MW3
Nearest Town: Aberdeen
Miles from town (enter 0 if in town): 1 M

B 4
Direction of well from town (circle box): NW N NE W TOWN E SW S SE
Near what road: Rt 22
On which side of road (circle appropriate box): NORTH WEST EAST SOUTH
Distance from road: 025 Ft
Tax Map: 42 Blk: 3B Parcel: 329

WELL INFORMATION
B 2
Approx. pumping rate (gal. per min.):
Average daily quantity needed (gal. per day):

USE FOR WATER (CIRCLE APPROPRIATE BOX)
- [D] DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- [F] FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- [I] INDUSTRIAL, COMMERICIAL, DEWATERING
- [P] PUBLIC WATER SUPPLY WELL
- [T] TEST, OBSERVATION, MONITORING
- [G] GEO-THERMAL

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL
Harford (County Name) 12 (County No.)
State Signature: ____ Insert S
Date Issued: 3/29/02 Peter J. Smith 3/29/03 (Exp. Date)
North Grid: 629 000 East Grid: 1004 000

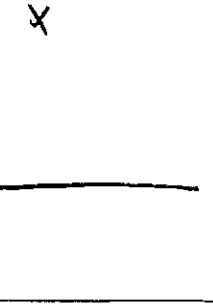
Approximate depth of well: 30 feet
Approximate diameter of well: 4 inch

METHOD OF DRILLING (circle one)
BORED (or Augered) JETTED Jetted & DRIVEN
AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT
other ____

Show major features of box & locate well with an X

Sources of drilling water:
1. Municipal
2.
3.

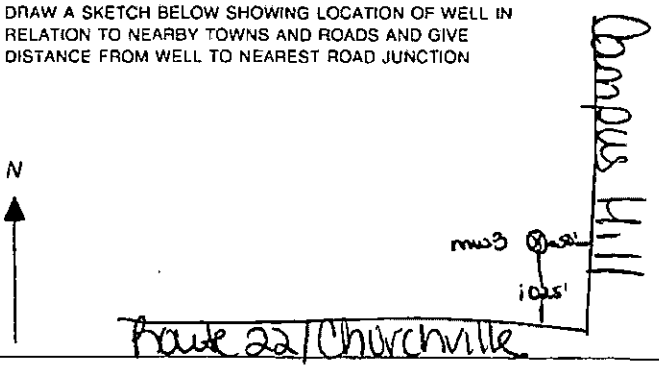
Write the box number from the map here:
E 1,000
N 620



REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)
- [N] THIS WELL WILL NOT REPLACE AN EXISTING WELL
- [Y] THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- [S] THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- [D] THIS WELL WILL DEEPEN AN EXISTING WELL

Permit number of well to be replaced or deepened (if available): ____

Draw a sketch below showing location of well in relation to nearby towns and roads and give distance from well to nearest road junction



Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER ____G____

PERMIT No HA-94-4951

SPECIAL CONDITIONS

DENV-Permit 97

ORIGINAL

C 1 | 11550 | SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL C MPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER: Tax # 12 03 76665

ST/CO USE ONLY
DATE Received: APR 19 2002

DATE WELL COMPLETED: 9 9 02

Depth of Well: 47 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA-94-4951

OWNER: Isgood L. L. C. (last name / first name)

STREET OR RFD: R+22 TOWN: Aberdeen

SUBDIVISION: M-42, G-3B, P-329 SECTION: LOT:

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Top soil	0	1	
Brown Dry Silt & Sand	1'	25	
Brown moist Silt & Sand	25'	35'	
Brown wet Silt & T. Sand	35	47'	

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E ELECTRIC LOG OBTAINED
- P TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: MD063

DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: MD066

SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)

CEMENT [CM] BENTONITE CLAY [BC]

NO. OF BAGS 4 NO. OF POUNDS 326

GALLONS OF WATER 24

DEPTH OF GROUT SEAL (to nearest foot) from 0 (TOP) ft. to 32 (BOTTOM) ft.

(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below

[ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
PL	4	37

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below

[ST] STEEL [BR] BRASS [BRONZE] [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

DEPTH (nearest ft.)

EACH SCREEN		
1	37	47
2		
3		

SLOT SIZE 1 0 2 2 3 0

DIAMETER OF SCREEN 4 (NEAREST INCH)

GRAVEL PACK IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68: from 34 to 47

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)

T (E.R.O.S.) W Q

TELESCOPE CASING | LOG INDICATOR | OTHER DATA

PUMPING TEST
HOURS PUMPED (nearest hour)

PUMPING RATE (gal. per min.)

METHOD USED TO MEASURE PUMPING RATE

WATER LEVEL (distance from land surface)

BEFORE PUMPING ft.

WHEN PUMPING ft.

TYPE OF PUMP USED (for test)
- [A] air
- [P] piston
- [T] turbine
- [C] centrifugal
- [R] rotary
- [O] other (describe below)
- [J] jet
- [S] submersible

PUMP INSTALLED
DRILLER INSTALLED PUMP (CIRCLE) (YES or NO): YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29.

CAPACITY: GALLONS PER MINUTE (to nearest gallon)

PUMP HORSE POWER

PUMP COLUMN LENGTH (nearest ft.)

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above LAND SURFACE
- [−] below

2.5 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)

N

@ 50' to 50'

11.5' septic

Rate 22

DENV-CR00 STATE

EMERGENCY/TEMP NO. IF ANY

B 1 | 4049 | SEQUENCE NO. (MDE USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please print or type

STATE PERMIT NUMBER: #HA-94-1154
fill in this form completely

Date Received (APA): 06/19/96

OWNER INFORMATION Works Inc

CAMPUS HILLS WATER (Last Name / Owner / First Name)
3907 GREENWAY (Street or RFD)
BALTIMORE MD 21218 (Town / State / Zip)

DRILLER INFORMATION CIRCLE: MSD / MGD / MWD

David Kelly 692-6981 304
Driller's Name / 77 License No. 80
Jones Well Drilling Inc
Firm Name
3200 Rush Rd Darrettsville
Address
David Kelly 6-11-96
Signature / Date

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 50
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 10000

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- P PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT AND STATE HEALTH DEPARTMENT APPROVAL)
- T TEST, OBSERVATION, MONITORING (MAY REQUIRE APPROPRIATION PERMIT)

APPROXIMATE DEPTH OF WELL: 250 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN
AIR-ROTary PERcussion ROTARY (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY - CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

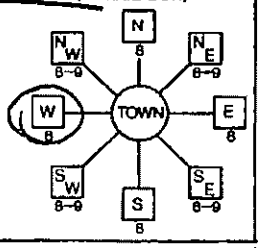
APPROP. PERMIT NUMBER: GAP
FORCE [ ] WRITE INITIALS IN BOX PERMIT No. #HA-94-1154

B 3 LOCATION OF WELL Well #2

HARFORD (8 COUNTY)
23 SUBDIVISION
SECTION LOT 03068579
CHURCHVILLE (52 NEAREST TOWN)
MILES FROM TOWN (enter 0 if in town): M 1

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



Campus Hill DR (NEAR WHAT ROAD)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX): NORTH, WEST, EAST, SOUTH
DISTANCE FROM ROAD: 2400
ENTER FT OR MI: FT

TAX MAP: 42 BLK: C3 PARCEL 327

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford (COUNTY NAME) 12 (COUNTY NO.)
STATE SIGNATURE
DATE ISSUED 07/19/96 CO SIGNATURE EXP. DATE 7/11/97
INSERT S
NORTH GRID 630000 EAST GRID 1004000

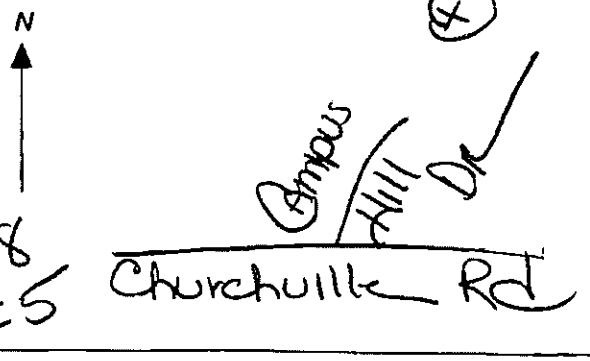
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000
N 630
000 000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED

ORIGINAL - STATE

C 1 | 01594 — SEQUENCE NO. (MDE USE ONLY)

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER

ST/CO USE ONLY
DATE Received MM 5 DD 12 YY 98

DATE WELL COMPLETED: MM 11 DD 11 YY 98

Depth of Well: 300 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL": HA - 94 - 1154

OWNER Campus Hills Water Works Inc.
STREET OR RFD _____ TOWN _____
SUBDIVISION Campus Hill Drive SECTION _____ LOT _____

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	5	
soft brown rock	5	11	
hard brown rock	11	14	
hard gray rock	14	17	
hard brown rock	17	19	
hard gray rock	19	24	
broken rock	24	25	x
hard gray rock	25	30	
hard brown rock	30	34	
hard gray rock	34	41	
broken rock	41	43	
hard gray rock	43	52	
med hard brown rock	52	53	x
hard gray rock	53	61	
broken rock	61	63	x
hard gray rock	63	92	
hard brown rock	92	96	x
hard gray rock	96	149	
hard gray rock	149	300	x

NUMBER OF UNSUCCESSFUL WELLS: _____

WELL HYDROFRACTURED: yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS LIC. NO.: M W D 304
David Kelley
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO.: M A D _____
Arnold Harrison
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box): yes [Y] no [N]
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [C M] BENTONITE CLAY [B C]
NO. OF BAGS 25 NO. OF POUNDS 2500
GALLONS OF WATER 150
DEPTH OF GROUT SEAL (to nearest foot)
from 0 (TOP) ft. to 50 (BOTTOM) ft.
(enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
[S T] STEEL [C O] CONCRETE [P L] PLASTIC [O T] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
PL	6	52

OTHER CASING (if used)

	diameter inch	depth (feet) from	to
EACH CASING			

SCREEN RECORD
screen type or open hole — insert appropriate code below
[S T] STEEL [B R] BRASS BRONZE [H O] OPEN HOLE [P L] PLASTIC [O T] OTHER

C 2

	DEPTH (nearest ft.)	
	from	to
1	40	50
2		
3		

EACH SCREEN

SLOT SIZE 1 _____ 2 _____ 3 _____

DIAMETER OF SCREEN _____ (NEAREST INCH)

GRAVEL PACK from _____ to _____
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T _____ (E.R.O.S.) _____ W Q R
TELESCOPE CASING — LOG INDICATOR — OTHER DATA

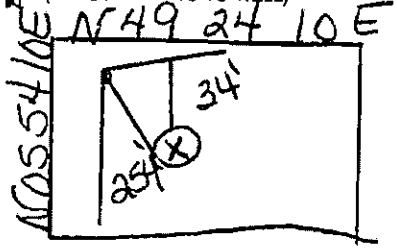
C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 6
PUMPING RATE (gal. per min.) 36
METHOD USED TO MEASURE PUMPING RATE timer
WATER LEVEL (distance from land surface)
BEFORE PUMPING 9.05 ft.
WHEN PUMPING 27.11 ft.

TYPE OF PUMP USED (lor test)
[A] air [P] piston [T] turbine [C] centrifugal [R] rotary [O] other (describe below) [J] jet [S] submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO): YES (NO)
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. _____
CAPACITY: GALLONS PER MINUTE (to nearest gallon) _____
PUMP HORSE POWER _____
PUMP COLUMN LENGTH (nearest ft.) _____
CASING HEIGHT (circle appropriate box and enter casing height) [+] above [—] below LAND SURFACE 2 (nearest foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



Re-worked well

ORIGINAL - STATE

C1 21.79 — SEQUENCE NO. (MDE USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received [illegible]

DATE WELL COMPLETED 04 05 96 — Well #2

Depth of Well 300 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-94-1154

OWNER Campus Hills Water Works
STREET OR RFD Campus Hills Drive (last name / first name) TOWN Churchville Well #2
SUBDIVISION _____ SECTION M42, C3, P322 LOT 03068579

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
dirt	0	5	
soft brown rock	5	11	
hard brown rock	11	14	
hard gray rock	14	17	
hard brown rock	17	19	
hard gray rock	19	24	
broken rock	24	25	x
hard gray rock	25	30	
hard brown rock	30	34	
hard gray rock	34	41	
broken rock	41	43	
hard gray rock	43	52	
med hard brown rock	52	53	x
hard gray rock	53	61	
broken rock	61	63	x
hard gray rock	63	92	
hard gray rock	92	300	

NUMBER OF UNSUCCESSFUL WELLS: ____ x

WELL HYDROFRACTURED — yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

TYPE: (WD/MSD/MGD)
DRILLERS LIC. NO. 304
David Kelly
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. _____
Arnold Harrison
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no [N]
TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [CM] BENTONITE CLAY [BC]
NO. OF BAGS 6 NO. OF POUNDS 600
GALLONS OF WATER 36
DEPTH OF GROUT SEAL (to nearest foot)
from 0 ft. to 21 ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below: [ST] STEEL [CO] CONCRETE [PL] PLASTIC [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
ST	6	22

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD
screen type or open hole — insert appropriate code below: [ST] STEEL [BR] BRASS BRONZE [HO] OPEN HOLE [PL] PLASTIC [OT] OTHER

C2

EACH SCREEN		DEPTH (nearest ft.)	
1	ST	18	81
2	HO	81	300
3			

SLOT SIZE 1 ____ 2 ____ 3 ____
DIAMETER OF SCREEN ____ (NEAREST INCH)

GRAVEL PACK — from ____ to ____
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68

MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T ____ (E.R.O.S.) ____ W Q ____
TELESCOPE CASING | LOG INDICATOR | OTHER DATA

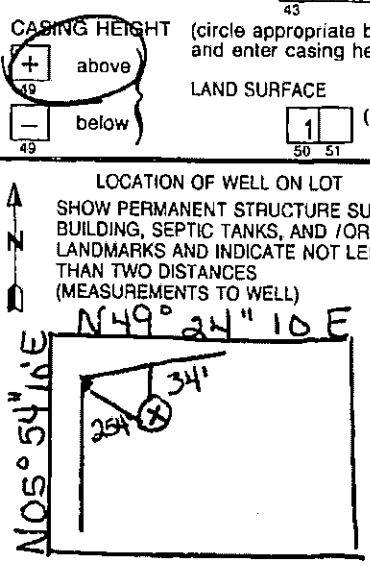
C3

PUMPING TEST
HOURS PUMPED (nearest hour) 1
PUMPING RATE (gal. per min.) 50.
METHOD USED TO MEASURE PUMPING RATE timer
WATER LEVEL (distance from land surface)
BEFORE PUMPING 4 ft.
WHEN PUMPING 295 ft.

TYPE OF PUMP USED (for test)
[A] air [P] piston [T] turbine
[C] centrifugal [R] rotary [O] other (describe below)
[J] jet [S] submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) YES [NO]
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ____
CAPACITY: GALLONS PER MINUTE (to nearest gallon) ____
PUMP HORSE POWER ____
PUMP COLUMN LENGTH (nearest ft.) ____
CASING HEIGHT (circle appropriate box and enter casing height) [+] above [—] below
LAND SURFACE ____ (nearest) foot)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



ORIGINAL - STATE

EMERGENCY/TEMP NO IF ANY

B 1 | 3680 | SEQUENCE NO. (MDE USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please print or type

STATE PERMIT NUMBER: HA-94-0938
fill in this form completely

Date Received (APA): 02/26/96

OWNER INFORMATION Works Inc

CAMPUS HILLS WATER
Last Name / Owner / First Name

3907 GREENWAY
Street or RFD

BALTIMORE MD 21218
Town / State / Zip

DRILLER INFORMATION CIRCLE: MSD/MGD/(MWD)

David Kelly 692-6981 3014
Driller's Name / License No

Jones Well Drilling Inc
Firm Name

3700 Rush Rd Darrettsville 21084
Address

David Kelly 2-23-96
Signature / Date

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.): 50

AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY): 10000

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- D HOME (SINGLE OR DOUBLE HOUSEHOLD UNIT ONLY)
- F FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION)
- I INDUSTRIAL, COMMERCIAL, STATE AND FEDERAL GOV. OTHER (REQUIRES APPROPRIATION PERMIT)
- P PUBLIC OR PRIVATE WATER COMPANY (REQUIRES APPROPRIATION PERMIT AND STATE HEALTH DEPARTMENT APPROVAL) Must request in writing change
- T TEST, OBSERVATION, MONITORING (MAY REQUIRE APPROPRIATION PERMIT) to production well

APPROXIMATE DEPTH OF WELL: 250 FEET

APPROXIMATE DIAMETER OF WELL: 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) JETTED Jetted & DRIVEN
AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)
CABLE REVerse-ROTary DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- N THIS WELL WILL NOT REPLACE AN EXISTING WELL
- Y THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- S THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY - CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- D THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

APPROP. PERMIT NUMBER: GAP

FORCE [ ] WRITE INITIALS IN BOX PERMIT No. HA-94-0938

B 3 LOCATION OF WELL

8 COUNTY: HARFORD
23 SUBDIVISION
SECTION
LOT: 030685 79
52 NEAREST TOWN: CHURCHVILLE
MILES FROM TOWN (enter 0 if in town): 1 M I

B 4

DIRECTION OF WELL FROM TOWN (CIRCLE BOX)

NW N NE
W TOWN E
SW S SE

Campus Hills DR
NEAR WHAT ROAD

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)
NORTH N / W WEST / E EAST / S SOUTH

DISTANCE FROM ROAD: 2400
ENTER FT OR MI: FT

TAX MAP: 42 BLK: C3 PARCEL 327

NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford / 12
COUNTY NAME / COUNTY NO.

STATE SIGNATURE: Norm Lazarus (BPW) INSERT $
DATE ISSUED: 03/29/96 CO SIGNATURE: Barbara EXP. DATE: 3/12/97

NORTH GRID: 63000 EAST GRID: 1000 1004

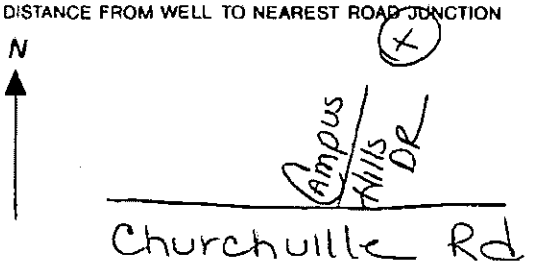
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE

E 1000
N 630
000 000

DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



18
F5 Needs well log for each hole drilled
See attached plat

SPECIAL CONDITIONS
NOTE - APPROVING AUTHORITIES SHOULD USE SEPARATE SHEET IF NEEDED - Notify Eric Daugherty 631-3784 24hrs before Drilling

ORIGINAL - STATE

P 813-3079
H 332-1035
Charles Edwards
9K

C 1 8869 (1 2 3 6) — SEQUENCE NO. (DENV USE ONLY)
(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

STATE OF MARYLAND
WELL COMPLETION REPORT
FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

THIS REPORT MUST BE SUBMITTED WITHIN 45 DAYS AFTER WELL IS COMPLETED.

COUNTY NUMBER 12

ST/CO USE ONLY
DATE Received (8–13)

DATE WELL COMPLETED (15–20): 04 02 96 — Well #1

Depth of Well (22–26): 400 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" (25–37): HA-94-0938

OWNER Campus Hills Water Works Inc
STREET OR RFD Campus Hills Dr (last name / first name) TOWN Churchville
SUBDIVISION SECTION M42, C3, P327 LOT

WELL LOG
Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	Check if water bearing
dirt	0	4	
soft brown rock	4	9	
hard gray rock	9	14	
med hard brown rock	14	16	
hard gray rock	16	24	x
hard brown rock	24	25	
hard gray rock	25	29	
hard brown rock	29	31	
hard gray rock	31	42	
hard brown rock	42	45	
hard gray rock	45	48	
med hard brown rock	48	50	x
hard gray rock	50	61	
hard brown rock	61	64	
hard gray rock	64	95	
med hard brown rock	95	96	x
hard gray rock	96	104	
hard gray rock	104	400	

IN HARD ROCK AREAS, IDENTIFY SPECIFICALLY WHERE SATURATED FRACTURES WERE OBSERVED.

WELL HYDROFRACTURED (yes Y / no N)

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DRILLERS IDENT. NO. 304
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION) David Kelly
SITE SUPERVISOR (sign. of driller or journeyman responsible for sitework if different from permittee) Arnold Harrison

GROUTING RECORD
WELL HAS BEEN GROUTED (Circle Appropriate Box) (yes Y / no N) (44)
TYPE OF GROUTING MATERIAL
CEMENT (CM) BENTONITE CLAY (BC) (45–48)
NO. OF BAGS 6 NO. OF POUNDS 600
GALLONS OF WATER 36
DEPTH OF GROUT SEAL (to nearest foot)
from 0 (48–52) ft. to 20 (54–58) ft. (enter 0 if from surface)

CASING RECORD
casing types insert appropriate code below
ST STEEL; CO CONCRETE; PL PLASTIC; OT OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)	Total depth of main casing (nearest foot)
ST (60–61)	6 (63–64)	24 (66–70)

OTHER CASING (if used) — EACH CASING

diameter inch	depth (feet) from	to

SCREEN RECORD
screen type or open hole — insert appropriate code below
ST STEEL; BR BRASS BRONZE; HO OPEN HOLE; PL PLASTIC; OT OTHER

C 2

		DEPTH (nearest ft.)	
1	HO (8–9)	20 (11–15)	400 (17–21)
2		(23–24)	(26–30) (32–36)
3		(38–39)	(41–45) (47–51)

EACH SCREEN

SLOT SIZE 1 ____ 2 ____ 3 ____
DIAMETER OF SCREEN (56–60) (NEAREST INCH)

from	to
GRAVEL PACK	
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68 (68)	

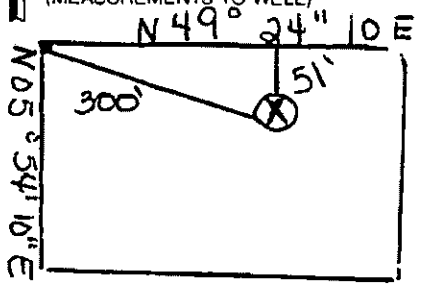
MDE USE ONLY (NOT TO BE FILLED IN BY DRILLER)
T (70) (E.R.O.S.) (72) W Q (74 75 76)
TELESCOPE CASING — LOG INDICATOR — OTHER DATA

C 3

PUMPING TEST
HOURS PUMPED (nearest hour) 1 (8–9)
PUMPING RATE (gal. per min. to nearest gal.) 30 (11–15)
METHOD USED TO MEASURE PUMPING RATE timer
WATER LEVEL (distance from land surface)
BEFORE PUMPING 4 (17–20)
WHEN PUMPING 390 (22–25)
TYPE OF PUMP USED (for test) (27)
A air; P piston; T turbine; C centrifugal; R rotary; O other (describe below); J jet; S submersible

PUMP INSTALLED
DRILLER WILL INSTALL PUMP (CIRCLE) (YES or NO) YES / NO
IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS EXCEPT HOME USE
TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX - SEE ABOVE: (29)
CAPACITY: GALLONS PER MINUTE (to nearest gallon) (31–35)
PUMP HORSE POWER (37–41)
PUMP COLUMN LENGTH (nearest ft.) (43–47)
CASING HEIGHT (circle appropriate box and enter casing height) + above / – below (49)
LAND SURFACE 3 (nearest foot) (50–51)

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND/OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



ORIGINAL - STATE

B 1 7181 (1 2 3 6) SEQUENCE NO. (MDE USE ONLY)

STATE OF MARYLAND
APPLICATION FOR PERMIT TO DRILL WELL
please type

STATE PERMIT NUMBER HA-94-6202 (70 79)
fill in this form completely

Date Received (APA) 12/17/03 (8 MM DD YY 13)

OWNER INFORMATION

(15 Last Name) R. Burnham Contractors, Inc. (Owner First Name 34)
(36 Street or RFD) ~~100~~ 400 Prospect Mill Rd. (55)
(57 Town) Bel Air, MD (70 State) 21015-1520 (72 Zip 76)

DRILLER INFORMATION

Driller's Name: GRAIG A Nemec MWD 5C3 (76 License No. 81)
Firm Name: C. Wayne Caswell Inc.
Address: Sarretsville, MD 21084
Signature: Craig A Nemec Date: 12-11-03

B 2 WELL INFORMATION

APPROX. PUMPING RATE (GAL. PER MIN.) 4 (8 12)
AVERAGE DAILY QUANTITY NEEDED (GAL. PER DAY) 500 (14 20)

USE FOR WATER (CIRCLE APPROPRIATE BOX)

- (D) DOMESTIC POTABLE SUPPLY & RESIDENTIAL IRRIGATION
- (F) FARMING (LIVESTOCK WATERING & AGRICULTURAL IRRIGATION
- (I) INDUSTRIAL, COMMERICIAL, DEWATERING (22)
- (P) PUBLIC WATER SUPPLY WELL
- (T) TEST, OBSERVATION, MONITORING
- (G) GEO-THERMAL

APPROXIMATE DEPTH OF WELL 300 (24 28) FEET

APPROXIMATE DIAMETER OF WELL 6 NEAREST INCH

METHOD OF DRILLING (circle one)

BORED (or Augered) ~~JETTED~~ Jetted & DRIVEN
(30) AIR-ROTary AIR-PERcussion ROTARY (Hydraulic Rotary)
(37) CABLE ~~REVerse-ROTary~~ DRive-POINT
other

REPLACEMENT OR DEEPENED WELLS
(CIRCLE APPROPRIATE BOX)

- (N) THIS WELL WILL NOT REPLACE AN EXISTING WELL
- (Y) THIS WELL WILL REPLACE A WELL THAT WILL BE ABANDONED AND SEALED
- (S) (39) THIS WELL WILL REPLACE A WELL THAT WILL BE USED AS A STANDBY-CONTACT LOCAL APPROVING AUTHORITY FOR POLICY ON STANDBY WELLS
- (D) THIS WELL WILL DEEPEN AN EXISTING WELL

PERMIT NUMBER OF WELL TO BE REPLACED OR DEEPENED (IF AVAILABLE) (41 52)

Not to be filled in by driller (MDE OR COUNTY USE ONLY)

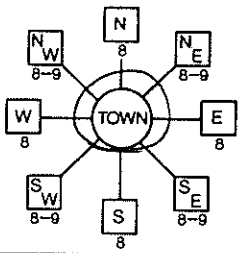
APPROP PERMIT NUMBER GAP (54 63)
PERMIT No. HA-94-6202 (70 71 72 73 74 75 76 77 78 79)

B 3 LOCATION OF WELL

(8 COUNTY Harford 21)
(23 SUBDIVISION 42)
SECTION (44 46) LOT (48 50)
(52 NEAREST TOWN Fulford 71)
MILES FROM TOWN (enter 0 if in town) 0 (73 M I 76 77 78)

B 4

(1 2) DIRECTION OF WELL FROM TOWN (CIRCLE BOX)



2401 A Churchville Rd. (11 NEAR WHAT ROAD 30)

ON WHICH SIDE OF ROAD (CIRCLE APPROPRIATE BOX)

(34 37) DISTANCE FROM ROAD
03038092 ENTER FT OR MI (38 39)
TAX MAP: 42 BLK: 3C PARCEL 213

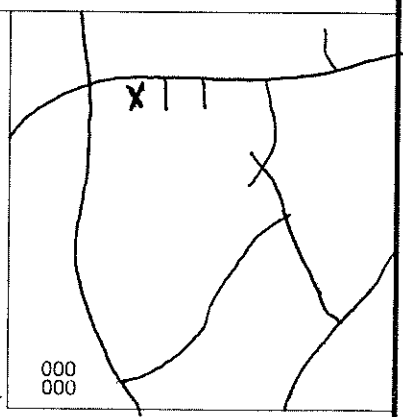
NOT TO BE FILLED IN BY DRILLER
HEALTH DEPARTMENT APPROVAL

Harford 12
COUNTY NAME COUNTY NO.
STATE SIGNATURE INSERT S (41)
DATE ISSUED 1/22/04 Peter O Smith 1/22/05
(42 MM DD YY 48) CO SIGNATURE EXP. DATE
NORTH GRID 628000 (50 55) EAST GRID 1005000 (57 63)

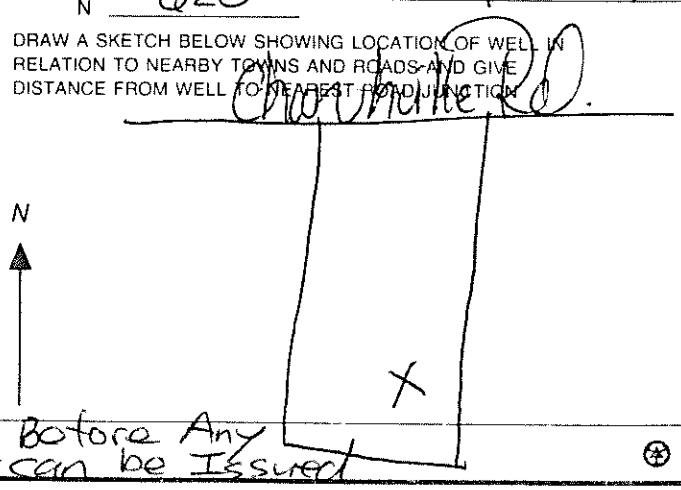
SHOW MAJOR FEATURES OF BOX & LOCATE WELL WITH AN X

SOURCES OF DRILLING WATER
1.
2.
3.

WRITE THE BOX NUMBER FROM THE MAP HERE
E 1000
N 620



DRAW A SKETCH BELOW SHOWING LOCATION OF WELL IN RELATION TO NEARBY TOWNS AND ROADS AND GIVE DISTANCE FROM WELL TO NEAREST ROAD JUNCTION



SPECIAL CONDITIONS V.O.C. Testing Required Before Any Building Permit can be Issued

WELL COMPLETION REPORT

FILL IN THIS FORM COMPLETELY
PLEASE TYPE

45 DAYS AFTER WELL IS COMPLETED.

(THIS NUMBER IS TO BE PUNCHED IN COLS. 3-6 ON ALL CARDS)

COUNTY NUMBER 12 Tax # 03038092

ST/CO USE ONLY
DATE Received MAR 10 2004

DATE WELL COMPLETED 02 18 04

Depth of Well 125 (TO NEAREST FOOT)

PERMIT NO. FROM "PERMIT TO DRILL WELL" HA-94-6202

OWNER R. Burnham Contractors, Inc.
STREET OR RFD 3461A Churchville Rd TOWN Fulford
SUBDIVISION Map 42, Parcel 213 SECTION LOT

WELL LOG

Not required for driven wells

STATE THE KIND OF FORMATIONS PENETRATED, THEIR COLOR, DEPTH, THICKNESS AND IF WATER BEARING

DESCRIPTION (Use additional sheets if needed)	FEET FROM	FEET TO	check if water bearing
Brown clay	0	77	
Weathered Rock	77	79	
Grey Rock	79	125	✓

NUMBER OF UNSUCCESSFUL WELLS: 0

WELL HYDROFRACTURED yes [Y] no [N]

CIRCLE APPROPRIATE LETTER
- A — A WELL WAS ABANDONED AND SEALED WHEN THIS WELL WAS COMPLETED
- E — ELECTRIC LOG OBTAINED
- P — TEST WELL CONVERTED TO PRODUCTION WELL

I HEREBY CERTIFY THAT THIS WELL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH COMAR 26.04.04 "WELL CONSTRUCTION" AND IN CONFORMANCE WITH ALL CONDITIONS STATED IN THE ABOVE CAPTIONED PERMIT, AND THAT THE INFORMATION PRESENTED HEREIN IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE

DRILLERS LIC. NO. MWD513
DRILLERS SIGNATURE (MUST MATCH SIGNATURE ON APPLICATION)

LIC. NO. ___ D ___

SITE SUPERVISOR (sign of driller or journeyman responsible for sitework if different from permittee)

GROUTING RECORD

WELL HAS BEEN GROUTED (Circle Appropriate Box) yes [Y] no [N]

TYPE OF GROUTING MATERIAL (Circle one)
CEMENT [CM] BENTONITE CLAY [BC]
NO. OF BAGS 30 NO. OF POUNDS 2850
GALLONS OF WATER 180
DEPTH OF GROUT SEAL (to nearest foot) from 0 (TOP) ft. to 81 (BOTTOM) ft.
(enter 0 if from surface)

CASING RECORD

casing types insert appropriate code below
- [ST] STEEL
- [CO] CONCRETE
- [PL] PLASTIC
- [OT] OTHER

MAIN CASING TYPE	Nominal diameter top (main) casing (nearest inch)!	Total depth of main casing (nearest foot)
ST	6	81

OTHER CASING (if used)

EACH CASING	diameter inch	depth (feet) from	depth (feet) to

SCREEN RECORD

screen type or open hole — insert appropriate code below
- [ST] STEEL
- [BR] BRASS / BRONZE
- [PL] PLASTIC
- [HO] OPEN HOLE
- [OT] OTHER

C 2

EACH SCREEN	DEPTH (nearest ft.)		
1	40	81	125
2			
3			

SLOT SIZE 1 ___ 2 ___ 3 ___

DIAMETER OF SCREEN ___ (NEAREST INCH)

	from	to
GRAVEL PACK		
IF WELL DRILLED WAS FLOWING WELL INSERT F IN BOX 68		

MDE USE ONLY
(NOT TO BE FILLED IN BY DRILLER)
T (E.R.O.S.) W Q

TELESCOPE CASING ___ LOG INDICATOR ___ OTHER DATA ___

C 3

PUMPING TEST

HOURS PUMPED (nearest hour) 3

PUMPING RATE (gal. per min.) 11.63

METHOD USED TO MEASURE PUMPING RATE Bucket

WATER LEVEL (distance from land surface)
BEFORE PUMPING 15 ft.
WHEN PUMPING 18 ft.

TYPE OF PUMP USED (for test)
- [A] air
- [P] piston
- [T] turbine
- [C] centrifugal
- [R] rotary
- [O] other (describe below)
- [J] jet
- [S] submersible

PUMP INSTALLED

DRILLER INSTALLED PUMP (CIRCLE) (YES or NO) YES (NO)

IF DRILLER INSTALLS PUMP, THIS SECTION MUST BE COMPLETED FOR ALL WELLS.

TYPE OF PUMP INSTALLED PLACE (A,C,J,P,R,S,T,O) IN BOX 29. ___

CAPACITY: GALLONS PER MINUTE (to nearest gallon) ___

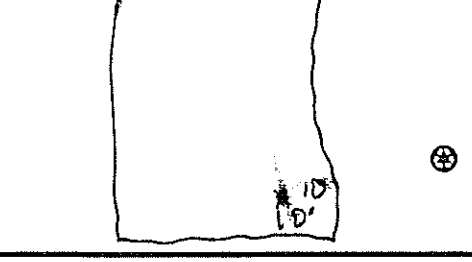
PUMP HORSE POWER ___

PUMP COLUMN LENGTH (nearest ft.) ___

CASING HEIGHT (circle appropriate box and enter casing height)
- [+] above LAND SURFACE
- [−] below

1 (nearest) foot

LOCATION OF WELL ON LOT
SHOW PERMANENT STRUCTURE SUCH AS BUILDING, SEPTIC TANKS, AND /OR LANDMARKS AND INDICATE NOT LESS THAN TWO DISTANCES (MEASUREMENTS TO WELL)



DENV-CR00 ORIGINAL

WR-W-3
4-66

State Office Building
ANNAPOLIS, MARYLAND 21401

STATE OF MARYLAND
DEPARTMENT OF WATER RESOURCES

MAY 23 11:18

APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.

Ha 690622

ANSWERED

APPLICATION FOR PERMIT TO DRILL WELL

WATER RESOURCES

Owner ~~Geo. W. Johnson~~ Campus Water Co.

Street or R. F. D. 365 Chesapeake Ave.

Post Office Towson, Md.

Quantity of Water to be Produced 35 Gallons Per Minute

Total Quantity Needed For Use ____ Gallons Per Day P

Use for Water Central Supply

Approximate Depth of Well (feet) 150 to 200'

Method of Drilling to be used Rotary R

Is this a Replacement Well? ~~Yes~~ No N

If YES, indicate date abandoned well is to be sealed: ____

and by whom: ____

Driller Wm. Leonard License Number 3hR 1h2

Street or R. F. D.
Post Office White Marsh, Md. 21162

Date ~~5-15-69~~ 5-15-69

Location of Well County HARFORD

Subdivision Campus Hills

Section ____ Lot ____

Nearest Town Churchville

Distance from Town 1 Mile

Direction from Town W

Description of Location of Well
(This information MUST BE ACCURATE, and should be definite enough to permit locating well on a county map).

Near what road Md. R-22

On which side of road N
(North, East, South, West)

Distance from road 3 Blocks

Draw a sketch below showing location of well in relation to nearby towns, roads and streams with north in the direction of the arrow, and give distance from well to nearest road junction or stream crossing shown on the sketch. Distances may be approximate, but must be indicated.

NORTH

Well #4 as per plat
1100' N. of Md Rt 22
725' W. of Campus Hills Dr

PERMIT TO DRILL WELL
(Not To Be Filled In By Driller)

Well Permit No. HA690622

Samples of Cuttings Required by Department: Yes / No
Owner Requires Permit to Appropriate Water: Yes / No
Owner Has Permit to Appropriate Water: Yes / No

Appropriation Permit No. HA69L-A0015

The applicant is herewith granted a permit to drill this well subject to the conditions stipulated.

[signature] Director 060469 Date

THIS PERMIT IS NOT TRANSFERRABLE WITHOUT WRITTEN PERMISSION OF THE DEPARTMENT

Special conditions that must be observed:

See condition 7 of the Appropriation Permit

Health Department Approval of Application

____ County Department of Health

or ☒ State Department of Health

Approved by [signature]

Title Sanitary Engineer

Date 6/2/69

ORIGINAL

ATTACHMENTS

Attachment 1
Summary of Remedial Feaibility Testing Field Notes
Drake Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, MD
September 8 & 9, 2011

	SVE Step #1 (9:33 - 10:34)	SVE Step #2 (10:34 - 10:56)	GW PUMPING (11:16 - 12:09)	VEGE Step #1 (12:09 - 12:56)	VEGE Step #2 (12:56 - 13:36)	VEGE Step #3 (13:36 - 14:09)	VEGE Step #4 (14:09 - 14:39)
Extraction Well: MW-10 **Initial DTW: 13.40' bgs** **Total Depth of Well: 24.40'** **Screen Interval: 5-25'** **Initial screen interval available: 8.40'** **Well Diameter: 4"**	**Time: 10:31** **Date: 9/8/2011** PID conc (ppm): 232 @ 10:20 LEL (%): 0 @ 9:55 O2 (%): 13.3 @ 9:55 Vapor flow (scfm): 6.7 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 31 Vac.at well ("Hg): 2.76 Liquid Level Change (ft):+1.93	**Time: 10:54** **Date: 9/8/2011** PID conc (ppm): 284 LEL (%): NM O2 (%): 9.3 Vapor flow (scfm): 6.2 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 50 Vac.at well ("Hg): 3.45 Liquid Level Change (ft): +3.18	**Time: 12:07** **Date: 9/8/2011** PID conc (ppm): NM LEL (%): NM O2 (%): NM Vapor flow (scfm): NA Gw flow (gpm): 1.08 Totalizer (gal): 54 Vac. applied on well (i.w.): 0 Vac.at well ("Hg): 0.06 Liquid Level Change (ft): -5.66	**Time: 12:49** **Date: 9/8/2011** PID conc (ppm): 208 @ 12:25 LEL (%): 0 @ 12:25 O2 (%): 11.2 @ 12:25 Vapor flow (scfm): 7.60 Gw flow (gpm): 1.91 Totalizer (gal): 142 Vac. applied on well (i.w.): 50 Vac.at well ("Hg): 2.93 Liquid Level Change (ft): -5.65	**Time: 13:27** **Date: 9/8/2011** PID conc (ppm): 180 LEL (%): 0 O2 (%): 11.0 Vapor flow (scfm): 10.95 Gw flow (gpm): 2.07 Totalizer (gal): 227 Vac. applied on well (i.w.): 77 Vac.at well ("Hg): 3.40 Liquid Level Change (ft): -5.69	**Time: 14:06** **Date: 9/8/2011** PID conc (ppm): 160 LEL (%): NM O2 (%): NM Vapor flow (scfm): 18.55 Gw flow (gpm): 2.75 Totalizer (gal): 326 Vac. applied on well (i.w.): 116 Vac.at well ("Hg): 9.41 Liquid Level Change (ft): -4.59	**Time: 14:39** **Date: 9/8/2011** PID conc (ppm): 174 LEL (%): 0 O2 (%): 12.0 Vapor flow (scfm): 28.22 Gw flow (gpm): 2.29 Totalizer (gal): 397 Vac. applied on well (i.w.): 210 Vac.at well ("Hg): 14.76 Liquid Level Change (ft): + 2.20

Well ID	Radial distance from MW-10 (feet)	Screen interval range (feet)	Initial depth to water (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)
MW-12	10	5-25'	13.28	-1.84	-0.30	-3.16	-0.06	0.00	-0.37	-3.30	-0.70	-4.40	-0.86	-7.84	-1.05	-9.85	-0.96
TF-1	28	NA	10.24	NM	NM	0.00	-0.10	NM	-0.10	NM	NM	0.00	-0.16	-0.02	-0.18	-0.07	-0.19
MW-13	43	4-19'	14.77	-0.06	0.02	-0.05	-0.01	-0.05	0.05	-0.09	0.03	-0.12	0.00	-0.18	-0.01	-0.23	-0.07
MW-16	45	3-18'	13.97	-0.48	-0.01	-0.75	0.03	-0.32	-0.05	-1.28	-0.05	-0.88	-0.04	-1.63	-0.05	-1.75	-0.05
MW-11	48	4-24'	14.00	0.00	0.00	NM	0.03	NM	0.03	0.00	0.04	0.00	0.00	-0.04	0.00	-0.08	0.00
TF-2	48	NA	12.88	NM	NM	NM	0.00	NM	0.00	NM	NM	NM	NM	NM	NM	-0.08	0.00
MW-7	51	NA	14.66	NM	NM	NM	0.01	NM	-0.01	NM	NM	NM	NM	NM	NM	0.00	-0.03
MW-9	53	NA	13.15	-0.15	-0.03	-0.35	-0.01	-0.04	-0.01	-0.15	-0.11	-0.17	-0.19	-0.23	-0.29	-0.70	-0.46
MW-14	68	5-25'	13.07	-0.50	0.05	-0.52	0.04	0.00	0.02	-0.36	0.02	-1.20	0.03	-2.60	0.07	-3.60	0.06

NA- not available
NM - not measured
DTW - depth to water
VEGE - vacuum-enhanced groundwater extraction
SVE- soil vapor extraction
AS - air sparge
scfm - standard cubic feet per minute
ppm - parts per million
gpm - gallons per minute
i.w. - inches of water
"Hg - inches of mercury

Attachment 1
Summary of Remedial Feaibility Testing Field Notes
Drake Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, MD
September 8 & 9, 2011

	SVE Step #1 (15:33 - 15:54)	SVE Step #2 (15:54 - 16:18)	SVE Step #3 (16:18 - 16:45)
Extraction Well: TF-1 **Initial DTW: 10.43' bgs** **Total Depth of Well: 11.6'** **Screen Interval: Unknown** **Initial screen interval available: Unknown** **Well Diameter: Unknown**	**Time: 15:50** **Date: 9/8/2011** PID conc (ppm): 368 LEL (%): 0 O2 (%): 16.1 Vapor flow (scfm): 58.70 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 15 Vac.at well ("Hg): 0.46 Liquid Level Change (ft): +0.26	**Time: 16:16** **Date: 9/8/2011** PID conc (ppm): 389 LEL (%): 0 O2 (%): 18.0 Vapor flow (scfm): 97.70 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 35 Vac.at well ("Hg): 0.77 Liquid Level Change (ft): +0.63	**Time: 16:44** **Date: 9/8/2011** PID conc (ppm): 270 @ 16:35 LEL (%): 0 @ 16:35 O2 (%): 18.6 @ 16:35 Vapor flow (scfm): 124.37 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 55 Vac.at well ("Hg): 0.94 Liquid Level Change (ft): +1.01

Well ID	Radial distance from TF-1 (feet)	Screen interval range (feet)	Initial depth to water (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)
MW-16	17	3-18'	13.97	-0.35	0.01	-0.20	0.04	-0.39	0.05
MW-11	23	4-24'	14.00	-0.01	0.02	-0.02	0.01	-0.03	0.01
MW-13	24	4-19'	14.99	NM	0.10	NM	0.11	NM	0.25
MW-8	35	NA	14.31	-0.05	0.01	-0.07	0.02	-0.19	0.04
MW-10	38	5-25'	13.39	-0.03	0.10	-0.05	0.17	-0.09	0.23
MW-7	46	NA	14.69	-0.04	0.00	-0.22	0.05	-0.36	0.07
TF-2	55	NA	12.88	-0.18	0.00	-0.32	0.00	-0.44	0.00

NA- not available
NM - not measured
DTW - depth to water
VEGE - vacuum-enhanced groundwater extraction
SVE- soil vapor extraction
AS - air sparge
scfm - standard cubic feet per minute
ppm - parts per million
gpm - gallons per minute
i.w. - inches of water
"Hg - inches of mercury

Attachment 1
Summary of Remedial Feaibility Testing Field Notes
Drake Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, MD
September 8 & 9, 2011

	SVE Step #1 (17:14 - 17:38)	SVE Step #2 (17:38 - 17:50)	SVE Step #3 (17:50 - 17:57)
Extraction Well: MW-7 **Initial DTW: 14.62' bgs** **Total Depth of Well: Unknown** **Screen Interval: Unknown** **Initial screen interval available: Unknown** **Well Diameter: Unknown**	**Time: 17:34** **Date: 9/8/2011** PID conc (ppm): 404 LEL (%): 0 O2 (%): 8.9 Vapor flow (scfm): 2.99 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 32 Vac.at well ("Hg): 2.22 Liquid Level Change (ft): +1.15	**Time: 17:49** **Date: 9/8/2011** PID conc (ppm): 357 LEL (%): 0 O2 (%): 11.4 Vapor flow (scfm): 3.86 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 50 Vac.at well ("Hg): 3.40 Liquid Level Change (ft): +2.14	**Time: 17:55** **Date: 9/8/2011** PID conc (ppm): 403 LEL (%): 0 O2 (%): 10.6 Vapor flow (scfm): 4.20 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 68 Vac.at well ("Hg): 4.71 Liquid Level Change (ft): +3.21

Well ID	Radial distance from MW-7 (feet)	Screen interval range (feet)	Initial depth to water (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)
TF-2	24	NA	12.88	-0.03	0.00	0.00	0.00	0.01	0.00
MW-11	37	4-24'	13.97	0.00	-0.01	0.00	-0.03	0.00	-0.02
TF-1	45	NA	10.43	-0.02	0.21	-0.02	0.15	NM	NM
MW-10	51	5-25'	13.40	0.03	-0.01	0.03	-0.01	0.02	0.01
MW-16	52	3-18'	13.97	NM	0.05	NM	0.05	NM	NM
MW-9	61	NA	13.15	0.06	-0.05	0.07	-0.02	0.03	0.01

NA- not available
NM - not measured
DTW - depth to water
VEGE - vacuum-enhanced groundwater extraction
SVE- soil vapor extraction
AS - air sparge
scfm - standard cubic feet per minute
ppm - parts per million
gpm - gallons per minute
i.w. - inches of water
"Hg - inches of mercury

Attachment 1
Summary of Remedial Feaibility Testing Field Notes
Drake Bel Air Xtra Fuels
2476 Churchville Rd
Bel Air, MD
September 8 & 9, 2011

	SVE Step #1 (8:27 - 8:58)	SVE Step #2 (8:58 - 9:33)	GW PUMPING (9:50 - 10:30)	VEGE Step #1 (10:30 - 10:49)	VEGE Step #2 (10:49 - 11:17)	VEGE Step #3 (11:19 - 11:57)	VEGE Step #4 (11:57 - 12:39)
Extraction Well: MW-12 **Initial DTW: 13.15' bgs** **Total Depth of Well: 25.0'** **Screen Interval: 5-25'** **Initial screen interval available: 8.15'** **Well Diameter: 4"**	**Time: 8:55** **Date: 9/9/2011** PID conc (ppm): 27 LEL (%): 0 O2 (%): 20.0 Vapor flow (scfm): 6.23 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 32 Vac.at well ("Hg): 2.06 Liquid Level Change (ft):+2.22	**Time: 9:31** **Date: 9/9/2011** PID conc (ppm): 22 LEL (%): 0 O2 (%): 19.4 Vapor flow (scfm): 7.36 Gw flow (gpm): NA Totalizer (gal): 0 Vac. applied on well (i.w.): 49 Vac.at well ("Hg): 3.25 Liquid Level Change (ft): +3.59	**Time: 10:28** **Date: 9/9/2011** PID conc (ppm): NM LEL (%): NM O2 (%): NM Vapor flow (scfm): NA Gw flow (gpm): 1.34 Totalizer (gal): 51 Vac. applied on well (i.w.): 0 Vac.at well ("Hg): 0.03 Liquid Level Change (ft): -7.61	**Time: 10:48** **Date: 9/9/2011** PID conc (ppm): 68.5 LEL (%): 0 O2 (%): 16.9 Vapor flow (scfm): 4.20 Gw flow (gpm): 1.55 Totalizer (gal): 82 Vac. applied on well (i.w.): 51 Vac.at well ("Hg): 3.50 Liquid Level Change (ft): -7.61	**Time: 11:17** **Date: 9/9/2011** PID conc (ppm): 68.9 LEL (%): NM O2 (%): NM Vapor flow (scfm): 8.10 Gw flow (gpm): 1.55 Totalizer (gal): 127 Vac. applied on well (i.w.): 74 Vac.at well ("Hg): 4.67 Liquid Level Change (ft): -7.59	**Time: 11:56** **Date: 9/9/2011** PID conc (ppm): 71.7 @ 11:40 LEL (%): 0 @ 11:40 O2 (%): 14.2 @ 11:40 Vapor flow (scfm): 15.87 Gw flow (gpm): 2.03 Totalizer (gal): 206 Vac. applied on well (i.w.): 136 Vac.at well ("Hg): 9.98 Liquid Level Change (ft): -7.50	**Time: 12:38** **Date: 9/9/2011** PID conc (ppm): 50.5 LEL (%): 0 O2 (%): 16.3 Vapor flow (scfm): 30.93 Gw flow (gpm): 2.57 Totalizer (gal): 314 Vac. applied on well (i.w.): 218 Vac.at well ("Hg): 15.30 Liquid Level Change (ft): -7.45

Well ID	Radial distance from MW-10 (feet)	Screen interval range (feet)	Initial depth to water (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)	Influence vacuum reading (i.w.)	Water table upwelling (+) or drawdown (-) (feet)
MW-10	10	5-25'	13.26	-0.20	-0.02	-0.38	-0.14	-0.03	-0.66	-0.39	-0.82	-0.99	-1.04	-5.48	-1.58	-9.76	-2.02
TF-1	36	NA	10.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	NM	-0.02	-0.01	-0.02	NM
MW-9	44	NA	13.07	-0.02	-0.01	-0.05	-0.01	-0.01	0.00	-0.03	-0.03	-0.07	-0.01	-0.31	-0.04	-0.56	-0.07
MW-13	53	4-19'	14.56	0.01	-0.02	0.01	0.01	0.02	-0.04	0.02	-0.01	0.02	-0.02	0.01	-0.06	0.00	-0.06
MW-16	53	3-18'	13.77	NM	NM	NM	-0.01	NM	-0.01	NM	-0.01	NM	NM	NM	-0.01	NM	NM
MW-11	55	4-24'	13.80	NM	NM	0.00	0.03	NM	0.03	0.00	0.02	NM	NM	-0.03	0.01	-0.01	0.00
MW-14	56	5-25'	12.96	-0.02	0.00	-0.06	0.02	-0.02	0.01	-0.03	0.04	-0.09	0.05	-0.75	-0.01	-1.55	-0.02
MW-7	61	NA	14.47	NM	NM	0.00	0.00	NM	0.00	NM	NM	NM	NM	-0.03	-0.02	-0.02	-0.03
MW-8	61	NA	14.12	NM	NM	-0.02	0.00	NM	0.00	0.00	0.00	NM	NM	-0.27	-0.01	-0.46	-0.03

NA- not available
NM - not measured
DTW - depth to water

VEGE - vacuum-enhanced groundwater extraction
SVE- soil vapor extraction
AS - air sparge

scfm - standard cubic feet per minute
ppm - parts per million
gpm - gallons per minute

i.w. - inches of water
"Hg - inches of mercury

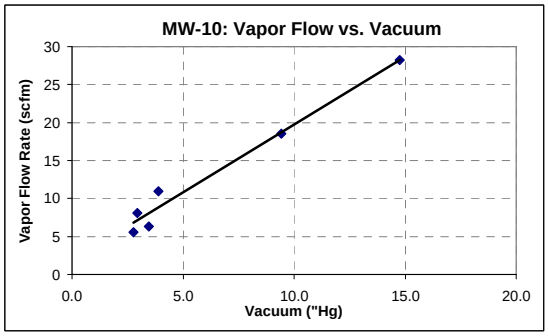
Attachment 2
Vacuum vs. Vapor Flow Graphs

Drake Bel Air
Xtra Fuels
2476 Churchville Rd
Bel Air, MD

September 8 & 9, 2011

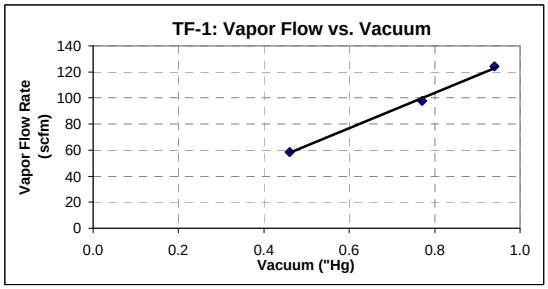
Vapor Extraction Well: MW-10 SVE & VEGE
Initial DTW (feet): 13.40
Initial screen interval available (feet): 8.40

Vacuum on well ("Hg)	Vapor Flow (scfm)
2.8	5.6
3.5	6.4
2.9	8.1
3.9	11.0
9.4	18.6
14.8	28.2



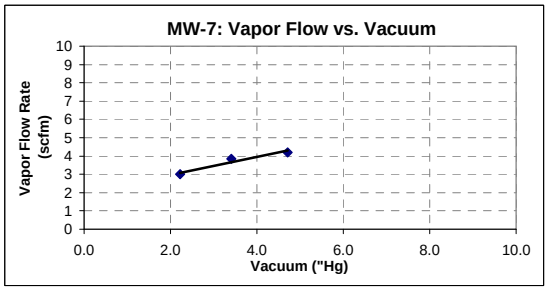
Vapor Extraction Well: TF-1 SVE
Initial DTW (feet): 10.24
Initial screen interval available (feet): Unknown

Vacuum on well ("Hg)	Vapor Flow (scfm)
0.5	58.7
0.8	97.7
0.9	124.4



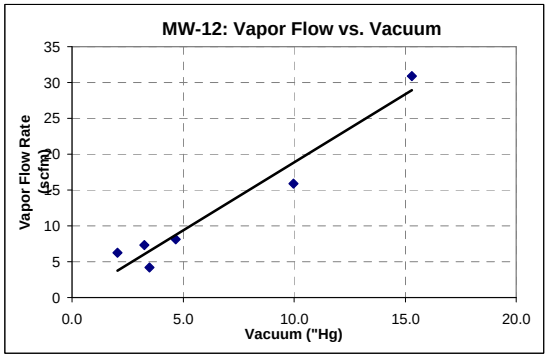
Vapor Extraction Well: MV-7 SVE
Initial DTW (feet): 14.66
Initial screen interval available (feet): Unknown

Vacuum on well ("Hg)	Vapor Flow (scfm)
2.2	3.0
3.4	3.9
4.7	4.2



Vapor Extraction Well: MW-12 SVE & VEGE
Initial DTW (feet): 13.15
Initial screen interval available (feet): 8.15

Vacuum on well ("Hg)	Vapor Flow (scfm)
2.1	6.2
3.3	7.4
3.5	4.2
4.7	8.1
10.0	15.9
15.3	30.9



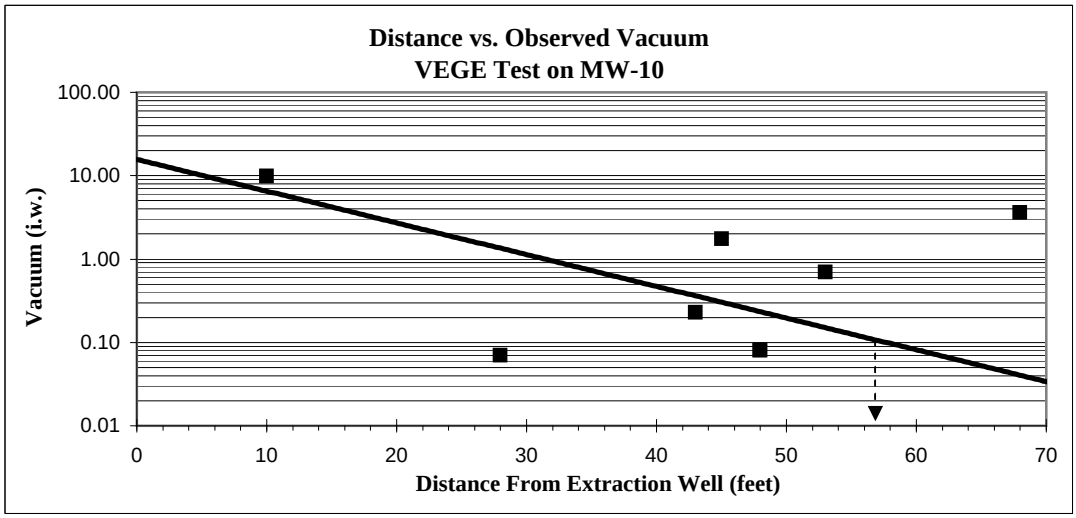
VEGE - vacuum enhanced groundwater extraction
SVE - soil vapor extraction
DTW - depth to water

scfm - standard cubic feet per minute
"Hg - inches of mercury

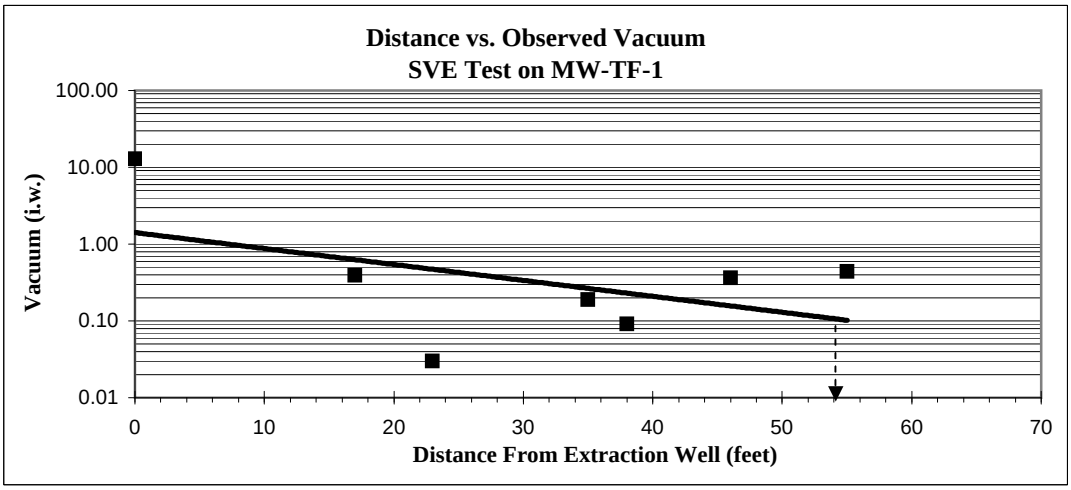
Attachment 3
Feasibility Testing Vacuum Radius-of-Influence Graphs

Drake Bel Air - Xtra Fuels
2476 Churchville Rd
Bel Air, MD

September 8 & 9, 2011



ROI estimated based on assuming 0.10 inches of water vacuum to be the minimal effective vacuum influence.
VEGE - vacuum enhanced groundwater extraction
i.w. - inches of water

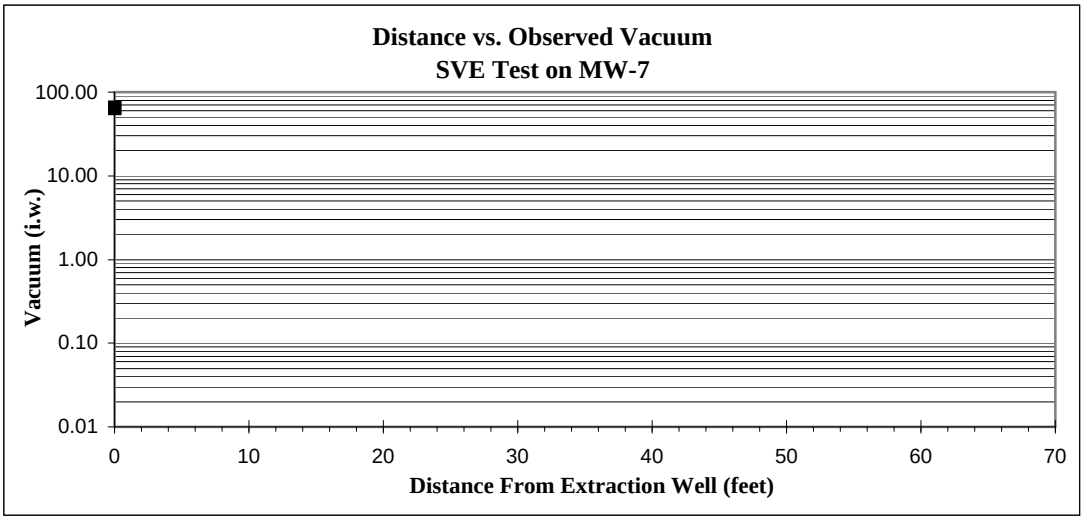


ROI estimated based on assuming 0.10 inches of water vacuum to be the minimal effective vacuum influence.
VEGE - vacuum enhanced groundwater extraction
i.w. - inches of water

Attachment 3
Feasibility Testing Vacuum Radius-of-Influence Graphs

Drake Bel Air - Xtra Fuels
2476 Churchville Rd
Bel Air, MD

September 8 & 9, 2011

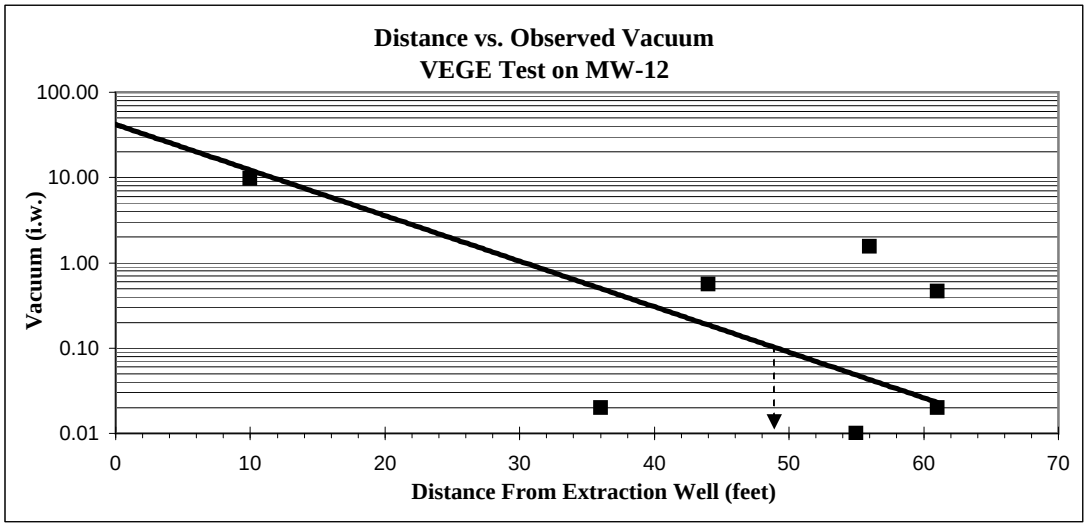


NOTE: No significant vacuum was observed. Therefore the ROI is estimated at "Less than 24 feet".

ROI estimated based on assuming 0.10 inches of water vacuum to be the minimal effective vacuum influence.

VEGE - vacuum enhanced groundwater extraction

i.w. - inches of water



ROI estimated based on assuming 0.10 inches of water vacuum to be the minimal effective vacuum influence.

VEGE - vacuum enhanced groundwater extraction

i.w. - inches of water

Attachment 4
Pilot Test Vapor Analytical Data Summary

Drake Bel Air - Xtra Fuels
2476 Churchville Rd
Bel Air, MD

September 8 & 9, 2011

Extraction Well ID	Type of Test	Vac. On Well (i.w.)	Vac. On Well ("Hg)	Vapor Flowrate (scfm)	Groundwater Flowrate (gpm)	Groundwater Drawdown (ft)	PID Reading (ppmv)	BTEX Conc. (mg/m3)	MTBE Conc. (mg/m3)	C1-C4 Hydrocarbon Conc. (mg/m3)	>C4-C10 Hydrocarbon Conc. (mg/m3)	BTEX Recovery (lb/day)	MTBE Recovery (lb/day)	C1-C4 Hydrocarbon Recovery (lb/day)	>C4-C10 Hydrocarbon Recovery (lb/day)
MW-10	SVE - Step 1	26.51	1.95	5.59	-	+1.93	232.5	NS	NS	NS	NS	NM	NM	NM	NM
	SVE - Step 2	44.73	3.29	6.70	-	+3.18	284	4.84	12	36.4	125	0.0	0.0	0.0	0.1
	GWE	-	-	-	1.08	-5.66	-	-	-	-	-	-	-	-	-
	VEGE - Step 1	42.96	3.16	8.10	1.91	-5.65	208	NS	NS	NS	NS	NM	NM	NM	NM
	VEGE - Step 2	52.75	3.88	10.95	2.07	-5.69	180	16.46	41.5	73.9	347	0.0	0.0	0.1	0.3
	VEGE - Step 3	115.97	8.53	18.55	2.75	-4.59	160	NS	NS	NS	NS	NM	NM	NM	NM
	VEGE - Step 4	202.16	14.87	28.22	2.29	+2.20	174	NS	NS	NS	NS	NM	NM	NM	NM
TF-1	SVE - Step 1	6.25	0.46	58.70	-	+0.26	368	NS	NS	NS	NS	NM	NM	NM	NM
	SVE - Step 2	11.15	0.82	97.70	-	+0.63	389	38.1	0.61	60.4	557	0.3	0.0	0.5	4.9
	SVE - Step 3	13.19	0.97	124.37	-	+1.01	270	NS	NS	NS	NS	NM	NM	NM	NM
MW-7	SVE - Step 1	29.37	2.16	2.99	-	+1.15	404	28.4	43.6	131	1,280	0.0	0.0	0.0	0.3
	SVE - Step 2	46.22	3.40	3.86	-	+2.14	357	NS	NS	NS	NS	NM	NM	NM	NM
	SVE - Step 3	65.12	4.79	4.20	-	+3.21	403	NS	NS	NS	NS	NM	NM	NM	NM
MW-12	SVE - Step 1	26.24	1.93	6.13	-	+2.22	27	NS	NS	NS	NS	NM	NM	NM	NM
	SVE - Step 2	44.86	3.30	7.36	-	+3.59	22	10.91	14	18.5	58.0	0.0	0.0	0.0	0.0
	GWE	-	-	-	1.34	-7.61	-	NS	NS	NS	NS	NM	NM	NM	NM
	VEGE - Step 1	47.58	3.50	4.20	1.55	7.61	70.0	NS	NS	NS	NS	NM	NM	NM	NM
	VEGE - Step 2	64.85	4.77	8.10	1.55	-7.59	68.9	NS	NS	NS	NS	NM	NM	NM	NM
	VEGE - Step 3	135.81	9.99	15.87	2.03	-7.50	71.7	6.97	106	237	248	0.0	0.2	0.3	0.4
	VEGE - Step 4	208.41	15.33	30.93	2.57	-7.45	50.5	NS	NS	NS	NS	NM	NM	NM	NM

Notes:
i.w. = inches of water
"Hg = inches of Mercury
scfm = standard cubic feet per minute
gpm = gallons per minute
psi = pounds per square inch
ppmv = parts per million (volume)
mg/m3 = milligrams per cubic meter
lb/day = pounds per day
recovery (lb/day) = conc. (mg/m^3) x flow (scfm) x 1lb/454,000mg x $0.0283 m^3/ft^3$ x 1440 min/day
NS= Not sampled; NM = Not measured
BDL= Below analytical method detection limit
E = Indicates value exceeds calibration range

Attachment 5
Feasibility Test Groundwater Analytical Results

Drake Bel Air - Xtra Fuels
2476 Churchville Rd
Bel Air, MD

September 8 & 9, 2011

Parameter (units)	MW-10 VEGE Step 1	MW-12 GWE
Benzene (µg/L)	2,090	1,120
Toluene (µg/L)	7,720	1,730
Ethylbenzene (µg/L)	2,740	1,670
Xylenes (µg/L)	11,900	6,850
BTEX (µg/L)	24,450	11,370
MTBE (µg/l)	46,900	89,800
TPH-GRO (mg/L)	135	135
TPH-DRO (mg/L)	18.4	14.3
Total Calcium (mg/l)	84.2	80.4
Total Iron (mg/l)	23.0	40.4
Total Lead (mg/l)	<0.003	0.0049
Total Magnesium (mg/l)	36	51.7
Total Manganese (mg/l)	16.1	25.6
Oil and Grease (mg/l)	NA	NA
Total Dissolved Solids (TDS) (mg/l)	972	1210
Total Suspended Solids (TSS) (mg/l)	14.0	433

NA= Not analyzed
µg/l= micrograms per liter
mg/l= milligrams per liter
BTEX= Sum of benzene, toluene, ethylbenzene and total xylenes
MTBE= methyl tert butyl ether
TPH-GRO= Total petroleum hydrocarbons as gasoline range organics
TPH-DRO= Total petroleum hydrocarbons as diesel range organics
TDS= Total Dissolved Solids
TSS= Total Suspended Solids

Attachment 6
Feasibility Test Groundwater Analytical Results:
Total Hardness in Groundwater

Drake Bel Air - Xtra Fuels
2476 Churchville Rd
Bel Air, MD

September 8 & 9, 2011

MW-10				
Hardness-causing cation	**Molecular weight**	**Equivalent weight**	**Concentration (mg/L)**	**Hardness as CaCO3 (mg/L)**
Calcium	40.08	20.04	84.2	210
Magnesium	24.31	12.15	36.0	148
Iron	55.85	27.93	23.0	41.2
Manganese	54.94	27.47	16.10	29.3
			Total Hardness as CaCO3 =	**429**

MW-12				
Hardness-causing cation	**Molecular weight**	**Equivalent weight**	**Concentration (mg/L)**	**Hardness as CaCO3 (mg/L)**
Calcium	40.08	20.04	80.4	201
Magnesium	24.31	12.15	51.7	213
Iron	55.85	27.93	40.4	72.3
Manganese	54.94	27.47	25.60	46.6
			Total Hardness as CaCO3 =	**532**

NOTES:
Samples were collected from monitoring well MW-10 on September 8, 2011 and from monitoring well MW-12 on September 9, 2011.
mg/L - milligrams per liter
$CaCO_3$ - calcium carbonate
Hardness (as CaCO3) = Conc. (mg/l) x 50 / (equivalent weight)