December 8, 2016

Ms. Jeannette DeBartolomeo
Oil Control Program
Maryland Department of the Environment
1800 Washington Blvd, Suite 620
Baltimore, Maryland 21230

RE: **SECOND SEMI-ANNUAL 2016 MONITORING AND CONCEPTUAL SITE MODEL REPORT**
MDE Case #2006-0442-HA
High's Store No. 130
4101 Norrisville Road, Jarrettsville, Harford County, Maryland
Facility ID No. 2057

Dear Ms. DeBartolomeo:

Groundwater & Environmental Services, Inc. (GES), on behalf of High's of Baltimore, LLC (High's), is pleased to submit the attached Second Semi-Annual 2016 Monitoring and Conceptual Site Model Report for the above mentioned facility. For the Second Semi-Annual 2016 monitoring period, the following activities were completed:

- semi-annual gauging and sampling of site monitoring wells and tank field observation pipes on October 13, 2016;
- quarterly sampling of the liquid granular activated carbon (LGAC) filtration system at 3914 Madonna Road on August 16 and October 18, 2016;
- quarterly sampling of the LGAC filtration system at 3921 Greenpeak Road on July 28 and October 13, 2016;
- quarterly sampling of residential potable well at 3922 Greenpeak Road on July 28 and October 13, 2016 and;
- the submittal of the *First Semi-Annual 2016 Monitoring Report* to the MDE on August 12, 2016.

In addition to the Second Semi-Annual 2016 Monitoring Report, GES has also prepared a Conceptual Site Model (CSM) included within the attached report correspondence. Based on the evidence presented in this CSM for the High's Store No.130, it is the opinion of GES that impacts of MTBE currently identified in selected potable wells within the community of Charbonnet, as associated to LUST 2006-0442-HA, and assigned to High's of Baltimore, are most likely sourced from historic petroleum releases originating from the DNR Madonna Ranger station property.

It is noted that current onsite groundwater quality at the High's facility has improved to near background-level conditions since the occurrence of a presumed, limited petroleum release event at the Site prior to 2005. Current onsite conditions, as summarized in the attached report (Section 2.0), warrant the resumption of High Risk Groundwater Use Area (HRGWUA) monitoring requirements.

Therefore, based on current site groundwater conditions and the evidence of LUST responsibility as presented in the attached CSM, High's respectfully petitions the MDE-OCP to close LUST case #2006-0442-HA. Specifically, High's requests: 1) permission to abandon the "backlot" cluster wells, 2) relinquish ownership of the two private LGAC well filtration systems and 3) revert to annual monitoring requirements for MW-1, MW-2, MW-3 and the onsite potable supply well per minimum requirements stipulated in COMAR 26.10.02.03-4 for HRGWUA-designated facilities.

During the MDE-OCP's review of this case closure request, High's will continue to maintain LUST case requirements during the First Semi-Annual Monitoring Period of 2017 which includes:

- quarterly frequency sampling of the potable well at 3922 Greenpeak Road;
- quarterly maintenance and sampling of the LGAC filtration systems at 3914 Madonna Road and 3921 Greenpeak Road;
- annual sampling of the 3908 and 3922 Madonna Road potable wells;
- annual sampling of the High's onsite supply well and;
- semi-annual groundwater monitoring and sampling (tentatively planned for April 2017.)

GES will continue to copy the MDE-OCP and the Harford County Health Department on all routine residential sampling result correspondences as affirmed, among other case requirements, in the MDE-OCP's most recent correspondence to High's dated September 13, 2016.

GES appreciates the MDE-OCP's review of this case closure request and looks forward to the Department's response. If you have any questions or would like additional information, please contact the undersigned at (800) 220-3606, extension 3726 or Herb Meade at (410) 261-5450.

Sincerely,

Peter Reichardt
Project Hydrogeologist

Enclosure

c: Jeannette DeBartolomeo – MDE (3 additional copies & CD)
Herb Meade –High's of Baltimore (e-copy)
Cari Biscoe (Harford County Health Dept.)
Todd Passmore – Apex
File – GES, MD (PSID 546437)

Second Semi-Annual 2016 Monitoring and Conceptual Site Model Report

High's Store No. 130
4101 Norrisville Road
Jarrettsville, Maryland 21161

MDE-OCP Case No. 2006-0442-HA
Facility I.D. No. 2057

Prepared for:
High's of Baltimore, LLC.
2700 Loch Raven Road
Baltimore, MD 21218

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December 8, 2016

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1.0 INTRODUCTION

Groundwater and Environmental Services Inc. (GES), on behalf of High's of Baltimore (High's), is pleased to submit the Second Semi-Annual 2016 Monitoring Report in conjunction with a Conceptual Site Model (CSM) for the Highs No. 130, 4101 Norrisville Road (Rd.), Harford County, Jarrettsville, Maryland (Site).

Monitoring activities conducted during the Second Semi-Annual of 2016 period are summarized in **Section 2.0** of this correspondence and should satisfy reporting requirements related to Maryland Department of the Environment Oil Control Program (MDE-OCP) Leaking Underground Storage Tank (LUST) case #2006-0442-HA, as assigned to the Site.

The remaining **Sections 3.0** through **6.0** of this report present a Conceptual Site Model (CSM) which considers both the High's assigned LUST case, as well as the now-inactive LUST case #2009-0539-HA which was historically assigned to the Department of Natural Resources (DNR) "Madonna" Ranger Station located at 3919 Madonna Road. The CSM, as presented herein, evaluates these two LUST cases with respect to select, impacted private wells within the adjacent community of Charbonnet. Elements of this CSM were initially presented to the MDE-OCP at a meeting held on August 9, 2016.

The intent of the CSM submission is to affirm those observations made by GES and High's that known impacts of methyl tert-butyl ether (MTBE), as identified in several private wells, are the result of historic petroleum releases associated with the DNR Madonna Ranger Station and not from the High's Store No. 130. Currently, High's is identified as the sole responsible party for the Charbonnet MTBE impacts per LUST case #2006-0442-HA.

As presented in this report, current onsite groundwater quality at the High's station has improved to near background-level conditions since the occurrence of a presumed, limited release event at the Site prior to 2005. These noted onsite conditions, as summarized in the most recent groundwater monitoring report compiled for the Site (**Section 2.0**) warrant the resumption of HRGWUA monitoring requirements. Therefore, High's petitions the MDE-OCP to close LUST 2006-0442-HA, which includes requirements for the maintenance and monitoring of offsite potable supply wells and their associated granular activated carbon (GAC) point-of-entry treatment (POET) systems. Pending release from LUST case requirements, High's request's permission to abandon the "backlot" cluster wells, relinquish ownership of the two GAC POET systems and revert to annual monitoring requirements for MW-1, MW-2, MW-3 and the onsite potable supply well per minimum requirements as stipulated in COMAR 26.10.02.03-4 for HRGWUA designated facilities.

2.0 SECOND SEMI-ANNUAL MONITORING EVENT - 2016

The Second Semi-Annual 2016 groundwater monitoring event for the Site was completed on October 13, 2016 among the nine (9) monitoring wells that comprise the current monitoring well network for the Site. The current Site monitoring well network includes:

- the shallow monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 which are screened across the surface of the underlying overburden water table aquifer and;

- the deep or "D" series monitoring wells including MW-4D, MW-5D, and MW-6D which are discretely screened just above confirmed top-of-bedrock to represent the deepest interval of the overburden water table aquifer.

Quarterly potable well sampling requirements were also completed during the Second Semi-Annual 2016 period in regard to LUST # 2006-0442-HA and are summarized as follows:

- POET system sampling for 3914 Madonna Road completed on August 16 and October 18, 2016;
- POET system sampling for 3921 Greenpeak Road completed July 28 and October 13, 2016 and;
- potable well sampling for 3922 Greenpeak was completed on July 28 and October 13, 2016.

A Site Location Map, which depicts the High's Store No. 130 site in comparison to regional and topographic features, is attached as **Figure 1**. A Local Area Map, depicting the Site in comparison to more localized features including the DNR Ranger Station and homes within the community of Charbonnet study, is attached as **Figure 2**. A Site Map, depicting current Site features and the locations of the Site's nine active monitoring wells, is attached as **Figure 3.**

2.1 Gauging Event and Determined Groundwater Flow Direction

During initial gauging activities conducted on October 13, 2016, an oil-water interface probe capable of measuring groundwater and petroleum product thickness to 0.01 feet (ft) was used and properly decontaminated between monitoring well measurements. Groundwater depths, as measured from the nine site monitoring wells during the event, ranged from 15.76 ft below top-of-casing (TOC) in MW-6 to 24.83ft below TOC in both MW-2 and MW-3. No measurable product was found within any of the monitoring wells or underground storage tank (UST) observation pipes gauged during the October 2016 event.

Monitoring well groundwater elevations for the event, as derived from relative TOC survey measurements within the onsite monitoring network, are presented in **Table 1 – Historical Monitoring Well Analytical Data Summary**. Groundwater elevation contour maps, created from the water level measurements recorded during the October 13, 2016 event for both the shallow and deep monitoring wells, and are attached as **Figure 4** and **Figure 5**, respectively. Review of **Figures 4 and 5**, demonstrate a shallow groundwater flow directed to the northwest and a deep well groundwater direction to the west.

2.2 Monitoring Well Sampling Summary

Prior to sampling on October 13, 2016, all monitoring wells were purged a minimum three calculated purge volumes and then allowed to recharge. Purged groundwater was collected and filtered through carbon and discharged onto a pervious surface onsite. Upon suitable recharge, groundwater was successfully collected from all nine (9) monitoring wells using disposable polyethylene bailers.

Groundwater samples were poured directly in laboratory-prepared bottleware, packaged immediately on ice for preservation, and ultimately transported, under proper chain-of-custody, to Eurofins Lancaster Laboratories for Full Suite Volatile Organic Compounds (VOCs) including oxygenates and naphthalene, analyses via USEPA Method 8260 and for analysis of Total Petroleum Hydrocarbons (TPH) – Gasoline Range Organics (GRO), and TPH – Diesel Range Organics (DRO) via USEPA Method 8015.

2.3 Groundwater Analytical Summary

Groundwater analytical results for the Second-Semi-Annual 2016 Monitoring Event are summarized as follows:

- peak benzene concentration was detected in MW-4D with a result of 0.5 J micrograms per liter (µg/L);
- peak Total BTEX (benzene, toluene, ethylbenzene, and total xylene) was detected in well MW-4D with result of 0.5 J µg/L in MW-4D;
- peak MTBE concentration was detected in well MW-4D with an result of 7.2 ug/L;
- TPH-GRO was non-detect (<20 µg/L) for all of the monitoring wells and;
- TPH-DRO was detected in MW-4D with an result of 300 ug/L.

Historic monitoring well analytical data for the Site, which includes results from the Second Semi-Annual 2016 groundwater monitoring event, is presented as **Table 1**. Laboratory reports and chain-of-custody documentation for the event are attached as **Appendix A**.

2.4 Vertical Gradient Calculations

Hydraulic vertical gradients were calculated between the shallow and deep well components of each of the three (3) "cluster" well pairs which are positioned east to west along the High's backlot property boundary. These cluster wells include MW-4 and MW-4D, MW-5 and MW-5D, and MW-6 and MW-6D The well pairs are located in close proximity and are screened in shallow and deep intervals of the unconfined aquifer.. The vertical gradient between the shallow and deep component of each pair was calculated via the use of the US Environmental Protection Agency's (EPA) on-line "Vertical Hydraulic Gradient Calculator" using the screen mid-point to mid-point method. Hydraulic flow for the October 13, 2016 event is upward at all three pairs of monitoring wells, with the highest magnitude of flow direction in MW-5 and MW-5D at 0.01400 and the lowest at MW-4 and MW-4D at 0.004864. The vertical gradient calculations are attached in **Appendix B**.

2.5 Residential Sampling

As summarized in **Section 2.0**, all quarterly POET system and potable well sampling requirements related to LUST # 2006-0442-HA were completed during the Second Semi-Annual 2016 monitoring period. Samples collected from 3914 Madonna Road, 3921 Greenpeak Road and 3922 Greenpeak Road were all analyzed for target list VOCs via USEPA Method 524.2. A summary of influent MTBE concentrations, as obtained from the three potable residences this monitoring period, is presented below.

Potable Well Address	Date	MTBE (µg/L)
3921 Greenpeak Rd.	7/28/2016	25
3921 Greenpeak Rd.	10/13/2016	26
3922 Greenpeak Rd.	7/28/2016	7.5
3922 Greenpeak Rd.	10/13/2016	7.6
3914 Madonna Rd.	8/16/2016	22
3914 Madonna Rd.	10/18/2016	12

µg/L = micrograms per liter

No POET maintenance (carbon change-outs) was required this semi-annual monitoring period for the two POET system's currently in operation at 3914 Madonna Road and the 3921 Greenpeak Road residences.

A historical summary of potable well analytical data is presented in **Table 2**. Complete laboratory reports for potable sampling completed within the Second Semi-Annual monitoring period, with chain-of-custody documentation, are attached as **Appendix A.**

2.6 Anticipated Efforts for the First Semi-Annual Monitoring Period – 2017

Unless otherwise directed by the MDE-OCP, High's will complete the following field activities during to the First Semi-Annual Monitoring Period of 2017:

- quarterly frequency sampling of potable well at 3922 Greenpeak Road;
- quarterly maintenance and sampling of the GAC POET systems at 3914 Madonna Road and 3921 Greenpeak Road;
- annual sampling of the 3908 and 3922 Madonna Road potable wells;
- annual sampling of the High's onsite supply well and;
- semi-annual groundwater monitoring and sampling tentatively planned for April 2017.

As noted in MDE-OCP correspondence dated September 13, 2016, High's is now required to report groundwater analytical results within 45 days of sampling event completion.

3.0 CONCEPTUAL SITE MODEL SUMMARY

3.1 Background and General Site Description

The High's Store No. 130 facility (Site) is located on the northwest corner, at the intersection of Route 23 (Norrisville Road) and Route 146 (Madonna Road/ Jarrettsville Pike), in the unincorporated community of Madonna, Harford County, Maryland. The Site property is zoned as a "General Business District." The majority of properties surrounding the Site are zone-designated as "Agriculture" with some community areas designated "Rural Residential".

To the immediate north of the Site exists the community of Charbonnet, which is comprised of single-family homes served by individual, potable supply wells and septic systems. Several potable supply wells within the community of Charbonnet are historically noted as impacted with dissolved methyl-tert-butyl ether (MTBE), a oxygenate additive which was removed from gasoline formulations sold in Maryland by the end of 2005 to early 2006. The CSM, as prepared and presented in this report, will discuss these MTBE-impacted homes within the community of Charbonnet in comparison to two local UST areas for a causal gasoline release: the High' Store, located at 4101 Norrisville Road (Site) and the DNR "Madonna" Ranger Station facility located at 3919 Madonna Road.

The High's store has been an active convenience store and service station since September 1992. The High's location contains four (4) USTs including: a 10,000 gallon (gal.) gasoline tank, two 8,000 gal. gasoline tanks and one 10,000 gal., compartmentalized UST split between on-road diesel and off-road diesel. The UST system is comprised of composite steel with fiberglass-reinforced plastic tanks and double-walled flexible plastic piping. Nine (9) monitoring wells, (4) four tank field observation pipes and a 380 ft. depth transient, non-community drinking water supply well are also located on the High's property.

The paved and building portion of the Site's gasoline and convenience store area is approximately 0.85 acres. Three (3) onsite monitoring wells including MW-1, MW-2 and MW-3 are positioned in the paved portion of the Site with MW-1 north of the UST field and MW-2 and MW-3 in the forecourt area,

between the existing UST field and fuel dispenser canopy. The High's storefront lot adjoins a 1.9-acre partially wooded lot to the north, also owned by High's. This "backlot" contains a large storm water infiltration structure which is designed to intercept runoff from Madonna Road and route the storm water to a natural drainage depression which directs flow to the northwest. The High's backlot has six (6) recently installed (2015) shallow and deep monitoring well clusters (MW-4, MW-4D, MW-5, MW-5D, MW-6 and MW-6D) which are positioned along the Site's northern property boundary. The backlot also serves to convey the septic lines from the High's convenience store to a drain field located in a northwest wooded area of the backlot. A Site Map, depicting current site features and the locations of the Site's nine active (9) monitoring wells, is attached as **Figure 3**.

3.2 Offsite Potential Receptor Summary

The Site is south and adjacent to the community of Charbonnet. Streets included in the Charbonnet "LUST study area"; as it relates to MDE-OCP LUST case # 2006-0442-HA, include Madonna Road, Greenpeak Road, Charbonnet Drive and Norrisville Road. A Local Area Map, depicting the Site in comparison to localized features including adjacent streets, commercial lots and residential properties, is attached as **Figure 2.**

In November 2014, GES, on behalf of High's, submitted a Public Information Act (PIA) request with the Harford County Health Department (HCHD) to obtain potable well and septic records for approximately 25 properties along Madonna Road, Greenpeak Road., Charbonnet Drive and Norrisville Road. Review of the well completion records obtained from the HCHD PIA request indicated that potable wells in the community were installed from approximately 1970 to 2012, with an average well age of 33 years (median age - 39 years). Residential well depths from homes along Madonna Road., Greenpeak Road and Charbonnet Drive range from 140 ft to 500 ft in depth with an average depth of 240 ft (median depth - 200 ft.)

The Maryland DNR "Madonna" Ranger Station facility lies within the community of Charbonnet at 3919 Madonna Road. The DNR site is approximately 1.7 acres in size and consists of a station building, maintenance shed/structure, large communication tower, tower support buildings, an above ground storage tank (AST) and fuel pump system for DNR vehicles. The AST was installed to replace a 21-year old, 1,000 gallon steel UST which was removed from the ranger station property in February 1996. The ranger station is currently served by a 500 ft. potable supply well installed in 2012 to replace a 200 ft deep former supply well which yielded groundwater test results in excess of the MDE MTBE cleanup standard in 2007. The replacement DNR supply well is approximately 500 ft northeast of the High's Store UST field.

A Potable Well Specification Summary table, which compiles construction details related to potable well records obtained by GES, from the HCHD, is presented as **Table 3**. A Monitoring Well Specification Summary table, which compiles construction details of the active High's No. 130 monitoring wells and former DNR Madonna Ranger Station monitoring wells, is attached as **Table 4**.

4.0 LUST CASE HISTORICAL REVIEW

4.1 High's Store No. 130 –LUST # 2006-0442-HA

In July 2005, three (3) monitoring wells were installed and sampled at the High's site in accordance with Code of Maryland Regulations (COMAR) 26.10.02.03-4. The COMAR regulations were enacted to

evaluate for release of petroleum-related VOCs, in particular MTBE, to groundwater at existing gasoline stations located in high risk groundwater use areas (HRGWUA), which included Harford County.

Groundwater analytical results from a July 2005 monitoring event at the Site indicated detections of MTBE in two (2) of three (3) wells which exceeded the MDE MTBE cleanup standard of 20 µg/L (MW-1 at 1,300 µg/L and MW-2 and 180 µg/L). In response to these results, the MDE-OCP opened LUST #2006-0442-HA for the High's Store No. 130 site per directive dated November 30, 2005. The LUST directive letter required the following to be completed and/or initiated at the Site:

- UST system and inventory diagnostic testing to assess for potential liquid and vapor leaks;
- semi-annual sampling of onsite monitoring wells and onsite supply well;
- identify the onsite supply well on a map and;
- conduct a survey of all potable wells within a half-mile radius of the Site.

From 2005 to 2006, a series of diagnostic tests were conducted on Site's UST system. Hydrostatic testing performed at this time revealed leaks in the mid-grade and super-grade spill catchment basins while helium leak testing revealed vapor leaks in automatic tank gauging (ATG) caps. From 2006 to 2007, all UST infrastructure previously identified as non-compliant had been repaired and passed confirmatory leak testing. Additional information, as requested in the November 30, 2005 LUST directive including a list of potable wells within 0.5 miles of the Site, were addressed in High's correspondence to MDE dated January 18, 2006.

Beginning in 2005, the HCHD initiated a separate program of potable well sampling at the both the High's onsite supply well and the potable supply well for the DNR ranger station. The High's supply well tested non-detect for MTBE during two sampling events conducted by the HCHD in 2005. (Two DNR supply well samples collected in 2005 revealed MTBE concentrations of 16.2 and 10.8 µg/L.

In 2008, the HCHD and High's expanded potable well sampling to include:

- 3908, 3911, 3914, 3922 and 3923 Madonna Road,
- 3922 Greenpeak Road and;
- 4065 Norrisville Road.

Potable sampling at the 3914 Madonna Road residence conducted in April and June 2008 revealed MTBE at concentrations of 41 µg/L and 58.1 µg/L (respectively) which exceeded the MDE MTBE cleanup standard (20 µg/L). Subsequently, the potable well at 3914 Madonna Road was placed on a GAC POET system on August 6, 2008. The 3914 Madonna Road GAC POET system was installed by High's under directive of the MDE in regard to LUST case #2006-0442-HA. A lower level detection of MTBE was also confirmed at the 3922 Greenpeak Road residence in 2008 (also assigned to LUST #2006-0442-HA).

From 2009 to 2011, HCHD expanded the potable sampling study area to include:

- 3928 Madonna Road;
- 3921, 3923 and 3924 Greenpeak Road and;
- 4105 Norrisville Road.

Potable sampling at the 3921 Greenpeak Road residence conducted in August 2014 revealed an MTBE concentration of 20.8 µg/L which exceeded the MDE MTBE cleanup standard (20 µg/L). Subsequently, the potable well at 3921 Greenpeak Road was placed on a GAC POET system on

November 11, 2014. To date High's has maintained and sampled the 3921 Greenpeak POET system on a quarterly basis, per MDE LUST case requirements.

A summary of current potable well sampling requirements as assigned to High's, in regard to LUST case # 2006-0442-HA, is presented below:

Potable Well Address	Sampling Frequency	Required Analysis	Notes
4101 Norrisville Rd.	Annual	EPA 524.2	High's Store #130 supply well
3908 Madonna Rd.	Annual	EPA 524.2	Residential supply well - untreated
3922 Madonna Rd.	Annual	EPA 524.2	Residential supply well - untreated
3922 Greenpeak Rd.	Quarterly	EPA 524.2	Residential supply well - untreated
3914 Madonna Rd.	Quarterly	EPA 524.2	Residential carbon POET supply well
3921 Greenpeak Rd.	Quarterly	EPA 524.2	Residential carbon POET supply well

In correspondence dated February 24, 2015 GES, on behalf of High's, presented the MDE-OCP with a *Site Investigation Work Plan*. This work plan proposed the installation of three shallow and three deep monitoring well cluster pairs (six total wells) to evaluate the horizontal and vertical distribution of MTBE in the groundwater system located along the High's northern property boundary. Installation of monitoring wells MW-4, MW-4D, MW-5, MW-5D, MW-6 and MW-6D was completed by July 15, 2015.

Per MDE-OCP correspondence issued September 13, 2016, all nine existing monitoring wells and four tank field observation points are to continue to be monitored on a quarterly basis for target list VOCs including fuel oxygenates via EPA Method 8260 and TPH-GRO and TPH-DRO via EPA Method 8015.

The results of historic HCHD and High's potable well testing, as it relates to the LUST case record, have been tabulated and are presented as **Table 2** with this report. A compilation of significant milestones related to LUST case #2006-0442-HA is attached as **Appendix C**.

4.2 DNR Ranger Station – LUST Case # 2009-0539-HA

In February 1996, a 21-year old, 1,000 gallon steel UST was removed from the DNR Madonna Ranger Station located at 3919 Madonna Road. Per review of documents obtained through an October 2014 MDE PIA request, no field screening, tank condition notes or analytical testing results were available from the provided files.

From 2005 to 2008, potable water samples were collected from the (original) DNR supply well by the HCHD. In November 2007, a water sample collected from the DNR supply well (MTBE= 20.7 µg/L) exceeded the MDE MTBE cleanup standard (20 µg/L). Based on this exceedance, the MDE-OCP required the DNR to install a GAC POET treatment system for the DNR supply well (which was installed by June 2009). In March 2009, the MDE OCP opened LUST #2009-0539-HA and required the DNR to complete a subsurface investigation in the vicinity of their former 1,000 gallon gasoline UST.

From September 2009 to August 2010, three (3) subsurface investigation events were performed at the DNR Madonna Ranger Station property, in an area between the former DNR UST and the impacted potable well at 3914 Madonna Road. A total of seven (7) soil borings and five (5) monitoring wells were completed during this timeframe. The seven initial soil borings completed at the DNR property in September 2009 did not yield detections of petroleum constituents among six (6) soil samples collected, which included boring "SB-7" that was placed adjacent to the former DNR UST location. It should be

noted, however, that none of the initial DNR soil borings, which terminated at depths of approximately 43 ft bgs, were able to produce groundwater samples. Subsequently, five monitoring wells MW-1, MW-2, MW-3, MW-4 and MW-5 were installed at the DNR property over two events (April 2010 and September 2010) per additional directives issued by the MDE. The five DNR monitoring wells were completed at depths ranging from 60 to 70 ft bgs with depth-to-water (DTW) measurements ranging from 29.5 ft bgs to 47.7 ft bgs.

From April 2010 to August 2011, six (6) successive, quarterly monitoring events were completed among the DNR monitoring well network per compliance requirements related to LUST case #2009-0539-HA. During this time, MTBE was detected recurrently at DNR wells MW-2 and MW-5, with individual peak concentrations of 117 µg/L and 217 µg/L, respectively. All remaining DNR monitoring wells, including MW-1, MW-3 and MW-5, returned non-detect results for MTBE through this period.

In December 2010, the MDE-OCP sent a *Site Status Letter* (SSL) to High's regarding determinations made from recent investigations conducted at both the High's Store No. 130 and the DNR Madonna Ranger Station. In the SSL, the MDE-OCP acknowledged that impacts determined at the DNR property, including MTBE impacts found in the DNR supply well, were "most likely related to historic on-site activities" (at the DNR facility). However, the Department notes that a review of an "*extensive collection of data*" and their confirmation of "*northerly groundwater flow from the High's Dairy Store #130*", affirmed their designation of High's as the responsible party for impacted residences including 3914 Madonna Road, 3922 Madonna Road and 3922 Greenpeak Road.

Additional correspondence between MDE and the DNR dated March 16, 2011 also acknowledges the Department's determination of responsibility with the following statement:

> *"Subsurface delineation to date has confirmed water bearing zones at 43 feet below grade surface and groundwater flow is in the northerly direction, which confirmed that the residences at 3914 Madonna Road is cross-gradient from the Ranger Station."*

On November 15, 2011, MDE issued the DNR correspondence which summarized efforts completed to date regarding LUST #2009-0539-HA and presented the following additional directives:

- semi-annual sampling of onsite monitoring well network until replacement onsite potable supply well is installed (via EPA Method 8260 and 8015);
- quarterly sampling on the existing onsite potable supply well and installed GAC POET system at pre, mid and post filtration stages (via EPA Method 524.2) and;
- work with the HCHD on locating and installing a replacement potable supply well for the facility.

The MDE suggested, in the November 15, 2011 correspondence, that the DNR replacement potable supply well be installed to at least 250 ft in depth with a suggested casing depth of 150 ft to "*avoid drawing in the established shallow sub-surface contamination into the deeper zones.*"

In March 2012, the DNR ranger station completed installation of the DNR replacement potable supply well (HA-95-2222). The replacement supply well, completed to a depth of 500 ft bgs, was located at the southern edge of the DNR property. This new DNR supply well location is approximately 190 ft in distance from the former DNR UST area (but approximately 230 ft closer to the existing High's UST field in comparison to the former DNR supply well.)

In correspondence to DNR dated March 26, 2012, David Kelly of Jones Well Drilling, Inc. noted the following details regarding the replacement supply well installation:

> *"Well construction was drilling 82' of casing set in grayish/tan rock with a yield of approximately 2 GPM between 82' and 100'. We drilled deeper and encountered water at 435'. At this time we pulled out and reset the casing to 109'."*

Thus, the new DNR supply well was installed with casing that penetrated the bedrock interface by 20 ft as opposed to the former DNR supply well, which was 148 ft. in total depth, with a casing penetration of only 2 ft into bedrock. Test results from three events conducted on the DNR replacement supply well from 2012 to 2014 were non-detect for MTBE. It appears that the DNR replacement bedrock well was successfully isolated from the overburden aquifer and that bedrock aquifer water quality, at least in the vicinity of the DNR replacement well, has not been affected by historic MTBE releases addressed in this report.

In October 2013, the five existing monitoring wells at the DNR Ranger Station were abandoned. In December 2013, MDE closed DNR LUST case #2009-0539-HA through issuance of a *Letter of Compliance.*

5.0 ANALYTICAL DATA SUMMARY

5.1 High's Store #130 Monitoring Well Network

There are currently nine (9) groundwater monitoring wells at the High' property, all of which are monitored on semi-annual basis. As previously noted, monitoring wells MW-1, MW-2 and MW-3 were installed in July 2005 around the Site dispenser area and UST field per HRGWUA regulations implemented in 2005. Site monitoring wells MW4/4D, MW-5/5D and MW-6/6D were voluntarily installed by High's in July 2015 to evaluate the horizontal and vertical distribution of MTBE in the groundwater located along the High's northern property boundary. The three shallow wells of each "cluster" set were completed exclusively in the unconsolidated, overburden aquifer as this zone is considered a significant area of storage for impacted groundwater that might have migrated from the Site UST system area. The deep component of each well pair was completed with a ten-foot long screened interval just above the bedrock interface. Monitoring of the current onsite network is conducted and reported on a semi-annual basis.

A historic summary of peak analytical concentrations for benzene, MTBE and TPH- GRO and TPH-DRO analyses obtained from the High's monitoring well network is provided on the next page.

Monitoring Well	Date Range	# of Sampling Events	Peak Benzene (µg/L)	Peak MTBE (µg/L)	Peak TPH-GRO (µg/L)	Peak TPH-DRO (µg/L)
MDE GW Residential Clean Up Standards			**5**	**20**	**47**	**47**
MW-1	7/13/05-10/13/16	23	38 (7/26/11)	1,600 (12/28/05)	1,500 (12/28/05)	350 (7/31/07)
MW-2	7/13/05-10/13/16	23	9 (12/28/05)	42 (1/17/07)	300 (6/15/06)	380 (1/17/2007)
MW-3	7/13/05-10/13/16	23	6.0 (12/28/05)	330 (6/15/06)	600 (07/13/05)	1,100 (03/01/10)
MW-4	7/30/15-10/13/16	4	ND <0.1	ND <0.1	ND <20	ND <45
MW-4D	7/30/15-10/13/16	4	0.2 J (7/30/2015)	7.2 (10/13/16)	ND <20	440 (4/28/16)
MW-5	7/30/15-10/13/16	4	ND <0.1	ND <0.1	ND <20	ND <45
MW-5D	7/30/15-10/13/16	4	0.4 J (10/21/2015)	1.8 (10/13/16)	ND <20	240 (10/13/16)
MW-6	7/30/15-10/13/16	4	ND <0.1	19 (7/30/15)	38 J (7/30/15)	86 J (10/13/16)
MW-6D	7/30/15-10/13/16	4	0.3 J (10/21/15)	7.5 (10/21/15)	ND <20	ND <20

A complete, historical record of analytical results obtained from the High's monitoring network related to the LUST case 2006-0442-HA is presented as **Table 1** of this report. A Site Map noting the locations of the monitoring well network at the High's property is presented in **Figure 3**.

Based upon a review of historic groundwater analytical concentrations, it appears that a relatively minor, short-duration oxygenate release (primarily MTBE), occurred at the Site sometime prior to 2005. In addition, a spike in TPH-DRO was observed in well MW-3 in 2010. Levels of TPH-DRO at MW-3 have since dissipated to levels below detection; however TPH-DRO remains slightly elevated in the backlot monitoring wells including MW-4D and MW-5D. It is unclear if the recent detections of TPH-DRO in MW-4D and MW-5D are related to either: 1) a historic onsite TPH-DRO release or 2) surface water runoff from the Madonna Road infiltration structure that is in proximity to these backlot wells. Occurrence of additional oxygenates including di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME) and tert-butyl alcohol (TBA) are historically significant, at minor levels, in the record for Site monitoring well MW-1 and more recently, within the northwest-positioned MW-6 / MW-6D cluster set. This occurrence of additional trace oxygenates may indicate the primary migration path from a previous petroleum release at the Site.

5.2 Historic Madonna Ranger Station Monitoring Well Network

As reported in **Section 4.2**, a total of five (5) monitoring wells were installed at the DNR Madonna Ranger Station during the active stage of LUST #2009-0539-HA. The five monitoring wells were sampled on a quarterly frequency from April 2010 to September 2011.

A summary of historic peak concentrations for benzene, MTBE, TPH- GRO and TPH- DRO analytical results for the DNR Madonna Ranger Station monitoring well network is provided on the next page.

Monitoring Well	Date Range	# of Sampling Events	Peak Benzene (µg/L)	Peak MTBE (µg/L)	Peak TPH-GRO (µg/L)	Peak TPH-DRO (µg/L)
MDE GW Residential Clean Up Standards			**5**	**20**	**47**	**47**
DNR MW-1	4/30/10-9/30/11	6	ND	ND	ND	ND (2 events)
DNR MW-2	4/30/10-9/30/11	6	ND	**117** (3/15/11)	ND	ND (2 events)
DNR MW-3	4/30/10-9/30/11	6	ND	ND	ND	ND (2 events)
DNR MW-4	9/17/10-9/30/11	5	ND	ND	ND	ND (2 events)
DNR MW-5	9/17/10-9/30/11	5	ND	**217** (7/6/11)	ND	ND (2 events)

A complete, historical record of analytical results obtained from the DNR Ranger Station well network, as obtained through an MDE PIA request, are tabulated in **Table 1** of this report. A Local Area Map noting the locations of former DNR monitoring well network in comparison to local, potable wells is presented in **Figure 2.**

As previously noted, MTBE was recurrently detected in DNR wells MW-2 and MW-5 throughout sampling conducted at the DNR facility from 2010 and 2011. DNR well MW-5 is presumed to have existed approximately 100 ft to the west-northwest of the historic 1,000 gallon DNR gasoline UST. DNR well MW-5 was also positioned in-line and approximately half-way between the former DNR gasoline UST and the impacted 3914 Madonna Road potable well (total distance =200 ft). Historically, the potable well at 3914 Madonna Road has exhibited the highest influent concentrations of MTBE among all historically sampled potable wells within the LUST study area, with a peak MTBE concentration reaching 72 µg/L in July 2010. An isopleth map of MTBE concentrations reported from sampling events conducted at both onsite DNR monitoring wells and immediate offsite potables wells from April to June 2011 is presented in **Section 6.7.2** of this report.

5.3 Potable Wells Within the LUST Study Area

As indicated in **Section 3.1**, approximately 15 potable supply wells within and surrounding the community of Charbonnet have been sampled in regard to the High's LUST case #2006-0442-HA. These potable well locations have been sampled along selected areas of Norrisville Road, Madonna Road, and Greenpeak Road through the combined efforts of both the HCHD and High's since 2005. As summarized in **Section 4.1**, High's maintains and samples, (on a quarterly basis), two (2) GAC POET systems located at 3914 Madonna Road and 3921 Greenpeak Road. High's is also responsible for quarterly monitoring of the 3922 Greenpeak Road potable supply well and for annual monitoring at the High's onsite potable supply well (4101 Norrisville Road) , annual monitoring at 3908 Madonna Road (immediately adjacent to the High's backlot monitoring wells) and annual monitoring at 3922 Madonna Road (located due north and adjacent to the 3914 Madonna property.)

A Local Area Map noting the locations the potable wells relevant to the LUST 2006-0442-HA study area is presented in **Figure 2.**

6.0 GEOLOGY AND HYDROGEOLOGY

6.1 Regional Geologic Setting

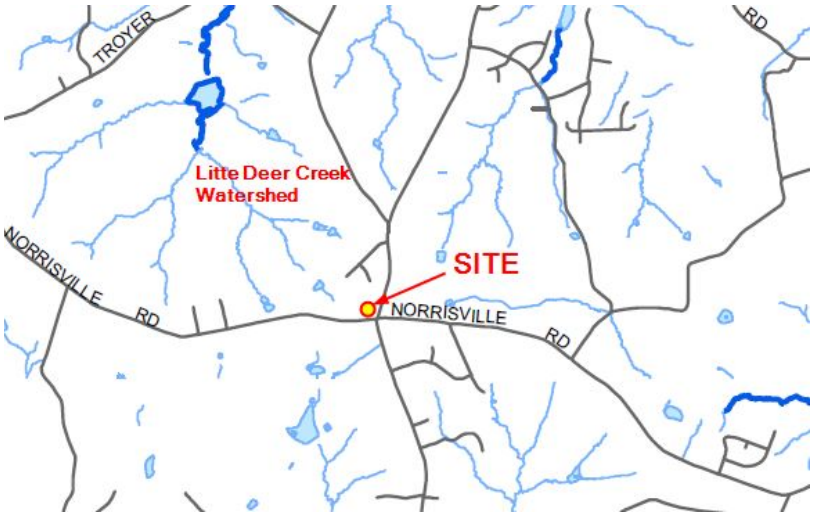
The Site is situated within the Central Piedmont Physiographic province of the eastern United States. The rocks of the Maryland Piedmont region are described by Nutter and Otton (1969) as consisting of "*closely folded rocks of sedimentary origin which have been metamorphosed and intruded by granitic and mafic rocks*." Based on the Maryland Geological Survey (MGS) Geologic Map of Harford County, Maryland (1968) the Site is mapped within the Lower Pelitic Schist of the Late Precambrian–age Wissahickon Formation. The Lower Pelitic Schist, as characterized by Cleaves et al., is noted as follows:

> *"medium- to coarse-grained biotite-oligoclase-muscovite-quartz schist with garnet, staurolite, and kyanite; fine- to medium-grained semipelitic schist; and fine-grained granular to weakly schistose psammitic granulite; psammitic beds increase upward."*

In addition, it is suspected that bedrock from the Ultramafic Rocks of early Paleozoic to late Precambrian age was also encountered during core sampling at the High's monitoring well MW-6D location. Additional information regarding rock core samples collected from the Site is discussed in **Section 6.4**.

6.2 Topography and Site Features

The Site is located approximately between 730 to750 ft above mean sea level (AMSL) and is positioned at the top of two intersecting topographic ridge features – the east-to-west trending section of Route 23 (Norrisville Road.) and the minor north-to-south trending section of Route 146 (Madonna Road). Per the United States Department of Agriculture (USDA) soil record, the site is comprised of moderately eroded Chester Silt Loam, which is characterized as well draining. The grade of convenience store and fuel dispenser area of the Site is relatively flat (2%), while the northern, grassy backlot land slopes more significantly (8%) toward the northwest. The backlot topography reflects its position as a local drainage area which feeds a small surface water impoundment located approximately 0.25 miles to the northwest. This impoundment and associated regional drainage surrounding the Site is a component of the Little Deer Creek watershed originating to the northwest of the Site as noted below.

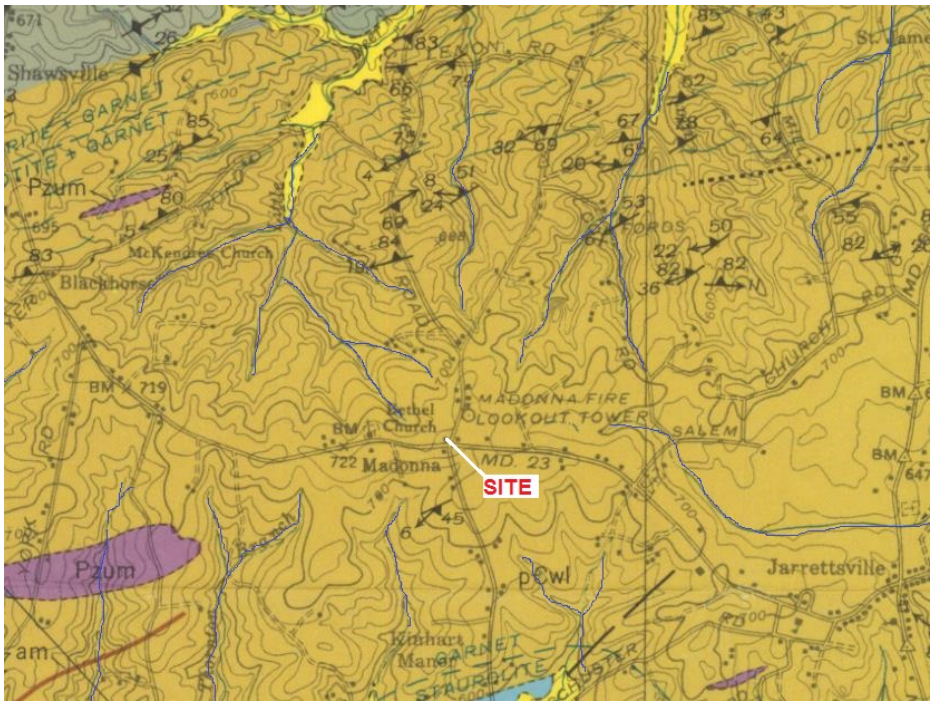


Reproduced from the Harford Co. Hydrology/Drainage Area Map (2008)

As previously noted, the Site's backlot also includes an engineered stormwater infiltration structure which directs surface drainage from Madonna Road toward the noted northwest drainage feature via an exposed outfall pipe.

6.3 Site Structural Geology and Hydrogeologic Setting

Structurally, the underlying bedrock would be expected to demonstrate features primarily aligned to the northeast-southwest based on the regional deformation which occurred during the Appalachian orogenic events. This assumption is supported by structural measurements (strike and dip) taken from bedrock features within approximately 0.5 miles of the site, as reported in the 1968 MGS Geologic Map of Harford County, Maryland (cropped image below).



Further review of the 1968 MGS Geologic Map of Harford County, Maryland indicates that the Site is positioned on the north limb of the Baltimore-Washington Anticlinorium which dips northwest. It is appears that the primary direction of local watershed drainage north of the Site generally conforms with the down-dip face of this regional structural feature (drainage highlighted blue for this figure and also apparent on the figure from the previous page).

It has been observed that groundwater production in Piedmont crystalline bedrock aquifers, including the Wissahickon Formation, is typically low due to the limited storage (minimal primary porosity) and poor permeability typical of fractured bedrock aquifers. Specifically, Nutter and Otton (1969) noted that the Lower Pelitic Schist of Wissahickon has been demonstrated to provide lower groundwater yields than the Upper Pelitic Schist member of the same formation due to the additional degree of metamorphism associated with the Lower Pelitic Schist.

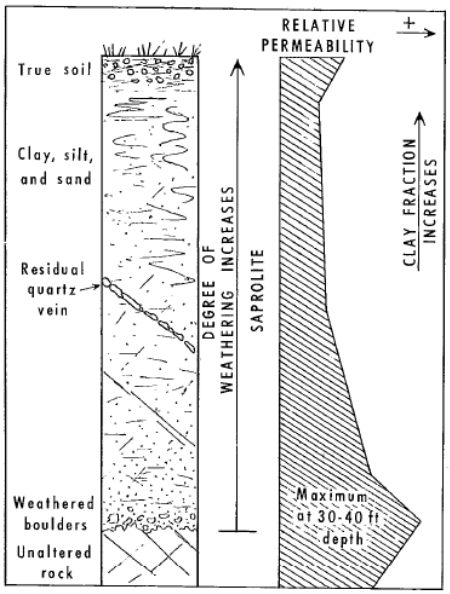
It is also noted that fractures (and to a lesser degree, joints and faults) are the primary transport and storage features for groundwater within metamorphic, Piedmont bedrock aquifers. Fracture density is noted to generally decrease with depth in Piedmont crystalline rocks.

For instance, it was noted in the well completion reports that several "dry holes" into rock were completed then abandoned during installation activities associated with potable wells within the LUST study area. These dry holes occurred at the 4105 Norrisville Road, 3914 Madonna Road and 4104 Charbonnet Drive properties in 1986, 1982 and 1979, respectively. In addition, driller notes for the replacement well installed at 3919 Madonna Road (DNR Ranger Station) in 2012 indicate that a yield of 2 gpm was achieved by 82 ft bgs but that suitable water yield was not found until a depth of 435 ft bgs (11 gpm). In summary, it can be inferred that potable wells, which were installed exclusively in bedrock near the Site: 1) had to be drilled to significant depths in order to find adequate yield or 2) over-drilled to provide sufficient volume in the well bore storage to meet necessary demand. In contrast, the final specifications of many potable wells installed within the LUST study area appear to have been completed with shallow casing lengths and relatively short total well depths. A Potable Well Specification Summary table, which compiles construction details related to potable well records obtained by GES, through the HCHD, is presented as **Table 3**. Further discussion of the potable well construction within the LUST study area is presented in **Section 6.7.1**.

6.4 Overburden – Saprolitic Aquifer

Significant to the conceptual site model presented in this report is the occurrence of extensive unconsolidated, degraded rock material underlying the Site and surrounding area. Such accumulations of these materials over competent rock are quite common in the Piedmont region. This extensive weathered mantle is termed "saprolite" and while it is comprised of weathered rock material, the saprolite has a much greater matrix porosity than its underlying crystalline parent. Regional precipitation and the establishment of a water table in a well-drained, upland setting introduces waters to rock that are elevated in oxygen content and lower in pH. Such conditions are conducive to the degradation of the parent rock mineralogy through a process of in-situ chemical leaching, alteration and replacement. In many instances, saprolite may retain the structure features of the parent rock body when all original rock materials have been replaced by secondary mineralogy.

The typical Piedmont overburden or regolith zone (graphically presented on the next page) can be generally divided in several sub-units including (from bottom to top): weathered rock, saprolite and the subsoil / soil zones. Evidence of weathering is considered most advanced in the shallowest regions with less mature weathering more apparent toward the bedrock horizon. The model also notes an increase in relative permeability of the subsurface materials (i.e the aquifer) progressing from the shallowest to deepest intervals of the saprolitic sequence, with a bump in permeability noted at the weathered rock zone progressing to a sharp decline in permeability once competent crystalline rock is encountered, where matrix porosity is negligible.



Idealized weathering profile showing fresh crystalline rock grading upward into true soil.

Reproduced From Nutter and Otton (1969)

Specific to the Site, the overburden interval was verified between 75 ft thick and 95 ft thick during rock coring activities performed in 2015, during the installation of High's wells MW-4D, MW-5D and MW-6D. Review of boring logs collected during the installation of MW-4D, 5D and MW-6D denote a significant interval of structural saprolite which was comprised of micaceous silt matrix with noted intermittent zones of thin, quartz beds with a relatively abrupt transition to a highly fractured weathered rock zone. As noted, the first five feet of rock zone was captured during core sampling also completed during onsite well installation activities in 2015.

A picture of the 2015 core samples is presented below which denotes the amount of fracturing (most natural, some "machine breaks") at the top-of-rock interface within the High's backlot.

It is noted that the wireline rock coring process performed to obtain these sample can only "cut" when a sufficient amount of rock versus weathered matrix is available to the core barrel. In the presence of excessive weathered soil matrix, the core barrel jams. Thus, the 5-ft sections of core below are predominately comprised of rock fragments separated by oxidized fracture intervals. Such an interval would be considered weathered rock to marginally competent rock. As previously noted, it would be expected (although not verified), that the concentration of fractures present within the first tens-of- feet below the bedrock interface at the Site would reduce significantly with depth into the competent rock body. It is the opinion of GES, that such weathered rock intervals, as determined by "feel" of a driller during a typically potable well installation, are likely selected as adequate to support a protective casing while also providing sufficient water yields. It is clear, however, that such well construction with protective casing set within the weathered rock zone creates a greater likelihood of overburden water capture. Further discussion of water levels of the High's backlot overburden wells is discussed in **Section 6.6**.

6.5 Site Monitoring Wells

The High's monitoring wells MW-1, MW-2 and MW-3 are constructed of 4-inch diameter poly vinyl chloride (PVC) and were installed in June 2005 after implementation of HRGWUA regulations in select Maryland counties including Harford County. Review of well completion reports for monitoring wells MW-1, MW-2 and MW-3 note screen intervals of 10-33 ft bgs, 8-38 ft bgs and 9-40 ft bgs, respectively. Wells MW-1 and MW-2 are positioned to the immediate north and south of the current High's UST field. Well MW-3 is positioned between the High's store building and the dispenser canopy.

The Site monitoring wells MW-4, 4D, 5, 5D, 6 and 6D were installed from late June to early July 2015. The six (6) monitoring wells were completed as a series of shallow and deep overburden zone "cluster" sets. The three pairs of cluster wells were installed along the margin of the Site property boundary to evaluate the onsite water table flow regime and delineate the extent of potential petroleum hydrocarbons, particularly MTBE, both horizontally and vertically. The shallow series wells were screened across the top of 'first water" while the deeper wells ("D" series) were installed (with ten feet of screen) just above the top-of-rock horizon, as determined through completion of a 5 ft of rock core at each deep well boring location. Screen intervals for the High's backlot overburden wells are summarized as follows:

- MW-4 = 12-32 ft bgs
- MW-4D = 83-93 ft bgs
- MW-5 = 12-30 ft bgs
- MW-5D = 75-85 ft bgs
- MW-6 = 12-30 ft bgs
- MW-6D = 65-75 ft bgs

Further information regarding the installation of the MW-4/D, MW-5/D and MW-6/D monitoring well series can be reviewed in the *Site Investigation Report* submitted to the MDE-OCP on September 11, 2015. A summary of monitoring well specifications for all Site monitoring wells is included as **Table 4**.

6.6 Onsite Hydrogeology

6.6.1 Water Levels

A summary of water levels measurements obtained from Site monitoring wells from July 2007 to October 2016 is presented below.

Monitoring Well	Date Range	Events	Measured DTB (ft bgs)	DTW (Min) (ft bgs)	DTW (Max) (ft bgs)
MW-1	7/13/05-10/13/16	24	34.5	18.71	25.01
MW-2	7/13/05-10/13/16	24	31.1	19.64	25.96
MW-3	7/13/05-10/13/16	24	35.1	19.79	25.84
MW-4	7/30/15-10/13/16	5	32.1	17.42	21.36
MW-4D	7/30/15-10/13/16	5	89.4	16.93	20.70
MW-5	7/30/15-10/13/16	5	29.5	12.65	16.63
MW-5D	7/30/15-10/13/16	5	82.8	12.87	16.10
MW-6	7/30/15-10/13/16	5	29.5	11.90	15.76
MW-6D	7/30/15-10/13/16	5	75.3	12.20	15.93

Upon review of the table above, it is observed that the depth to water measured at Site monitoring wells in comparison to verified top-of-rock depths (determined during the installation at MW-4D, MW-5D and MW-6D) indicate a relatively thick saturated overburden water table (~60 to 70 ft thick) existing in the High's backlot. Based on the water levels for site monitoring wells MW-1, MW-2 and MW-3 and the casing depth specified for the Site potable supply well (68 ft bgs), it is assumed that a significant thickness of saturated, saprolitic overburden also underlies the Site where the High's UST system is located. A summary of monitoring well specifications for Site wells is included as **Table 4.**

6.6.2 Groundwater Flow Direction and Gradient Determinations

Groundwater flow direction for the shallow water table aquifer beneath the Site is considered represented by wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6. A Groundwater Monitoring Map for shallow wells gauged on October 13, 2016 is presented as **Figure 4**. Review of **Figure 4** depicts a shallow groundwater direction to the northwest which is consistent with historic groundwater direction determinations reported for previous monitoring events at the Site. The shallow overburden groundwater gradient, as calculated during the October 13, 2016 event between wells MW-2 to MW-6, was 0.022 ft/ft.

Groundwater flow gradient for deep wells MW-4D, MW-5D and MW-6D, as determined from the October 13, 2016 monitoring event, is presented as **Figure 5**. Review of **Figure 5** depicts a deep overburden groundwater directional gradient oriented due-west which is consistent with historic groundwater direction determinations reported for previous monitoring events at the Site. The deep overburden groundwater gradient, as calculated during the October 13, 2016 event between wells MW-4D to MW-5D, was 0.006 ft/ft.

GES has performed and reported vertical gradient calculations for the High's backlot monitoring well clusters since July 2016 using the EPA Gradient Calculator (available online). A summary of vertical calculations as performed on the High's cluster wells for monitoring events completed to date is presented on the next page.

Gauging Date	Magnitude of Vertical Gradient (Screen mid-point value)*			Vertical Flow Directional Summary
	MW-4 & MW-4D	MW-5 & MW-5D	MW-6 & MW-6D	
8-20-15	0.00288	0.00542	0.007592	Upwards
10-21-15	0.005343	0.01484	0.01686	Upwards
4-28-16	0.002042	0.0006848	0.002262	Upwards
10-13-16	0.004864	0.01400	0.005138	Upwards

* Positive value indicates an "upward" vertical gradient.

Review of the historic vertical gradient calculations for onsite cluster wells indicate a consistent upward vertical gradient occurring in the High's backlot overburden aquifer. The gradient values are relatively low, indicating effective hydraulic communication between the upper and lower overburden water table zones. Furthermore, the persistence of an upward vertical gradient is consistent with a groundwater discharge zone, which typically occur in topographic lows (as opposed to a downward vertical gradients associated with groundwater recharge zones). As has been previously reported, the storm water infiltration area has not demonstrated any effect on vertical groundwater gradients, particularly at wells MW-4 and MW-4D, which are adjacent to this structure.

Thus, both the horizontal and vertical gradient data supports the conclusion that the backlot cluster wells are positioned along a W-NW oriented topographic depression and that this feature has the potential to exhibit hydraulic control on impacted, overburden groundwater sourced from the upgradient High's UST system area. Further discussion of this backlot drainage feature is addressed in **Section 6.8.**

6.7 Offsite Hydrogeology

6.7.1 Potable Wells with the LUST Study Area

In November and December 2015, GES received files from MDE-OCP and HCHD (respectively) through Public Information Act (PIA) requests. The PIA files, as obtained, included potable well completion reports, analytical testing results and septic construction records related to properties within and surrounding the community of Charbonnet. A compilation of potable well construction specifications, as derived from the HCHD PIA file review, is attached as **Table 3**.

Review of **Table 3** presents the following observations:

- Depth-to-bedrock for seventeen (17) private potable wells within the LUST study area ranged from 140 ft to 500 ft bgs, with an average depth-to bedrock of 76.6 ft bgs.
- Static depth-to-water, as obtained during initial yield testing of the17 private potable wells, ranged from 15 ft to 54 ft bgs, with an average depth-to-water of 36.8 ft bgs.
- The calculated difference between the recorded depth-to rock and depth of "casing" (i.e the extent of casing penetration into bedrock) ranged from 1.0 to 20 ft, with an average casing penetration depth into rock of 5.2 ft (median depth=3.0 ft) among 17 private potable wells.

Based on review of the available potable well completion records, it appears that a thick, saturated overburden condition, as noted to occur at the High's property (**Section 6.6**), also occurs beneath offsite properties comprising the LUST study area.

It is also apparent, upon review of the potable well specification data, that many of the LUST study area wells are constructed with limited, if any, protective casing extended into the competent bedrock zone, thus allowing for in-flow of overburden groundwater. It is likely, during installation, that these wells

demonstrated (to the driller) an acceptable water yield for single-family home occupancy with a suitable rock surface to physically support the protective casing upon installation. Given our understanding of regional geology and well yields as previously described, GES would offer that such shallow-cased potable wells likely derive most water yield from the saturated overburden aquifer, although the well may penetrate or "bridge" into the competent rock zone. In comparison, wells completed exclusively in bedrock such as the current 3919 Madonna Road supply well, had to be cased and completed to significant depths within the bedrock in order to achieve adequate water production and protection from MTBE impact. It is encouraging that the DNR Ranger Station supply well has, so far, tested non-detect for MTBE. This indicates that no extensive MTBE bedrock contamination likely exists within the LUST study area and such impacts may be relegated primarily to the overburden aquifer.

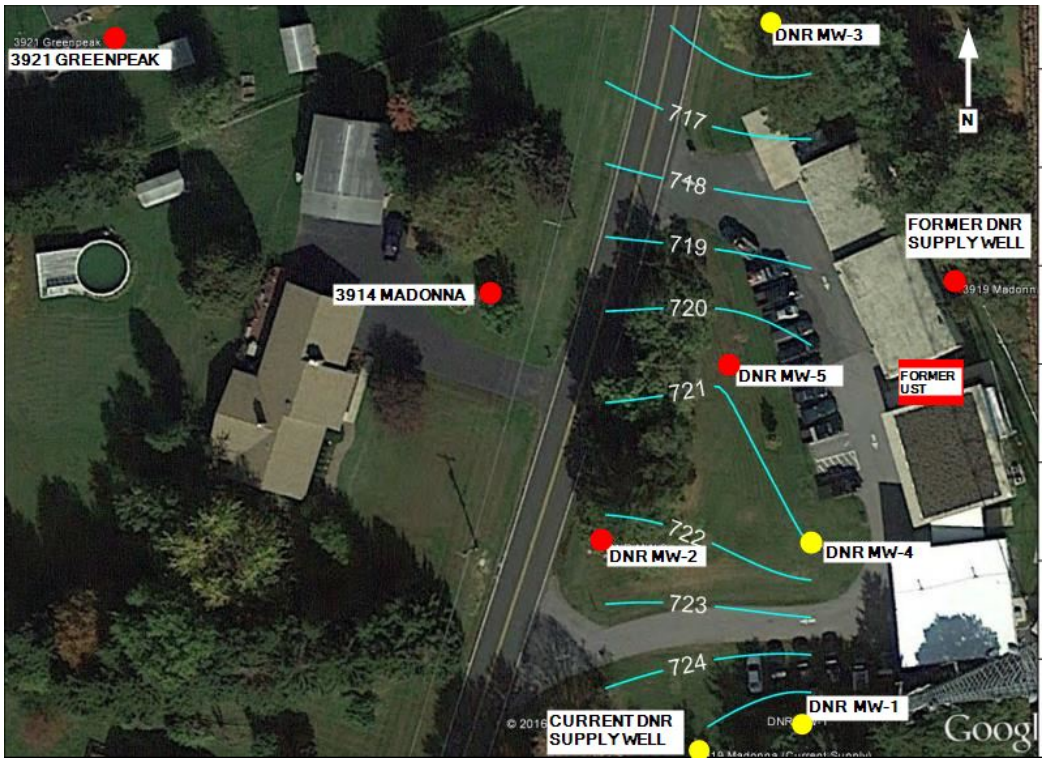
Unfortunately, a leaking UST (LUST), particularly in regard to releases of MTBE, has the potential to contaminant a significant volume of groundwater storage within an overburden aquifer. Any inadequately constructed potable well positioned downgradient of a LUST is at greater risk to intercept impacted overburden waters. Evidence regarding the cause of impacts associated to selected properties within the community of Charbonnet is discussed in the following sections of this report.

6.7.2 DNR Ranger Station Monitoring Well Network

A record of groundwater level and analytical data for the DNR ranger station monitoring well network, as obtained through the 2015 MDE PIA request, has been tabulated and is included with **Table 1.** A Monitoring Well Specification Summary table, which includes construction details of the former DNR Madonna Ranger Station monitoring wells, is attached as **Table 4.**

As noted in **Section 4.2**, DNR wells MW-2 and MW-5 demonstrated repeated detections of MTBE during the monitoring phase of LUST # 2009-0539-HA, which occurred from April 2010 to September 2011.

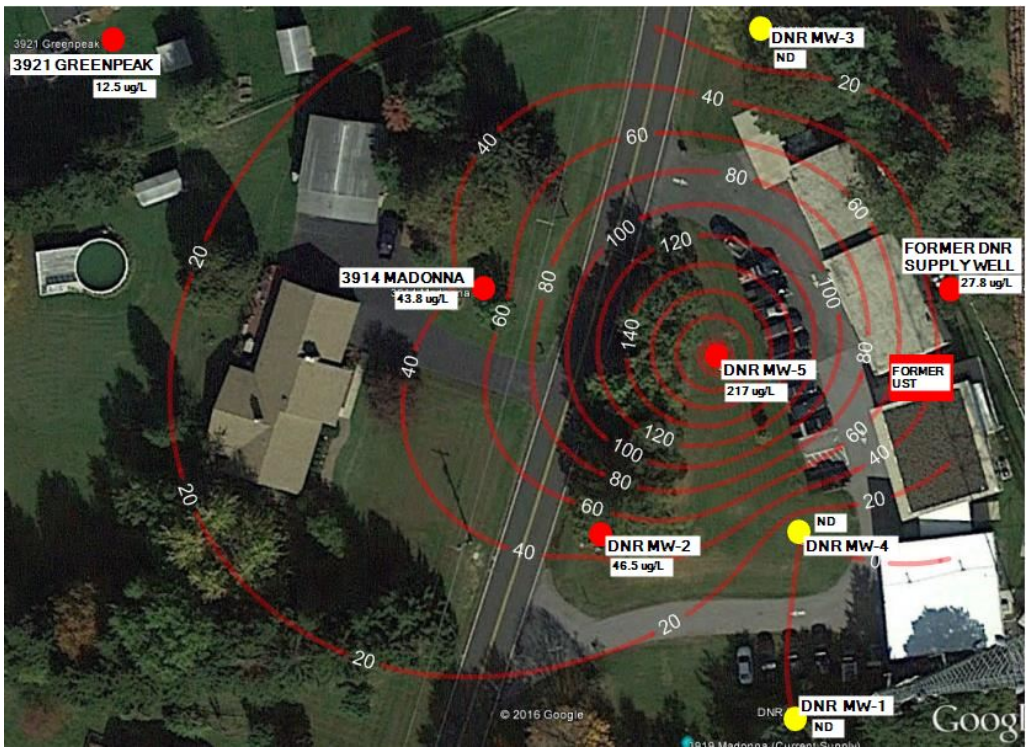
In order to corroborate historically reported groundwater flow direction at the DNR site, GES selected water levels obtained from the July 6, 2011 DNR groundwater monitoring event and created a plot of groundwater elevation contours which is presented on the next page.



Review of the July 2011 groundwater elevation contour map depicts an apparent groundwater direction to the north. This depiction is typical of groundwater direction determinations reported for the facility in regard to LUST 2009-0539-HA. This apparent south-to-north groundwater flow direction was also the basis for MDE's determination that the 3914 Madonna Road potable well, (immediately across the street from the DNR Ranger Station), shares a "cross-gradient" relationship (as opposed to a downgradient relationship) to the DNR facility (see **Section 4.2**). Thus, the MDE-OCP concluded that MTBE impacts at 3914 Madonna Road were associated with the High's UST system located to the south, and presumably upgradient, of the 3914 Madonna Road residence.

GES takes issue with this determination of responsibility made by the MDE-OCP as the constraints of the narrow configuration of the DNR monitoring well network bias the representation of groundwater flow that cannot necessarily be extrapolated to adjacent properties. Clearly additional monitoring wells should have been installed offsite toward historically impacted homes (including 3914 Madonna Road) in order to establish true groundwater gradient and flow relationships between the DNR facility and surrounding properties.

Historic dissolved MTBE analytical data are available from the LUST record for both the DNR monitoring wells and potable wells in proximity to the DNR facility. GES has prepared a map of the MTBE distribution among both potable and monitoring wells proximal to the DNR Ranger Station collected within a three month period, from April to July 2011. The MTBE plot is presented on the next page.



Review of the offsite MTBE map for April/July 2011 clearly demonstrates a consistent distribution of dissolved MTBE concentrations emanating from the DNR monitoring wells toward impacted potable supply wells to the west including 3914 Madonna Road, and 3921 Greenpeak Road. It is inferred, as discussed in several previous sections of this CSM report, that both the potable and monitoring wells presented in this plot likely share a common aquifer connection (the overburden aquifer.)

To further evaluate the potential for MTBE migration from the DNR facility to homes adjacent to the property, GES prepared a cross-sectional diagram which transects the area from the former DNR UST area (A) to the impacted 3924 Greenpeak Road potable well (A'). A transect map, identifying the lines of section in plan view, is included as **Figure 6**.

The A-A' cross sectional drawing, as presented as **Figure 7**, incorporates data from six impacted potable and two impacted DNR monitoring wells. For the cross section, water levels from DNR monitoring wells (obtained during the July 2011 event) are plotted with static water levels obtained from well completion reports for the potable wells represented in the transect. While this is not a synoptic plot of water levels among all wells at a given moment in time, the plot provides: 1) a general comparison of groundwater level relationships, 2) a comparison of surface and bedrock topographic gradient relationships and 3) a presentation of the relatively shallow penetrations of well casings for potable wells along a potential flow path from the DNR facility to adjacent and apparent downgradient potable supply wells. All well specification information presented in the A-A' cross sectional drawings was derived from the well completion reports obtained by GES through PIA request made with HCHD in November 2014. Grade elevations for each plotted location have been estimated from the online Google Earth software. Potable well specifications and depth-to-rock determinations have been tabulated from the well completion reports and are attached as **Table 3.** Monitoring well specifications for DNR and High's wells are included as **Table 4.**

Review of the A-A' cross-sectional drawing indicates a relatively thick overburden aquifer system which positions the former DNR monitoring well network topographically (and presumably hydraulically) upgradient of the adjacent, residential potable wells. The cross section also demonstrates a relatively consistent distribution of MTBE concentration along the progression of the transect as it runs from the DNR monitoring well MW-5 northwest through residential potable well locations 3914 Madonna Road, 3921 and 3922 Greenpeak Road which (as a group) have presented the highest historic concentrations of MTBE in the LUST case record. Of perhaps greatest interest is the nearly identical concentration of MTBE between DNR MW-2 and 3914 Madonna Road. It is the opinion of GES that this distribution of MTBE, as presented in Figure A-A', establishes a downgradient relationship between the former DNR monitoring well area and impacted homes immediately west-northwest of the property (– which is a migration direction consistent with overburden groundwater movement determined through subsequent analysis of the fluid levels in deep overburden wells installed on the High's backlot parcel.)

GES prepared a second cross-sectional drawing from the High's UST field (B) to the 3914 Madonna Road potable well location (B') which is included as **Figure 8** to this report. Data values presented in the B-B' cross sectional drawing are derived from the most recent groundwater and potable monitoring events completed by GES in October 2016 with exception of the MTBE concentration for the potable well at 3908 Madonna Road, which was last sampled February 15, 2016 (sampled on an annual frequency).

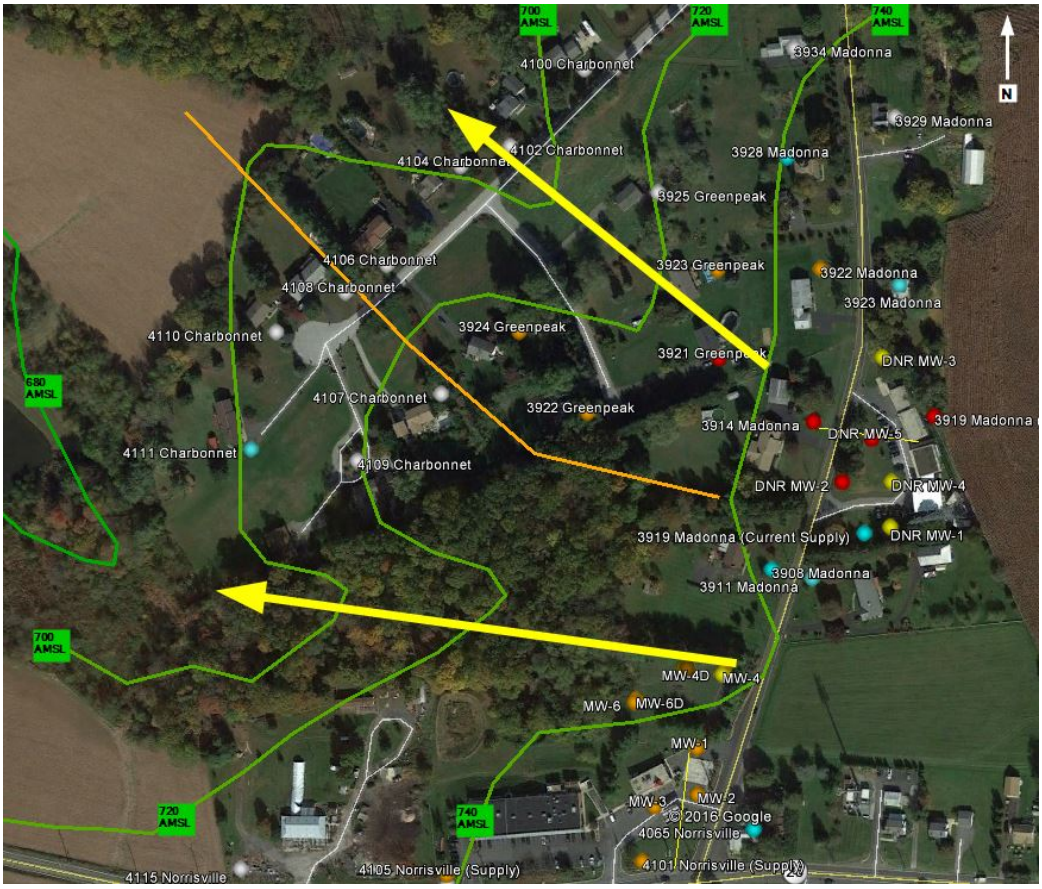
Review of the B-B' cross sectional drawing indicates a thick, saturated overburden aquifer system underlying the Site and adjacent residential properties. Review of the topographic surface indicates that the High's property is approximately equal to lower in elevation than the 3908 and 3914 Madonna Road properties. Furthermore, the B-B' transect denotes a topographic depression separating the High's lot from the more northerly Madonna Road properties. This depression, near the MW-4/4D monitoring well cluster, is reflective of the west-northwest trending drainage feature located on the High's backlot discussed in **Section 6.6.2.**

It is the opinion of GES that the backlot drainage depression / groundwater discharge area acts as a hydraulic barrier which has prevented impacted overburden groundwater sourced from the High's property from migrating toward potables wells located further north from the Site along Madonna and Greenpeak Roads, including homes at 3914 Madonna Road, 3921 Greenpeak and 3922 Greenpeak Road. This hypothesis is supported by the consistent non-detection of MTBE in the 3908 Madonna Road potable well over seven (7) sampling events conducted from 2008 to 2016 (See **Table 2**.) It is apparent in both the Potable Well Specification Summary table (**Table 3**) and as represented in the Cross-section Diagram A-A' (**Figure 8**), that the 3908 Madonna Road well is similarly constructed to adjacent, impacted potable well 3914 Madonna Road. As presented in previous sections of this CSM report, many of the evaluated potable wells within the LUST study area may be insufficiently cased and therefore are in communication with the overburden aquifer. Therefore, it would be expected that the 3908 Madonna Road potable well should intercept any potential MTBE plume emanating from the High's site if the 3908 Madonna Road (and 3914 Madonna Road) wells were truly hydraulically downgradient of the High's site.

6.8 Localized Drainage Basin Evaluation

It is considered that the transport of dissolved groundwater contaminants through the overburden aquifers local to the Site and community of Charbonnet are controlled, predominately, by the topography and morphology of the local water shed drainage systems. As previously noted, upland drainage features of

the Little Deer Creek water shed, including the drainage in the High's backlot begin at the Site property and are oriented to the northwest. **Figure 1** (Site Location Map) provides a view of the regional topography. Regional drainage patterns surrounding the Site have also been discussed in **Sections 6.2 and 6.3** of this report. A more enhanced view of local topographic contours in relation to the potable supplies along Madonna Road, Greenpeak Road and Charbonnet Drive is presented below.



For this figure, USGS-derived elevation contours (green lines) have been super imposed over an aerial photograph of the area. Topographic "highs" (orange lines) and "lows" (yellow lines) define the watershed ridges and valleys, respectively, which controls surface water and also influence underlying groundwater movement in the area.

Review of this figure denotes a distinct topographic "high" which begins between the 3908 and 3914 Madonna Road properties and extends to the west-northwest. This topographic ridge has the effect of creating two separate drainage valleys (yellow arrows): 1) a northwest trending valley emanating from the DNR Ranger station property and 2) a west-northwest trending valley that bisects the High's backlot property, as discussed in previous sections. It is the position of GES that these two drainage features control overburden groundwater flow and corresponding, have controlled the migration of historic MTBE releases, which are suspected to have sourced from both the High's Store #130 and the DNR Ranger Station properties.

7.0 CONCLUSIONS

GES, on behalf of High's of Baltimore, has prepared this CSM to demonstrate that known impacts of MTBE, as identified in several potable wells within the community of Charbonnet, are resultant from historic petroleum releases associated to the DNR Madonna Ranger Station property and not from releases sourcing from the High's Store No. 130. Through the course of investigations focused on these two potential leaking underground storage tank (LUST) locations within the community, the MDE-OCP, in directive correspondence dated December 13, 2010, identified High's as the sole responsible party under LUST case #2006-0442-HA. The MDE-OCP's determination was based on a review of "area historic leaking UST cases and available drinking water logs" and from analysis of data collected during the four year activity of LUST case # 2009-0539-HA assigned to the Maryland DNR "Madonna" Ranger Station.

Fundamental to the MDE-OCP's assignment of responsibility for impacted potable wells within the community was the assumption that the High's UST system was positioned hydraulically upgradient and in communication with potable wells along Madonna Road and Greenpeak Road. This interpretation of groundwater flow was determined from groundwater measurements collected from five monitoring wells positioned exclusively within the DNR Ranger Station property.

Since 2005, High's has complied with the requirements of LUST case #2006-0442-HA, which includes quarterly sampling and maintenance requirements for two carbon treatment filtration systems at 3914 Madonna Road and 3921 Greenpeak Road residences, as well as quarterly sampling of 3922 Greenpeak Road and annual sampling of 3908 Madonna Road residences. This effort has been performed at considerable effort and expense to High's, and thus, has required High's to conduct its own independent investigation into the validity of the MDE-OCP's determination of responsibility.

In late 2014, High's instructed GES to conduct a review of MDE-OCP and Harford County Health Department records available through the Public Information Act. From these requests, GES was able to obtain, evaluate and compare potable well completion records, analytical result data and internal correspondence and reporting conducted between the MDE-OCP, HCHD and DNR during the active periods of both the High's and the DNR LUST cases.

In July 2015, High's completed the voluntary installation of six monitoring wells along the backlot of the High's property which abuts the first, presumed downgradient potable well property (3908 Madonna Road) from the High's UST system. The six wells installed in the backlot were configured as three sets of shallow and deep well "clusters" screened across the shallow and deep intervals of the saturated overburden aquifer.

The culmination of High's independent investigative efforts regarding LUST case #2006-0442-HA are presented in the Conceptual Site Model report. A summary of the multiple lines-of-evidence, as gathered through the development of the CSM, are summarized below for the MDE-OCP's consideration:

- Current groundwater quality at the High's property is near background conditions, thus the Site is not considered an ongoing source of dissolved MTBE to community potable wells.
- Groundwater elevation levels from the High's shallow and deep well monitoring network demonstrate a consistent west-northwest (WNW) groundwater flow direction across the Site. Vertical gradient groundwater calculations completed for paired backlot "cluster" wells indicate a

upward gradient that is consistent with a groundwater discharge zone occurring near the High's property boundary, adjacent to the 3908 Madonna Road property.

- This groundwater flow direction for the High's site appears to be controlled by a regional, NW trending topographic drainage feature related the Little Deer Creek watershed.
- The 3908 Madonna Road property abutting the High's backlot has tested non-detect for petroleum constituents, including MTBE, over seven (7) annual events conducted since 2008.
- Well completion reports evaluated by GES indicate that many of the Charbonnet potable wells are constructed with limited casing into the bedrock zone, thus allowing for in-flow of overburden groundwater. Such construction makes these wells susceptible to shallow overburden releases including those from leaking USTs positioned hydraulically upgradient.
- Onsite water quality for the DNR Ranger Station property, located within the community of Charbonnet, was acknowledged by the MDE as impacted with MTBE due "historic on-site petroleum activities". These historic activities likely relate to a 1,000 gallon gasoline UST that was in-place at the site from approximately 1975 to 1996.
- Two of five total DNR monitoring wells (MW-2 and MW-5) were repeatedly tested in exceedance of the MDE MTBE cleanup standard (20 µg/L) during the monitoring period of the facility's former LUST case, from 2010 to 2011.
- Potable well sampling, which has been conducted by both High's and the HCHD since 2005, has identified several MTBE-impacted potable well locations within the community, including the original DNR supply well (replaced in 2012). Correspondingly, High's was assigned responsibility for the impacted, private wells along Madonna Road and Greenpeak Road while the DNR was held responsible for MTBE impacts to its on former supply well.
- The 3914 Madonna Road potable well has demonstrated the highest MTBE concentration among all tested community wells to date. This well is 105 feet from the historical highest MTBE-bearing DNR monitoring well – MW-5. (In comparison, the 3914 Madonna Road is approximately 640 feet from the High's UST area.)
- Through LUST case # 2006-0442-HA, the MDE-OCP has assigned High's as responsible party for impacts occurring at select Charbonnet properties including 3914 Madonna Road based on an apparent south-to-north groundwater direction reported at the DNR site. However, constraints of the narrowly-configured former DNR monitoring well network bias the representation of groundwater flow direction at the facility that cannot necessarily be extrapolated to adjacent properties. Additional monitoring wells should have been installed offsite toward impacted homes prior to the closure of DNR's LUST case #2009-0539-HA in order to establish true groundwater gradient and flow relationships between the DNR facility and surrounding properties.
- Review of surface topography, interpreted depth-to-rock data, historic water levels measurements and well construction specifications as plotted in a cross sectional diagram (B-B') between the High's UST area and the 3914 Madonna Road potable well indicate a low likelihood of northerly groundwater movement between these two area. However, a cross sectional diagram transecting the area between the former DNR property and the impacted homes immediately across the street

and topographically equal to downgradient from the facility (A-A') supports a more realistic occurrence of a west-northwest groundwater flow path through a shared overburden water table.

- A prepared plot of dissolved MTBE distribution among DNR monitoring wells and potable wells immediate to the ranger station, sampled from April to July 2011, presents a distinct distribution pattern emanating from the DNR property.
- Finally, an evaluation of regional watershed topography and morphology identifies a predominantly NW trending topographic high that bisects the area between the High's and DNR property, beginning near Madonna Road. This topographic high is flanked by two WNW and NW trending drainage depressions which appear to have controlled the direction of groundwater flow emanating from both the High's facility and the DNR ranger station. Distribution of dissolved MTBE impacts found at High's site, the DNR facility and within Charbonnet potable supply wells compare favorably to this "roadmap" of overburden groundwater flow.

Based on the evidence presented in the Conceptual Site Model for the High's Store No.130, it is the opinion of GES that impacts of MTBE currently identified in selected potable wells within the community of Charbonnet, as associated to LUST 2006-0442-HA and assigned to Highs of Baltimore, are most likely sourced from historic petroleum releases originating from the DNR Madonna Ranger station property.

As previously noted, current onsite groundwater quality at the High's station has improved to near background-level conditions since the occurrence of a presumed, limited release event at the Site prior to 2005. These noted onsite conditions, as summarized in the most recent groundwater monitoring report compiled for the Site (**Section 2.0**) warrant the resumption of HRGWUA monitoring requirements. Therefore, High's petitions the MDE-OCP to close LUST 2006-0442-HA which includes requirements for the maintenance and monitoring of offsite potable supply wells and their associated GAC POET systems. Pending release from LUST case requirements, High's request's permission to abandon the backlot cluster wells, relinquish ownership of the two GAC POET systems and revert to annual monitoring requirements for MW-1, MW-2, MW-3 and the onsite potable supply well per minimum requirements as stipulated in COMAR 26.10.02.03-4 for HRGWUA designated facilities.

8.0 REFERENCES

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TABLES

Table 1

HISTORICAL MONITORING WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Depth to Bottom (Measured Depth) (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	TPH-GRO (µg/L)	TPH-DRO (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)	p-Isopropyltoluene (µg/L)
GW Clean-up Standards*						**5.00**	**1,000**	**700**	**10,000**	**NL**	**20**	**0.65**	**NL**	**NL**	**NL**	**NL**	**5**	**47**	**47**	**80**	**19**	**NL**
DNR MW-01	04/30/2010	757.14	29.56	727.58	-	ND<5	ND<5	ND<50	ND<5	ND	ND<5	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
	09/17/2010	757.14	35.78	721.36	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	12/22/2010	757.14	37.18	719.96	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	03/15/2011	757.14	36.78	720.36	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	07/06/2011	757.14	31.22	725.92	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	09/30/2011	757.14	33.72	723.42	-	ND<5	ND<5	ND<50	ND<5	ND	ND<5	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
DNR MW-02	04/30/2010	758.00	33.95	724.05	-	ND<5	ND<5	ND<50	ND<5	ND	76.90	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
	09/17/2010	758.00	40.11	717.89	-	ND	ND	ND	ND	ND	46.4	ND	-	-	-	-	-	ND	-	-	-	-
	12/22/2010	758.00	41.49	716.51	-	ND	ND	ND	ND	ND	63.8	ND	-	-	-	-	-	ND	-	-	-	-
	03/15/2011	758.00	40.89	717.11	-	ND	ND	ND	ND	ND	117	ND	-	-	-	-	-	ND	-	-	-	-
	07/06/2011	758.00	35.74	722.26	-	ND	ND	ND	ND	ND	46.4	ND	-	-	-	-	-	ND	-	-	-	-
	09/30/2011	758.00	38.17	719.83	-	ND<5	ND<5	ND<50	ND<5	ND	33.7	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
DNR MW-03	04/30/2010	755.07	37.49	717.58	-	ND<5	ND<5	ND<50	ND<5	ND	ND<5	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
	09/17/2010	755.07	43.91	711.16	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	12/22/2010	755.07	45.71	709.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	01/07/2011	755.07	-	-	-	ND<5	ND<5	ND<50	ND<5	ND	ND<5	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
	03/15/2011	755.07	45.20	709.87	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	07/06/2011	755.07	39.92	715.15	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	09/30/2011	755.07	47.65	707.42	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
DNR MW-04	09/17/2010	757.52	40.15	717.37	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	12/22/2010	757.52	41.41	716.11	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	03/15/2011	757.52	40.83	716.69	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	07/06/2011	757.52	36.59	720.93	-	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	ND	-	-	-	-
	09/30/2011	757.52	37.90	719.62	-	ND<5	ND<5	ND<50	ND<5	ND	ND<5	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
DNR MW-05	09/17/2010	758.54	42.24	716.30	-	ND<5	ND<5	ND<50	ND<5	ND	112	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
	12/22/2010	758.54	43.54	715.00	-	ND	ND	ND	ND	ND	75.6	ND	-	-	-	-	-	ND	-	-	-	-
	03/15/2011	758.54	42.79	715.75	-	ND	ND	ND	ND	ND	110	ND	-	-	-	-	-	ND	-	-	-	-
	07/06/2011	758.54	38.47	720.07	-	ND	ND	ND	ND	ND	217	ND	-	-	-	-	-	ND	-	-	-	-
	09/30/2011	758.54	41.23	717.31	-	ND<5	ND<5	ND<50	ND<5	ND	111	ND<5	ND<5	ND<5	ND<5	ND<50	ND<5	ND<100	ND<500	-	-	-
MW-1	07/13/2005	-	18.71	-	-	ND	2	ND	ND	2	1300	-	-	-	-	-	-	ND<100	ND<100	-	-	-
	12/28/2005	-	21.73	-	-	ND	15	ND	ND	15	1600	-	-	-	-	-	-	1500	ND	-	-	-
	06/15/2006	-	20.66	-	-	ND	ND	ND	ND	ND	1200	-	-	-	-	-	-	900	ND	-	-	-
	01/17/2007	-	21.02	-	-	ND	ND	ND	ND	ND	140	-	-	-	-	-	-	ND	ND	-	-	-

HISTORICAL MONITORING WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Depth to Bottom (Measured Depth) (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	TPH-GRO (µg/L)	TPH-DRO (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)	p-Isopropyltoluene (µg/L)
GW Clean-up Standards*						**5.00**	**1,000**	**700**	**10,000**	**NL**	**20**	**0.65**	**NL**	**NL**	**NL**	**NL**	**5**	**47**	**47**	**80**	**19**	**NL**
MW-1 (cont.)	07/31/2007	-	20.78	-	-	ND	ND	ND	ND	ND	190	-	-	-	-	-	-	ND	350	-	-	-
	01/23/2008	-	24.44	-	-	ND	ND	ND	ND	ND	76	-	-	-	-	-	-	ND	ND	-	-	-
	07/24/2008	-	21.68	-	-	ND	ND	ND	ND	ND	210	-	-	-	-	-	-	300	ND	-	-	-
	01/30/2009	-	25.01	-	33.66	ND	ND	ND	ND	ND	73	-	-	-	-	-	-	ND	260	-	-	-
	07/20/2009	-	23.51	-	33.66	ND	ND	ND	ND	ND	120	-	-	-	-	-	-	ND	ND	-	-	-
	03/01/2010	-	18.80	-	-	ND	ND	ND	ND	ND	130	-	-	-	-	-	-	ND	ND	-	-	-
	07/31/2010	-	19.91	-	33.66	ND	ND	ND	ND	ND	87	-	-	-	-	-	-	230	ND	-	-	-
	01/31/2011	-	23.41	-	33.66	6	ND	ND	ND	6	47	-	-	-	-	-	-	ND	260	-	-	-
	07/26/2011	-	19.79	-	33.66	38	ND	ND	ND	38	25	-	-	-	-	-	-	580	ND	-	-	-
	01/30/2012	-	18.96	-	33.50	27	ND	ND	ND	27	26	-	-	-	-	-	-	200	250	-	-	-
	07/05/2012	96.13	21.76	74.37	33.61	20.10	ND<2	ND<2	ND<4	20.10	17.60	ND<2	12.30	ND<2	ND<2	530	ND<2	ND<100	ND<300	ND<2	ND<2	ND<2
	02/18/2013	96.13	23.18	72.95	33.53	8.41	ND<1.00	ND<1.00	ND<2.00	8.41	20.90	ND<1.00	12.10	ND<1.00	ND<1.00	402	ND<1.00	ND<100	ND<152	ND<1	ND<1	ND<1
	08/20/2013	96.13	22.15	73.98	34.25	2.24	ND<1.00	ND<1.00	ND<2.00	2.24	9.94	ND<1.00	8.26	ND<1.00	ND<1.00	372	ND<1.00	ND<100	ND<300	ND<1 VC	ND<1	ND<1
	03/04/2014	96.13	21.73	74.40	35.70	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	11.2	ND<1.00	12.40	1.18	ND<1.00	153	ND<1.00	ND<100	ND<150	ND<1	ND<1	ND<1
	08/22/2014	96.13	19.36	76.77	35.10	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	8.08	ND<1.00	7.13	ND<1.00	ND<1.00	73	ND<1.00	ND<100	ND<152	ND<1	ND<1	ND<1
	05/26/2015	96.13	22.22	73.91	35.10	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<1.00	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	96.13	23.08	73.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	96.13	24.31	71.82	35.40	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	4.4	ND<0.1	1.4	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	63 J	ND<0.1	ND<0.2	ND<0.1
	04/28/2016	96.13	21.13	75.00	35.55	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	3.8	ND<0.1	0.5 J	ND<0.1	ND<0.1	ND<4	0.1 J	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	10/13/2016	96.13	24.44	71.69	35.70	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	3.1	ND<0.1	0.2 J	ND<0.1	ND<0.1	ND<4.0	0.3 J	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
MW-2	07/13/2005	-	19.64	-	-	ND	1.00	ND	ND	1	9	-	-	-	-	-	-	ND<100	ND<100	-	-	-
	12/28/2005	-	22.85	-	-	9	16	6	26	57	15	-	-	-	-	-	-	300	ND	-	-	-
	06/15/2006	-	21.65	-	-	ND	ND	ND	ND	ND	26	-	-	-	-	-	-	ND	300	-	-	-
	01/17/2007	-	22.03	-	-	ND	ND	ND	ND	ND	42	-	-	-	-	-	-	ND	ND	-	-	-
	07/31/2007	-	21.84	-	-	ND	ND	ND	ND	ND	4	-	-	-	-	-	-	ND	380	-	-	-
	01/23/2008	-	25.50	-	-	ND	ND	ND	ND	ND	2	-	-	-	-	-	-	ND	ND	-	-	-
	07/24/2008	-	22.42	-	-	ND	ND	ND	ND	ND	3	-	-	-	-	-	-	ND	ND	-	-	-
	01/30/2009	-	25.96	-	30.76	ND	ND	ND	ND	ND	4	-	-	-	-	-	-	ND	ND	-	-	-
	07/20/2009	-	24.35	-	30.76	ND	ND	ND	ND	ND	5	-	-	-	-	-	-	ND	ND	-	-	-
	03/01/2010	-	19.97	-	-	ND	ND	ND	ND	ND	4	-	-	-	-	-	-	ND	ND	-	-	-
	07/31/2010	-	20.35	-	30.76	ND	ND	ND	ND	ND	3	-	-	-	-	-	-	ND	ND	-	-	-
	01/31/2011	-	24.14	-	30.76	ND	ND	ND	ND	ND	6	-	-	-	-	-	-	ND	ND	-	-	-
	07/26/2011	-	20.50	-	30.76	ND	ND	ND	ND	ND	4	-	-	-	-	-	-	ND	ND	-	-	-
	01/30/2012	-	19.96	-	31.20	ND	ND	ND	ND	ND	5	-	-	-	-	-	-	ND	ND	-	-	-
	07/05/2012	98.39	22.56	75.83	31.22	ND<2	ND<2	ND<2	ND<4	ND<10	5.18	ND<2	ND<2	ND<2	ND<2	ND<10	ND<2	ND<100	ND<158	ND<2	ND<2	ND<2
	02/18/2013	98.39	24.52	73.87	31.25	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	5.85	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<152	ND<1	ND<1	ND<1
	08/20/2013	98.39	23.01	75.38	31.11	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	3.64	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<300	ND<1 VC	ND<1	ND<1

Table 1

HISTORICAL MONITORING WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Depth to Bottom (Measured Depth) (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	TPH-GRO (µg/L)	TPH-DRO (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)	p-Isopropyltoluene (µg/L)
GW Clean-up Standards*						**5.00**	**1,000**	**700**	**10,000**	**NL**	**20**	**0.65**	**NL**	**NL**	**NL**	**NL**	**5**	**47**	**47**	**80**	**19**	**NL**
MW-2 (cont.)	03/04/2014	98.39	23.15	75.24	31.11	ND<1.00	ND<1.00	ND<1.00	ND<2.0	ND<5.0	5.28	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<150	ND<1	ND<1	ND<1
	08/22/2014	98.39	19.90	78.49	31.37	ND<1.00	ND<1.00	ND<1.00	ND<2.0	ND<5.0	4.36	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<153	ND<1	ND<1	ND<1
	05/26/2015	98.39	23.02	75.37	31.37	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<1.00	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	98.39	23.67	74.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	98.39	24.82	73.57	32.08	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	3.5	ND<0.1	ND<0.1	ND<0.1	0.2 J	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	04/28/2016	98.39	22.06	76.33	32.19	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	4.4	ND<0.1	ND<0.1	ND<0.1	0.2 J	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	10/13/2016	98.39	24.83	73.56	32.49	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	3.8	ND<0.1	ND<0.1	ND<0.1	0.2 J	ND<4.0	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
MW-3	07/13/2005	-	19.79	-	-	ND	1	ND	ND	1	180	-	-	-	-	-	-	600	ND<100	-	-	-
	12/28/2005	-	22.91	-	-	6	12	4	21	43	280	-	-	-	-	-	-	ND	720	-	-	-
	06/15/2006	-	21.70	-	-	ND	ND	ND	ND	ND	330	-	-	-	-	-	-	ND	ND	-	-	-
	01/17/2007	-	22.16	-	-	ND	ND	ND	ND	ND	140	-	-	-	-	-	-	ND	ND	-	-	-
	07/31/2007	-	21.98	-	-	ND	ND	ND	ND	ND	190	-	-	-	-	-	-	ND	ND	-	-	-
	01/23/2008	-	25.46	-	-	ND	ND	ND	ND	ND	69	-	-	-	-	-	-	ND	ND	-	-	-
	07/24/2008	-	22.49	-	-	ND	ND	ND	ND	ND	12	-	-	-	-	-	-	ND	ND	-	-	-
	01/30/2009	-	25.84	-	36.03	ND	ND	ND	ND	ND	3	-	-	-	-	-	-	ND	ND	-	-	-
	07/20/2009	-	24.30	-	36.03	ND	7.00	ND	ND	7	4	-	-	-	-	-	-	ND	260	-	-	-
	03/01/2010	-	20.03	-	-	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	ND	1100	-	-	-
	07/31/2010	-	20.41	-	36.03	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	ND	240	-	-	-
	01/31/2011	-	23.90	-	36.03	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	ND	450	-	-	-
	07/26/2011	-	20.58	-	36.03	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	ND	ND	-	-	-
	01/30/2012	-	20.04	-	31.00	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	ND	230	-	-	-
	07/05/2012	97.79	22.60	75.19	30.95	ND<2	ND<2	ND<2	ND<4	ND<10	3.16	ND<2	ND<2	ND<2	ND<2	ND<10	ND<2	ND<100	261	ND<2	ND<2	ND<2
	02/18/2013	97.79	24.45	73.34	31.40	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	4.66	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	835	ND<1	ND<1	ND<1
	08/20/2013	97.79	23.03	74.76	35.70	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	2.32	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<600	ND<1 VC	ND<1	ND<1
	03/04/2014	97.79	23.21	74.58	34.25	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	3.80	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<153	ND<1	ND<1	ND<1
	08/22/2014	97.79	19.98	77.81	34.93	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<5.00	2.07	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<5.00	ND<1.00	ND<100	ND<152	ND<1	ND<1	ND<1
	05/26/2015	97.79	23.07	74.72	34.93	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<1.00	ND<20	ND<45	0.2 J	ND<0.2	ND<0.1
	08/20/2015	97.79	23.72	74.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	97.79	24.83	72.96	35.10	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	1.5	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	0.2 J	ND<0.2	ND<0.1
	04/28/2016	97.79	22.14	75.65	35.20	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	2.6	ND<0.1	ND<0.1	ND<0.1	0.2 J	ND<4	ND<0.1	ND<20	ND<45	0.1 J	ND<0.2	ND<0.1
	10/13/2016	97.79	24.83	72.96	35.47	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	1.5	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<0.1	ND<20	ND<45	0.2 J	0.2 J	ND<0.1
MW-4	07/30/2015	91.56	19.25	72.31	32.11	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	91.56	19.70	71.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	91.56	21.20	70.36	32.05	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	0.2 J	ND<0.2	ND<0.1
	04/28/2016	91.56	17.42	74.14	32.04	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	0.1 J	ND<0.2	ND<0.1
	10/13/2016	91.56	21.36	70.20	32.13	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<0.1	ND<20	ND<45	0.1 J	ND<0.2	ND<0.1

Table 1

HISTORICAL MONITORING WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Depth to Bottom (Measured Depth) (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	TPH-GRO (µg/L)	TPH-DRO (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)	p-Isopropyltoluene (µg/L)
GW Clean-up Standards*						**5.00**	**1,000**	**700**	**10,000**	**NL**	**20**	**0.65**	**NL**	**NL**	**NL**	**NL**	**5**	**47**	**47**	**80**	**19**	**NL**
MW-4D	07/30/2015	91.2	18.77	72.43	89.60	0.2 J	0.3 J	0.1 J	ND<0.1	0.6 J	2.9	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	49 J	ND<0.1	0.3 J	ND<0.1
	08/20/2015	91.2	19.16	72.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	91.2	20.51	70.69	89.15	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	5.7	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	0.3 J	ND<0.1
	4/28/2016[1]	91.2	16.93	74.27	89.60	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	6.5	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	440	ND<0.1	0.4 J	ND<0.1
	10/13/2016	91.2	20.70	70.50	89.25	0.5 J	ND<0.1	ND<0.1	ND<0.1	0.5 J	7.2	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<0.1	ND<20	300	ND<0.1	ND<0.2	ND<0.1
MW-5	07/30/2015	85.69	14.55	71.14	29.68	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	85.69	15.08	70.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	85.69	16.31	69.38	29.55	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	04/28/2016	85.69	12.65	73.04	29.55	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	10/13/2016	85.69	16.63	69.06	29.48	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	2.2
MW-5D	07/30/2015	85.95	14.90	71.05	84.45	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	0.7	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	85.95	15.03	70.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	85.95	15.73	70.22	83.00	0.4 J	ND<0.1	0.8	0.2 J	1.4 J	1	0.2 J	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	04/28/2016	85.95	12.87	73.08	84.45	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	1.6	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	67 J	ND<0.1	ND<0.2	ND<0.1
	10/13/2016	85.95	16.10	69.85	82.80	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	1.8	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<0.1	ND<20	240	ND<0.1	ND<0.2	ND<0.1
MW-6	07/30/2015	84.99	13.84	71.15	29.45	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	19	ND<0.1	5.6	0.5	0.2 J	ND<4	ND<0.1	38 J	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	84.99	14.34	70.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	84.99	15.49	69.50	29.40	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	11	ND<0.1	7.2	0.7	ND<0.1	ND<4	ND<0.1	24 J	ND<45	ND<0.1	ND<0.2	ND<0.1
	04/28/2016	84.99	11.90	73.09	28.95	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	3.9	ND<0.1	5.3	0.5	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	0.1 J	ND<0.2	ND<0.1
	10/13/2016	84.99	15.76	69.23	28.85	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	2.5	ND<0.1	3.8	0.4 J	ND<0.1	ND<4.0	ND<0.1	ND<20	86 J	0.1 J	ND<0.2	ND<0.1
MW-6D	07/30/2015	85.4	14.19	71.21	75.30	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	5.4	ND<0.1	ND<0.1	ND<0.1	0.2 J	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
	08/20/2015	85.4	14.39	71.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	85.4	15.11	70.29	75.20	0.3 J	ND<0.1	0.8	0.2 J	1.3 J	7.5	0.3 J	ND<0.1	ND<0.1	0.2 J	ND<4	ND<0.1	ND<20	110	ND<0.1	0.3 J	0.2 J
	04/28/2016	85.4	12.20	73.20	75.30	0.2 J	ND<0.1	ND<0.1	ND<0.1	0.2 J	1.1	ND<0.1	0.1 J	ND<0.1	ND<0.1	ND<4	ND<0.1	ND<20	ND<45	ND<0.1	0.3 J	ND<0.1
	10/13/2016	85.4	15.93	69.47	75.30	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<4.0	ND<0.1	ND<20	ND<45	ND<0.1	ND<0.2	ND<0.1
TF-1	01/30/2009	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/20/2009	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/31/2010	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	01/31/2011	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/26/2011	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	01/30/2012	-	12.06	-	12.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/05/2012	-	DRY	-	12.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	02/18/2013	-	DRY	-	12.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1

HISTORICAL MONITORING WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Depth to Bottom (Measured Depth) (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	TPH-GRO (µg/L)	TPH-DRO (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)	p-Isopropyltoluene (µg/L)
GW Clean-up Standards*						**5.00**	**1,000**	**700**	**10,000**	**NL**	**20**	**0.65**	**NL**	**NL**	**NL**	**NL**	**5**	**47**	**47**	**80**	**19**	**NL**
TF-1 (cont.)	08/20/2013	-	DRY	-	12.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	03/04/2014	-	DRY	-	12.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/22/2014	-	DRY	-	12.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/26/2015	-	DRY	-	12.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/19/2016	-	DRY	-	12.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/13/2016	-	DRY	-	12.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TF-2	01/30/2009	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/20/2009	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/31/2010	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	01/31/2011	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/26/2011	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	01/30/2012	-	DRY	-	11.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/05/2012	-	DRY	-	12.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	02/18/2013	-	DRY	-	12.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/20/2013	-	DRY	-	12.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	03/04/2014	-	11.95	-	12.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/22/2014	-	12.01	-	12.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/26/2015	-	DRY	-	12.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	-	DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/19/2016	-	DRY	-	12.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/13/2016	-	DRY	-	12.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TF-3	01/30/2012	-	12.24	-	12.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/05/2012	-	DRY	-	13.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	02/18/2013	-	DRY	-	12.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/20/2013	-	DRY	-	12.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	03/04/2014	-	12.75	-	12.79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/22/2014	-	12.72	-	12.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/26/2015	-	DRY	-	12.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015		DRY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/19/2016	-	DRY	-	12.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/13/2016	-	DRY	-	12.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TF-4	01/30/2012	-	12.43	-	12.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	07/05/2012	-	DRY	-	12.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	02/18/2013	-	12.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1

HISTORICAL MONITORING WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Top of Casing (ft)	Depth to Water (ft)	GW Elevation (ft)	Depth to Bottom (Measured Depth) (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	TPH-GRO (µg/L)	TPH-DRO (µg/L)	Chloroform (µg/L)	Chloromethane (µg/L)	p-Isopropyltoluene (µg/L)
GW Clean-up Standards*						**5.00**	**1,000**	**700**	**10,000**	**NL**	**20**	**0.65**	**NL**	**NL**	**NL**	**NL**	**5**	**47**	**47**	**80**	**19**	**NL**
TF-4 (cont.)	08/20/2013	-	12.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	03/04/2014	-	13.03	-	13.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	08/22/2014	-	13.12	-	13.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	05/26/2015	-	12.87	-	13.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/2015	-	DRY	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
	05/19/2016	-	DRY	-	13.30	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
	10/13/2016	-	DRY	-	13.30	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Please note that the top of casing for the DNR monitoring wells is not tied into the same elevations as the High's monitoring wells.

* GW Cleanup Standards are the Maryland Department of the Environment (MDE) Groundwater Clean-up Standards for Type I and II Aquifers, except for TPH-GRO and TPH-DRO, which are Residential Clean-up Standards for

(Date)[1] = On 4/28/2016 during GES' semi-annual groundwater sampling event technician recorded MW-4D's borehole had collapsed to approximately 15 feet below the top of land surface. GES notified the MDE & corrected by re-grouting on May 19, 2016.

ND<# = Non-detect less than the method detection limit of #
µg/L = Micrograms/Liter
MTBE = Methyl Tertiary Butyl Ether
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
BTEX = Benzene, toluene, ethylbenzene, xylenes
ft = feet
- = No data available usually due to not being sampled.
(cont.) = continued
J = Detected between the Method Detection Limit (MDL) and Reporting Limit (RL); therefore, the result is an estimated value.
NL =No Limit

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
4111 CHARBONNET	03/14/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<0.5	ND<1
3921 GREENPEAK	04/18/2011**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3	12.45	ND<0.5	NA	ND<0.5	ND<0.5	NA	0.57	ND<0.5
	05/17/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	10.9	NA	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	06/25/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	14.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	09/24/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	8.02	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/12/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	12.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	18.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/07/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	12.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/20/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	12.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	11/11/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	12.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	03/11/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	16.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/15/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	19.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	06/20/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	17.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/22/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	20.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
3921 GREENPEAK-INF	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	17.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/10/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	17.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	01/20/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	17	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3
	04/17/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	21	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3
	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	21	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.2 J	ND<0.3
	10/21/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	23	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3
	01/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	24	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	24	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3
	7/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	25	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3
	10/13/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	26	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.1 J	ND<0.3

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3921 GREENPEAK-MID	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/10/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	01/20/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/17/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/21/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	01/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	7/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/13/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3921 GREENPEAK-EFF	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/10/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	01/20/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/17/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/21/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	01/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	7/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1		ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/13/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1		ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3922 GREENPEAK-INF	08/27/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	03/13/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	7.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	04/12/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	15	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	07/22/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	8.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3922 GREENPEAK-INF (cont.)	12/06/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	5.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<0.5	ND<0.5
	03/27/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	6.55	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	06/25/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	7.06	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	09/24/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	4.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/12/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	5.94	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	10.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/17/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	6.66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/20/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	7.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	11/11/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	7.16	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	03/04/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	6.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/15/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	9.24	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	06/13/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	7.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	09/18/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	7.43	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	6.64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/19/2015	ND<0.1	0.2 J	ND<0.1	ND<0.1	0.2 J	8.3	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	05/26/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	8.5	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	7.7	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	11/19/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	7.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	01/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	8.7	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	7.9	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	7/28/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	7.5	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/13/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	7.6	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3923 GREENPEAK	04/18/2011**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	0.57	ND<0.5	NT	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5
3924 GREENPEAK	04/12/2011**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	0.59	ND<0.5	NT	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5
3908 MADONNA	08/27/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
	4/12/2011**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<0.5	ND<0.5
	03/27/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	10/30/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	13.4
	02/19/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	02/15/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3911 MADONNA	08/27/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<0.5	ND<3
3914 MADONNA-INF	04/29/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	41	ND<0.5	NA	ND<0.5	ND<0.5	NA	ND<0.5	ND<0.5
	06/06/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	58.1	ND<0.5	NA	ND<0.5	ND<0.5	NA	ND<0.5	ND<0.5
	08/27/2008	NT	NT	NT	NT	NT	57	NT	NT	NT	NT	NT	NT	NT
	09/11/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	70	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	10/28/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	46	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	11/25/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	66	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	12/28/2008	NT	NT	NT	NT	NT	46	NT	NT	NT	NT	NT	NT	NT
	12/30/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	40	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	03/13/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	47	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	06/25/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	34	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	08/10/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	40	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	11/02/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	35	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	02/22/2010	NT	NT	NT	NT	NT	3.4	NT	NT	NT	NT	NT	NT	NT
	07/28/2010	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	72	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	01/07/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	36.5	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	04/12/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	42	ND<0.5	ND<0.5	ND<0.5	ND	8.4	NT	ND<0.5
	07/22/2011	NT	NT	NT	NT	NT	43.8	NT	NT	NT	NT	NT	NT	NT
	12/06/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	03/27/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	30.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3914 MADONNA-INF (cont.)	06/25/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	37.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	09/24/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	10/17/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	30.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/12/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	33	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	44.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/07/2013	ND<0.5	0.53	ND<0.5	ND<1	0.53	24.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/20/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	36	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/09/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	45	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	03/04/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	30	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/15/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	29.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/22/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	38	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	42.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/26/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	29	ND<0.2	ND<0.1	ND<0.1	0.1 J	ND<2.5	ND<0.1	ND<0.3
	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	26	ND<0.2	ND<0.1	ND<0.1	0.1 J	ND<2.5	ND<0.1	ND<0.3
	11/19/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	30	ND<0.2	ND<0.1	ND<0.1	0.1 J	ND<2.5	ND<0.1	ND<0.3
	03/09/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	24	ND<0.2	ND<0.1	ND<0.1	0.1 J	ND<2.5	ND<0.1	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	25	ND<0.2	ND<0.1	ND<0.1	ND<0.1	6.1 J	ND<0.1	ND<0.3
	8/16/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	22	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/18/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	12	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3914 MADONNA-MID	09/11/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	10/28/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	11/25/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	12/30/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	03/13/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	06/25/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	18	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	08/10/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	45	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	11/02/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	0.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3914 MADONNA-MID	02/22/2010	NT	NT	NT	NT	NT	0.6	NT	NT	NT	NT	NT	NT	NT
(cont.)	07/28/2010	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	0.4	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	01/07/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	04/12/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	1.7	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	07/22/2011	NT	NT	NT	NT	NT	2.2	NT	NT	NT	NT	NT	NT	NT
	12/06/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	1.1	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	03/27/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	06/25/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	1.62	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	09/24/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	27	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	10/17/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/12/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/07/2013	ND<0.5	0.61	ND<0.5	ND<1	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/20/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/09/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	03/04/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/15/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	1.04	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/22/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/26/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	11/19/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	0.2 J	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	03/09/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	8/16/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/18/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3914 MADONNA-EFF	08/27/2008	NT	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3914 MADONNA-EFF (cont.)	09/11/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	10/28/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	11/25/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	12/30/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	03/13/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	06/25/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	08/10/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	11/02/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	02/22/2010	NT	NT	NT	NT	NT	1.9	NT	NT	NT	NT	NT	NT	NT
	07/28/2010	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	01/07/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	04/12/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	07/22/2011	NT	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT
	12/06/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	30.7	ND<0.5	ND<0.5	ND<0.5	ND	ND	NT	ND<0.5
	01/30/2012	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	NT	ND<0.5
	03/27/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	06/25/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	09/24/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	10/17/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/12/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/07/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/20/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	12/09/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	03/04/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	05/15/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	08/22/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	11/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3914 MADONNA-EFF	05/26/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
(cont.)	07/30/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	11/19/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	03/09/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	8/16/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
	10/18/2016	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
3919 MADONNA-INF	04/12/2005**	ND	ND	ND	ND	ND	16.2	NT	NT	NT	NT	NT	NT	NT
HA-70-0551	06/24/2005**	ND	ND	ND	ND	ND	10.8	NT	NT	NT	NT	NT	NT	NT
	11/16/2007**	ND	ND	ND	ND	ND	20.7	NT	NT	NT	NT	NT	NT	NT
	03/21/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	23.3	ND<0.5	NT	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5
	07/11/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	22.4	ND<0.5	NT	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5
	06/01/2009**	ND	ND	ND	ND	ND	20.5	ND	ND	ND	ND	ND	ND	ND
	07/10/2009**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	26.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	08/21/2009**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	21.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	09/15/2009**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	25.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	04/30/2010**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	1.59	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	09/17/2010**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	15.1	ND	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	12/22/2010**	ND	ND	ND	ND	ND	10.5	ND	NT	NT	NT	NT	NT	NT
	01/07/2011**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	10.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	04/18/2011**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	27.76	ND<0.5	ND<0.5	NT	ND<0.5	NT	ND<0.5	ND<0.5
	07/06/2011**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
	09/30/2011**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND	27.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
3919 MADONNA-MID	9/15/2009**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	04/30/2010**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
	09/17/2010**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3919 MADONNA-MID	12/22/2010**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
(cont.)	01/07/2011**	NT	NT	NT	NT	NT	ND<0.5	NT	NT	NT	NT	NT	NT	NT
	04/18/2011**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	07/06/2011**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
	90/30/2011**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
3919 MADONNA-EFF	09/15/2009**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	04/30/2010**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
	09/17/2010**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
	12/22/2010**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
	01/07/2011**	NT	NT	NT	NT	NT	ND<0.5	NT	NT	NT	NT	NT	NT	NT
	04/18/2011**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	07/06/2011**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
	09/30/2011**	ND	ND	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT
3919 MADONNA (NEW)	03/16/2012**	ND<0.5	ND<0.5	ND<0.5	ND<1.0	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<10	ND<0.5	ND<0.5
HA-95-2222	02/06/2013**	ND	10.74	ND	ND	10.74	ND	ND	ND	ND	ND	ND	ND	ND
	10/30/2014	ND<0.5	0.760	ND<0.5	ND<1.5	0.760	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
3922 MADONNA	06/06/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	0.89	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	1.39	ND<1
	04/14/2011**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	1.82	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	0.88	ND<0.5
	03/27/2012	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	1.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	3.03	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	0.64	ND<0.5
	03/25/2014	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	2.72	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	0.58	ND<0.5
	05/26/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	5.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<0.1	0.5	ND<0.3
	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	6.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	0.5	ND<0.3
3923 MADONNA	08/19/2008**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	0.59	NT

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
3928 MADONNA	04/14/2011**	ND<0.1	ND<0.1	ND<0.1	ND<1.5	ND<3.0	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5
4065 NORRISVILLE	04/29/2008	NT	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT
	05/16/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5	NT	NT	NT
	06/27/2008**	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	NT	ND<0.5	ND<0.5	NT	NT	NT
	07/08/2008	NT	NT	NT	NT	NT	ND	NT	NT	NT	NT	NT	NT	NT
4101 NORRISVILLE (ONSITE SUPPLY	06/15/2005	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	NT	NT	NT	NT	NT	NT
	12/28/2005	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	NT	NT	NT	NT	NT	NT
	06/15/2006	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	01/17/2007	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	07/31/2007	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	01/23/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	07/24/2008	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<0.5	ND<1
	01/30/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	02/18/2009	NT	NT	NT	NT	NT	1.99	NT	NT	NT	NT	NT	NT	NT
	07/20/2009	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	03/01/2010	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	07/31/2010	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	01/31/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	04/14/2011	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA
	05/02/2011	NT	NT	NT	NT	NT	3.04	NT	NT	NT	NT	NT	NT	NT
	07/26/2011	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	NT	NT
	01/30/2012	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<3.0	ND<0.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5	ND<0.5	ND<0.5
	02/18/2013	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	03/04/2014	ND<0.5	1.04	ND<0.5	ND<1	1.04	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.5	ND<0.5	ND<0.5
	07/08/2015	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.4	ND<0.1	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3

Table 2

HISTORICAL POTABLE WELL ANALYTICAL DATA SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Monitoring Well	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Total BTEX (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Diisopropyl ether (µg/L)	Ethyl tert-butyl ether (µg/L)	Tert-amyl methyl ether (µg/L)	Tert-Butyl Alcohol (µg/L)	Tetrachloroethene (µg/L)	Methylene Chloride (µg/L)
MDE GW Clean-up Standards*		**5**	**1,000**	**700**	**10,000**	**NL**	**20**	**NL**	**NL**	**NL**	**NL**	**NL**	**5**	**6**
4101 NORRISVILLE (ONSITE SUPPLY WELL) (cont.)	04/28/2016	ND<0.1	ND<0.1	ND<0.1	NA	ND<0.6	0.1 J	ND<0.2	ND<0.1	ND<0.1	ND<0.1	ND<2.5	ND<0.1	ND<0.3
4105 NORRISVILLE	09/07/1993**	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	ND
	10/25/1995**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	07/24/1996**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	08/18/2009**	NT	NT	NT	NT	NT	1.99	NT	NT	NT	NT	NT	NT	NT
	05/02/2011**	NT	NT	NT	NT	NT	3.04	NT	NT	NT	NT	NT	NT	NT

Notes:

*Groundwater (GW) Cleanup Standards are the Maryland Department of the Environment (MDE) GW Clean-up Standards for Type I and II Aquifers.

ND<# = Less than the method detection limit of #
ND = Non-Detect
µg/L = Micrograms/Liter
MTBE = Methyl Tertiary Butyl Ether
BTEX = Benzene, toluene, ethylbenzene, xylenes
- = No data available
NA = Not Analyzed
NT = Not Tabulated
J = Detected between the Method Detection Limit (MDL) and the Reporting Limit (RL); therefore, this is an estimated value.
NL = No Limit
(Date)** = Analytical Data for the particular date was obtained from Harford County's Health Department.
(cont.) = (continued)

Table 3

POTABLE WELL SPECIFICATIONS SUMMARY

High's Store No. 130
4101 Norrisville Road
Madonna, MD

Address	Map	Grid	Parcel	Lot	Permit #	Est. Surface Elev. (ft AMSL)	Install Date	Age	Well Type	Depth of well (fbg)	Est. Bottom of Well Elev. (ft AMSL)	Type of Casing	Depth of Casing (fbg)	Est. Bottom of Casing Elev. (ft AMSL)	Bottom Depth to Grout (fbg)	Est. Bottom of Grout Elev. (ft AMSL)	Depth to Top of Rock (fbg)	Est. Top of Rock Elev. (ft AMSL)	Type of Interval Below Casing (Screen or Borehole)	Pentration of Casing into Rock (ft)	Depth to GW (fbg)	Est. GW Elev. (ft AMSL)	Sustained Pumping Rate (GPM)	Time Pumped (hrs)	Specific Capacity (gallons per minute per foot)	Driller's Notes (from Well Completion Reports)
3908 Madonna	0023	0004D	0243	2	HA-78-5366	748	1/9/78	38	Potable	140	608	steel	100	648	98	650	96	652	open hole	4	47	701	2	6	0.04	-
3911 Madonna	0023	0004D	0064	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3914 Madonna	0023	0004D	0242	1	HA-73-5767	752	8/24/79	37	Potable	148	604	steel	106	646	90	662	95	657	open hole	11	41	711	illegible	6	-	Initial dry hole noted to 300' 30' off final well location, double-cased (90 & 106')
3919 Madonna Rd. - Original	0023	0004D	0063	-	HA-70-0551	750	9/1/70	42	Potable	200	550	steel	80	670	80	670	78	672	open hole	2	44	706	4	8	0.03	-
3919 Madonna Rd. - Replaceme	0023	0004D	0063	-	HA-95-2222	753	3/16/12	4	Potable	500	253	PVC 6"	110	643	109	644	89	664	open hole	20	37	716	16.6	3	0.14	Initial casing set at 82' with 2 gpm (between 82' to 109') then went deeper to 435'; found water and decided to reset casing at 109'
3922 Madonna Rd.	0023	0004D	0056	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3923 Madonna Rd.	0023	0004D	0116	-	-	749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3928 Madonna Rd.	0023	0004D	0113	-	-	751	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3929 Madonna Rd.	0023	0004D	0237	-	-	748	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3934 Madonna Rd.	0023	0004D	0114	-	-	746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3921 Greenpeak Rd. - Original	0023	0004D	0219	13	HA-73-3707	739	4/19/77	39	Potable	150	589	steel	82	657	82	657	73	666	open hole	9	34	705	4	6	0.33	-
3921 Greenpeak - Overdrilled	0023	0004D	0219	13	HA-73-5189	739	9/1/78	38	Potable	400	339	steel	82	657	82	657	73	666	open hole	9	54	685	3	4	0.01	Well extended from 150 to 400' approx. 16 months after initial install
3922 Greenpeak Rd.	0023	0004D	0219	11	illegible	735	4/21/77	39	Potable	175	560	steel	65	670	65	670	63	672	open hole	2	30	705	3	6	0.15	-
3923 Greenpeak Rd.	0023	0004D	0219	14	illegible	736	4/27/77	39	Potable	200	536	steel	68	668	68	668	65	671	open hole	3	40	696	5	6	0.26	Water at 93'-180' interval & @ 135'
3924 Greenpeak Rd.	0023	0004D	0219	12	HA-94-1241	729	9/25/96	20	Potable	180	549	steel	98	631	98	631	93	636	open hole	5	42	687	10	3	0.10	-
3925 Greenpeak Rd.	0023	0004D	0219	15	HA-73-2982	731	6/24/76	40	Potable	150	581	steel	51	680	51	680	49	682	open hole	2	45	686	5	6	0.2	Green Rock at 49 @ sets casing (51') but no water, water appears in Grey Rock @ 130'
4065 Norrisville Rd.	0023	0004D	0252	PAR 1	-	751	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4100 Norrisville Rd.	0023	0004D	0132	-	HA-92-0241	748	6/23/92	24	Potable	42	706	PVC 4"	42	706	11	737	na	-	4" - 020 slot PVC	-	23	725	3	1	0.17	-
4101 Norrisville Rd. (High's #130 Supply Well)	0023	0004D	0132	5	HA-94-1159	749	8/2/96	20	Potable	380	369	PVC 6"	68	681	67	682	65	684	open hole	2	5	744	11	3	0.61	Water bearing intervals noted for 65'-92, 92'-96, 136'-355', 355'-380'
4105 Norrisville Rd	0023	0004D	0200	4	HA-81-2975	748	8/12/86	30	Potable	300	448	steel	75	673	75	673	75	673	open hole	0	22	726	3.52	6	0.02	Shopping center to west of High's - First attempt to 375' was dry. Hole backfilled. Original hole presumed close by. Water on second hole noted for 75'-375' interval
4115 Norrisville Rd	0023	0004D	0132	3	-	735	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4100 Charbonnet Dr.	0023	0004D	0167	-	HA-73-0641	724	4/23/73	43	Potable	200	524	steel	40	684	38	686	32	692	-	8	31	693	3	1	0.02	Alternating gray & brown "shale" with water noted at 71'-82' & 160' -163'
4102 Charbonnet Dr.	0023	0004D	0219	2	HA-73-4727	715	3/24/78	38	Potable	250	465	steel	63	652	63	652	62	653	open hole	1	43	672	3	6	0.04	Water at 62' when grey rock noted
4104 Charbonnet Dr.	0023	0004D	0219	4	HA-92-0214	704	6/1/92	24	Potable	300	404	steel	10	694	30	674	85	619	4" - 020 slot PVC	-	21	683	5	3	0.04	Initial dry hole noted to 600', backfilled from 30' to 600' with drill cuttings, moves 26' off to east for final well location, water noted at 37' & 74'
4106 Charbonnet Dr.	0023	0004D	0219	5	HA-94-3594	721	3/23/00	16	Potable	500	221	steel	80	641	79	642	76	645	open hole	3	36	685	2.39	2	0.01	Water at 76' when grey rock noted
4107 Charbonnet Dr.	0023	0004D	0219	10	illegible	725	4/25/77	39	Potable	150	575	steel	74	651	74	651	70	655	open hole	4	30	695	5	6	0.24	Water at 70' when grey rock noted
4108 Charbonnet Dr.	0023	0004D	0219	6	HA-73-4438	722	11/14/77	39	Potable	350	372	steel	95	627	95	627	93	629	open hole	2	32	690	2	6	0.01	Water at 90' when grey rock noted
4109 Charbonnet Dr.	0023	0004D	0219	9	HA-73-1446	704	11/10/77	39	Potable	200	504	steel	93	611	93	611	90	614	open hole	3	37	667	4	6	0.07	-
4110 Charbonnet Dr.	0023	0004D	0219	7	HA-73-4434	722	11/2/77	39	Potable	200	522	steel	93	629	93	629	90	632	open hole	3	44	678	4	6	0.13	Water at 90' when grey rock noted, interval of "mud & clay" noted between 35' - 90', likely saprolite
4111 Charbonnet Dr.	0023	0004D	0219	8	HA-73-3709	712	6/8/77	39	Potable	300	412	steel	84	628	84	628	82	630	open hole	2	15	697	2	6	0.01	Water at 82' when grey rock noted
							Average	33.0		246	486		75.4		73.9		75.9			4.8	34.2		4.8		0.12	
							Median	38.5		200	523		80.0		79.5		76.0			3.0	36.5		4.0		0.07	

Notes:

Est. = Estimated
AMSL = (Elevation) Above Mean Sea Level
fbg = feet below grade
ft or (#)' = feet
PVC = Polyvinyl chloride (piping)
(#)" =inches
- = No Data Available
GW = Groundwater
GPM = gallons per minute

Table 4

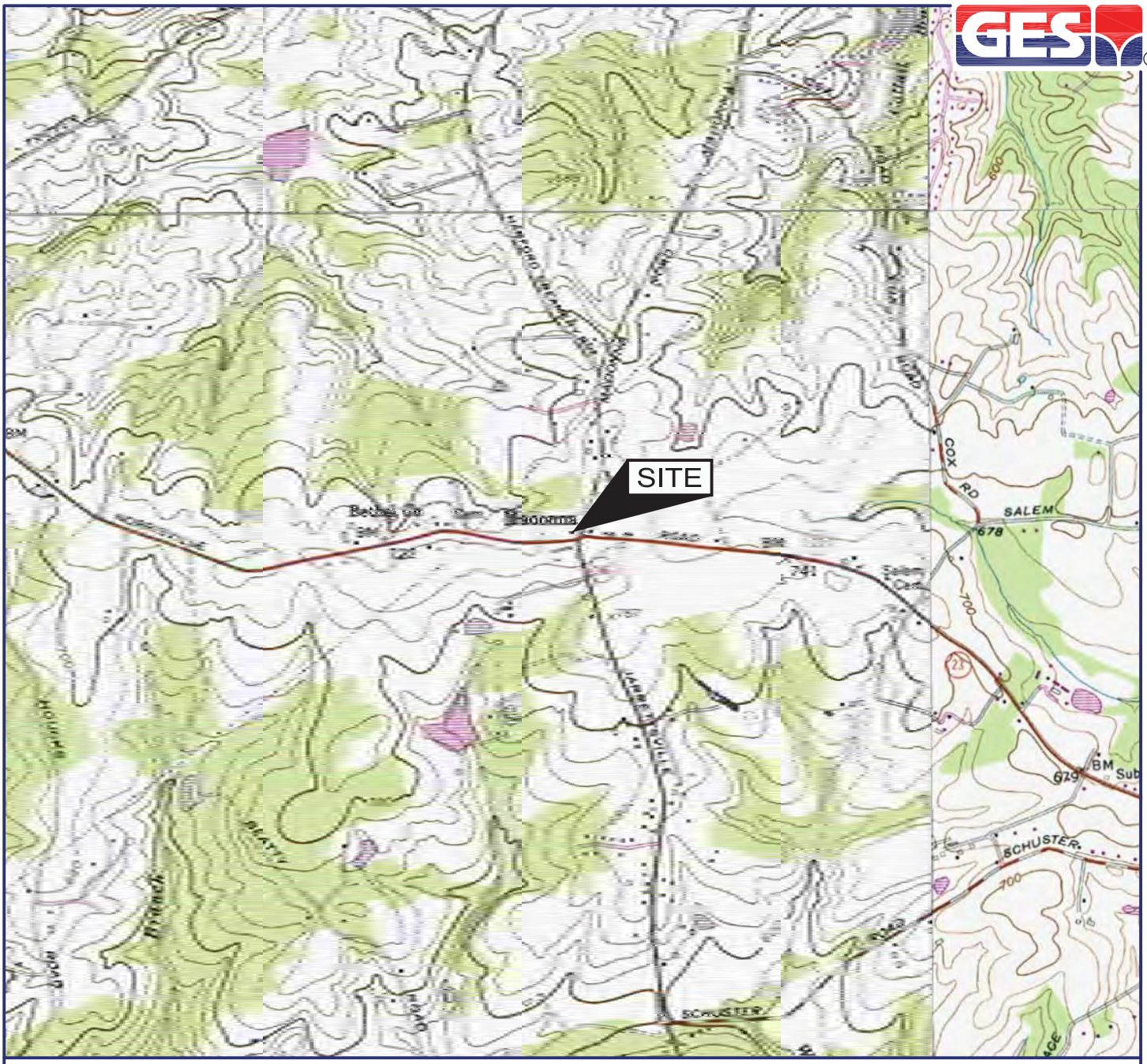
MONITORING WELL SPECIFICATIONS SUMMARY

High's Store #130
4101 Norrisville Road
Madonna, MD

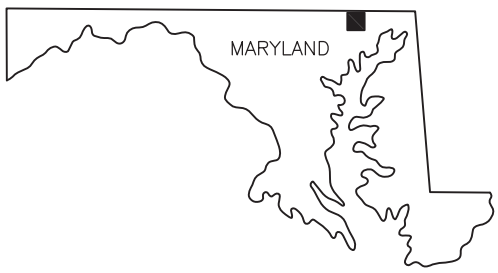
Monitoring Well	Well Permit #	Date Well Completed	Well Diameter (inches)	TOS from Ground Surface (feet)	Total Depth of Well (feet)
DNR MW-01	HA-95-1603	Apr-13	2	30	60
DNR MW-02	HA-95-1604	Apr-13	2	50	70
DNR MW-03	HA-95-1605	Apr-13	2	43	63
DNR MW-04	HA-95-1816	Sep-13	2	40	70
DNR MW-05	HA-95-1817	Sep-13	2	40	70
MW-1	HA-94-7037	6/27/2005	4	10	33
MW-2	HA-94-7038	6/27/2005	4	8	38
MW-3	HA-94-7039	6/27/2005	4	9	40
MW-4	HA-15-0087	7/2/2015	2	12	32
MW-4D	HA-15-0086	7/1/2015	2	83	93
MW-5	HA-15-0085	7/9/2015	2	12	30
MW-5D	HA-15-0084	7/8/2015	2	75	85
MW-6	HA-15-0083	7/14/2015	2	12	30
MW-6D	HA-15-0082	7/13/2015	2	65	75

Notes:
- = Not available
BOS = Bottom of screen
TOS = Top of screen

FIGURES



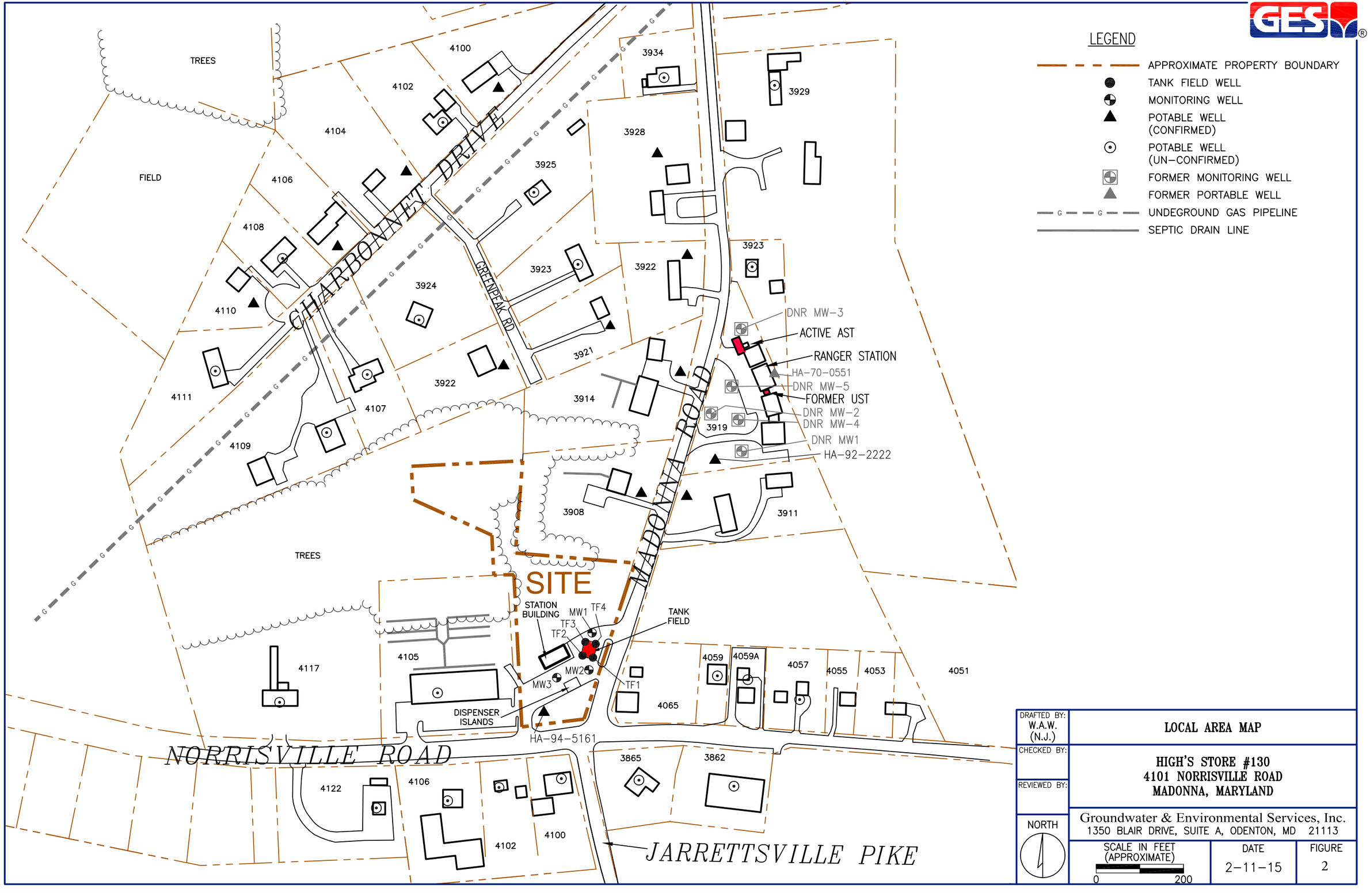
SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1974
PHOENIX, MARYLAND
CONTOUR INTERVAL = 20'



QUADRANGLE LOCATION

DRAFTED BY: B.C.S. (N.J.)	SITE LOCATION MAP
CHECKED BY: DR	HIGH'S STORE #130 4101 NORRISVILLE ROAD MADONNA, MARYLAND
REVIEWED BY: GR	Groundwater & Environmental Services, Inc. 1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113
NORTH	SCALE IN FEET: 0 2000 / DATE: 4-9-12 / FIGURE: 1

L:\Projects\Carroll Fuel\Active\MD_Madonna _4101 Norrisville Rd_Highs\Graphics



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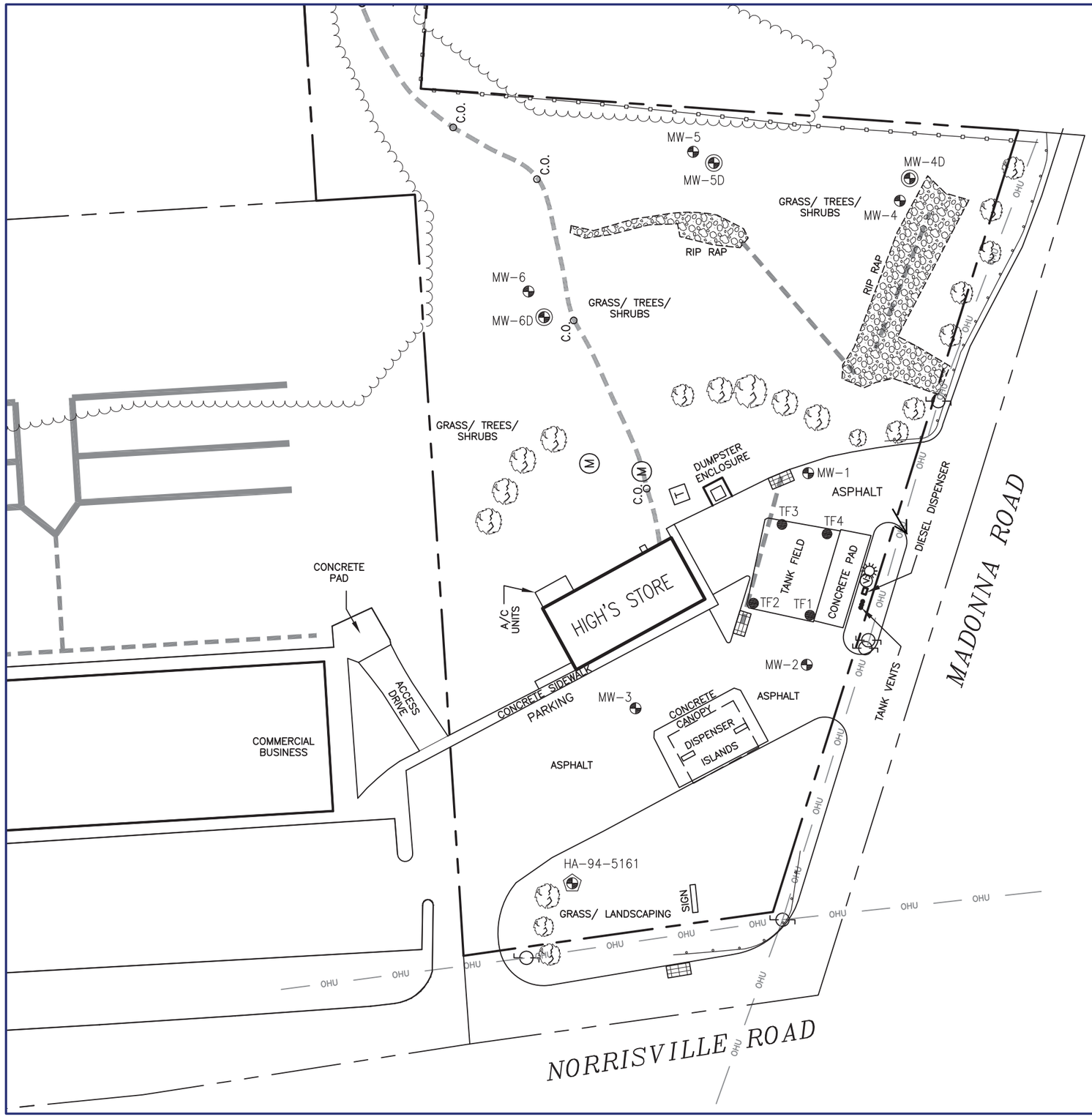

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GUARDRAIL
- WOOD FENCE
- TREE LINE
- CATCH BASIN
- UTILITY POLE
- SANITARY SEWER UTILITY MANHOLE
- SANITARY SEWER CLEANOUT
- PAD MOUNTED TRANSFORMER
- AREA LIGHT
- VACUUM STATION
- MONITORING WELL
- DEEP MONITORING WELL
- TANK FIELD WELL
- POTABLE WATER SUPPLY WELL (CONFIRMED)
- OVERHEAD UTILITY LINES
- WASTE WATER LINE TO DRAIN AREA
- SEPTIC DRAIN LINE

DRAFTED BY: W.A.W. (N.J.)	SITE MAP
CHECKED BY: D.R.	HIGH'S STORE #130 4101 NORRISVILLE ROAD MADONNA, MARYLAND
REVIEWED BY: P.R.	Groundwater & Environmental Services, Inc. 1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113
NORTH	SCALE IN FEET: 0 APPROXIMATE 50 / DATE: 8-20-15 / FIGURE: 3

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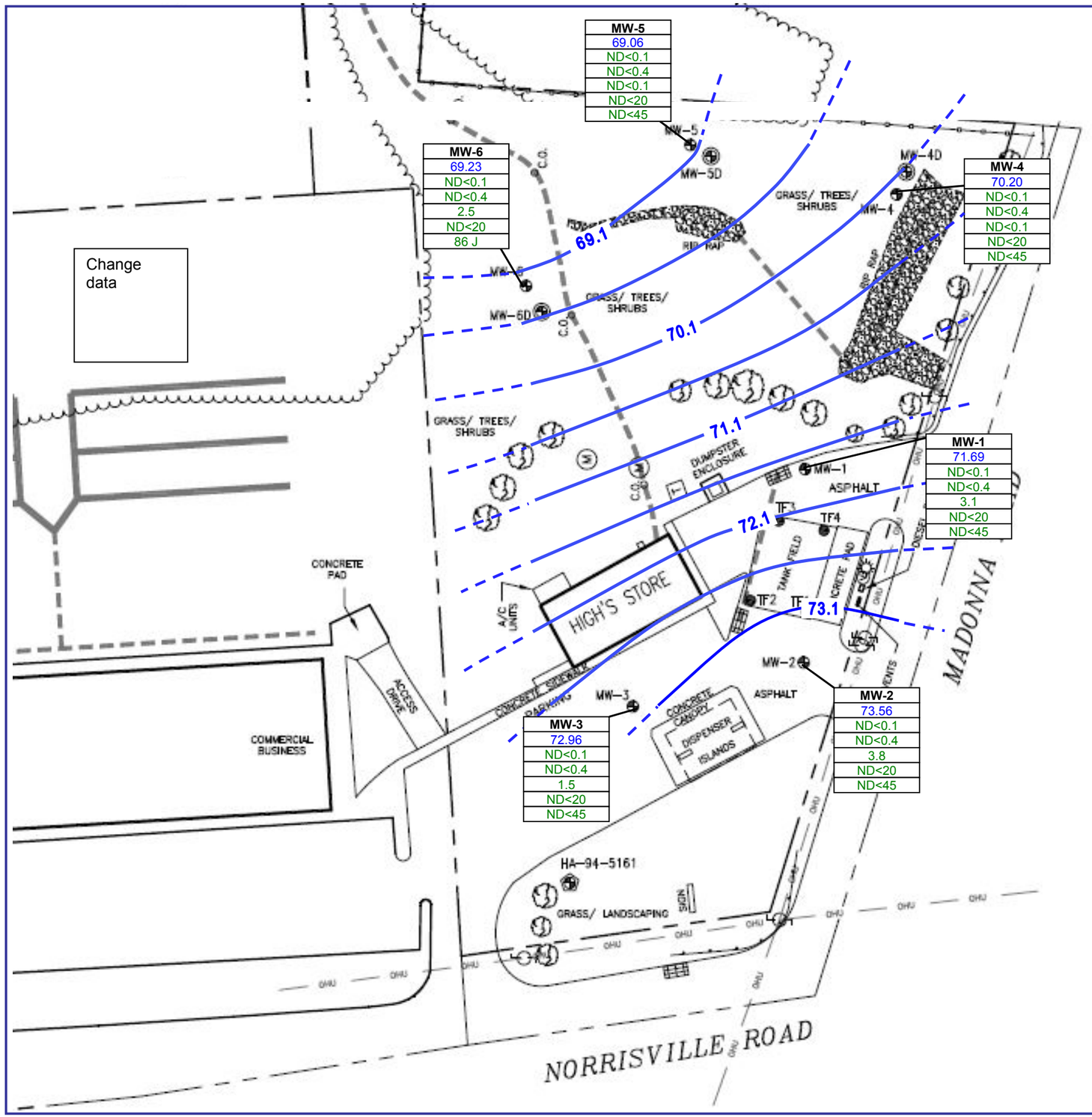

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GUARDRAIL
- WOOD FENCE
- TREE LINE
- CATCH BASIN
- UTILITY POLE
- SANITARY SEWER UTILITY MANHOLE
- SANITARY SEWER CLEANOUT
- PAD MOUNTED TRANSFORMER
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- VACUUM STATION
- MONITORING WELL
- DEEP MONITORING WELL
- TANK FIELD WELL
- POTABLE WATER SUPPLY WELL (CONFIRMED)
- OHU — OVERHEAD UTILITY LINES
- WASTE WATER LINE TO DRAIN AREA
- SEPTIC DRAIN LINE

Sample ID	WELL IDENTIFICATION
GW Elevation	GROUNDWATER ELEVATION (Feet)
Benzene	BENZENE CONCENTRATION (µg/L)
Total BTEX	Total BTEX (µg/L)
MTBE	MTBE CONCENTRATION (µg/L)
TPH-GRO	TPH-GRO CONCENTRATIONS (µg/L)
TPH-DRO	TPH-DRO CONCENTRATIONS (µg/L)

µg/L	MICROGRAMS PER LITER
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
MTBE	METHYL TERT-BUTYL ETHER
TPH	TOTAL PHASE HYDROCARBONS
GRO	GASOLINE RANGE ORGANICS
ND< (#)	WHERE AN ANALYTE IS NOT DETECTED, THE DETECTIONs LIMIT IS GIVEN
	GROUNDWATER CONTOUR INTERVAL (feet)
	INFERRED CONTOUR INTERVAL (feet)
J	RESULT IS BETWEEN THE DETECTION & REPORTING LIMITS; THEREFORE, RESULT IS ESTIMATED.

DRAFTED BY: LK

CHECKED BY: PR

REVIEWED BY:

NORTH

GROUNDWATER MONITORING MAP
SHALLOW SERIES WELLS, OCTOBER 13, 2016

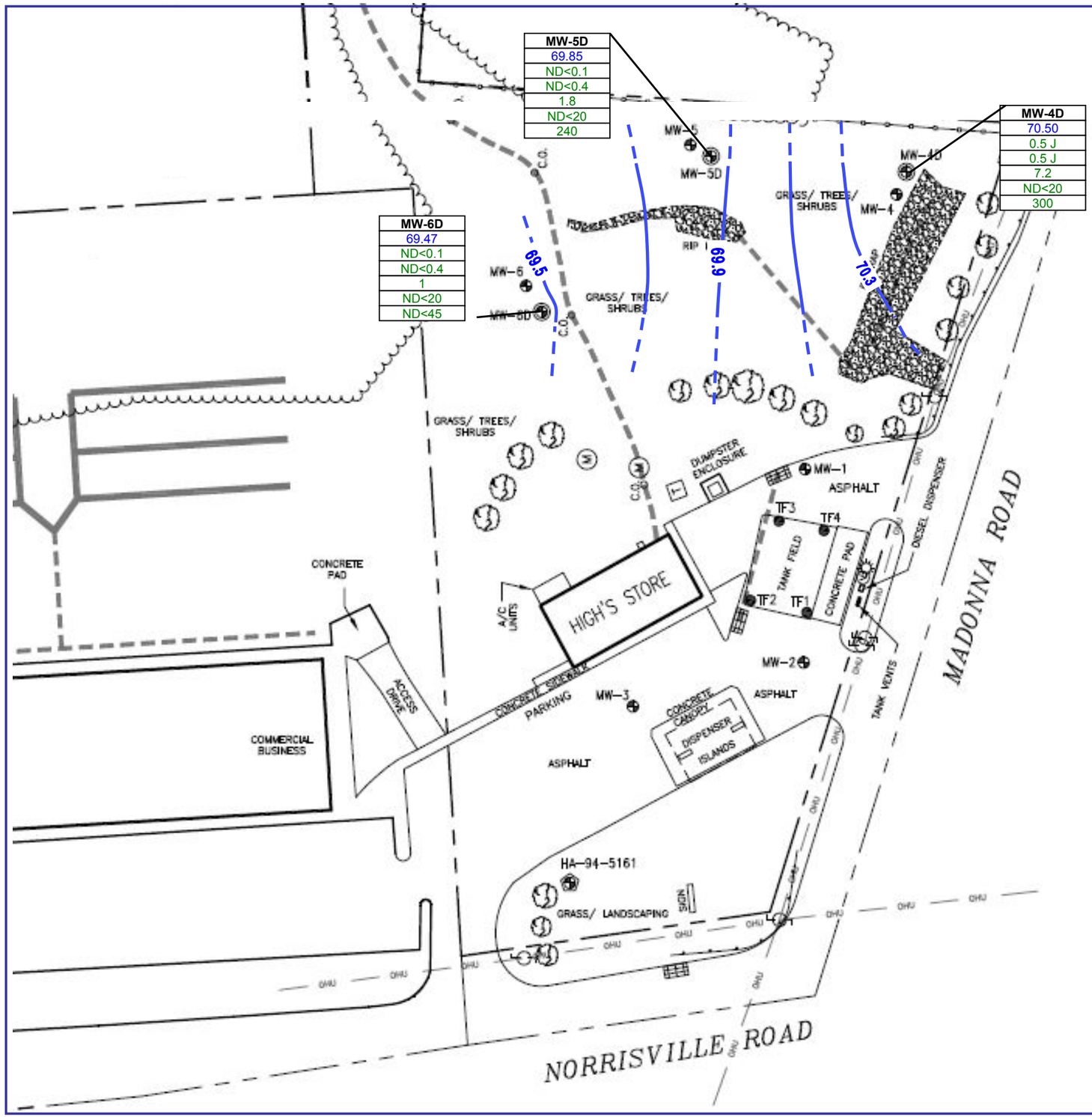
HIGH'S STORE #130
4101 NORRISVILLE ROAD
MADONNA, MARYLAND

Groundwater & Environmental Services, Inc.
1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113

SCALE IN FEET
0 APPROXIMATE 50

DATE
11-14-2016

FIGURE
4



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GUARDRAIL
- WOOD FENCE
- TREE LINE
- CATCH BASIN
- UTILITY POLE
- SANITARY SEWER UTILITY MANHOLE
- SANITARY SEWER CLEANOUT
- PAD MOUNTED TRANSFORMER
- AREA LIGHT
- VACUUM STATION
- MONITORING WELL
- DEEP MONITORING WELL
- TANK FIELD WELL
- POTABLE WATER SUPPLY WELL (CONFIRMED)
- OHU — OVERHEAD UTILITY LINES
- WASTE WATER LINE TO DRAIN AREA
- SEPTIC DRAIN LINE

Sample ID	WELL IDENTIFICATION
GW Elevation	GROUNDWATER ELEVATION (Feet)
Benzene	BENZENE CONCENTRATION (µg/L)
Total BTEX	Total BTEX (µg/L)
MTBE	MTBE CONCENTRATION (µg/L)
TPH-GRO	TPH-GRO CONCENTRATIONS (µg/L)
TPH-DRO	TPH-DRO CONCENTRATIONS (µg/L)

µg/L	MICROGRAMS PER LITER
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
MTBE	METHYL TERT-BUTYL ETHER
TPH	TOTAL PHASE HYDROCARBONS
GRO	GASOLINE RANGE ORGANICS
ND< (#)	WHERE AN ANALYTE IS NOT DETECTED, THE REPORTING LIMIT IS GIVEN

- GROUNDWATER CONTOUR INTERVAL (feet)
- INFERRED CONTOUR INTERVAL (feet)

DRAFTED BY: LK

CHECKED BY: PR

REVIEWED BY:

NORTH

GROUNDWATER MONITORING MAP, DEEP D-SERIES WELLS, OCTOBER 13, 2016

HIGH'S STORE #130
4101 NORRISVILLE ROAD
MADONNA, MARYLAND

Groundwater & Environmental Services, Inc.
1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113

SCALE IN FEET
0 APPROXIMATE 50

DATE
11-14-2016

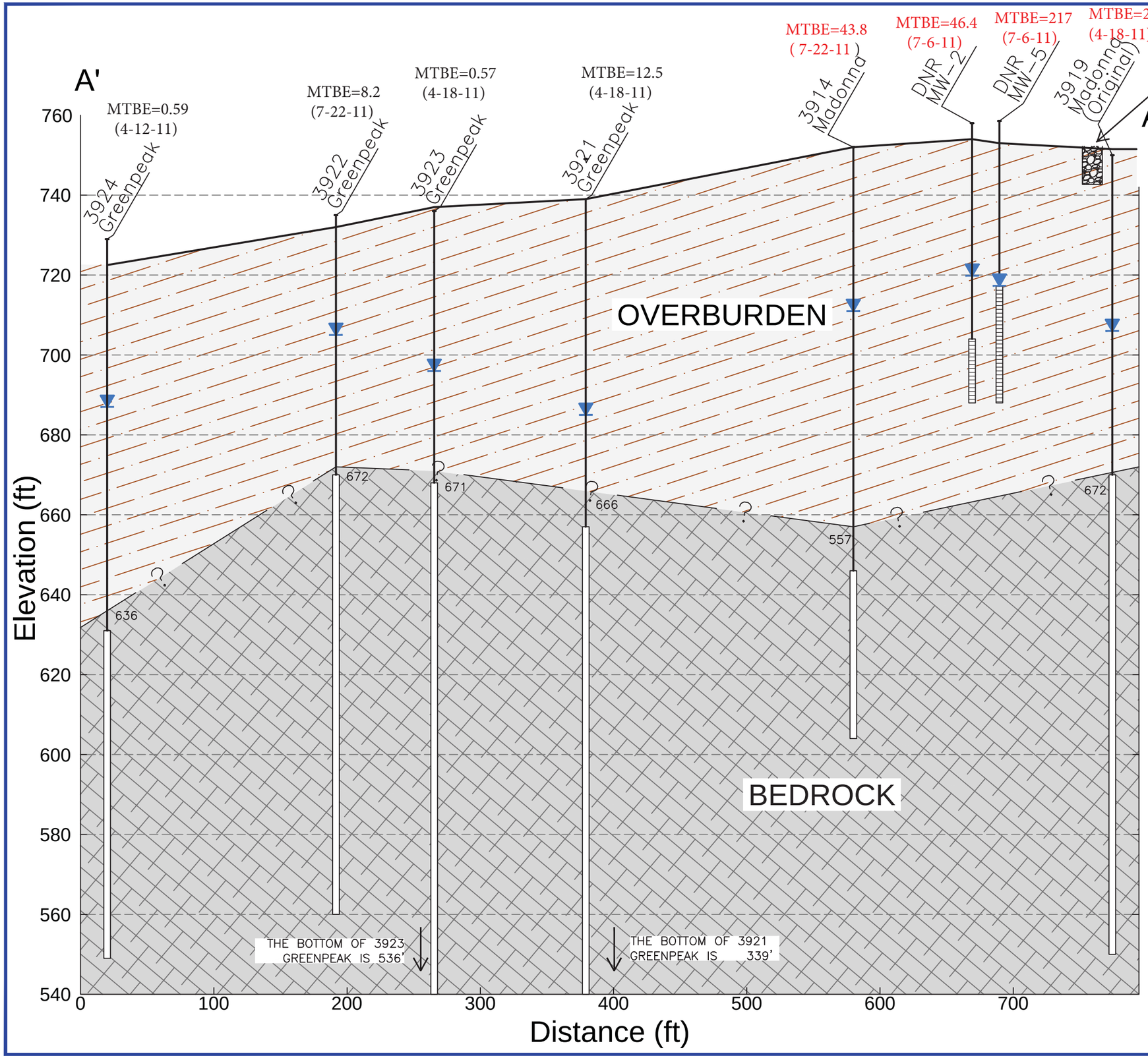
FIGURE
5

LEGEND

WELL OR BORING

SECTION LINE

DRAFTED BY: JW	TRANSECT MAP
CHECKED BY: LK	HIGH'S STORE #130 4101 NORRISVILLE ROAD MADONNA, MARYLAND
REVIEWED BY PR	Groundwater & Environmental Services, Inc. 1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113
NORTH	SCALE IN FEET 0 150 / DATE 10-27-16 / FIGURE 6



FORMER DNR TANK FIELD

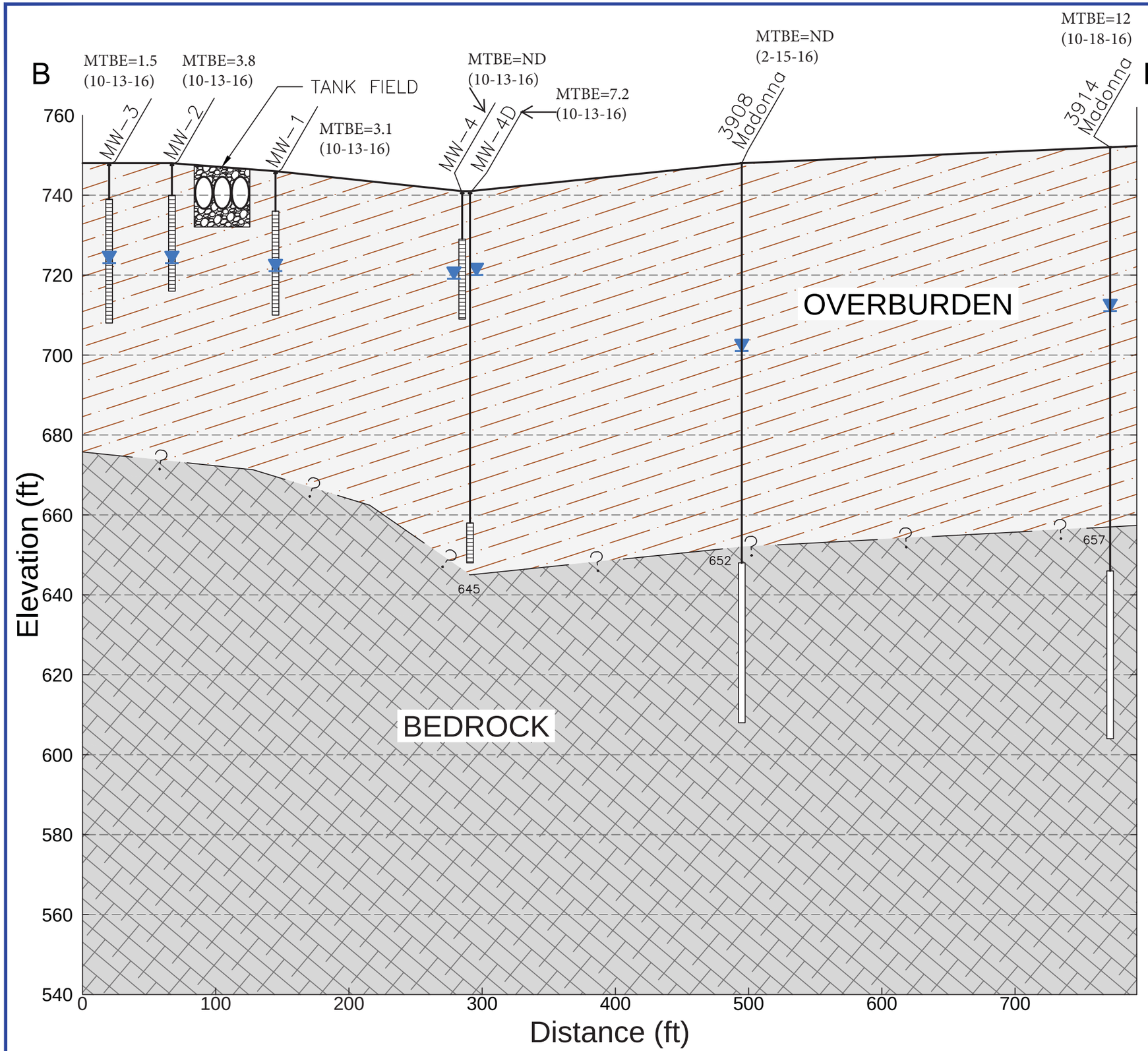
LEGEND

- RISER
- SCREENED INTERVAL
- RISER
- OPEN BOREHOLE INTERVAL
- GROUNDWATER ELEVATION

NOTES:

1. VERTICAL EXAGGERATION = 3X
2. MONITORING WELLS DNR-MW-2 AND DNR-MW-5 WERE GAUGED ON 09/30/2011.
3. POTABLE WELL 3914 MADONNA GAUGED ON 08/24/1979.
4. POTABLE WELL 3919 MADONNA (ORIGINAL) GAUGED ON 09/01/1970.
5. POTABLE WELL 3924 GREENPEAK GAUGED ON 09/25/1996.
6. POTABLE WELL 3923 GREENPEAK GAUGED ON 04/27/1977.
7. POTABLE WELL 3922 GREENPEAK GAUGED ON 04/21/1977.
8. POTABLE WELL 3921 GREENPEAK GAUGED ON 09/01/1978 WHEN IT WAS OVERDRILLED TO A DEPTH 400 FT.

DRAFTED BY: JW	SECTION A - A'
CHECKED BY: LK	HIGH'S STORE #130 4101 NORRISVILLE ROAD MADONNA, MARYLAND
REVIEWED BY: PR	Groundwater & Environmental Services, Inc. 1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113
NORTH	SCALE IN FEET HORIZONTAL 1" = 75' VERTICAL 1" = 25'
	DATE 11-2-16
	FIGURE 7



LEGEND

- RISER
- SCREENED INTERVAL
- RISER
- OPEN BOREHOLE INTERVAL
- GROUNDWATER ELEVATION

NOTES:

1. VERTICAL EXAGGERATION = 3X
2. MONITORING WELLS MW-1, MW-2, MW-3, MW-4, AND MW-4D GAUGED ON 10/13/2016.
3. POTABLE WELL 3908 MADONNA GAUGED ON 01/09/1978.
4. POTABLE WELL 3914 MADONNA GAUGED ON 08/24/1979.

DRAFTED BY: JW	SECTION B-B'
CHECKED BY: LK	HIGH'S STORE #130 4101 NORRISVILLE ROAD MADONNA, MARYLAND
REVIEWED BY: PR	Groundwater & Environmental Services, Inc. 1350 BLAIR DRIVE, SUITE A, ODENTON, MD 21113
NORTH	SCALE IN FEET: HORIZONTAL 1" = 75, VERTICAL 1" = 25' / DATE: 11-2-16 / FIGURE: 8

APPENDIX A

Laboratory Reports and Chain of Custody Documentation
(See Files on CD)

Europhins Lancaster Laboratories
ID Numbers:
1688263
1696840
1721422
1722241
1722869

APPENDIX B

Vertical Gradient Calculations - 10-13-16

Vertical Gradient Calculations

Carroll – Madonna
4101 Norrisville Road
Madonna, MD 21161

Input Parameters

	Surface Elevation	Depth to Well Screen	Screen Length	Depth to Water
Shallow Well	91.56	12	20	21.36
Deep Well	91.2	83	10	20.70

Results

	Magnitude	Flow Direction	
Screen mid-point value	0.004864	up	
Range of Estimates	0.004167 to 0.005	up; up	More information...

Flow directions can be determined. Shallow well is a water table well. Only submerged length

Gradient Estimate Between Piezometers (screen lengths equal to zero)

Piezoemeters	0.004204	up

MW-4 and MW-4D vertical gradient magnitude (well screen mid-point to mid-point calculation) of 0.004864 in an upward flow direction (calculated with the Environmental Protection Agency's (EPA) on-line vertical gradient calculator).

Input Parameters

	Surface Elevation	Depth to Well Screen	Screen Length	Depth to Water
Shallow Well	85.69	10	20	16.63
Deep Well	85.95	75	10	16.10

Results

	Magnitude	Flow Direction	
Screen mid-point value	0.01400	up	
Range of Estimates	0.01160 to 0.0176	up; up	More information...

Flow directions can be determined. Shallow well is a water table well. Only submerged length

Gradient Estimate Between Piezometers (screen lengths equal to zero)

Piezoemeters	0.01220	up

MW-5 and MW-5D vertical gradient magnitude (well screen mid-point to mid-point calculation) of 0.01400 in an upward flow direction (calculated with the EPA on-line vertical gradient calculator).

Vertical Gradient Calculations

Carroll – Madonna
4101 Norrisville Road
Madonna, MD 21161

Input Parameters

	Surface Elevation	Depth to Well Screen	Screen Length	Depth to Water
Shallow Well	84.99	10	20	15.76
Deep Well	85.40	65	10	15.93

Results

	Magnitude	Flow Direction	
Screen mid-point value	0.005138	up	
Range of Estimates	0.004080 to 0.006	up; up	More information...

Flow directions can be determined. Shallow well is a water table well. Only submerged length

Gradient Estimate Between Piezometers (screen lengths equal to zero)

Piezoemeters	0.004396	up

MW-6 and MW-6D vertical gradient magnitude (well screen mid-point to mid-point calculation) of 0.005138 in an upward flow direction (calculated with the EPA on-line vertical gradient calculator).

EPA's vertical gradient calculator can be located at this site:
https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/vgradient.html

APPENDIX C

Historical Activities Summary

HISTORICAL ACTIVITY SUMMARY (*key / relevant dates*):

1992	Four underground storage tanks (UST) were installed: one 10,000-gallon gasoline, two 8,000-gallon gasoline, and one 10,000-gallon compartmentalized diesel/kerosene.
6/2005	Three monitoring wells were installed pursuant to the new MTBE emergency regulations (COMAR 26.10.02).
9/28/05	The MDE-OCP received electronic notification from High's consultants of preliminary groundwater sampling data collected at 18 facilities operated by High's of Baltimore. The preliminary data included sampling results for the onsite drinking water well and monitoring well network located at Madonna High's No. 130.
11/30/05	The MDE-OCP issued a directive letter to High's requiring to perform UST vapor leak testing, UST system self-audit, conduct semiannual sampling of all monitoring wells and tank field monitoring pipes, conduct semiannual sampling of the onsite supply well and perform a half-mile drinking water well survey.
1/24/06	The MDE-OCP received the storage system test results, well receptor survey, and well sampling results.
2/08/06	The MDE-OCP received additional well receptor survey information.
11/13/06	The MDE-OCP received the storage system test results.
2/5/07	The MDE-OCP issues Official Notice requiring UST inspection by certified UST inspector within 30 days.
3/16/07	The MDE-OCP received the results of the spill basin and containment sump testing, performed 07/21/06. All spill basins and containment sumps passed.
12/24/07	The MDE-OCP received the results of the spill basin performed 12/20/07. All spill basins passed.
6/27/08	High's of Baltimore submits correspondence titled *Request for Reduction of Sampling Parameters* to MDE-OCP.
7/18/08	Based on the results in *Adjacent Well Sampling Event*, the MDE-OCP required that a granular activated carbon (GAC) filtration system be installed at 3914 Madonna Rd by August 2008.
10/8/08	The MDE-OCP issues correspondence titled *Reduction in Sampling Parameters Denied.*
3/24/09	The MDE-OCP issues *Request for Subsurface Investigation* directive to the DNR Ranger Station facility located at 3919 Madonna Rd, Jarrettsville, MD.
1/7/10	The MDE-OCP issues *Official Notice* requiring UST inspection by certified UST inspector within 30 days.
6/22/10	The MDE-OCP issues correspondence to the 3919 Madonna Rd DNR Ranger Facility requesting an additional monitoring well at the property.
12/13/10	The MDE-OCP issues a *Site Status Letter* regarding determinations made from recent investigations at both the High's Store #130 and the 3919 Madonna Rd DNR Ranger Station. High's of Baltimore identified as responsible party for petroleum impacts at the 3914 and 3922 Madonna Rd and 3922 Greenpeak Rd properties.
4/2011	The Harford County Health Department collects additional water samples in the area including the 3921 Greenpeak Rd residence.
5/17/11	MDE grants Freedom of Information Act (FOIA) request to Nutshell Enterprises, regarding the Madonna Rd State Tower (DNR Ranger facility).
2/17/12	The MDE-OCP issues a *Site Status Letter* directing High's of Baltimore to continue the following: maintaining the GAC filtration system operation, quarterly sampling (and maintenance as needed) of the 3914 Madonna Rd carbon system, quarterly sampling at the 3921 Greenpeak Rd residence, annual sampling of the High's Store #130 onsite supply well, and semiannual sampling of the monitoring well network and tank field wells.

HISTORICAL ACTIVITY SUMMARY (continued):

3/16/12	GES assumes role as environmental consultant for the project on behalf of High's of Baltimore.
5/15/12	The MDE-OCP provides clarification via email correspondence regarding a required quarterly sampling frequency for the 3922 Greenpeak Rd residence.
7/23/12	A carbon change out was performed on the 3914 Madonna Rd GAC filtration unit.
5/28/13	A carbon change out was performed on the 3914 Madonna Rd GAC filtration unit.
5/27/14	A carbon change out was performed on the 3914 Madonna Rd GAC filtration unit.
8/22/14	MTBE concentrations exceeded the MDE action level of 20 ug/l at 3921 Greenpeak Rd.
9/23/14	The MDE issued a directive letter requiring the installation of a GAC filtration system at 3921 Greenpeak Rd no later than October 30, 2014 and to commence monthly sampling of the GAC filtration system before November 15, 2014 for a three month duration.
10/6/15	GES received acknowledgement from the MDE for its request for information under the Public Information Act (PIA) regarding potable well locations in Site's local vicinity.
10/30/14	Signed Access Agreement received from the property owner of 3921 Greenpeak Rd.
11/11/14	GAC filtration system installed at 3921 Greenpeak Rd; monthly sampling initiated for a three-month duration (November/December/January) and then resumed to a quarterly frequency.
2/24/15	*Site Investigation Work Plan* submitted to MDE outlining installation of three pairs of 2-inch monitoring wells (MWs) (1 shallow and 1 deep for each MW pair).
4/17/15	Onsite meeting with High's and the MDE occurred to discuss the proposed monitoring well locations presented in the *Site Investigation Work Plan*.
5/28/15	MDE issues *Site Investigation Work Plan* approval.
6/29/15	Monitoring well installations begin.
7/15/15	Monitoring well installations and developments are completed.
7/30/15	New monitoring wells MW-4, 4D, 5, 5D, 6 and 6D are sampled.
9/11/15	GES submits the *Site Investigation Report* to the MDE for the newly installed wells.
12/14/15	A carbon change out was performed on the 3914 Madonna Rd GAC filtration unit.
4/6/16	GES receives phone call from the MDE requesting an expanded volatile organic compounds (VOCs) results list with EPA Method 524.2
5/6/16	GES informs the MDE that grout settlement was noted in MW-4D by the GES technician during the semi-annual groundwater sampling event.
5/19/16	GES supervises the re-grouting of MW-4D by Allied Environmental Services.
6/2/16	GES visits the Site and notes that well MW-4D grout has settled an additional few feet since the initial repair by Allied.
6/23/16	GES returns to the Site and re-grout's MW-4D casing to just below grade.
8/16/16	GES returns to the Site and confirms MW-4D grout repair is complete.
8/16/16	GES receives *Sampling Change Approval – September 13, 2016* directive from the MDE, approving "target" EPA 524.2 VOCs list.