



Rose & Westra
A Division of GZA



MEMORANDUM

To: Abby Hendershott, MDEQ

From: Lori Powers, Rose & Westra, a Division of GZA GeoEnvironmental, Inc.

Date: April 1, 2019

File No.: 16.0062335.52 Task 003

Re: Wolverine World Wide, Inc. (Wolverine) – House Street Disposal Area
Monthly Progress Report

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION
MANAGEMENT

The Widdicomb Building
601 Fifth Street NW
Suite 102
Grand Rapids, MI 49504
T: 616.956.6123
F: 616.288.3327
www.rosewestra.com
www.gza.com

This MDEQ Monthly Progress Report (MPR) is being submitted on behalf of Wolverine. This MDEQ MPR is completed as agreed upon in Mr. John Byl's July 9, 2018 letter entitled *Response to May 29 Correspondence regarding Tannery Meeting Summary and Action Items*.

This MPR summarizes actions and available data through March 20, 2019 for the House Street Former Disposal Site (1855 House Street NE).

During this reporting period, R&W/GZA did not complete any additional on-Site investigative tasks. However, a complete round of sampling was conducted for all on-Site and off-Site permanent groundwater monitoring wells. To date, limited analytical data has been received. The PFAS data thus far is summarized in the attached Table 1.

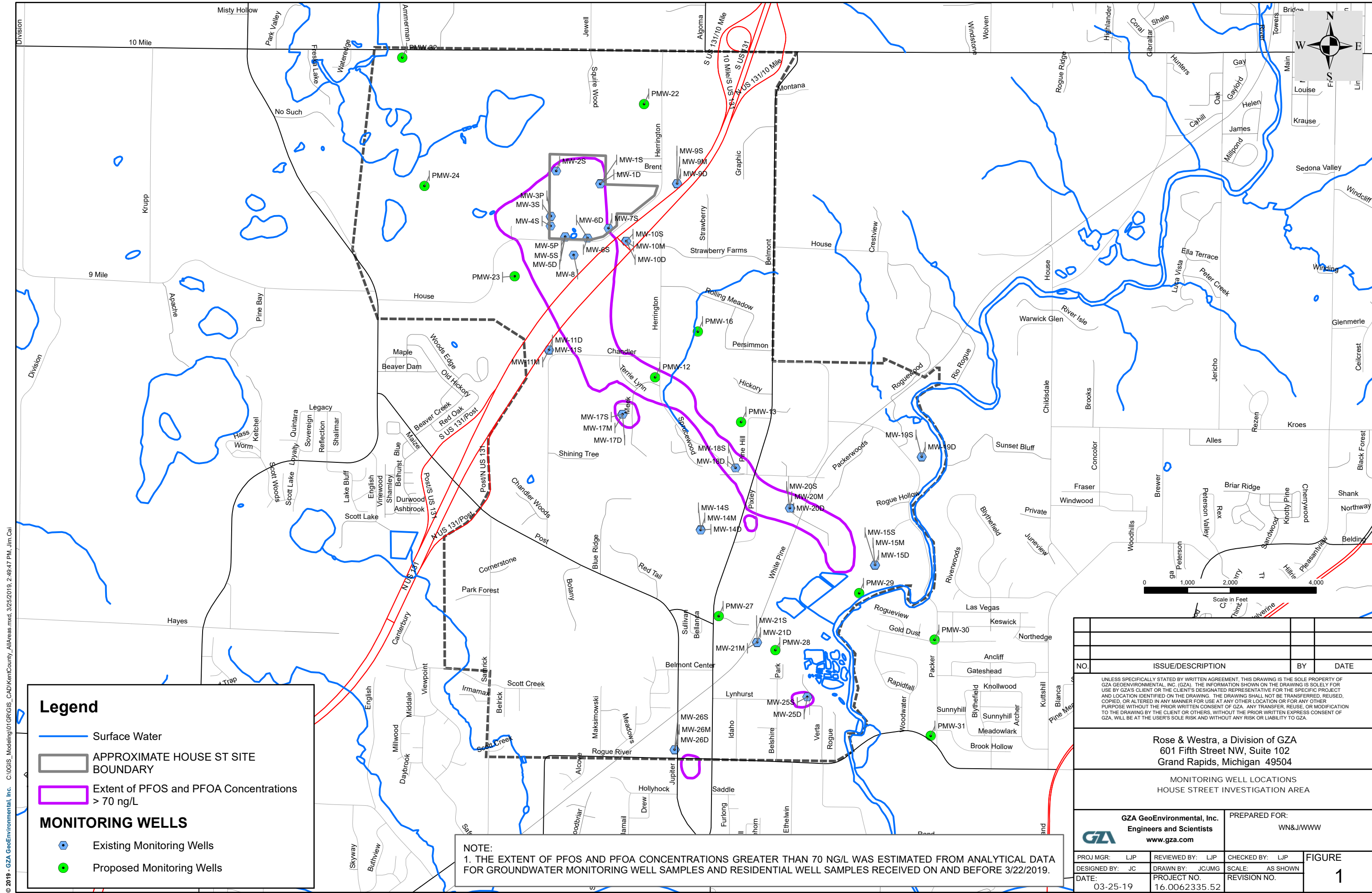
R&W/GZA continues to contact property owners in an effort to gain access to additional off-site locations for drilling and permanent well installation. During this reporting period, access has been obtained for at least three additional locations.

An update well location map is included with this update; it includes both installed and proposed well locations.

During the next reporting period we anticipate receiving the remainder of the permanent well analytical data. R&W/GZA will also continue to gain access for the additional well installation locations. Lastly, it is likely sonic drilling in resume for well installation during the month of April 2019.

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Legend

- Surface Water
- APPROXIMATE HOUSE ST SITE BOUNDARY
- Extent of PFOS and PFOA Concentrations > 70 ng/L

MONITORING WELLS

- Existing Monitoring Wells
- Proposed Monitoring Wells

NOTE:
 1. THE EXTENT OF PFOS AND PFOA CONCENTRATIONS GREATER THAN 70 NG/L WAS ESTIMATED FROM ANALYTICAL DATA FOR GROUNDWATER MONITORING WELL SAMPLES AND RESIDENTIAL WELL SAMPLES RECEIVED ON AND BEFORE 3/22/2019.

NO.	ISSUE/DESCRIPTION	BY	DATE
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<p>Rose & Westra, a Division of GZA 601 Fifth Street NW, Suite 102 Grand Rapids, Michigan 49504</p>			
<p>MONITORING WELL LOCATIONS HOUSE STREET INVESTIGATION AREA</p>			
<p>GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p>		<p>PREPARED FOR: WN&J/WWW</p>	
<p>PROJ MGR: LJP DESIGNED BY: JC DATE: 03-25-19</p>	<p>REVIEWED BY: LJP DRAWN BY: JC/JMG PROJECT NO. 16.0062335.52</p>	<p>CHECKED BY: LJP SCALE: AS SHOWN REVISION NO.</p>	<p>FIGURE 1</p>

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TABLE 1
SUMMARY OF GROUNDWATER SAMPLE ANALYSIS - PFAS
1855 House Street NE
Plainfield Township, Kent County, MI

Sample Location	Part 201 Generic Residential Groundwater Cleanup Criteria – Drinking Water ²	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface ²	Part 201 Generic Residential Groundwater Cleanup Criteria – Groundwater Volatilization to Indoor Air Inhalation ²	MDEQ Residential Recommended Volatilization to Indoor Air Interim Action Screening Level – Groundwater ³	U.S. EPA Residential Tap Water Regional Removal Management Levels ⁴	HS-MW-14D	HS-MW-14D	HS-MW-14M	HS-MW-14S	HS-MW-15D	HS-MW-15M	HS-MW-15S	HS-MW-21D	HS-MW-21M	HS-MW-21S
Sample Name						HS-MW-14D	HS-MW-14D DUP	HS-MW-14M	HS-MW-14S	HS-MW-15D	HS-MW-15M	HS-MW-15S	HS-MW-21D	HS-MW-21M	HS-MW-21S
Well Screen Interval (Feet below ground surface)						UB27031-003	UB27031-004	UB27031-001	UB27031-002	UB28086-006	UB28086-005	UB28086-004	UB28086-003	UB28086-002	UB28086-001
Laboratory Sample ID(s)						107 - 112	107 - 112	68 - 73	13 - 23	108 - 118	45 - 50	7 - 17	75.8 - 85.8	59 - 64	10 - 20
Sample Date						02/26/2019	02/26/2019	02/26/2019	02/26/2019	02/27/2019	02/27/2019	02/27/2019	02/27/2019	02/27/2019	02/27/2019
Parameter (µg/L)															
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
N-Methyl perfluorooctane sulfonamide (MeFOSA)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0073	<0.0071	<0.0071	<0.0075	<0.0074	<0.0074	<0.0072	<0.0075	<0.0073
Perfluorobutane sulfonic acid (PFBS)	NCL	NCL	NCL	NCL	1,200	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	0.0073	<0.0036	<0.0037	<0.0037
Perfluorodecane sulfonic acid (PFDS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluoroheptane sulfonic acid (PFHpS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluoro-1-nonanesulfonate (PFNS)	NCL	NCL	NCL	NCL	NCL	<0.0075	<0.0073	<0.0071	<0.0071	<0.0075	<0.0074	<0.0074	<0.0072	<0.0075	<0.0073
Perfluorooctane sulfonamide (FOSA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluoro-1-pentanesulfonate (PFPeS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorohexane sulfonic acid (PFHxS)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorobutanoic acid (PFBA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorodecanoic acid (PFDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorododecanoic acid (PFDoDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluoroheptanoic acid (PFHpA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorohexanoic acid (PFHxA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorononanoic acid (PFNA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorooctanoic acid (PFOA)	0.07 (JJ)	12	NCL	NCL	NCL	<0.0019	<0.0018	<0.0018	<0.0018	<0.0019	<0.0018	<0.0018	<0.0018	<0.0019	0.0028
Perfluorooctane sulfonic acid (PFOS)	0.07 (JJ)	0.012	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
PFOA + PFOS (Calculated)	0.07	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0028
Perfluoropentanoic acid (PFPeA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorotetradecanoic acid (PFTeDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluorotridecanoic acid (PFTrDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Perfluoroundecanoic acid (PFUnDA)	NCL	NCL	NCL	NCL	NCL	<0.0037	<0.0036	<0.0036	<0.0036	<0.0037	<0.0037	<0.0037	<0.0036	<0.0037	<0.0037
Total PFAS (Calculated)	NCL	NCL	NCL	NCL	NCL	ND	ND	ND	ND	ND	ND	0.0073	ND	ND	0.0028

TABLE 1 NOTES
1855 House Street NE
Plainfield Township, Kent County, MI

16.0062335.52

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NOTES:

1. Concentration and criteria units are micrograms per Liter ($\mu\text{g/L}$) or parts per billion (ppb). Calculated criteria and concentrations are rounded to two significant digits.
"ND" indicates the parameters used in the calculation were not detected.
2. Michigan Part 201 Groundwater Cleanup Criteria are based on "Table 1, Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels/Part 213 Tier I Risk Based Screening Levels," Michigan Administrative Code, Cleanup Criteria Requirements for Response Activity, Rules 299.44 and 299.49, effective December 30, 2013; updated June 25, 2018.
Abbreviations Include:
"NCL" indicates no criterion listed in MDEQ Table 1.
Footnotes Include:
(JJ) - Compliance with the drinking water criteria shall require comparing the sum of the PFOA and PFOS groundwater concentrations to the drinking water criterion of 0.07 $\mu\text{g/L}$.
3. MDEQ Residential Groundwater Recommended Volatilization to Indoor Air Interim Action Screening Levels (RIASLs) for were based on MDEQ's Toxics Steering Group's "Media-Specific Interim Action Screening Levels," published in August 2017. The MDEQ published the RIASLs in August 2017, and recently removed the RIASLs from the MDEQ website. The MDEQ is reportedly evaluating the RIASLs for appropriate use and applicability. These are included for reference.
Abbreviations Include:
"NCL" indicates no value listed in the Media-Specific Interim Action Screening Levels table.
4. U.S. EPA Residential Tap Water Regional Removal Management Levels (RMLs) were based on "Generic RML Tables," updated November 2018.
5. Bold, italic number with thick line border or italic parameter name indicates that parameter was detected above the Michigan Part 201 Groundwater Cleanup Criteria or Media-Specific Interim Action Screening Levels. U.S. EPA RMLs are provided for reference only and results detected above the EPA RMLs are not bolded or italicized.
6. Abbreviations include:
"< RL" indicates the parameter was analyzed for but not detected above the method detection limit; RL = Reporting Limit.
7. Well screen interval presented is the top of the well screen to the bottom of the well screen in feet below ground surface.