



August 21, 2020

Reference No. 048038-70-01

Ms. Candace Sykora  
Wisconsin Department of Natural Resources  
890 Spruce Street  
Baldwin, Wisconsin 54002

Dear Ms. Sykora

**Re: Groundwater Monitoring, May 2020  
New Richmond Landfill (#2492)**

On behalf of the New Richmond Landfill Settling PRPs (Settling PRPs), GHD Services, Inc. (GHD) is submitting the semi-annual sampling results for the May 2020 sampling event for the New Richmond Landfill in New Richmond, Wisconsin.

The May 2020 sampling event was conducted on May 19<sup>th</sup> and 20<sup>th</sup>, 2020. Figure 1 shows the location of the groundwater monitoring points.

Sampling activities were conducted in accordance with the Operation, Maintenance, and Monitoring Plan dated April 2008 and the modifications presented in the Wisconsin Department of Natural Resources (WDNR) technical review letter, dated October 21, 2015. The WDNR increased the number of wells sampled semi-annually in response to modifications to the SVE/LFG system.

A total of 10 monitoring wells (MW-1, MW-2R, MW-9, MW-10, MW-10A, MW-16, MW-16A, MW-17, MW-17A, and MW-18) were sampled as a part of the sampling event. Samples were analyzed for volatile organic compounds (VOCs) and per- and polyfluoroalkyl substances (PFAS).

Sample results from all of the wells either showed a decreasing trend from previous sampling rounds or were non-detect for VOCs. This was the first time PFAS were sampled at the site. All of the VOC and PFAS detections for the May 2020 round are provided in Table 1.

In addition to the monitoring well samples, two residential wells were sampled. 2055 County Road C (Thommes-untreated) was sampled and analyzed for VOCs and PFAS while 2056 County Road C (TNT Metals) was sampled and only analyzed for VOCs.

A sample was not collected from 1070 192<sup>nd</sup> Avenue (Hegge) this year due to access issues. An access letter will be sent out again next year and an attempt will be made to sample their well.

Groundwater sampling and analysis was conducted according to the Quality Assurance Project Plan. All VOC samples were shipped to Eurofins TestAmerica Laboratories in University Park, Illinois, for analysis. All PFAS samples were submitted to TestAmerica's laboratory in West Sacramento, California for analysis. A copy of the data quality validation memorandum is included as Attachment A.

The next scheduled sampling event will occur in November 2020.



Should you have any questions regarding this matter, please do not hesitate to call.

Sincerely,

GHD

A handwritten signature in black ink that reads "Thomas Hobday". The signature is fluid and cursive, with a long horizontal stroke at the end.

Thomas Hobday

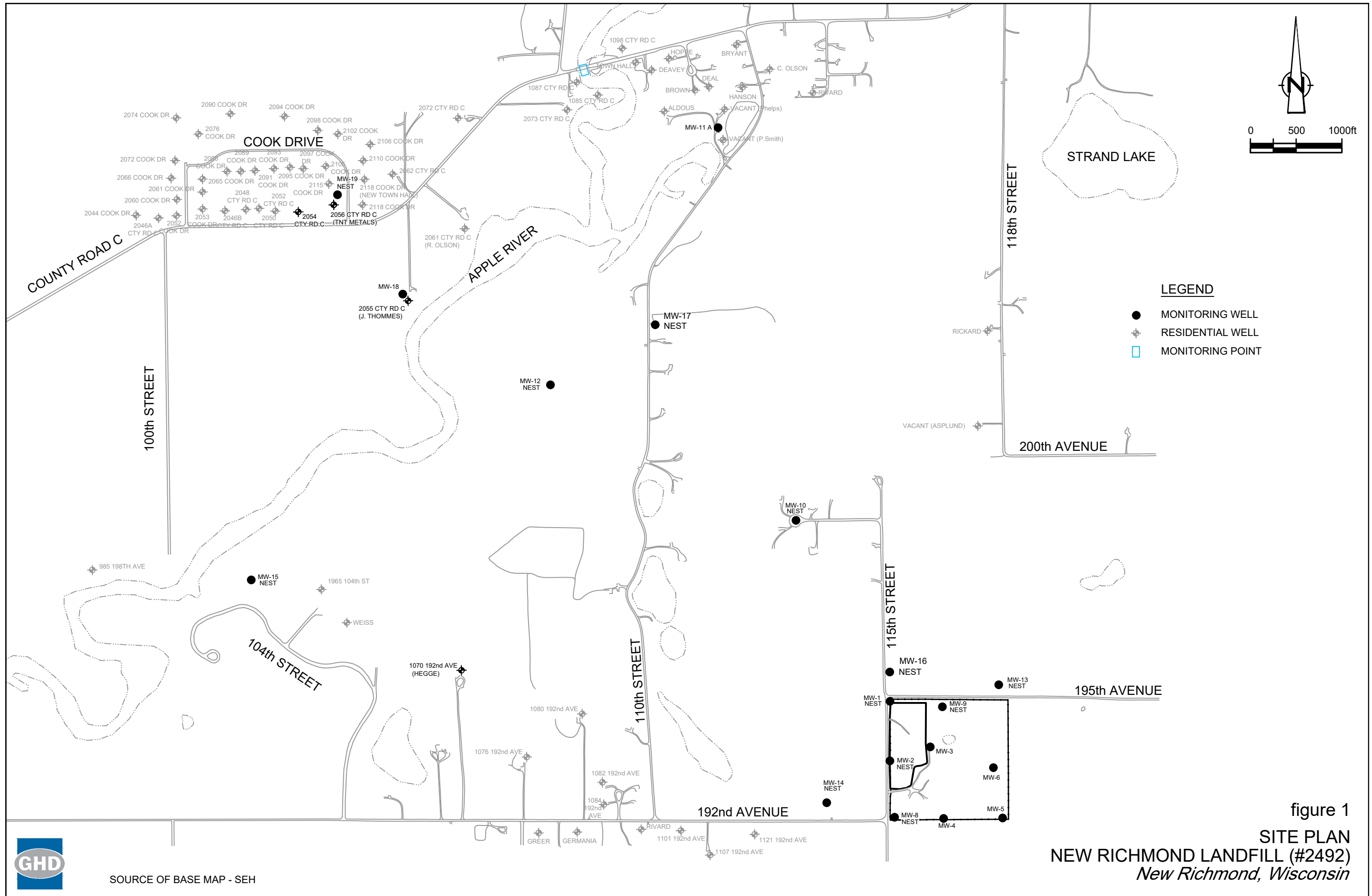
A handwritten signature in black ink that reads "Ryan Aamot". The signature is more compact and stylized than the one to its left.

Ryan Aamot

RA/md/1

Encl.

cc: Raymond Krueger, Michael Best & Feiedrich (via email)  
PRP Settling Parties (via email)



SOURCE OF BASE MAP - SEH

figure 1  
**SITE PLAN**  
**NEW RICHMOND LANDFILL (#2492)**  
*New Richmond, Wisconsin*

Table 1

Groundwater Detections  
New Richmond Landfill (#2492)  
New Richmond, Wisconsin

			PFAS											VOCs									
			Fluorotelomer sulfonic acid (6:2)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorooctane sulfonamide (FOSA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	Chloroethane	Chloroform (Trichloromethane)	cis-1,2-Dichloroethene	Tetrachloroethene	Trichloroethene		
			ES											200	850	7	80	6	70	5	5		
			PAL											40	85	0.7	400	0.6	7	0.5	0.5		
			ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		
Location	Sample	Date																					
2055 Cty Rd C	W-200519-RA-02	05/19/20	N	< 17	< 1.7	4.3	< 1.7	< 1.7	< 1.7	2.8	< 1.7	< 1.7	< 1.7	< 1.7	0.74 J	1.4	1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 0.50	
2056 Cty Rd C	W-200519-RA-01	05/19/20	N	--	--	--	--	--	--	--	--	--	--	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 0.50	
MW1	W-200520-RA-15	05/20/20	N	< 17	36	150	18	13	110	< 1.7	0.57 J	67	16	62	4.2	16	1.2	< 1.0	1.3 J	< 1.0	0.42 J	0.33 J	
MW2R	W-200520-RA-14	05/20/20	N	< 17	49	380	11	14	130	< 1.7	< 1.7	3.1	18	140	--	--	--	--	--	--	--	--	
MW9	W-200520-RA-11	05/20/20	N	< 17	2.5	29	1.6 J	2.7	11	< 1.7	6.2	4.2	0.85 J	11	--	--	--	--	--	--	--	--	
MW10	W-200519-RA-03	05/19/20	N	< 18	0.97 J	43	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	0.77 J	1.6	2.1	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 0.50	
MW10A	W-200519-RA-05	05/19/20	N	< 18	0.29 J	21	0.22 J	< 1.8	0.64 J	< 1.8	< 1.8	< 1.8	0.75 J	< 1.8	0.71 J	11	13	2.5	< 1.0	0.41 J	1.2	2.4	0.24 J
MW10A	W-200519-RA-06	05/19/20	FD	< 18	0.31 J	22	< 1.8	< 1.8	0.64 J	< 1.8	< 1.8	0.77 J	< 1.8	0.83 J	9.9	12	2.3	< 1.0	< 2.0	1.0	2.3	0.25 J	
MW16	W-200520-RA-10	05/20/20	N	1.9 J	5.9	59	3.4	3.9	21	< 1.8	6.0	5.0	2.0	14	12	12	3.1	< 1.0	0.67 J	0.90 J	1.7	0.20 J	
MW16A	W-200520-RA-08	05/20/20	N	< 18	0.20 J	29	< 1.8	< 1.8	< 1.8	< 1.8	0.71 J	< 1.8	< 1.8	0.51 J	< 1.0	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 1.0	< 0.50	
MW17	W-200520-RA-12	05/20/20	N	< 17	0.93 J	30	0.34 J	< 1.7	1.7	< 1.7	0.90 J	0.76 J	0.28 J	1.8	7.8	10	2.1	0.60 J	< 2.0	0.67 J	1.4	0.21 J	
MW17A	W-200520-RA-13	05/20/20	N	< 17	0.81 J	26	0.34 J	< 1.7	1.4 J	< 1.7	0.55 J	< 1.7	< 1.7	1.7	5.9	6.4	1.1	< 1.0	< 2.0	< 1.0	1.5	< 0.50	
MW18	W-200520-RA-07	05/20/20	N	< 18	0.41 J	8.9	0.32 J	< 1.8	0.79 J	< 1.8	0.68 J	1.1 J	< 1.8	0.60 J	6.8	2.6	2.8	< 1.0	< 2.0	< 1.0	< 1.0	< 0.50	

Notes:

Enforcement Standard (ES) and Preventative Action Limit (PAL) as found in Wisconsin Administrative Code Chapter NR 140.

J - Estimated concentration

**Bold Lettering** - Exceeds PAL

Exceeds ES

# **Attachment A**

## **Data Quality Validation Memorandum**



# Memorandum

July 2, 2020

To: Tom Hobday, GHD Ref. No.: 048038-70-01

From: Grant Anderson/lg/43 Tel: 612-524-6836

cc: Ryan Aamot, GHD

**Subject: Analytical Results and Reduced Validation  
Groundwater and Residential Well Sampling Event  
New Richmond Landfill Site  
New Richmond, Wisconsin  
May 2020**

## 1. Introduction

This document details a reduced validation of analytical results for groundwater and residential well samples collected at the New Richmond Landfill Site during May 2020. Volatile organic compound (VOC) samples were submitted to Eurofins TestAmerica (TestAmerica), located in University Park, Illinois. Per and polyfluoroalkyl substance (PFAS) samples were submitted to TestAmerica's West Sacramento, California laboratory. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD Services Inc. (GHD) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes, isotope dilution analytes (IDA), laboratory control samples (LCS), matrix spikes (MS), and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

- i) "Quality Assurance Project Plan (QAPP), New Richmond Landfill, WDNR License #2492"; April 2008, Conestoga-Rovers & Associates, Report 7
- ii) "Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Methods 537", EPA 910-R-18-001, November 2018
- iii) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," October 1999, United States Environmental Protection Agency (USEPA) 540/R 99/008 (for VOC data)
- iv) "National Functional Guidelines for Organic Superfund Methods Data Review," USEPA 540-R-2017-002, January 2017 (for PFAS data)



Items ii), iii) and iv) will subsequently be referred to as the "Guidelines" in this Memorandum.

## **2. Sample Holding Time and Preservation**

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding time.

VOC samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C). PFAS samples were received at 7.8°C. No qualification of data was deemed necessary.

## **3. Laboratory Method Blank Analyses**

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

Laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

With the exception of perfluorobutanoic acid (PFBA), perfluorohexanesulfonic acid (PFHxS) and perfluorooctanesulfonamide (FOSA), all method blank results were non-detect. Associated PFBA results were sufficiently high enough that qualification of data was not necessary. Table 4 lists the PFHxS and FOSA method blank results. Associated sample results are qualified as noted in the table.

## **4. Surrogate Spike Recoveries - VOCs**

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for VOCs are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for VOC determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

## **5. Isotope Dilution Analyte (IDA) Spike Recoveries - PFAS**

IDA data were evaluated for all PFAS sample analyses. IDAs are isotopically labeled analogs of the analytes of interest added to the investigative and QC samples at the time of extraction. All results are then calculated as a ratio of the IDA responses.

The IDA recovery results for each sample were evaluated against the following lab criteria:



- i) IDA recoveries must be within 25-150%

Two IDAs recovered above the upper control limit. Table 5 lists the outlying IDA recoveries. Associated sample data are qualified as noted in the table.

## **6. Laboratory Control Sample (LCS) Analyses**

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

## **7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses**

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The relative percent difference (RPD) between the MS and MSD is used to assess analytical precision. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the above criteria, demonstrating acceptable analytical accuracy and precision.

## **8. Field QA/QC Samples**

The field QA/QC consisted of a trip blank sample, two field blank samples and a field duplicate sample set.

### ***Trip Blank Sample Analysis***

To evaluate contamination from sample collection, transportation, storage, and analytical activities, a trip blank sample was submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

### ***Field Blank Sample Analysis***

To assess ambient conditions at the site and cleanliness of sample containers, two field blanks were submitted for analysis, as identified in Table 1. PFBA, PFHxS, FOSA, and PFOS were detected in the field blanks. Associated sample results for PFBA were sufficiently high enough; therefore, no qualification of PFBA data was necessary. Associated PFHxS and FOSA results were previously qualified based on method





blank results (see Method Blank section). Table 6 lists the PFOS field blank detection. Associated sample results are qualified as noted in the table.

#### *Field Duplicate Sample Analysis*

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

### **9. Analyte Reporting**

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

### **10. Conclusion**

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

**Sample Collection and Analysis Summary  
Groundwater and Residential Sampling Event  
New Richmond Landfill Site  
New Richmond, Wisconsin  
May 2020**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters	Comments
W-200519-RA-01	2056 Cty Rd C	water	05/19/2020	10:22	VOCs	
W-200519-RA-02	2055 Cty Rd C	water	05/19/2020	10:40	VOCs and PFAS	
W-200519-RA-03	MW10	water	05/19/2020	11:05	VOCs and PFAS	
W-200519-RA-04	MW10	water	05/19/2020	11:05	VOCs and PFAS	Field Blank
W-200519-RA-05	MW10A	water	05/19/2020	11:35	VOCs and PFAS	
W-200519-RA-06	MW10A	water	05/19/2020	11:35	VOCs and PFAS	Duplicate (RA-05)
W-200520-RA-07	MW18	water	05/20/2020	09:35	VOCs and PFAS	
W-200520-RA-08	MW16A	water	05/20/2020	10:35	VOCs and PFAS	
W-200520-RA-09	MW16A	water	05/20/2020	10:35	VOCs and PFAS	Field Blank
W-200520-RA-10	MW16	water	05/20/2020	11:05	VOCs and PFAS	
W-200520-RA-11	MW9	water	05/20/2020	11:55	PFAS	
W-200520-RA-12	MW17	water	05/20/2020	13:10	VOCs and PFAS	MS/MSD
W-200520-RA-13	MW17A	water	05/20/2020	13:45	VOCs and PFAS	
W-200520-RA-14	MW2R	water	05/20/2020	14:10	PFAS	
W-200520-RA-15	MW1	water	05/20/2020	14:40	VOCs and PFAS	
Trip Blank	Lab	water	05/20/2020	00:00	VOCs	Trip Blank

## Notes:

VOCs - Volatile Organic Compounds

MS/MSD - Matrix Spike/Matrix Spike Duplicate

PFAS - Per and Polyfluoroalkyl Substances

**Table 2**  
**Validated Analytical Results Summary**  
**Groundwater and Residential Sampling Event**  
**New Richmond Landfill Site**  
**New Richmond, Wisconsin**  
**May 2020**

Location ID:	2055 Cty Rd C	2056 Cty Rd C	MW1	MW10	MW10	MW10A	MW10A	MW16	
Sample Name:	W-200519-RA-02	W-200519-RA-01	W-200520-RA-15	W-200519-RA-03	W-200519-RA-04	W-200519-RA-05	W-200519-RA-06	W-200520-RA-10	
Sample Date:	05/19/2020	05/19/2020	05/20/2020	05/19/2020	05/19/2020	05/19/2020	05/19/2020 Duplicate	05/20/2020	
Parameters	Unit								
<b>Volatile Organic Compounds</b>									
1,1,1-Trichloroethane	µg/L	0.74 J	1.0 U	4.2	1.6	1.0 U	11	9.9	12
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.4	1.0 U	16	2.1	1.0 U	13	12	12
1,1-Dichloroethene	µg/L	1.0	1.0 U	1.2	1.0 U	1.0 U	2.5	2.3	3.1
1,2,3-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trimethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3,5-Trimethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Carbon disulfide	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobromomethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	1.3 J	2.0 U	2.0 U	0.41 J	2.0 U	0.67 J
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2	1.0	0.90 J
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m&p-Xylenes	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
o-Xylene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	0.42 J	1.0 U	1.0 U	2.4	2.3	1.7
Tetrahydrofuran	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	0.50 U	0.50 U	0.33 J	0.50 U	0.50 U	0.24 J	0.25 J	0.20 J
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrchloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

**Table 2**  
**Validated Analytical Results Summary**  
**Groundwater and Residential Sampling Event**  
**New Richmond Landfill Site**  
**New Richmond, Wisconsin**  
**May 2020**

Location ID:	2055 Cty Rd C	2056 Cty Rd C	MW1	MW10	MW10	MW10A	MW10A	MW16
Sample Name:	W-200519-RA-02	W-200519-RA-01	W-200520-RA-15	W-200519-RA-03	W-200519-RA-04	W-200519-RA-05	W-200519-RA-06	W-200520-RA-10
Sample Date:	05/19/2020	05/19/2020	05/20/2020	05/19/2020	05/19/2020	05/19/2020	05/19/2020 Duplicate	05/20/2020
Parameters	Unit							
<b>Per/Polyfluoroalkyl Substances (PFAS)</b>								
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	17 U	--	17 UJ	18 U	17 U	18 U	17 U
Fluorotelomer sulfonic acid(8:2)	ng/L	17 U	--	17 U	18 U	17 U	18 U	17 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.4 U	--	3.4 U	3.7 U	3.4 U	3.5 U	3.4 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	17 U	--	17 U	18 U	17 U	18 U	17 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	17 U	--	17 U	18 U	17 U	18 U	17 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.7 U	--	36	0.97 J	1.7 U	0.29 J	0.31 J
Perfluorobutanoic acid (PFBA)	ng/L	4.3	--	150	43	0.39 J	21	22
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.7 U	--	18	1.8 U	1.7 U	0.22 J	1.8 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.7 U	--	13	1.8 U	0.27 J	1.8 U	1.8 U
Perfluorohexanoic acid (PFHxA)	ng/L	1.7 U	--	110	1.8 U	1.7 U	0.64 J	0.64 J
Perfluorononane sulfonic acid (PFNS)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.7 U
Perfluorooctane sulfonamide (FOSA)	ng/L	2.8	--	1.7 U	1.8 U	0.83 J	1.8 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.7 U	--	0.57 J	1.8 U	0.65 J	1.8 U	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	1.7 U	--	67	1.8 U	1.7 U	0.75 J	0.77 J
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.7 U	--	16	1.8 U	1.7 U	1.8 U	1.8 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.7 U	--	62	0.77 J	1.7 U	0.71 J	0.83 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.7 U	--	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	17 U	--	17 U	18 U	17 U	18 U	18 U

**Table 2**  
**Validated Analytical Results Summary**  
**Groundwater and Residential Sampling Event**  
**New Richmond Landfill Site**  
**New Richmond, Wisconsin**  
**May 2020**

Location ID:	MW16A	MW16A	MW17	MW17A	MW18	MW2R	MW9
Sample Name:	W-200520-RA-08	W-200520-RA-09	W-200520-RA-12	W-200520-RA-13	W-200520-RA-07	W-200520-RA-14	W-200520-RA-11
Sample Date:	05/20/2020	05/20/2020	05/20/2020	05/20/2020	05/20/2020	05/20/2020	05/20/2020
Parameters	Unit						
<b>Volatile Organic Compounds</b>							
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	7.8	5.9	6.8	--
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	10	6.4	2.6	--
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	2.1	1.1	2.8	--
1,2,3-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2,4-Trimethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,3,5-Trimethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--
2-Hexanone	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	--
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Bromomethane (Methyl bromide)	µg/L	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	--
Carbon disulfide	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	--
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Chlorobromomethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Chloroethane	µg/L	1.0 U	1.0 U	0.60 J	1.0 U	1.0 U	--
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	--
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	0.67 J	1.0 U	1.0 U	--
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Dichlorodifluoromethane (CFC-12)	µg/L	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	--
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
m&p-Xylenes	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	--
o-Xylene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.4	1.5	1.0 U	--
Tetrahydrofuran	µg/L	10 U	10 U	10 U	10 U	10 U	--
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	--
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Trichloroethene	µg/L	0.50 U	0.50 U	0.21 J	0.50 U	0.50 U	--
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Trifluorotrchloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	--

**Table 2**  
**Validated Analytical Results Summary**  
**Groundwater and Residential Sampling Event**  
**New Richmond Landfill Site**  
**New Richmond, Wisconsin**  
**May 2020**

Location ID:	MW16A	MW16A	MW17	MW17A	MW18	MW2R	MW9
Sample Name:	W-200520-RA-08	W-200520-RA-09	W-200520-RA-12	W-200520-RA-13	W-200520-RA-07	W-200520-RA-14	W-200520-RA-11
Sample Date:	05/20/2020	05/20/2020	05/20/2020	05/20/2020	05/20/2020	05/20/2020	05/20/2020
<b>Parameters</b>	<b>Unit</b>						
<b>Per/Polyfluoroalkyl Substances (PFAS)</b>							
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	18 U	18 U	17 U	17 U	18 U	17 UJ
Fluorotelomer sulfonic acid(8:2)	ng/L	18 U	18 U	17 U	17 U	18 U	17 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.5 U	3.6 U	3.4 U	3.4 U	3.7 U	3.4 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	18 U	18 U	17 U	17 U	18 U	17 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	18 U	18 U	17 U	17 U	18 U	17 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	0.20 J	1.8 U	0.93 J	0.81 J	0.41 J	49
Perfluorobutanoic acid (PFBA)	ng/L	29	0.35 J	30	26	8.9	380
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.8 U	1.8 U	0.34 J	0.34 J	0.32 J	11
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.8 U	0.28 J	1.7 U	1.7 U	1.8 U	14
Perfluorohexanoic acid (PFHxA)	ng/L	1.8 U	1.8 U	1.7	1.4 J	0.79 J	130
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	0.78 J	1.7 U	1.7 U	1.8 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	0.71 J	1.8 U	0.90 J	0.55 J	0.68 J	1.7 U
Perfluorooctanoic acid (PFOA)	ng/L	1.8 U	1.8 U	0.76 J	1.7 U	1.1 J	3.1
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.8 U	0.28 J	1.7 U	1.8 U	18
Perfluoropentanoic acid (PFPeA)	ng/L	0.51 J	1.8 U	1.8	1.7	0.60 J	140
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluorotridecanoic acid (PFTTrDA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.7 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	18 U	18 U	17 U	17 U	18 U	17 U

## Notes:

U - Not detected at the associated reporting limit

J - Estimated concentration

UJ - Not detected, associated reporting limit is estimated

Table 3

**Analytical Methods and Holding Times  
Groundwater and Residential Sampling Event  
New Richmond Landfill Site  
New Richmond, Wisconsin  
May 2020**

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Volatile Organic Compounds (VOCs)	SW-846 8260B	Water	-	14
PFAS	EPA 537 modified	Water	14	28

## Notes:

## Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

EPA - "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", Version 1.1, September 2009, EPA/600/R-08/092

PFAS - Per and Polyfluoroalkyl Substances

Table 4

**Qualified Sample Results Due to Analyte Concentrations in the Method Blanks  
Groundwater and Residential Sampling Event  
New Richmond Landfill Site  
New Richmond, Wisconsin  
May 2020**

Parameter	Analyte	Analysis Batch	Blank Result *	Sample ID	Original Result	Qualified Result	Units
PFAS	PFHxS	380478	0.282J	W-200520-RA-12	0.83 J	1.7 U	ng/L
				W-200520-RA-13	0.64 J	1.7 U	ng/L
				W-200519-RA-02	0.29 J	1.7 U	ng/L
				W-200519-RA-03	0.57 J	1.8 U	ng/L
				W-200519-RA-05	0.58 J	1.8 U	ng/L
				W-200519-RA-06	0.57 J	1.8 U	ng/L
				W-200520-RA-07	0.28 J	1.8 U	ng/L
				W-200520-RA-08	0.41 J	1.8 U	ng/L
PFAS	FOSA	380478	0.719J	W-200520-RA-12	1.8	1.8 U	ng/L
					0.50 J	1.7 U	ng/L
					0.62 J	1.7 U	ng/L
					0.63 J	1.7 U	ng/L
					0.35 J	1.7 U	ng/L
					0.67 J	1.8 U	ng/L
					0.56 J	1.8 U	ng/L
					1.0 J	1.8 U	ng/L
					0.50 J	1.8 U	ng/L
	0.81 J	1.8 U	ng/L				

## Notes:

- \* - Blank result adjusted for sample factors where applicable
- U - Not detected at the associated reporting limit
- J - Estimated concentration
- PFAS - Per and Polyfluoroalkyl Substances
- PFHxS - Perfluorohexane sulfonic acid
- FOSA - Perfluorooctane sulfonamide



Table 5

**Qualified Sample Data Due to Outlying IDA Recoveries  
Groundwater and Residential Sampling Event  
New Richmond Landfill Site  
New Richmond, Wisconsin  
May 2020**

<b>Parameter</b>	<b>Sample ID</b>	<b>Surrogate</b>	<b>Surrogate % Recovery</b>	<b><u>Control Limits</u> % Recovery</b>	<b>Analyte</b>	<b>Qualified Result</b>	<b>Units</b>
PFAS	W-200520-RA-14	M2-4:2 FTSA	237	25-150	Fluorotelomer sulfonic acid (4:2)	17 UJ	ng/L
PFAS	W-200520-RA-15	M2-4:2 FTSA	160	25-150	Fluorotelomer sulfonic acid (4:2)	17 UJ	ng/L

## Notes:

- IDA - Isotope Dilution Analyte
- PFAS - Per and Polyfluoroalkyl Substances
- M2-4:2 FTSA - 1H, 1H, 2H, 2H-perfluoro-1-[1,2-<sup>13</sup>C<sub>2</sub>] hexansulfonic acid
- UJ - Not detected; associated reporting limit is estimated

Table 6

**Qualified Sample Data Due to Analyte Concentrations in the Field Blanks  
Groundwater and Residential Sampling Event  
New Richmond Landfill Site  
New Richmond, Wisconsin  
May 2020**

<b>Parameter</b>	<b>Field Blank ID</b>	<b>Blank Date (dd/mm/yyyy)</b>	<b>Analyte</b>	<b>Blank Result</b>	<b>Associated Sample ID</b>	<b>Original Result</b>	<b>Qualified Result</b>	<b>Units</b>
PFAS	W-200519-RA-04	5/19/2020	PFOS	0.65J	W-200519-RA-05	0.92 J	1.8 U	ng/L
					W-200519-RA-06	0.96 J	1.8 U	ng/L

## Notes:

PFAS - Per and Polyfluoroalkyl Substances

PFOS - Perfluorooctane sulfonic Acid

U - Not detected at the associated reporting limit

J - Estimated concentration