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Infrastructure, environment, facilities

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Mr. Tom Wentland
Wisconsin Department of Natural Resources
Plymouth Service Center
1155 Pilgrim Parkway
Plymouth, Wisconsin 53073

ENVIRONMENT

Subject:
Update to the Development at Historic Fill Site or Licensed Landfill Exemption Application, 67th Place Industrial Park (formerly Lime Pit [Formerly Novak] Site), 1960 South 67th Place, West Allis, Wisconsin.
BRRTS #s 02-41-184802 and 06-41-548795
FID# 241222520

Date:
30 March 2010

Contact:
Ben Verburg

Phone.
414.277.6231

Email:
ben.verburg@arcadis-us.com

Our ref.
WI001074.0007

Dear Mr. Wentland:

This letter is a follow-up to our telephone conversation on March 25, 2010, when we discussed the Development at Historic Fill Site or Licensed Landfill Exemption Application (Application) for the 67th Place Industrial Park Redevelopment located at 1960 South 67th Place in the city of West Allis, Wisconsin (Site). The Application was presented to you during our project meeting on February 3, 2010 at your office. As I mentioned on the telephone, additional data has been collected since submittal of the original Application. The additional data is summarized in this letter. Additionally, the proposed protective actions included in the original Application have been revised to include the use of a vapor barrier in conjunction with the originally-specified soil gas venting system. A revised "*Summary of Protective Actions*" is attached and replaces the "*Summary of Protective Actions*" included in the original Application.

Supplemental Data

Groundwater samples were collected from Monitoring Wells MW-3, MW-9, MW-11R, and MW-14 on February 22, 2010. The groundwater samples were collected using low-flow groundwater sampling methodology. The samples were analyzed for dissolved gases using Method # AM20GAX. A copy of the analytical report and chain-of-custody form is included under Attachment A.

Table 12 provides a summary of the analytical results and Figure 15 presents the data posted by monitoring well location. Table 12 and Figure 15 are both available from the Closure Report (ARCADIS 2010). The maximum observed dissolved methane gas analytical results were observed in the samples collected from Monitoring Wells MW-11R and MW-14, which are installed within the footprint of the former lagoons. These monitoring wells also yielded the maximum recorded soil methane gas readings. The groundwater samples collected from Monitoring Wells MW-3 and MW-9 (located outside of the footprint of the former lagoons and

representative of background conditions) were at low concentrations (2.2 micrograms per liter) and three to four orders of magnitude less in concentration compared to the sample results from Monitoring Wells MW-11R and MW-14. In summary:

- The maximum reported concentration of dissolved methane gas is observed in the monitoring wells located in the footprint of the former lagoons.
- The high concentration of dissolved methane gas indicates that the methane source is present in the saturated section.
- Methane gas is not observed in monitoring well locations outside of the footprint of the former lagoons.

Summary of Protective Actions

Attached to this letter is a revised "*Summary of Protective Actions*" and replaces the same section that was included with our original Application. The revised "*Summary of Protective Actions*" includes the requirement of a vapor barrier in conjunction with the soil gas venting system.

Closing

If you have any questions or comments, please contact me at your convenience.

Sincerely,

ARCADIS

Benjamin J. Verburg, PE, CHMM
Principal Engineer

Attachments

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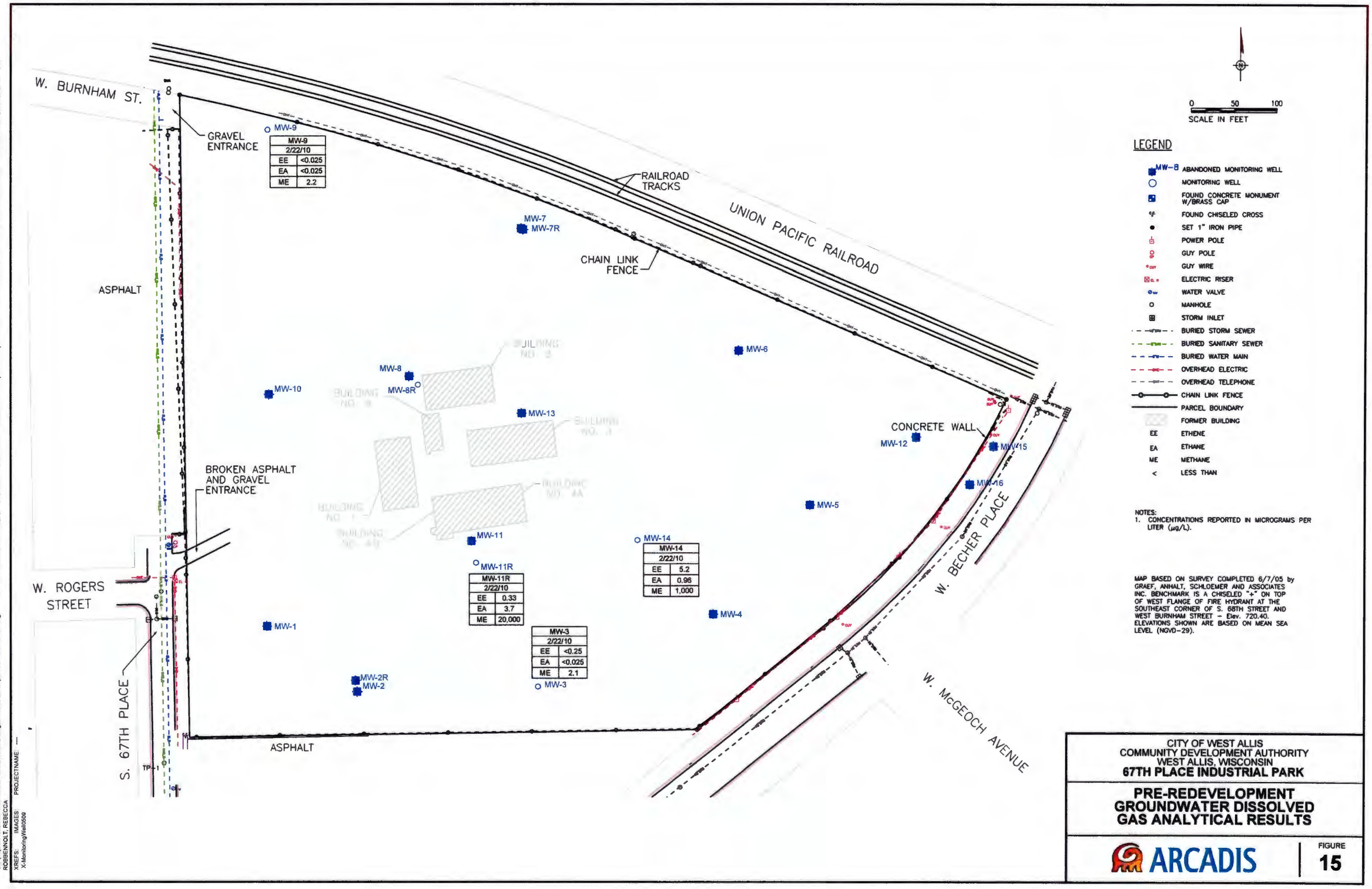
Table 12. Summary of Groundwater Dissolved Gas Analytical Results, 67th Place Industrial Park, West Allis, Wisconsin.

Well ID	MW-3	MW-9	MW-11R	MW-14
Sample Date	**02/22/10**	**02/22/10**	**02/22/10**	**02/22/10**
Dissolved Gases (ug/L)				
Ethane	<0.025	<0.025	3.7	0.96
Ethene	<0.025	<0.025	0.33	5.2
Methane	2.1	2.2	20,000	1,000

µg/L Microgram per liter.



CITY:MILWAUKEE DIV/GROUP:ENVIRONMENTAL DB:R. ROBBENNOLT PM:B. VERBURG TM:T. SCHOEN
G:\Projects\PresSteel\W1074\LimaPit\CADD\benverburg\20100\Pre Development Dissolved Gas.dwg LAYOUT: MONITORING WELLS SAVED: 3/9/2010 4:19 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: BLACKGRAY-THIN.CTB PLOTTED: 3/29/2010 10:59 AM BY:
ROBBENNOLT, REBECCA
XREFS: IMAGES: PROJECTNAME: ---
X-MonitoringWell0509

CITY OF WEST ALLIS
COMMUNITY DEVELOPMENT AUTHORITY
WEST ALLIS, WISCONSIN
67TH PLACE INDUSTRIAL PARK

PRE-REDEVELOPMENT GROUNDWATER DISSOLVED GAS ANALYTICAL RESULTS

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FIGURE 15

Summary of Protective Actions
(Revision #1; March 30, 2010)

The following sections present a summary of the protective actions for the 67th Place Industrial Park located in West Allis, Wisconsin (Site).

The Wisconsin Department of Natural Resources (WDNR) publication *Development at Historic Fill Sites and Licensed Landfills: Considerations and Potential Problems* (PUB-RR-685, WDNR April 2002) lists factors that must be considered when evaluating whether the planned land development is compatible with the waste conditions at a property. These factors include:

- Methane Gas Accumulation in Buildings and Enclosed Structures
- Toxic Gases Collection in Buildings and Other Structures
- Disturbance of the Soil Cap
- Utility Lines Acting as Conduits for Gas and Leachate and Water Supply Wells
- Dewatering Problems
- Worker Exposure
- Settlement Problems
- Prohibition on Water Supply Wells within 1,200 Feet of Waste Limits
- Material Handling

Each factor is addressed in the sections that follow.

Methane Gas Accumulation in Buildings and Enclosed Structures

Methane gas has been observed in select monitoring wells installed in the area of the former lagoons at the Site. The methane gas has been observed in groundwater samples (dissolved gas) and the monitoring well column. The proposed protective action is a combination of a soil gas venting system in conjunction with a vapor barrier.

The soil gas venting system will consist of a six to twelve-inch pea gravel layer placed directly over the soil within the building footprint. Perforated horizontal polyvinyl chloride (PVC) vent pipe, minimum four inches diameter, shall be embedded in the pea gravel layer. The vent pipe shall be wrapped in a filter fabric to mitigate the introduction of fines into the pipe. The PVC pipe will be connected to vertical risers and terminated and capped at the roof with a passive wind-driven rotary turbines and rain caps at the top of the riser pipe. The soil gas venting piping should be marked and clean outs should be installed as necessary to allow for maintenance.

A vapor barrier will be installed over the soil gas venting system. The vapor barrier material may be constructed of 30-mil thick polyethylene (PE) geomembrane, Liquid Boot® (CETCO Remediation Technologies), or 15-mil Stego® Wrap (Stego Industries, LLC), or equivalent and approved by the WDNR. Filter fabric, fine sand, or other equivalent material shall be placed over the vapor barrier for protection. All penetrations and seams shall be sealed and/or welded as necessary.

Toxic Gases Collection in Buildings and Other Structures

There are no contaminants (e.g., VOCs) at concentrations that would pose a threat to indoor air quality.

Disturbance of the Soil Cap

As part of pursuing Site closure under NR726 Wisconsin Administrative Code, a Cap Maintenance Plan and Material Handling Plan was prepared for the Site. The Cap Maintenance Plan and Material Handling Plan is designed to specify future measures to implement to address residual soil and groundwater contamination at the Site.

Utility Lines Acting as Conduits for Gas and Leachate and Water Supply Wells

Bedding material surrounding subsurface utilities can act as a conduit for contaminant migration. This material usually consists of pea gravel, which may have a higher hydraulic conductivity than the surrounding native soil. Utilities passing through the fill material will be constructed to reduce the potential for migration of contaminants or gas. Clay plugs or anti-seep collars will be placed at the entrance and exit of each utility line passing through the fill material.

It is noted that WDNR water supply regulations prohibit the placement of a water supply well within 1,200 feet of the limits of the fill material. The Site is serviced by the local municipal water supply system. Consequently, this requirement is satisfied.

Dewatering Problems

Dewatering problems are not considered an issue with the current redevelopment scenario for the Site.

Worker Exposure

Construction workers engaged in the redevelopment may come into contact with the fill materials. These materials may be encountered during activities such as site grading, utility placement, or construction of footings/foundations.

Prior to redevelopment of the property, construction documents will be prepared for the general contractor and selected subcontractors. These documents will contain information pertaining to the nature and distribution of the fill material on the southern portion of the Site. The general contractor and subcontractors who may potentially encounter the fill material will be required to inform workers of the fill material and to provide instructions on procedures to follow when the fill material is encountered.

Settlement Problems

Geotechnical surveys have been conducted at the Site. Phase I of the redevelopment has been completed that included a site grading plan, construction of a wet detention pond, and other surface water drainage features. Settlement problems in areas of fill will be addressed through active participation between the city of West Allis and the future developer.

Prohibition on Water Supply Wells within 1,200 Feet of Waste Limits

As presented earlier, the WDNR water supply regulations prohibit the placement of a water supply well within 1,200 feet of the limits of the fill material. The Site is serviced by the local municipal water supply system. Consequently, this requirement is satisfied.

Material Handling

Fill materials may be disturbed during construction activities, including site grading, utility placement, and footing/foundation construction. A Cap Maintenance Plan and Material Handling Plan was prepared as an institutional control to satisfy the ch. NR 726 Site Closure requirements.

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ATTACHMENT A

LABORATORY ANALYTICAL REPORT AND

CHAIN-OF-CUSTODY FORM

Client Name: Arcadis
Contact: Toni Schoen
Address: 126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

Lab Proj #: P1002285
Report Date: 03/05/10
Client Proj Name: 67th Place Industrial Park
Client Proj #: WI001074.0007.00011

Laboratory Results

Total pages in data package: 6

Lab Sample #	Client Sample ID
P1002285-01	MW-9
P1002285-02	MW-11R
P1002285-03	MW-14
P1002285-04	MW-3

Microseeps test results meet all the requirements of the NELAC standards or provide reasons and/or justification if they do not.

Approved By: Debbie Hallo ***Date:*** 3-5-10

Project Manager: Debbie Hallo

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

As a valued client we would appreciate your comments on our service.
Please call customer service at (412)826-5245 or email customerservice@microseeps.com.

Case Narrative:

Client Name: Arcadis
Contact: Toni Schoen
Address: 126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

Lab Proj #: P1002285
Report Date: 03/05/10
Client Proj Name: 67th Place Industrial Park
Client Proj #: WI001074.0007.00011

Sample Description	Matrix	Lab Sample #	Sampled Date/Time	Received
MW-9	Water	P1002285-01	22 Feb. 10 11:25	24 Feb. 10 11:24

Analyte(s)	Result	PQL	Units	Method #	Analysis Date	By
RiskAnalysis						
N Ethane	<0.025	0.025	ug/L	AM20GAX	3/4/10	rw
N Ethene	<0.025	0.025	ug/L	AM20GAX	3/4/10	rw
N Methane	2.200	0.100	ug/L	AM20GAX	3/4/10	rw

N - NELAC certified analysis

Client Name: Arcadis
Contact: Toni Schoen
Address: 126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

Lab Proj #: P1002285
Report Date: 03/05/10
Client Proj Name: 67th Place Industrial Park
Client Proj #: WI001074.0007.00011

Sample Description	Matrix	Lab Sample #	Sampled Date/Time	Received
MW-11R	Water	P1002285-02	22 Feb. 10 12:50	24 Feb. 10 11:24

Analyte(s)	Result	PQL	Units	Method #	Analysis Date	By
RiskAnalysis						
N Ethane	3.700	0.025	ug/L	AM20GAX	3/4/10	rw
N Ethene	0.330	0.025	ug/L	AM20GAX	3/4/10	rw
N Methane	20000.000	0.100	ug/L	AM20GAX	3/4/10	rw

N - NELAC certified analysis

Client Name: Arcadis
Contact: Toni Schoen
Address: 126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

Lab Proj #: P1002285
Report Date: 03/05/10
Client Proj Name: 67th Place Industrial Park
Client Proj #: WI001074.0007.00011

Sample Description	Matrix	Lab Sample #	Sampled Date/Time	Received
MW-14	Water	P1002285-03	22 Feb. 10 15:15	24 Feb. 10 11:24

Analyte(s)	Result	PQL	Units	Method #	Analysis Date	By
RiskAnalysis						
N Ethane	0.960	0.025	ug/L	AM20GAX	3/4/10	rw
N Ethene	5.200	0.025	ug/L	AM20GAX	3/4/10	rw
N Methane	1000.000	0.100	ug/L	AM20GAX	3/4/10	rw

N - NELAC certified analysis

Client Name: Arcadis
Contact: Toni Schoen
Address: 126 North Jefferson Street
Suite 400
Milwaukee, WI 53202

Lab Proj #: P1002285
Report Date: 03/05/10
Client Proj Name: 67th Place Industrial Park
Client Proj #: WI001074.0007.00011

Sample Description	Matrix	Lab Sample #	Sampled Date/Time	Received
MW-3	Water	P1002285-04	22 Feb. 10 16:30	24 Feb. 10 11:24

Analyte(s)	Result	PQL	Units	Method #	Analysis Date	By
RiskAnalysis						
N Ethane	<0.025	0.025	ug/L	AM20GAX	3/4/10	rw
N Ethene	<0.025	0.025	ug/L	AM20GAX	3/4/10	rw
N Methane	2.100	0.100	ug/L	AM20GAX	3/4/10	rw

N - NELAC certified analysis

P1002285

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Laboratory Task Order No./P.O. No. ____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name WI001074.0007.00011/Lm P.I

Project Location West Allis, WI

Laboratory MicroSeeps

Project Manager T. Schoen

Sampler(s)/Affiliation CAB/ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/~~Time~~ Sampled	TIME ~~Lab ID~~	dissolved gases ethane, ethene, methane 40mL VOA, No. [illegible]						Remarks	Total
MW-9	L	2/22/10	1125	2							2
MW-11R	L	2/22/10	1250	2							2
MW-14	L	2/22/10	1515	2							2
MW-3	L	2/22/10	1630	2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 8

Relinquished by: [signature]	Organization: ARCADIS	Date 2/23/10	Time 1700	Seal Intact?
Received by: [signature]	Organization: [signature]	Date 2/24/10	Time [illegible]	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

ANY QUESTIONS CONTACT TONI SCHOEN @ 414-276-7742

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05-12/01