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T 877.633.5520 | W www.cornerstoneeg.com

March 31, 2017

Mr. Eric Syftestad
Wisconsin Department of Natural Resources
Waste Management Engineer
3911 Fish Hatchery Road
Fitchburg, WI 53711

Re: Marathon County Solid Waste Landfill – Area A Landfill
2016 Annual Solid Waste Report
WDNR License No. 2892, FID No. 737054890

Dear Mr. Syftestad:

On behalf of the Marathon County Solid Waste Department (Marathon County) Cornerstone Environmental Group, LLC (Cornerstone) is herewith submitting a copy of the 2016 Annual Solid Waste Report for the Area A Landfill (Area A) of the Marathon County Landfill. This Annual Solid Waste Report is being submitted in accordance with the approved plan of operation for Area A.

In accordance with your request, two (2) additional copies and the necessary electronic (CD burned) version are also being distributed to pertinent WDNR staff as noted below.

Should you have any questions or comments regarding this Annual Solid Waste Report do not hesitate to contact me at (262) 573-7012 or Ms. Meleesa Johnson at (715) 466-3101 ext 104.

Sincerely,

Cornerstone Environmental Group, LLC

Michael Melan
Project Manager

Enclosure: As Noted

cc: Marathon County Solid Waste Landfill (File Copies)
Nathan Collier – WDNR Spooner Service Center
Sarah Sheil – WDNR Eau Claire Service Center

Marathon County Solid Waste Department
Area A Landfill
2016 ANNUAL REPORT

WDNR License No. 2892
FID 737054890

Marathon County Solid Waste Management Department
R18500 Highway 29
Ringle, WI 54471
Phone 715-446-3101
Director: X104
Operations Manager: 715-551-5864
Business Office: X100
Environmental Technician: X101
Scale: X103

Solid Waste & Recycling Information Line: 877-270-3989

www.marathoncountysolidwaste.org

marathoncountysolidwaste

Staff, Consultants & Contractors

Marathon County Solid Waste Department Staff:

- Meleesa Johnson-Director
- David Hagenbucher-Operations Manager
- Jessica Knaup-Scale Operator
- Ron Smith-Environmental Technician
- Julie Groshek-Accounting Specialist
- Chris Wickman-Equipment Maintenance Specialist
- Kevin Steinke-Equipment Operator
- Eric Olson-Equipment Operator
- Dave Vitt-Equipment Operator
- Paul Swanwell-Temporary Intern
- Lindsey Carlson- Temporary Intern
- Lydia Campbell- Temporary Intern

Engineering Consultants:

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- Michael Melan
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  435 E Mill Street, Suite 15
  Plymouth, WI 53073
- Cyndi Neitzel, P.E.
  Cornerstone Environmental Group, LLC
  435 E Mill Street, Suite 15
  Plymouth, WI 53073

Contractors:

- Northern Lakes Service, Inc.
  400 North Lake Avenue
  Crandon, WI 54520
- Northern Pipe Equipment, Inc.
  1722 County Road QQ
  Green Bay, WI 54311
- Walt's Petroleum Services, Inc.
  5207 E. Jelinek Avenue
  Schofield, WI 54476

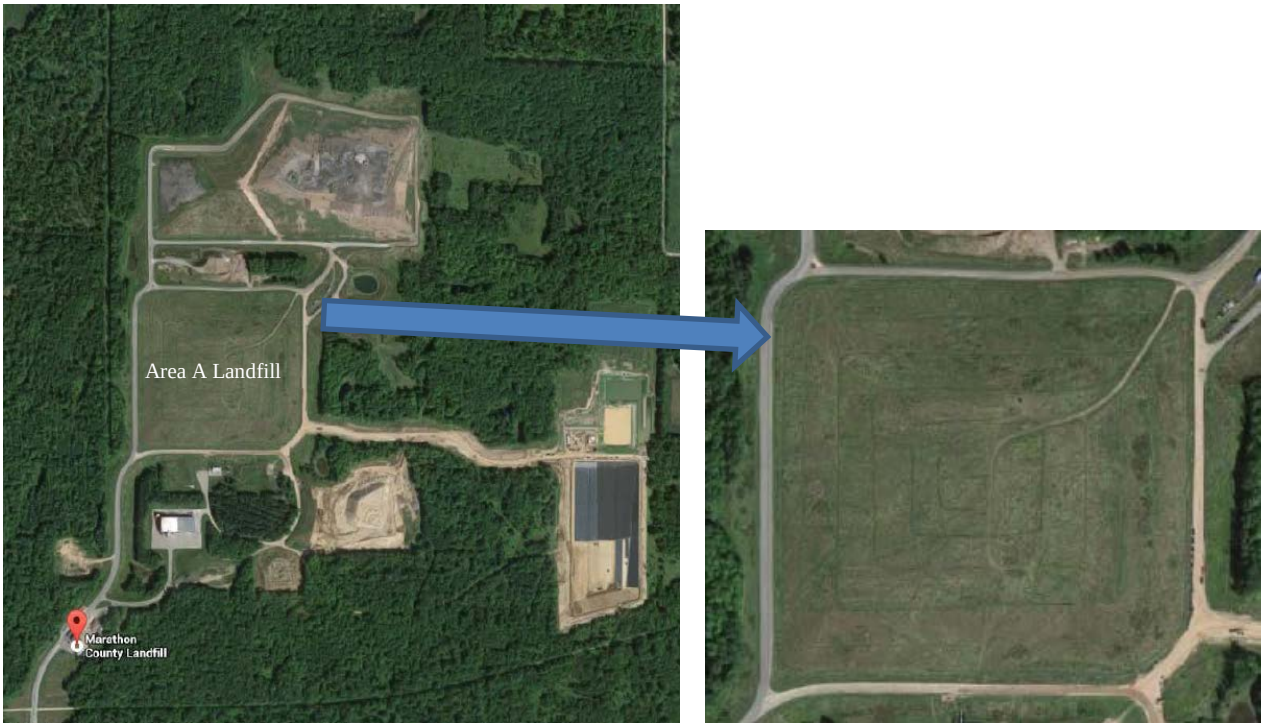
Introduction

This report provides information about site conditions on, work conducted at and other activities related to, the closed Area A Landfill (Area A). This report is intended to meet the intent and spirit of the annual reporting and monitoring requirements found in approved documents for Area A and the modified monitoring requirements found in the 2013 Modification to the Monitoring Plan (for Groundwater, Lysimeters and Leachate Collection).

Area A Background

Area A is a 27.3-acre closed landfill and is owned and operated by Marathon County Solid Waste Department (MCSWD). This facility accepted and disposed of waste from December 1980 until December 1993. In 1994 closure was conducted according to approved methods. During active fill operations a variety of waste materials were accepted including residential and commercial waste, high-volume industrial wastes and other miscellaneous materials.

MCSWD and various contracted firms have and will continue to work collaboratively to ensure post-operations/post-closure activities are conducted in accordance with all required long-term care approvals. This includes, but is not limited to, operation of and maintenance of the following systems: final cover, storm water, landfill gas and condensate, leachate collection, and groundwater monitoring.



Site Landfill Activities in 2016

The Area A is a closed landfill and, as such, did not accept waste during 2016. However, as is required by the approved permit, general maintenance and management of the post-closure facility was conducted. This included:

- Monthly visual inspections of the final cover surface
- Inspections of storm water management pathways
- Removal of obstructions or repair to storm water pathways
- Mowing pathways for surface emission monitoring work
- General mowing to control for woody herbaceous growth
- Snow plowing of access roads
- Grading and dust management of access roads
- Preventative maintenance on gas system and leachate pumping system

As needed, MCSWD hired various contractors and/or consultants to perform specific tasks beyond the capabilities of the site staff such as air permit compliance reporting and support and, seeding and fertilizing duties and contracted leachate hauling.

The condition of the surface area and final cover are good. There is no damage or compromising of the final cover. There are no slumps or subsidence, other than the normal gradual undulations. No leachate seeps exist. Vegetation consists of dense mixed grasses including rye, fescues and sedges. Some wildflowers, both native and invasive, are evident, but not abundant. The plant growth continues to look acceptable and no bare spots or other problems were noted. Wildlife species such as deer, fox, coyote, rabbits and many types of birds use the ecosystem of Area A for cover and as a source of food. The cover is inspected regularly for damage caused by wildlife and corrected, if needed.

Gas Collection System

Area A is situated near the center of the 532 acre facility boundaries. The landfill is located north of the facility's gas recovery building. An active gas system, consisting of blowers and other equipment, has been extracting landfill gas from this landfill since 1989.

Most of the Area A landfill gas piping was installed during a ten-year period from 1984 through 1993, with additions made in 2003, 2004 and 2009. Landfill gas extracted from the landfill is transferred to the gas recovery building via a large header pipe. Vacuum to the wellfield is regulated by the variable frequency drive (VFD) at the blower station located at the Gas Recovery Building to the south of the site that controls the gas collection and control system (GCCS) at the site.

Landfill gas emissions from Area A are regulated under, and in accordance with, renewed Air Pollution Control Operation Permit 737092730-P20 dated November 2, 2015.

Existing sensing devices measure gas flow rates, pressures and vacuums, as well as methane and oxygen concentrations. Data is recorded and stored on a computerized system. This data is used for reporting and operating purposes.

Data shown in the tables below indicate the landfill gas collection system operated 99.2% of the year and 8721.3 hours of operation (a leap year). The average aggregated flow rate, for both Area A and Area B, was 540.6 standard cubic feet per minute (scfm), of this Area A contributed an average of 55.7 scfm. Methane and oxygen concentrations of landfill gas averaged, by volume, 50.61% for methane and 0.55% oxygen. Total gas collected for at the site in 2016 was 284,794,518 standard

cubic feet (scf) and of this total, Area A contributed 29,434,246 scf. From the total scf collected at the site, 280,264,285 scf was used for production of electricity and 4,530,233 scf was sent to the flare.

MARATHON COUNTY LANDFILL GAS COLLECTION DATA (INCLUDES AREA A AND AREA B)

2016	Average flow (SCFM)	Monthly total flow (SCFM)	To Electrical Production (SCFM)	To Flare (SCFM)	Average Vacuum to Wellfield (Inches SC)
Jan	584.0	26,070,170.7	25,555,283.5	514,887.14	25.45
Feb	617.6	25,788,851.7	24,575,562.7	1,213,288.96	29.10
March	593.0	26,473,725.0	26,280,784.3	192,940.8	29.46
April	558.6	24,132,972.1	23,857,596.0	275,376.0	30.60
May	552.9	24,680,642.6	24,658,652.7	21,989.9	31.12
June	531.9	22,976,388.4	22,664,822.4	311,566.0	29.36
July	536.6	23,951,593.2	23,755,492.8	196,100.4	29.37
August	522.5	23,323,056.4	22,912,099.2	410,957.2	28.88
Sept	515.9	22,284,504.6	22,095,607.6	188,897.0	30.11
Oct	509.4	22,741,147.3	22,587,131.6	154,015.7	30.49
Nov	497.1	21,474,956.0	21,423,136.7	51,819.3	31.08
Dec	468.1	20,896,509.9	19,898,115.2	998,394.8	31.01
Totals	*540.6*	*284,794,517.9*	*280,264,284.5*	*4,530,233*	*29.67*

Below is a chart listing average monthly and annual methane (CH4), oxygen (O2) and hydrogen sulfide (H2S) concentrations.

2016	CH4 %	O2 %
Jan	52.32	0.42
Feb	51.24	0.42
March	51.53	0.56
April	51.79	0.89
May	50.02	0.54
June	50.68	0.42
July	50.85	0.48
August	50.22	0.46
Sept	50.11	0.49
Oct	49.65	0.56
Nov	48.74	0.59
Dec	50.14	0.72
Averages	50.61	0.55

As indicated previously, the gas system operated nearly continuously. Any shutdowns, whether for planned maintenance or unplanned events, resulted in proper and lawful notification to the Wisconsin Department of Natural Resources (WDNR) Air Management staff. The January to June 2016 Semi-annual Report and July to December 2016 Semiannual Report for the facility include descriptions of GCCS and control device shutdown events, GCCS and control device malfunctions, and continuous monitoring device malfunctions.

Surface Emission Monitoring

Surface emission monitoring (SEM) of Area A was conducted on June 14, 2016. No exceedances were detected. Permit compliance condition I.A.9.e allows for annual SEM once "any closed landfill…has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods…" Because MCSWD is allowed to conduct annual SEM monitoring on Area A, a SEM was not conducted in the first, third and fourth quarter.

For the SEM event a photoionization detector (PID) was used and the MCSWD's environmental technician walked a serpentine pattern across the surface of the landfill for the annual event.

Soil Gas Monitoring

During 2016 the soil gas probes were monitored quarterly for relative pressure, methane (CH4), oxygen (02), and soil gas pressure. In 2016, these monitoring results indicated no gas migration.

First Quarter Probe Data (February 16, 2016):

Gas Probe [Depth in feet]	Location	Methane (%CH4 by Vol.)	Oxygen (%O2 by Vol.)	Pressure (inch W.C.)	Notes:
Lic. 2892	WDNR Parm Code #	85547	85550	46389	
Area A Probe IDs					WDNR ID No.
G-1R [10']	E Area A	0	10.5	-0.01	700
G-3R [15']	W Area A	0	21.6	-0.17	704
G-4R [5']	W Area A	0	21.6	0	709
G-9 [9']	W Area A	0	22	0	720
G-11 [10']	S Area A	0	21.7	-0.03	724
G-12 [10']	S Area A	0	21.7	0	726

Second Quarter Probe Data (May 19, 2016):

Gas Probe [Depth in feet]	Location	Methane (%CH4 by Vol.)	Oxygen (%O2 by Vol.)	Pressure (inch W.C.)	Notes:
Lic. 2892	WDNR Parm Code #	85547	85550	46389	
Area A Probe IDs					WDNR ID No.
G-1R [10']	E Area A	0.0	15.9	-0.01	700
G-3R [15']	W Area A	0.0	20.2	0.0	704
G-4R [5']	W Area A	0.0	20.2	0.0	709
G-9 [9']	W Area A	0.0	20	0.0	720
G-11 [10']	S Area A	0.0	21	-0.01	724
G-12 [10']	S Area A	0.0	20.2	0.0	726

Third Quarter Probe Data (August 16, 2016):

Gas Probe [Depth in feet]	Location	Methane (%CH4 by Vol.)	Oxygen (%O2 by Vol.)	Pressure (inch W.C.)	Notes:
Lic. 2892	WDNR Parm Code #	85547	85550	46389	
Area A Probe IDs					WDNR ID No.
G-1R [10']	E Area A	0.0	14.4	0.0	700
G-3R [15']	W Area A	0.0	19.5	0.0	704
G-4R [5']	W Area A	0.0	19.2	0.0	709
G-9 [9']	W Area A	0.0	19.9	0.0	720
G-11 [10']	S Area A	0.0	17.9	0.0	724
G-12 [10']	S Area A	0.0	19.4	0.0	726

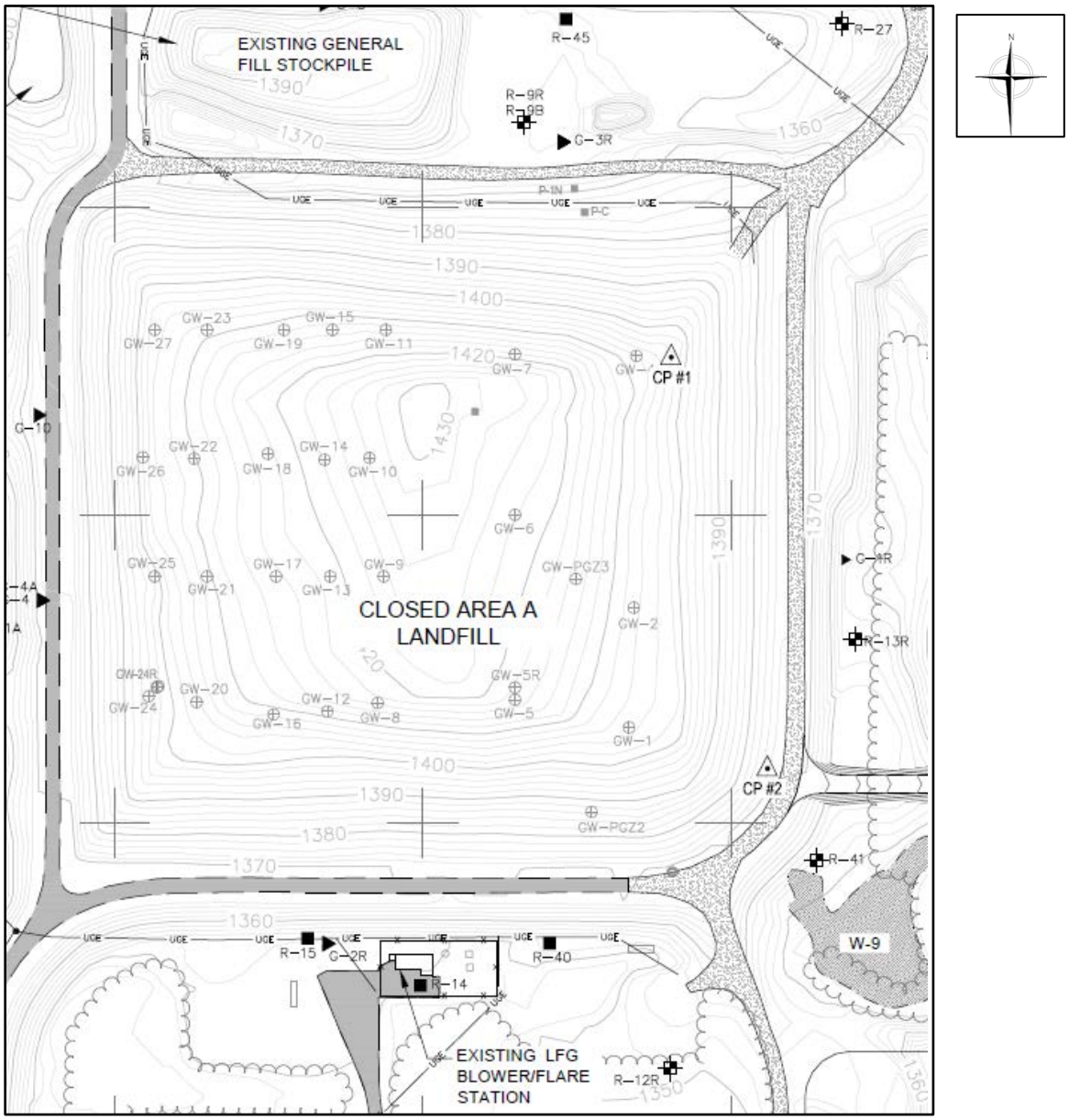
Fourth Quarter Probe Data (November 1, 2016):

Gas Probe [Depth in feet]	Location	Methane (%CH4 by Vol.)	Oxygen (%O2 by Vol.)	Pressure (inch W.C.)	Notes:
Lic. 2892	WDNR Parm Code #	85547	85550	46389	
Area A Probe IDs					WDNR ID No.
G-1R [10']	E Area A	0.0	14.2	0.0	700
G-3R [15']	W Area A	0.0	19.5	0.02	704
G-4R [5']	W Area A	0.0	19	0.02	709
G-9 [9']	W Area A	0.0	18.3	0.02	720
G-11 [10']	S Area A	0.0	19.4	0.0	724
G-12 [10']	S Area A	0.0	19.6	0.0	726

Gas Sampling Data

On August 31, 2016 MCSWD's environmental technician used a summa canister to collect a sample of landfill gas. The full canister was shipped via express mail services to Air Technology Labs, Inc. (ATL) in City of Industry, California for analyses of volatile organic compounds. The test method used was United States Environmental Protection Agency (EPA) test method TO-15, Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS). Results of the testing performed by ATL is provided as Attachment A to this report.

Area A Landfill Gas Wellfield Map:



Leachate Management:

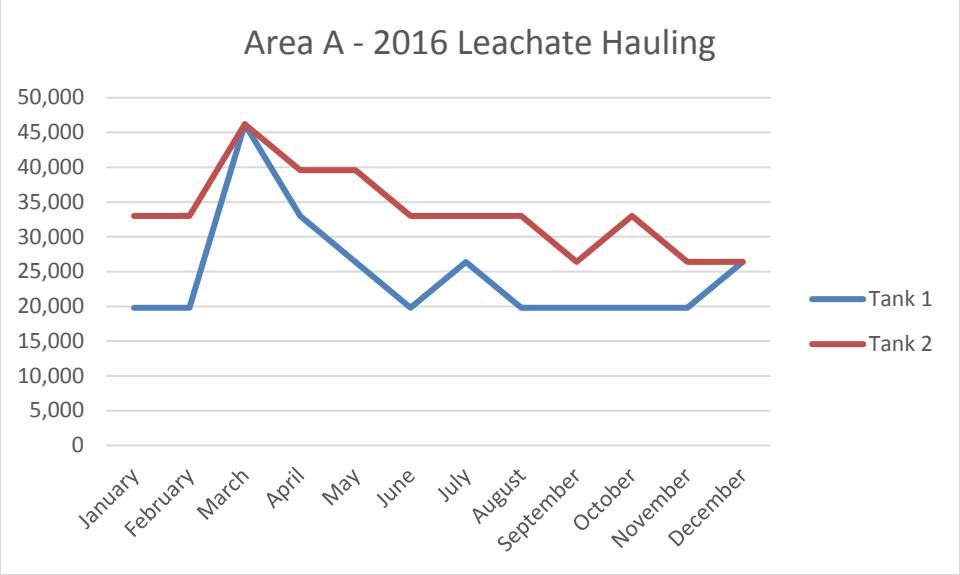
The Area A leachate collection system captures all liquids entering the site and directs to the holding tank system. Leachate is collected through a series of perforated pipes within the landfill and is delivered to one of two double-walled steel, underground storage tanks. Tank 1 has a 20,000-gallon capacity and Tank 2 has a 25,000-gallon tank.

Leachate tank levels are checked daily by the contract operator and throughout the week by the site facility supervisor and environmental technicians.

Preventative maintenance of the leachate storage and pumping system was conducted, as needed, by on-site operations contractor or other tank and pump specialists when required. Unplanned repairs were performed by the most available, qualified tank and pump specialists.

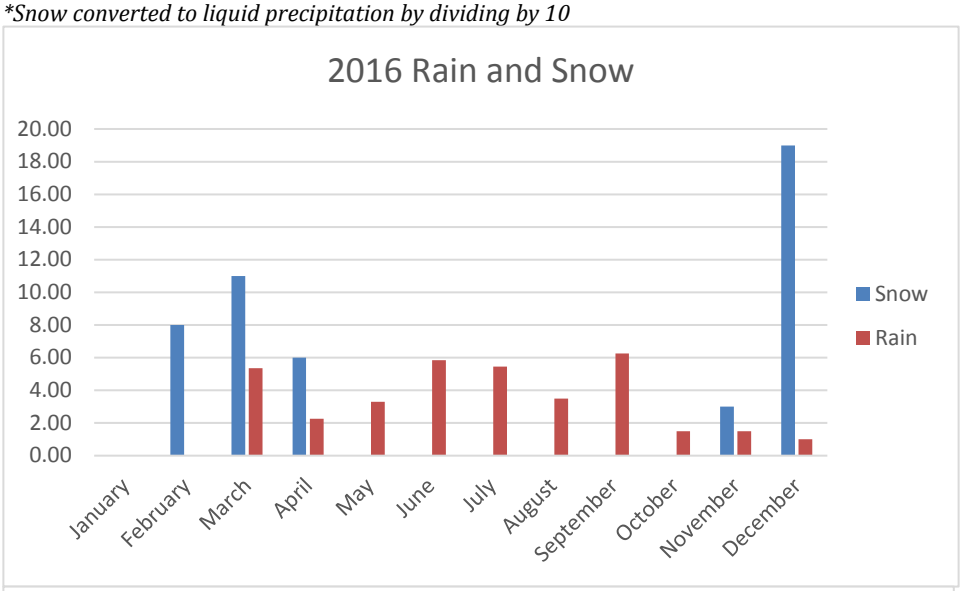
Total volume of leachate collected/transported/treated are as follows:

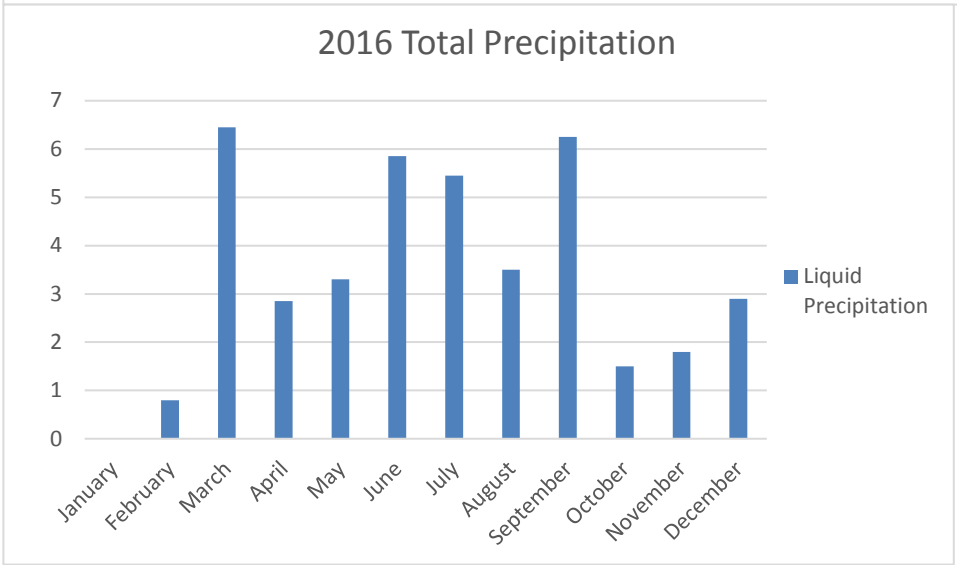
2016	Tank 1	Tank 2
January	19,800	33,000
February	19,800	33,000
March	46,200	46,200
April	33,000	39,600
May	26,400	39,600
June	19,800	33,000
July	26,400	33,000
August	19,800	33,000
September	19,800	26,400
October	19,800	33,000
November	19,800	26,400
December	26,400	26,400
Total	297,000	402,600



2016 Precipitation Totals			
Month	Snow (inches)	Rain (inches)	Liquid Precipitation* (inches)
January			0.00
February	8.00		0.80
March	11.00	5.35	6.45
April	6.00	2.25	2.85
May		3.30	3.30
June		5.85	5.85
July		5.45	5.45
August		3.50	3.50
September		6.25	6.25
October		1.50	1.50
November	3.00	1.50	1.80
December	19.00	1.00	2.90
Total	47.00	35.95	40.65

**Snow converted to liquid precipitation by dividing by 10*





Leachate Collection Piping

On July 18, 2016 Northern Pipe Equipment, Inc. of Green Bay, Wisconsin, water jetted the Area A leachate lines with a total of 2,900 gallons of water. With the exception of access points 1 and 7, leachate pipelines were fully jetted. These two collection lines will be addressed in the next round of jetting in 2017. Jetting was accomplished by accessing pipes from both ends for cleaning to overlap in the center or jetting the full length from one access point. The results/findings are provided below:

NORTHERN PIPE EQUIPMENT, INC.
PROFESSIONAL PIPELINE CLEANING & INSPECTION

MARATHON COUNTY LANDFIL I
LEACHATE PIPE CLEANOUT RECORDS

DATE: July 18, 2016
CONTRACTOR NAME: Northern Pipe Equipment, Inc.
CONTRACTOR PHONE: 920-468-7074
EQUIPMENT USED: #36 Vac-Con w/ 1,200 ft. 3/4" hose

AREA A

CLEANOUT ACCESS POINT	PIPE SIZE	PIPE LENGTH (FT)	FT. JETTED SOUTH	FT. JETTED NORTH	COMMENTS
1	8"	1180	285	480	Jetter stops ; Hard deposits on both sides
2	6"	1040	750	340	Jetter stops on South side ; North side no problems ; Achieved overlap
3	6"	1040	1040	0	Whole line from South ; No problems
4	8"	1180	925	355	Jetter stops on South side ; North side no problems ; Achieved overlap
5	6"	1040	825	315	Jetter stops on South side ; North side no problems ; Achieved overlap
6	6"	1040	600	540	Jetter stops on South side ; North side no problems ; Achieved overlap
7	8"	460	92	0	Jetter stops
Gas Condensate Line		280	280		Line is good

AMOUNT OF WATER USED: 2,900 Gallons of water

Leachate Sampling

Leachate sampling and analytical analysis was conducted in April and October 2016 by Northern Lake Services (NLS). Sampling results of volatile organic compounds, submitted electronically to the WDNR Groundwater and Environmental Monitoring System (GEMS) database, show a wide variety of compounds present. Conductivity and pH values obtained are summarized below.

Leachate tank sampling conductivity results are as follows;

Tank 1

April	3840 umho/cm
October	4950 umho/cm

Tank 2

April	5010 umho/cm
October	5700 umho/cm

Analyses show leachate presents as slightly basic to neutral.

Tank 1

April	7.01 ph
October	7.21 ph

Tank 2

April	7.02 ph
October	6.90 ph

Leachate Level Monitoring

The reported monthly leachate levels are provided below:

2016 LEACHATE HEADWELL AND STORMWATER MONITORING FOR AREA A LANDFILL

Area A - 2016	LHW1	LHW2	LHW3	LHW4D	LHW4M	LHW4S	P5*	P6*	P7*	P8*
Measured Pipe Length to Bottom 2007-8 (ft) (P)	56.26	58.53	63.7	67.5	47.65	33.6	67.7	52.25	68.8	59.8
Bottom of Pipe Elevation				1356	1375.8	1390				
Screen Length (ft)	20	20	20	1.5	1.5	1.5				
Date:	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)	Depth to Liquid (ft)
1/12/2016	37.0	34.5	43.6	45.4	42.5	Dry	Frozen	Frozen	Frozen	Frozen
2/22/2016	36.9	34.4	43.5	45.3	42.3	Dry	Frozen	Frozen	Frozen	Frozen
3/25/2016	36.7	34.2	43.3	45.2	42.3	32.1	Frozen	Frozen	Dry	Frozen
4/4/2016	36.6	34.1	43.2	45.2	42.3	32.1	Frozen	Frozen	Dry	Frozen
5/28/2016	33.7	35.3	43.8	45.1	41.5	Dry	Dry	Dry	Dry	Dry
6/14/2016	33.6	35.3	43.8	45.1	41.4	Dry	Dry	Dry	Dry	Dry
7/29/2016	33.6	34.9	44.9	45.3	41.2	Dry	Dry	Dry	Dry	Dry
8/15/2016	33.6	34.4	46.9	45.4	40.8	Dry	Dry	Dry	Dry	Dry
9/27/2016	34.4	34.3	43.5	46.7	41.0	Dry	Dry	Dry	Dry	Dry
10/21/2016	34.6	34.5	43.7	46.8	41.1	Dry	Dry	Dry	Dry	Dry
11/10/2016	33.6	35.4	43.5	45.0	40.5	Dry	Dry	Dry	Dry	Dry
12/22/2016	33.0	34.9	44.2	44.6	41.0	Dry	Dry	Dry	Dry	Dry

LHW - Leachate Head Well, monitoring pipe within Area A waste mass

*P's are monitoring pipes on the side slopes

SW - Stormwater levels of surface ponds

	1/12/2016	2/22/2016	3/25/2016	4/4/2016	5/28/2016	6/14/2016	7/29/2016	8/15/2016	9/27/2016	10/21/2016	11/10/2016	12/22/2016
SW1	18" snow	20" snow	22"	32"	20"	19"	17"	14"	7"	5"	Dry	11" snow
SW2	19" snow	30" snow	33"	34"	31"	31"	28"	20"	Dry	Dry	Dry	12" snow
SW3	20" snow	29" snow	31"	33"	28"	27"	25"	17"	Dry	Dry	Dry	12" snow

Lysimeters

Four lysimeters (LS-2, LS-3, LS-5 and LS-6) were constructed within the unsaturated zone under the Area A landfill. NLS monitored the lysimeters in October 2016 and found LS-3 and LS-5 to be dry. LS-2 and LS-6, the two lysimeters sampled, also includes VOC testing. Results of the sample testing is provided below:

October 2016 Results:

ID/Date	Conductivity	pH	Gal. Pumped	Alkalinity (as CaCO)	COD	Chloride (as Cl)	Hardness	Nitrogen, Amonia, Total	Sodium (as Na)	Sulfate (as SO4)	VOC's
Lysimeter 2											
Oct-16	591 umho/cm @25C	7.26	1	79 mg/L	11 mg/L	120 mg/L	250 mg/L	0.08 mg/L	8.2 mg/L	5.7 mg/L	ND ug/L
Lysimer 6											
Oct-16	884 umho/cm @25C	6.82	1	490 mg/L	19 mg/L	29 mg/L	460 mg/L	2.4 mg/L	13 mg/L	ND mg/L	ND ug/L

Hydrogeological Conditions

The near-surface geology at this site consists of glacial sediments that were deposited in an ice marginal environment that led to the formation of an end moraine. Consequently, these deposits vary widely in terms of their grain-size distributions and sorting. On-site borings penetrated mostly gravelly, silty sands (classified as SM and SP-SM type soils), but zones of well-sorted sands (SP) and sandy, clayey silts (CL or CL-ML type soils) were also encountered. The thickness of glacial drift also varies widely, partly because the sediments were deposited in a moraine with hummocky topography, and partly because the underlying bedrock has more than 80 feet of local relief to its upper surface. Depth to bedrock (granitic gneiss, granite, and quartz monzonite) ranges from 35 to nearly 100 feet. (Sand Creek Consultant Report-Groundwater Flow and Plume Dynamics, 12/09)

Groundwater at the Area A locale occurs under water table conditions and is recharged by excess rainfall that infiltrates the land surface. Estimates of recharge near the site are on the order of 10 inches per year. The water table is generally less than 50 feet below grade, occurring within the glacial deposits. (Sand Creek Consultant Report-Groundwater Flow and Plume Dynamics, 12/09)

Groundwater Monitoring & Analysis

At the beginning of 2016 MCSWD had a total of 91 groundwater monitoring wells, with forty-two designated for Area A. The groundwater monitoring regimen was conducted according to the February 7, 2013 approved groundwater, lysimeter and leachate monitoring plan.

Per the approved monitoring plan, the groundwater wells within the plan were sampled semi-annually in April and October. Sampling and laboratory analysis was conducted by qualified personnel from Northern Lake Service (NLS) of Crandon, Wisconsin. Results revealed that the majority of monitoring wells have very good water quality and most meet safe drinking water standards. The groundwater samples were analyzed to very low chemical concentrations with many found to be below the laboratory's limit of quantification (LOQ). The groundwater quality measurements were compared to NR 140 Groundwater Preventive Action Limits (PALs) and Enforcement Standards (ESs) and site specific indicator PALs and Alternate Concentration Limits (ACLs) provided in the approved monitoring plan.

Reporting values higher than these limits are reported as exceedances. As in past monitoring events at the Area A site, results of some wells exceeded the PAL and ES standards, particularly for volatile organic compounds (VOCs). In particular are those wells that have historically indicated contamination: R12R, R13R, R38, and R50P and more recently R47. Continued monitoring and trending will be necessary to track this. No action is planned or required at this time. Groundwater monitoring results and any exceedances were submitted electronically by NLS to the WDNR's Groundwater Environmental Monitoring System (GEMS). Below is a summary of the exceedances from each semi-annual monitoring period. The exceedance reports submitted to the WDNR for sampling events in April and October 2016 are provided in Attachment B.

Private Well Water Sampling

The private wells identified in the monitoring plan identify nine wells monitored semi-annually (April and October) and seven monitored annually (October) for specified parameters. Analytical results and explanations, where necessary, were reported to the private well owners. Results of the down-gradient wells having WDNR well ID numbers were submitted electronically to the WDNR's GEMS . The private water supply well samples analyzed in 2016 met the parameters identified in the site's monitoring plan for safe drinking water standards and no exceedances were recorded.

Since 1993, MCSWD has monitored private wells adjacent to and generally within about one mile to the southeast of the landfill property limits. MCSWD annually sends letters to approximately fifty

landowners and nearby residents, offering to monitor their private water supply wells in autumn of each year. MCSWD notifies all eligible residents in advance of the monitoring event and schedules private well testing based on owner requests on a first come, first served basis. Not all residents accept the offer.

MCSWD's July 2004 "Private Well Monitoring Program and Contingency Plan for Alternative Water Supplies" explained that water supply wells located south to southeast of Area A will be sampled and tested for VOCs. MCSWD outlined a plan to take precautionary measures and to ensure safe drinking water is provided to homeowners in this group if, in the future, impacted groundwater from the landfill would cause a well's water to have total contaminants at a concentration half of the allowable drinking water maximum contaminant level. The maximum contaminant levels are allowed in drinking water for public water supply systems, so the county's contingency plan is even more protective of human health.

Landfill Gas Monitoring

Landfill gas monitoring was conducted on a monthly basis in accordance with the sites Air Pollution Control Operation Permit 737092730-P20. The results of each monthly monitoring event is provided to both the solid waste and air departments of the WDNR on a monthly basis.

ATTACHMENT A

TO-15 SAMPLE RESULTS

Air TECHNOLOGY Laboratories, Inc.

September 26, 2016

ADE-1461
EPA Methods TO3, TO14A, TO15 SIM & SCAN ASTM D1946

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Marathon County Solid Waste
ATTN: Ron Smith
R18500 E. Highway 29
Ringle, WI 54471

LABORATORY TEST RESULTS

Project Reference: Marathon Co. Mainline VOC Sample; I
Lab Number: H090706-01/02

Enclosed are results for sample(s) received 9/07/16 by Air Technology Laboratories. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the NELAC Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Ron Smith on 9/23/16.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

Client: Marathon County Solid Waste
Attn: Ron Smith
Project Name: Marathon Co. Mainline VOC Sample
Project No.: 1
Date Received: 09/07/16
Matrix: Air
Reporting Units: ug/L

EPA Method TO15

Lab No.:	II090706-02
Client Sample I.D.:	Mainline VOC 1
Date/Time Sampled:	8/31/16 8:00
Date/Time Analyzed:	9/9/16 2:25
QC Batch No.:	160908MS2A1
Analyst Initials:	VM
Dilution Factor:	16

ANALYTE	Result ug/L	RL ug/L
Dichlorodifluoromethane (12)	0.77	0.078
Chloromethane	ND	0.065
1,2-Cl-1,1,2,2-F ethane (114)	0.12	0.11
Vinyl Chloride	0.37	0.040
Bromomethane	ND	0.15
Chloroethane	0.073	0.042
Trichlorofluoromethane (11)	0.12	0.089
1,1-Dichloroethene	ND	0.063
Carbon Disulfide	0.73	0.25
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.12
Acetone	4.7	0.19
Methylene Chloride	ND	0.055
t-1,2-Dichloroethene	ND	0.063
1,1-Dichloroethane	ND	0.064
Vinyl Acetate	ND	0.28
c-1,2-Dichloroethene	0.40	0.063
2-Butanone	2.9	0.047
t-Butyl Methyl Ether (MTBE)	0.065	0.057
Chloroform	ND	0.077
1,1,1-Trichloroethane	ND	0.086
Carbon Tetrachloride	ND	0.099
Benzene	1.1	0.050
1,2-Dichloroethane	0.11	0.064
Trichloroethene	0.100	0.085
1,2-Dichloropropane	ND	0.073
Bromodichloromethane	ND	0.11
c-1,3-Dichloropropene	ND	0.072
4-Methyl-2-Pentanone	1.4	0.065
Toluene	6.8	0.060
t-1,3-Dichloropropene	ND	0.072

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 • City of Industry, CA 91748 • Ph: (626) 964-4032 • Fx: (626) 964-5832

Client: Marathon County Solid Waste
Attn: Ron Smith
Project Name: Marathon Co. Mainline VOC Sample
Project No.: 1
Date Received: 09/07/16
Matrix: Air
Reporting Units: ug/L

EPA Method TO15

Lab No.:	H090706-02
Client Sample I.D.:	Mainline VOC 1
Date/Time Sampled:	8/31/16 8:00
Date/Time Analyzed:	9/9/16 2:25
QC Batch No.:	160908MS2A1
Analyst Initials:	VM
Dilution Factor:	16

ANALYTE	Result ug/L	RL ug/L
1,1,2-Trichloroethane	ND	0.086
Tetrachloroethene	0.57	0.11
2-Hexanone	ND	0.065
Dibromochloromethane	ND	0.13
1,2-Dibromoethane	ND	0.12
Chlorobenzene	ND	0.073
Ethylbenzene	1.7	0.069
p,&m-Xylene	2.9	0.069
o-Xylene	0.91	0.069
Styrene	ND	0.067
Bromoform	ND	0.82
1,1,2,2-Tetrachloroethane	ND	0.22
Benzyl Chloride	ND	0.082
4-Ethyl Toluene	0.14	0.078
1,3,5-Trimethylbenzene	ND	0.16
1,2,4-Trimethylbenzene	ND	0.16
1,3-Dichlorobenzene	ND	0.095
1,4-Dichlorobenzene	ND	0.095
1,2-Dichlorobenzene	ND	0.095
1,2,4-Trichlorobenzene	ND	0.23
Hexachlorobutadiene	ND	0.17

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 9/22/16
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AIR TECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 • City of Industry, CA 91748 • Ph. (626) 964-4032 • Fx: (626) 964-5832

ATTACHMENT B

EXCEEDANCES OF GROUNDWATER STANDARDS FOR AREA A APRIL AND OCTOBER 2016 MONITORING EVENTS

Marathon County Solid Waste Department

R18500 E. Hwy 29
Ringle, WI 54471

Director:	715-446-3101 X104
Site Supervisor:	715-446-3101 X102
Administrative Office:	715-446-3101 X100
Scale Master	715-446-3101 X103
Solid Waste & Recycling Info Line	877-270-3989 toll-free

marathoncountysolidwaste.org
marathoncountysolidwaste

June 14, 2016

Wisconsin Department of Natural Resources
Bureau of Solid Waste Management
GEMS Data Submittal Contact, WA/3
P.O. Box 7921
Madison, WI 53707-7921

RE: Exceedance of Groundwater Standards for Marathon County Landfill, License No. 2892 Area A.

In accordance with NR 140, please accept this notification of groundwater monitoring results for the reporting period of April 2016. An exceedance table has been attached for the Area A landfill and can be found on the following page.

If you have any questions, please contact me.

Thank you,

David Hagenbucher
Operations Manager
Marathon County Solid Waste

C.c: Nathan Coller, Sarah Shiel, Eric Syftestad, Meleesa Johnson, Michael Michels, Michael Melan

Area A Groundwater Well Exceedance Table April 2016

Marathon County Solid Waste Department: Area A Groundwater Monitoring Wells								
	Area A	Facility #02892	Exceedances					
Project #	Date	Well #	Parameter	Units	Result	PAL	ES	Comments
258582	04/14/2016	Dup 041416	Tetrachloroethylene	ug/L	3.40	0.50	5.00	NR140
258582	04/14/2016	Dup 041416	Trichloroethylene	ug/L	6.60	0.50	5.00	NR140
258582	04/14/2016	Dup 041416	Vinyl Chloride	ug/L	0.30	0.02	0.20	NR140
258582	04/14/2016	R12R	Tetrachloroethylene	ug/L	1.10	0.50	5.00	NR140
258582	04/14/2016	R12R	Trichloroethylene	ug/L	1.00	0.50	5.00	NR140
258582	04/14/2016	R13R	Tetrachloroethylene	ug/L	4.10	0.50	5.00	NR140
258582	04/14/2016	R13R	Trichloroethylene	ug/L	6.40	0.50	5.00	NR140
258582	04/14/2016	R13R	Vinyl Chloride	ug/L	0.24	0.02	0.20	NR140
258582	04/14/2016	R38	Tetrachloroethylene	ug/L	1.00	0.50	5.00	NR140
258582	04/14/2016	R38	Trichloroethylene	ug/L	1.30	0.50	5.00	NR140
258582	04/14/2016	R47	Trichloroethylene	ug/L	0.59	0.50	5.00	NR140
258582	04/14/2016	R50P	Tetrachloroethylene	ug/L	0.75	0.50	5.00	NR140
258582	04/14/2016	R50P	Trichloroethylene	ug/L	0.62	0.50	5.00	NR140
258582	04/14/2016	R35	Conductivity	umho @ 25C	510.00	510.00		Well

The Area A exceedances that were detected during the April 2016 sampling event are consistent with the exceedances that were detected in previous sampling events. The exceedances are indicator parameters, not public health standards. Therefore, the concentrations are not considered to present a threat to human health or the environment. Conductivity in R35 has not been identified in the past; however, this particular well is very close to a new haul road where Calcium Chloride surfactant has been used for dust control.

Groundwater contamination was detected southeast of Area A during the late 1980s. By May of 1993, Marathon County completed a groundwater quality investigation and submitted a report to WDNR titled "Marathon County, Area A Landfill – Environmental Contamination Assessment (ECA) report". The ECA report suggested that contaminants may have been released to the environment from one or more of the leachate collection basins and other source locations. Consequently, several improvements were made and both leachate collection basins were removed in 1995. The identified groundwater contaminants of primary concern at this facility are VOCs, specifically the chlorinated aliphatic hydrocarbons (CAHs) and vinyl chloride. Since the remedial work from 1993 to 1996, significant reductions of CAH concentration have been measured near the suspected source zone.

It is the opinion of Marathon County that the exceedances are related to the leachate basins that were removed in 1995. Marathon County will continue to monitor these wells for exceedances as required, and report any anomalies to the WDNR. Marathon County has installed groundwater monitoring wells along State Highway 29, just southeast of the site. If these particular wells begin showing signs of contamination, the County has a contingency plan in place and will respond to protect residents.

marathoncountysolidwaste.org
marathoncountysolidwaste

Marathon County Solid Waste Department
R18500 E. Hwy 29
Ringle, WI 54471

Director:	715-446-3101 X104
Site Supervisor:	715-446-3101 X102
Administrative Office:	715-446-3101 X100
Scale Master	715-446-3101 X103
Solid Waste & Recycling Info Line	877-270-3989 toll-free

November 10, 2016

Wisconsin Department of Natural Resources
Bureau of Solid Waste Management
GEMS Data Submittal Contact, WA/3
P.O. Box 7921
Madison, WI 53707-7921

RE: Exceedance of Groundwater Standards for Marathon County Landfill: License No. 2892 Area A

In accordance with NR 140, please accept this notification of groundwater monitoring results for the reporting period of October 2016. An exceedance table has been attached for the Area A landfill and can be found on the following page.

If you have any questions, please contact me.

Thank you,

David Hagenbucher
Operations Manager
Marathon County Solid Waste

C.c: Nathan Coller, Sarah Shiel, Eric Syftestad, Meleesa Johnson, Michael Michels, Michael Melan

Area A Groundwater Well Exceedance Table October 2016

Marathon County Solid Waste Department: Area A Groundwater Monitoring Wells									
	Area A	Facility #2892	Exceedances						
Project #	Date	Well #	Parameter	Units	Result	PAL	ES	ACL	Comments
268765	10/01/2016	Dup 100316	Tetrachloroethylene	ug/L	4.00	0.50	5.00		NR140
268765	10/01/2016	Dup 100316	Trichloroethylene	ug/L	5.10	0.50	5.00		NR140
268765	10/01/2016	R12R	Tetrachloroethylene	ug/L	0.56	0.50	5.00		NR140
268765	10/01/2016	R13R	Tetrachloroethylene	ug/L	4.70	0.50	5.00		NR140
268765	10/01/2016	R13R	Trichloroethylene	ug/L	6.50	0.50	5.00		NR140
268765	10/01/2016	R38	Tetrachloroethylene	ug/L	0.89	0.50	5.00		NR140
268765	10/01/2016	R38	Trichloroethylene	ug/L	1.10	0.50	5.00		NR140
268765	10/01/2016	R47	Tetrachloroethylene	ug/L	0.87	0.50	5.00		NR140
268765	10/01/2016	R47	Trichloroethylene	ug/L	1.40	0.50	5.00		NR140
268765	10/01/2016	R50P	Tetrachloroethylene	ug/L	0.74	0.50	5.00		NR140

The Area A exceedances that were detected during the October 2016 sampling event are consistent with the exceedances that were detected in previous sampling events.

Groundwater contamination was detected southeast of Area A during the late 1980s. By May of 1993, Marathon County completed a groundwater quality investigation and submitted a report to WDNR titled "Marathon County, Area A Landfill – Environmental Contamination Assessment (ECA) report". The ECA report suggested that contaminants may have been released to the environment from one or more of the leachate collection basins and other source locations. Consequently, several improvements were made and both leachate collection basins were removed in 1995. The identified groundwater contaminants of primary concern at this facility are VOCs, specifically the chlorinated aliphatic hydrocarbons (CAHs) and vinyl chloride. Since the remedial work from 1993 to 1996, significant reductions of CAH concentration have been measured near the suspected source zone.

It is the opinion of Marathon County that the exceedances are related to the leachate basins that were removed in 1995. Marathon County will continue to monitor these wells for exceedances as required, and report any anomalies to the WDNR. Marathon County has installed groundwater monitoring wells along State Highway 29, just southeast of the site. If these particular wells begin showing signs of contamination, the County has a contingency plan in place and will respond to protect residents.