3rd Five-Year Review Report

For

Sauk County Landfill (old)
Town of Excelsior
Sauk County, Wisconsin

August, 2010

PREPARED BY:

Wisconsin Department of Natural Resources
South Central Region
Fitchburg, Wisconsin

Approved by: Richard C Karl Date: 8-9-10
Richard C. Karl
U.S. EPA, Region V
Division Director
Superfund Division

this page intentionally left blank

Table of Contents

List of Acronyms 5
Executive Summary 6
I. Introduction 9
II. Site Chronology 10
III. Background 10
Physical Characteristics 10
Land and Resource Use 11
History of Contamination 11
Initial Response 11
Basis for Taking Action 11
III. Remedial Actions 12
Remedy Selection 12
Remedy Implementation 13
Institutional Controls and Access Restrictions 13
System Operations/Operation and Maintenance (O&M) 17
V. Progress Since the Last Five-Year Review 17
VI. Five-Year Review Process 18
Administrative Components 18
Community Involvement 18
Document Review 18
Data Review 18
Site Inspection 19
VII. Technical Assessment 20
Question A: Is the remedy functioning as intended by the decision documents? 20
Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid? 20
Question C: Has any other information come to light that could call into question the protectiveness of the remedy? 21
Technical Assessment Summary 21
VII. Issues 21
IX. Recommendations and Follow-up Actions 22
X. Protectiveness Statement(s) 22
XI. Next Review 23
Figures 24
Figure 1 – Site Location Map 24
Figure 2 – Site Layout Map 24
Figure 3 – Water Table Map April 2009 24
Figure 4 – Upper Intermediate Potentiometric Map April 2009 24
Figure 5 – Lower Intermediate Potentiometric Map April 2009 24
Figure 6 – Deep Potentiometric Map April 2008 24
Figure 7 – Total VOC Concentration Map October 2009 24
Figure 8 – 1,1-Dichloroethane Isoconcentration Map October 2009 24
Table 1 – Groundwater Monitoring Program Summary 24
Table 2 – Parameters that Exceed Current NR140 Standards 24

Table 3 – Addresses/Fire Numbers with, or potentially with, Potable Supply Wells 24
Attachments 24
Attachment A – May 24, 2006, Groundwater Monitoring Plan Modification 24
Attachment B – March 2010, "5-Year Data Summary for the Period of 2005 through 2009" by RMT, Inc. 24
Attachment C – Restrictive Covenant 24
Attachment D – Wisconsin Administrative Code Provision Regulating Groundwater Wells . 24

List of Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTH	County Trunk Highway
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
ICs	Institutional Controls
MCL	Maximum Contaminant Level
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PRP	Potentially Responsible Party
RA	Remedial Action
RAA	Remedial Action Alternatives
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
ROD	Record of Decision
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources

Executive Summary

The remedy for the Sauk County Landfill Site, in the Town of Excelsior, Wisconsin included construction of a gas extraction system, continued monitoring of the groundwater, regrading of the landfill, fencing the landfill. deed restriction, future maintenance of the cap, and contingency plan that includes a composite landfill cover system if the groundwater remedy is not successful.

The Site achieved construction completion with the signing of the Preliminary Close Out Report on September 1, 1995. The trigger for this five-year review was the completion of the second Five-Year Review in August, 2005.

A Record of Decision (ROD) requiring source control at the landfill was signed on March 31, 1994, and contained a contingent remedy that required construction of a plastic membrane cover system over the landfill should groundwater quality not improve. A review of the data indicates that groundwater quality down-gradient of the landfill has improved and there is no need to construct a membrane cover system over the landfill at this time. Groundwater monitoring completed at the Site from 2005 through 2009 includes an evaluation relative to compliance with NR140, Wisconsin Administrative Code standards for groundwater quality. A second ROD was signed on September 28, 1995 to address groundwater as part of the operable unit 2 at the Site.

This Five-Year Review assessment finds that the remedy was constructed in accordance with the requirements of the RODs. The remedy is functioning as designed and is protective of human health and the environment in the short-term.

Sampling of previously un-tested water supply wells is recommended, to assure protection of human health, and to further evaluate the extent of the groundwater contamination.

Long-term protectiveness at the Site will be achieved by continuing the long-term monitoring of the ground water system and by implementation of the institutional controls (ICs) and IC monitoring plan. Long-term groundwater monitoring has demonstrated that the concentrations of the chemicals of concern have declined. Long-term trends show significant and adequate improvements in groundwater quality. However, additional groundwater monitoring will be performed to ensure the remedy is functioning as intended. An IC in the form of a restrictive covenant has been implemented on the landfill property which requires further evaluation to ensure long-term protectiveness. Long-term protectiveness also requires compliance with effective ICs. Compliance with effective ICs will be ensured by maintaining, monitoring, and enforcing effective ICs. To that end, a long-term stewardship plan must be prepared. An IC Work Plan will be requested from the PRPs to address the additional IC evaluation activities.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Sauk County Landfill

EPA ID *(from WasteLAN)*: WID 980610141

Region: 5	**State: WI**	**City/County: Sauk County**

SITE STATUS

NPL status: x Final □ Deleted □ Other (specify)

Remediation status (choose all that apply): □ Under Construction □ Operating x Complete

Multiple OUs?* □ YES x NO	**Construction completion date:** 09/01/1995

Has site been put into reuse? □ YES x NO

REVIEW STATUS

Lead agency: □ EPA x State □ Tribe □ Other Federal Agency _____

Author name: Jeff Ackerman

Author title: Hydrogeologist	**Author affiliation: WDNR**

Review period:** 12/22/2009 to 5/31/2010

Date(s) of site inspection: 5/5/2010

Type of review:

x Post-SARA □ Pre-SARA □ NPL-Removal only
□ Non-NPL Remedial Action Site □ NPL State/Tribe-lead
□ Regional Discretion

Review number: □ 1 (first) □ 2 (second) x 3 (third) □ Other (specify) _____

Triggering action:

□ Actual RA Onsite Construction at OU #____ □ Actual RA Start at OU#____
□ Construction Completion x Previous Five-Year Review Report
□ Other (specify)

Triggering action date *(from WasteLAN)*: 8/19/2005

Due date *(five years after triggering action date)*: 8/19/2010

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, continued

Issues:
1. There appear to be additional supply wells located down-gradient of the Site than existed at the time of the remedial action and preparation of the RODs.

2. Unclear contaminant trends at TW-K and TW-38A.

3. ICs. - The ICs have not been fully evaluated. A further review of the ICs is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in-place for long-term stewardship at the Site.

Recommendation and Follow-up Actions:
1. Modify the groundwater sampling schedule to include additional potable supply wells.

2. Include these wells (TW-K and TW-38A) in the next three monitoring rounds.

3. ICs - An IC Work Plan will be developed to conduct additional IC evaluation activities and plan for additional IC activities as needed including planning for long- term stewardship.

Protectiveness Statement(s):
All immediate threats at the Site have been addressed, and the remedy is protective in the short-term of human health and the environment.

Long-Term Protectiveness:
Long-term protectiveness at the Site will be achieved by continuing the long-term monitoring of the ground water system and by implementation of the institutional controls and an IC monitoring plan. Long-term groundwater monitoring has demonstrated that the concentrations of the chemicals of concern have declined. Long-term trends show significant and adequate improvements in groundwater quality. However, additional groundwater monitoring will be performed to ensure the remedy is functioning as intended. An IC in the form of a restrictive covenant has been implemented on the landfill property which requires further evaluation to ensure long-term protectiveness. Long-term protectiveness also requires compliance with effective ICs. Compliance with effective ICs will be ensured by maintaining, monitoring, and enforcing effective ICs. To that end, a long-term stewardship plan must be prepared.

Other Comments:
None.

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a Site is protective of human health and the environment. The methods, findings, and conclusions of the reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Wisconsin Department of Natural Resources (WDNR) is preparing this Five-Year Review report pursuant to CERCLA §121 and the
National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The WDNR and the United States Environmental Protection Agency (EPA), Region 5, conducted the Five-Year Review of the remedy implemented at the Site. This review was conducted by the Project Managers for the entire Site from December 2009 through May 2010. This report documents the results of the review.

This is the third Five-Year Review for the Site. The triggering action for this Five-Year Review is the completion of the second Five-Year Review on August 19, 2005. The statutory Five-Year Review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Event	Date
Removal Assessment	08/07/1991
Proposal to the NPL	06/24/1988
NPL listing	10/04/1989
PRP Search	06/29/1987
RI/FS Start GUI	03/31/1994
RI/FS complete OU2	01/23/1995
ROD signature - Source Control OU1	03/31/1994
ROD signature - Groundwater OU2	09/28/1995
Remedial Design start	08/02/1994
Remedial Action complete	01/18/1995
Preliminary Close Out Report	09/01/1995
First five-year review	05/19/2000
Second five-year review	08/19/2005
Third five-year review	2010

III. Background

The Sauk County Landfill is located in the central/northeast part of the county between Reedsburg and Baraboo, south of Hwy 33 (Figure 1), in the Southeast 1/4 of Section 15, Township 12 North, Range 5 East, Town of Excelsior, Sauk County, Wisconsin.

Physical Characteristics

The Sauk County Landfill is located along the eastern margin of Wisconsin's unglaciated area. Topography in the area is gently sloping to somewhat hilly. The landfill is located in an east-west trending valley bounded to the north and south by sandstone bedrock ridges (figure 1). The elevation of the ridges is about 1200 feet above sea level. The valley containing the landfill slopes gently to the west, with elevations near the landfill ranging from 960 to 1010 feet above sea level.

The geology at the landfill consists of approximately 50 feet of sand on top of Paleozoic sedimentary bedrock. From shallow to deep, the bedrock encountered during the site investigation consists of

- The Mazomanie Formation; a medium-grained, poorly lithified sandstone, 5 to 40 feet thick.
- The Lone Rock Formation; siltsone, shale, and very fine-grained sandstone, 30 to 50 feet thick. The Lone Rock acts a semi-confining unit for groundwater..
- The Wonewoc Formation; a medium-granined sandstone, at least 65 feet thick.

Contaminant transport by groundwater occurs mostly within the shallow groundwater in the sand and Mazomanie Formations. Shallow groundwater flow is to the west.

Land and Resource Use

The landfill is 14 acres in size and is part of a 320 acre parcel containing two closed landfills (Figure 2). The subject landfill, which is the old landfill (WDNR license #2051), is located to the south of the more recently closed landfill (WDNR license #2978). The surrounding land use is agricultural and wooded to the north, east, and south, and agricultural and rural residential housing to the west.

History of Contamination

The Sauk County Landfill was operated as a landfill from 1973 to 1983 by Sauk County. Throughout its operational history, the landfill accepted municipal, commercial, and industrial wastes. Landfilling operations ceased in 1983. An estimated 750,000 cubic yards of wastes are in the landfill.

A Remedial Investigation (RI) was conducted under contract between Sauk County and the WDNR to characterize contaminant migration pathways and to evaluate the nature, extent, and magnitude of contaminant migration along those pathways for the former Sauk County Landfill in the Town of Excelsior, Wisconsin.

Fifteen Voatile Organic Compounds (VOCs) were detected in the samples collected from the leachate-representative wells. A vapor intrusion investigation was performed by the Wisconsin Department of Health and Social Services in 1993. Air quality in two residences nearest the landfill was tested for VOCs and methane. The results indicated no compounds attributable to the landfill.

Initial Response

On August 2, 1993, a Focused Feasibility Study was completed for the source control at the Site. Fifteen VOCs were detected in the samples collected from the leachate-representative wells. Five semi-volatile compounds exceed the PALs. Five inorganic compounds were detected at levels that exceed standards in the leachate-representative samples.

Basis for Taking Action

The exposure pathways that triggered CERCLA action were potential ingestion of contaminated groundwater, potential direct contact and/or ingestion of contaminated soil, and combustible concentrations of methane underground, near the landfill.

Contaminants

Hazardous substances that have been released to soil and groundwater at the Site include:

Acetone	Benzene	Chlorobenzene
Chloroethane	1,2-Dichlorobenzene	1,4-Dichlorobenzene
1,1-Dichloroethane	1,2-Dichloroethane	cis-1,2-Dichloroethene
1,2-Dichloropropane	Ethylbenzene	Isopropylbenzene
Methyl-t-butyl ether	Naphthalene	p-isopropyltoluene
Tetrachloroethene	Tetrahydrofuran	Toluene
1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene	Vinyl Chloride	Xylenes

III. Remedial Actions

The remedial action objectives from the Source Control ROD are:

- Prevent direct contact with the landfill wastes
- Reduce contaminant leaching to groundwater
- Control surface water runoff and erosion of the landfill cap
- Control and destroy landfill gas.

The remedial action objectives from the Groundwater ROD are:

- Prevent migration of impacted groundwater in violation of NR 140, Wis. Adm. Code
- Restore groundwater quality to standards in NR 140, Wis. Adm. Code

Remedy Selection

SOURCE CONTROL

Source control and groundwater Records of Decision (RODs) were completed for this Site. The source control ROD was signed on March 31, 1994, and the specific components of the source control remedy include:

- Continued monitoring of the groundwater at on-site groundwater monitoring wells and offsite private wells
- Regrading of the landfill surface to promote drainage off of the landfill cover
- Fencing the portion of the parcel that includes the landfill
- Installation of a gas extraction system to efficiently collect and combust landfill gases
- Placing a deed restriction on the property to prohibit the disturbance of the surface of the landfill cap in the future
- Maintenance of the landfill cap to prevent erosion and differential settlement
- A contingency which requires a composite landfill cover system if groundwater quality preventive action limits are not achieved in the future

GROUNDWATER

The groundwater ROD was signed on September 28, 1995, and the selected remedy for the groundwater unit included monitoring of the groundwater at twelve on-site groundwater monitoring wells and six off-site private water supply wells. The ROD also noted that if the VOC concentrations in the groundwater increase in violation of NR 140, Wis. Adm. Code, then additional source control measures will be taken, including the installation of a composite landfill cover. To date, the additional source control measures have not been necessary, and there has been no need to invoke the contingency for a composite cap. Details on the potential source control actions are listed in the source control ROD for this site.

On May 24, 2006, Sauk County received approval for a Plan Modification, which reduced the frequency and sampling points for groundwater monitoring. A copy of the Plan Modification is included as Attachment A.

The history of the groundwater sampling is shown on Table 1.

Remedy Implementation

SOURCE CONTROL

Sauk County began construction of the cap upgrade during the summer of 1994. The construction consisted of adding material to re-grade the cap of the landfill, eliminating erosion gullies and leveling the ground surface to promote drainage. The active gas collection system was installed at the same time as the cap upgrade. The system for the old landfill consists of 15 extraction wells (see figure 2). The collected gas is combined with gas from the other landfill, treated, and used for the generation of electricity via microturbines. Excess gas that is not used for electricity generation is directed to a utility flare for combustion. Condensate from the gas system is treated as leachate.

GROUNDWATER

The original groundwater monitoring plan prepared after the ROD included twelve monitoring wells. Wells were selected to characterize variation in contaminant concentrations near the landfill, at the center of the contaminant plume, and also near the leading edge of contamination as defined with existing monitor wells. Three wells selected for sampling characterize the source contamination in the shallow aquifer. The shallow aquifer near the landfill consists of both unconsolidated deposits and sandstone of the Mazomanie Formation. Two deeper, near source wells were also selected to evaluate trends with depth near the landfill. One well, located to the west of the landfill, was selected to characterize temporal variations in contaminant concentrations in the deeper sandstone of the Wonewoc Formation. A well, located to the east of the landfill, was selected to monitor for potential downward vertical migration of contaminants near the landfill. A well is screened in the low permeability Lone Rock Formation, which consists primarily of shale. One well was selected to characterize the central area of the plume. This well is screened in the Lone Rock Formation and historically has been sampled for VOCs more frequently than most of the other monitoring wells at the Site. A comprehensive summary of the well sampling schedule and the analytical results is included in Attachment B.

To characterize the leading edge of the contaminant plume, four well nest locations were selected for sampling. Two wells, completed in the Wonewoc Formation were selected for the northwestern extent of the deep plume. Two wells completed in the unconsolidated Mazomanie Formation and the Wonewoc Formation, respectively, were selected to monitor the leading edge of the plume in the shallow aquifer to the west of the Site and the west central area of the plume in the deeper aquifer. A well was selected to monitor for the presence of VOCs immediately to the southwest of the landfill in the Wonewoc Formation. No VOCs had been detected in samples from the well during the RI, and the purpose of including this well in the sampling was to confirm the extent of groundwater contamination immediately southwest of the landfill. One well was selected to monitor VOC concentrations in the Wonewoc at the southwest property boundary. Sample results from all these wells provide the information required to determine whether contaminants at levels of concern which may be migrating off the County property.

Institutional Controls and Access Restrictions

ICs are required to ensure the protectiveness of the remedy. Institutional controls (ICs) are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for exposure to contamination and protect the integrity of the remedy. Compliance

with ICs is required to assure long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE).

The Sauk County landfill is fenced and access is restricted. Sauk County maintains a well established vegetative cap on the landfill. The landfill is 14 acres in size and is part of a 320 acre parcel containing both the closed and active landfills in the Southeast 1/4 of Section 15, Township 12 North, Range 5 East, Town of Excelsior, Sauk County, Wisconsin. The landfill and property boundary are fenced. The site was closed in 1983 with a cover system consisting of 2' of clay on the landfill surface, 1' of clay on the sidewalls and 6" of topsoil over the entire site. The topsoil was vegetated. The site has been maintained by Sauk County since closure. The Source Control ROD signed on March 31, 1994 required that a restriction be placed on the deed requiring Sauk County to maintain the landfill cover system, and to restrict future use of the landfill to activities that don't compromise the cap. This restriction was filed with the Sauk County Register of Deeds on January 26, 1996. No groundwater ICs were required by the groundwater operable unit.

Wisconsin Administrative Code 812.08 (4) (g) 1 requires a 1200-foot setback between potable wells and landfills. With the exception of the landfill's supply well, all known private wells in the area comply with the 1200-foot setback requirement.

The table below summarizes institutional controls for these restricted areas.

Institutional Controls Summary Table

Media, Engineered Controls, & Areas that Do Not Support UU/UE Based on Current Conditions.	**IC Objective**	**Title of Institutional Control Instrument Implemented (note if planned)**
Sauk County Landfill - capped area	Prohibit residential, commercial, industrial use; Prohibit interference with remedy; Ensure proper maintenance.	- Restrictive Covenant (under review) Attached as Attachment C - Wisconsin Administrative Code *NR 812.08(4)(g)3* And NR 812.10 Attached as Attachment D (see also below)
Groundwater *– current area that exceeds groundwater cleanup standards is under investigation.*	Requirement for IC is under review. Existing ICs requires no potable or non-potable wells within 1200 feet of the a landfill and new groundwater wells require a permit	Wisconsin Administrative Code NR 812.08(4)(g)3 and NR 812.10 Under Review
Other Remedy components	Under review	Under review

The WDNR created a special casing area that encompasses the area from south of the landfill on Hogsback Road, extending west to Evergreen Road. Prior to drilling in this special casing area, drillers must contact the DNR for well construction details, such as well depth and length of casing.

Maps which depict the current conditions of the site and areas which do not allow for UU/UE will be developed as part of the IC Plan.

Summary of Current ICs and Follow-up Actions Required

At this time, initial IC evaluation activities have determined that required ICs have been implemented on the area where the Sauk County Landfill is located. This restriction was filed with the Sauk County Register of Deeds on January 26, 1996. Also, Wisconsin Administrative Code 812.08 (4) (g) 1 requires a 1200-foot setback between potable wells and landfills. With the exception of the landfill's supply well, all known private wells in the area comply with the 1200-foot setback requirement. Additional steps must be taken to evaluate the effectiveness of the existing ICs.

Sauk County Landfill Property - Landfill Cap Area:

Objectives: On January 26, 1996, Declaration of Restriction and Covenant was recorded at page 630482 with the Sauk County Recorder that prohibits interference with the landfill cap and underlying hazardous waste. On March 27, 2007, an addendum was filed with the County Recorder's office to add the legal description. The addendum was recorded as document #930874 at page 000245(Reel 694; Image 962). Based on the Restrictive Covenant, unless there is prior approval by the WDNR, the following activities are prohibited on that portion of the property described: where a cap or cover has been placed unless prior written approval has been obtained from the Wisconsin Department of Natural Resources or it's successor or assign: (1) Excavating or grading of the land surface; (2) Filling on the capped area; (3) Plowing for agricultural cultivation; and (4) Construction or installation of a building or other structure with a foundation that would sit on or placed with the cap or cover.

Physical Area: A legal description is included in the addendum to the restrictive covenant. It is described as 15.15 acres more or less. Additional IC evaluation work is necessary to evaluate whether the area described in the legal description covers the entire area which needs to be subject to the restrictions. The covenant is enforceable by the State of Wisconsin Department of Natural Resources or its successor or assign.

Recordation and Title work: Title work was performed in September 2005. The title work needs to be reviewed to ensure that the restrictive covenant was properly recorded. Additionally, the title work needs to be evaluated to ensure that the property owner signed the covenant and that no existing liens appear in the chain of title, including any utility easements, that would interfere with the restrictive covenant or other environmental easements needed to protect the integrity of the remedy.

Enforceability and Longevity of Restrictive Covenant: The restrictive covenant recites that it is enforceable by the State of Wisconsin or its successor or assign. Also, the restrictive covenant states that it is a covenant running with the land that shall be binding upon all persons acquiring the property. The restrictive covenant needs to be further evaluated to ensure that it runs with the land as it states. Also, WDNR and EPA will evaluate whether the covenant should be enhanced such as ensuring that EPA is able to enforce the covenant as a third party beneficiary.

Groundwater:
Currently, no groundwater ICs are required by the RODs. Even so, there are several governmental ICs that exist which regulate groundwater usage in the area. Wisconsin Administrative Code NR 812.08 (4) (g) (3) requires a minimum separation distance of 1200-feet between potable and non-potable wells and landfills. Also, Wisconsin Administrative Code NR 812.10 requires that a permit be issued by the State for all new wells. With the exception of the landfill's supply well, all known private wells in the area comply with the 1200-foot setback requirement. Long-term groundwater monitoring has demonstrated that the concentrations of the chemicals of concern have declined. Long-term trends show significant and adequate improvements in groundwater quality. Never the less certain monitoring wells have shown increases in specific contaminant concentrations (see discussion at p.19). Additional work is needed to further evaluate whether the groundwater contamination is increasing. If so, during that evaluation then consideration will be given to whether groundwater ICs are needed and if so, what specifically would be required to ensure long-term protectiveness. If ICs are determined to be necessary, then the decision documents will need to be clarified or amended.

Current compliance: Based on site inspections and interviews. WDNR and EPA find no evidence of existing uses which are inconsistent with the objectives of the implemented ICs. Also, with the exception of the landfill's supply well, all known private wells in the area comply with the 1200-foot setback requirement. In general, the groundwater contamination levels have been declining. However, as mentioned, additional work is needed to confirm.

Long-Term Stewardship: Long-term protectiveness at the Site requires compliance with use restrictions to assure the remedy continues to function as intended. Compliance with effective ICs will be ensured by ensuring effective ICs are maintained, monitored, and enforced as well as maintaining the site remedy components. To assure proper maintenance, monitoring, and enforcement of effective ICs, the long term stewardship procedures will be reviewed and a plan developed. The long-term stewardship plan (or modified operation and maintenance plan) will require regular inspection of ICs at the Site and annual certification to EPA that the required ICs are in place and effective. Additionally, development of a communications plan and consideration of the one-call system should be explored for long term stewardship.

Follow-up Actions.

An IC Work Plan will be requested from the PRPs to plan for additional IC evaluation activities, plans for a long-term stewardship plan and plan for any corrective measures required or enhancements to the ICs. If the additional groundwater investigations indicate that the groundwater contamination has moved beyond the Site, then consideration will be given to including groundwater ICs in the remedy to ensure long-term protectiveness.

System Operations/Operation and Maintenance (O&M)

The Source Control ROD requires that the existing cap be maintained to encourage runoff of precipitation from the cap, limit percolation of precipitation through the cap, and seal the waste from the atmosphere as best as possible to ensure optimal effectiveness of the gas extraction system. A visual inspection of the cap is completed on a regular basis to determine that these objectives are met. The vegetation is mowed once per year to remove woody growth that may damage the soil cap. If erosion gullies develop the County re-grades and re-seeds the affected area. Raptor perches have been installed to facilitate predation on voles, which may damage the cover.

Ten monitoring wells and six private wells have been sampled during the last five years, as shown on Table 1. The wells are sampled for VOCs and the private well results are shared with homeowners shortly after the results are received from the lab. Some of the private wells have detections of VOCs. None of the private wells has had a VOC detected in excess of a Wisconsin Enforcement Standard within the 5-year period addressed by this report. Some detections have exceeded the Wisconsin Preventive Action Limit (PAL). A list of groundwater standard exceedences found during the review period, and where they were detected, is presented in Table 2.

The landfill has an active gas extraction system. Vacuum pressures at gas extraction wells are monitored and adjusted to maximize gas extraction, and minimize oxygen intrusion. The landfill gas is collected and combined with gas captured at the other Sauk County landfill located approximately two hundred yards north of the Superfund landfill. Gas from both landfills is combined and is combusted to generate electricity using micro turbines. RMT, Inc.'s review of the landfill data indicates the old landfill produces about 50 to 75 cubic feet of landfill gas per minute. Gas production will continue to decline with time.

V. Progress Since the Last Five-Year Review

The remedy continues to function as designed. The operation of the landfill gas extraction system continues to reduce the methane and VOCs generated and existing within the fill. Continued operation of the extraction system as specified in the remedy will assist in meeting the goal to protect human health and the environment.

The three issues were identified during the 2005 Five-Year Review Report have all been addressed:

- Settlement on the east side of the landfill.
- Concern for encumberances on the property that could affect the institutional controls
- Continuation of groundwater monitoring.

The settled area was repaired and the landfill cover has been adequately maintained.

Sauk County's corporate counsel determined in 2005 that there were no easements that could impact any aspects of the remediation.

Groundwater monitoring of the site monitoring wells and nearby supply wells has continued.

VI. Five-Year Review Process

Administrative Components

This Five-Year Review Report was prepared by WDNR and based on the technical review of the Site by members of the WDNR. This Five-Year Review Report was prepared by Jeff Ackerman of the WDNR, and follows from the previous five-year review written by Gladys Beard of EPA, and from the March 2010, "5-Year Data Summary for the Period of 2005 through 2009", written by RMT, Inc.

The review included the following components:
- Opportunity for community involvement
- Document review
- Data review
- Site inspection
- Five-year review report development and review

Community Involvement

A notice was published by WDNR, in the Baraboo News Republic, the Reedsburg Independent, and the Reedsburg Times Press in March, 2010, stating that the Sauk County Superfund landfill was under review as part of the five-year review process. No public comments were received during the review period.

An additional notice will be made to the public announcing the completion of the Five-Year Review Report and providing a summary of Five-Year Review findings, protectiveness of the remedy, and advising the community where a copy of the review can be found.

Document Review

This Five-Year Review consisted of a review of relevant documents including O&M records, monitoring data, and the previous Five-Year Review Reports. Cleanup standards in the ROD and subsequent correspondence were also reviewed.

Data Review

Groundwater Monitoring

During the 2005 to 2009 monitoring period, field measurements, including water levels, were made at monitoring wells, and samples were collected for analysis of VOCs and indicator parameters at monitoring wells and private supply wells, during nine events. Specifics of the monitoring program are shown on Table 1.

Groundwater flow patterns over the past five years have been consistent with previous findings. Shallow groundwater moves to the west, based on the hydraulic gradient and contaminant distribution (Figures 3 and 7). The upper intermediate groundwater appears to flow to the west (Figure 4), the lower intermediate groundwater appears to flow to the southeast (figure 5), and the deeper groundwater flow has been interpreted to flow toward the east (Figure 6).

Trends in groundwater chemistry are most relevant in the upper (water table) aquifer, because this zone is most affected by contaminants from the landfill. The upper aquifer is composed of sand and sandstone. The primary groundwater contaminants of concern near the landfill include chloromethane, methylene chloride, tetrachloroethene, tetrahydrofuran, trichloroethene, and benzene. Several of the contaminants are present at concentrations in excess of the State's Preventive Action Limits, which are the standards referenced in the ROD.

Concentrations of VOCs on the order of 1 to 10 parts per billion are sometimes detected west and southwest of the landfill, in supply wells on Evergreen Road and Hogsback Road. None of the private wells have shown detections of landfill contaminants above State Enforcement Standards or Federal Maximum Contaminant Levels. The State Preventive Action Limits have been exceeded for chloromethane, methylene chloride, and tetrachloroethene at five supply well locations during the last five years. See Table 2. Concentrations at the private supply wells have generally remained stable or decreased over the last five years.

Contaminant trends in monitoring wells have shown a large decrease in concentrations since implementation of the source control measures. Concentrations of most contaminants at most monitoring wells decreased following implementation of the source control measures. In some cases the decrease was by a factor of 100, or to a concentration where the contaminant(s) were no longer detected.

There are four noted exceptions to the general stable or decreasing contaminant trends:

- The detections and concentrations of VOCs at private well PW-3652 have not shown an increasing trend, but have been sporadic. The concentrations have been below the Preventive Action Limits during the period from 2005 to 2006. PW-3652 has not been sampled since 2006, due to changes in the plan of operation for the site.

- Concentrations of cis-1,2-dichloroethene have increased to about 2 parts per billion over the last ten years at TW-25A, immediately west of the landfill. This increase is attributed to the breakdown of trichloroethene and tetrachloroethene. The concentrations of cis-1,2,-dichloroethene are still below the Preventive Action Limit of 7 parts per billion.

- Concentrations of VOCs in TW-38A (about ¼ mile west/southwest of the landfill) were elevated, the one time it was sampled in 2004, compared to previous sampling rounds. TW-38A has not been sampled since 2004, due to changes in the plan of operation for the site. Additional sampling would be needed to fully evaluate this increase in concentration.

- The concentration of benzene in TW-K, immediately west of the landfill, increased to 4.5 parts per billion during the October 15, 2009 sampling. Additional sampling would be needed to fully evaluate this possible increase in concentration.

Site Inspection

A site inspection was conducted on May 5, 2010. The landfill cover vegetation was in good condition. Some areas that had settled, had recently been re-graded and re-seeded. A raptor

perch had recently been installed to promote predation of voles, which may damage the cover. No areas of methane stress were noted. Site access is restricted and the visible portions of the fence were noted to be in good condition. The County has maintained the site and it continues to remain in good condition.

An inspection of the residential and rural area surrounding the landfill property revealed many fire numbers/addresses that have not been included during past private well sampling efforts. Table 3 summarizes the addresses and known and potential private supply wells in the area. Many of the newly identified locations likely have private wells. These locations should be evaluated, and if potable supply wells are present, those wells should be added to the on-going monitoring effort as a precautionary measure.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes, the review of documents, ARARS, risk assumptions, and the results of the site inspection indicate that the remedy is functioning as intended by the ROD. The stabilization and capping of the contaminated landfill have achieved the remedial objectives to minimize contaminant migration to groundwater and surface water and to prevent direct contact with, or ingestion of, contaminants in soil.

A deed restriction was filed with the Sauk County Register of Deeds on January 26, 1996 which serves to protect the cap. There are no known easements or other obligations or encumberances that limit the effectiveness of the deed restriction.

Operation and maintenance (O&M) of the cap has been and continues to be effective. Annual O&M costs are consistent with original estimates and there are no indications of any difficulties with the remedy.

Long-term protectiveness requires maintenance of the remedy and compliance with the ICs. Compliance with ICs will be accomplished by ensuring effective ICs are in-place and planning for long-term stewardship which includes maintaining, monitoring, and enforcing effective ICs as well as maintaining the Site remedy components. No activities were observed that would have violated the institutional controls. The cap and the surrounding area were undisturbed, and no new uses of groundwater were observed.

The fence around the Site is intact and in good repair.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid?

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

Yes, the exposure assumptions used to develop the Human Health Risk Assessment included both current exposures (older child trespasser, adult trespasser) and potential future exposures (young and older future child resident, future adult resident and future adult worker). There have been no changes in the toxicity factors for the contaminants of concern that were used in the

baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions, or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The remedy is however progressing slower than expected. Based on groundwater sample results, significant progress has been made toward the PALs and it is expected that all groundwater cleanup levels will be met within a reasonable time. Therefore it is not now necessary or appropriate to invoke the contingent remedy described in the ROD at this time.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No ecological targets were identified during the baseline risk assessment and none were identified during the five-year review, and therefore monitoring of ecological targets is not necessary. No weather-related events have affected the protectiveness of the remedies. There is no other information that calls into question the protectiveness of the remedies. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. Additional assessment of groundwater at previously untested private supply wells is recommended as a precaution.

Technical Assessment Summary

According to the data reviewed, the Site inspection, and the interviews, the remedies are functioning as intended by the ROD. There are no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedies. There is no other information that calls into question the protectiveness of the remedies.

VII. Issues

Issue	Affects current protectiveness?	Affects future protectiveness?
Possible private wells that have not been sampled	N	Y
Unclear contaminant trends at TW-K and TW-38A	N	Y
ICs. - The ICs have not been fully evaluated. A further review of the ICs is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in-place for long-term stewardship at the Site.	N	Y

IX. Recommendations and Follow-up Actions

Issue	Reccomendations and Follow-up	Party Responsible	Oversight Agency	Milestone Date	Affects Current Protectiveness	Affects future Protectiveness
Possible private wells that have not been sampled	Include additional potable wells in the sampling schedule	PRPs	WDNR	10-1-10	N	Y
Unclear contaminant trends at TW-K and TW-38A	Include these wells in the next three monitoring rounds	PRPs	WDNR	10-1-11	N	Y
ICs. - The ICs have not been fully evaluated. A further review of the ICs is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in-place for long-term stewardship at the Site.	ICs- An IC Work Plan will be developed to conduct additional IC evaluation activities and plan for additional IC activities as needed including planning for long- term stewardship.	PRPs	WDNR/ EPA	10-1-11	N	Y

X. Protectiveness Statement(s)

The remedy is protective in the short-term of human health and the environment. All immediate threats at the Site have been addressed. All threats at the Site have been addressed through deed restrictions, Site fencing and posting, Site grading and filling, Site capping, and placement of vegetative cover soil.

Long-term protectiveness at the Sauk County Landfill Superfund Site will be achieved by continuing the long-term monitoring of the ground water system. Long-term groundwater monitoring has demonstrated that the concentrations of the chemicals of concern have declined. Long-term trends show significant and adequate improvements in groundwater quality. However, additional groundwater monitoring will be performed to ensure the remedy is functioning as intended. An IC in the form of a restrictive covenant has been implemented on the landfill property which requires further evaluation to ensure long-term protectiveness. Long-term protectiveness also requires compliance with effective ICs. Compliance with effective ICs will be ensured by maintaining, monitoring, and enforcing effective ICs. To that end, a long-term stewardship plan must be prepared. An IC Work Plan will be requested from the PRPs to address the additional IC evaluation activities.

XI. Next Review

The next Five-Year Review for the Site will be completed five years from the signature date of this report in August 2015.

Figures

Figure 1 – Site Location Map

Figure 2 – Site Layout Map

Figure 3 – Water Table Map April 2009

Figure 4 – Upper Intermediate Potentiometric Map April 2009

Figure 5 – Lower Intermediate Potentiometric Map April 2009

Figure 6 – Deep Potentiometric Map April 2008

Figure 7 – Total VOC Concentration Map October 2009

Figure 8 – 1,1-Dichloroethane Isoconcentration Map October 2009

Table 1 – Groundwater Monitoring Program Summary

Table 2 – Parameters that Exceed Current NR140 Standards

Table 3 – Addresses/Fire Numbers with, or potentially with, Potable Supply Wells

Attachments

Attachment A – May 24, 2006, Groundwater Monitoring Plan Modification

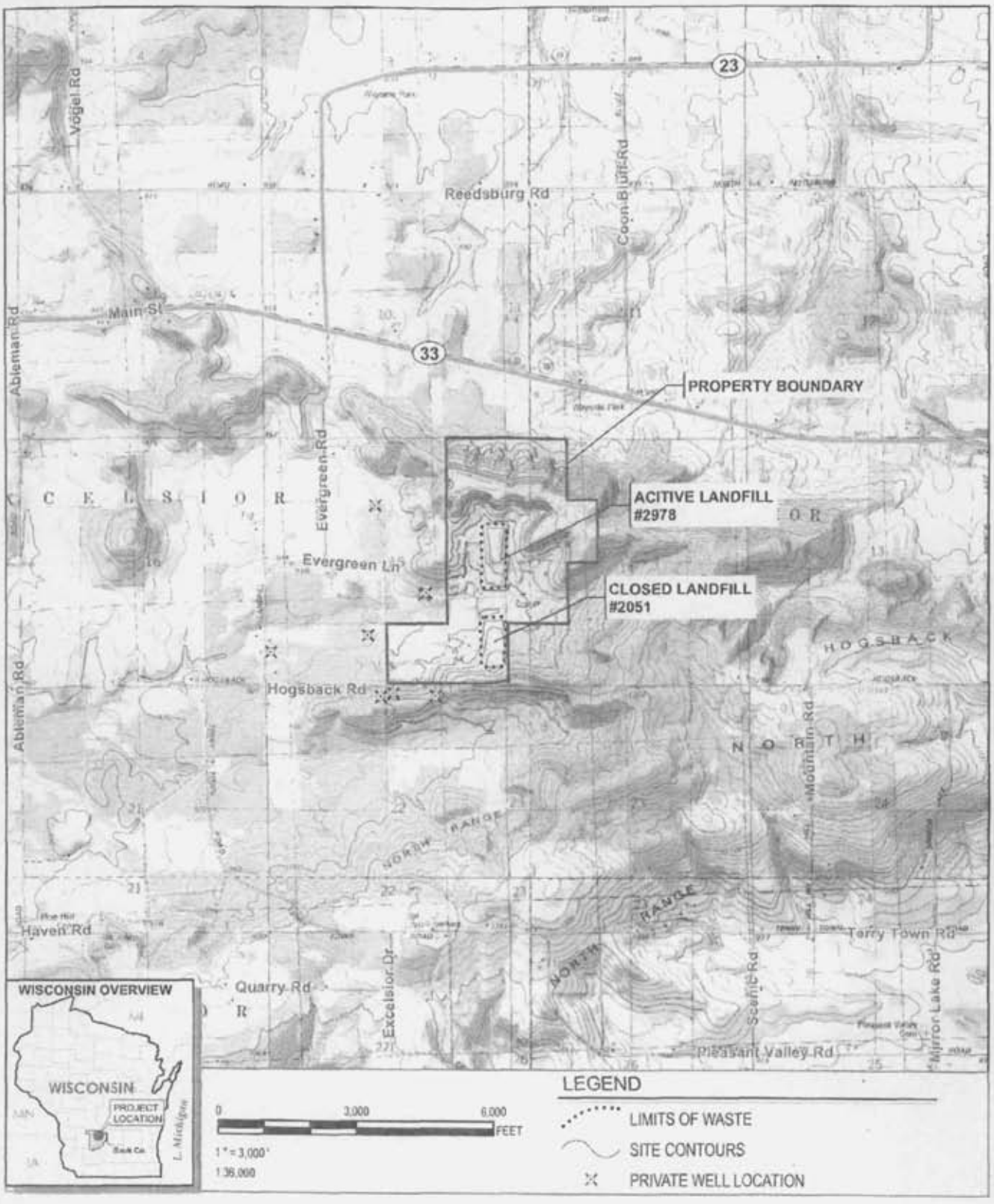
Attachment B – March 2010, "5-Year Data Summary for the Period of 2005 through 2009" by RMT, Inc.

Attachment C – Restrictive Covenant

Attachment D – Wisconsin Administrative Code Provision Regulating Groundwater Wells

Figures

Figure 1 – Site Location Map



RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

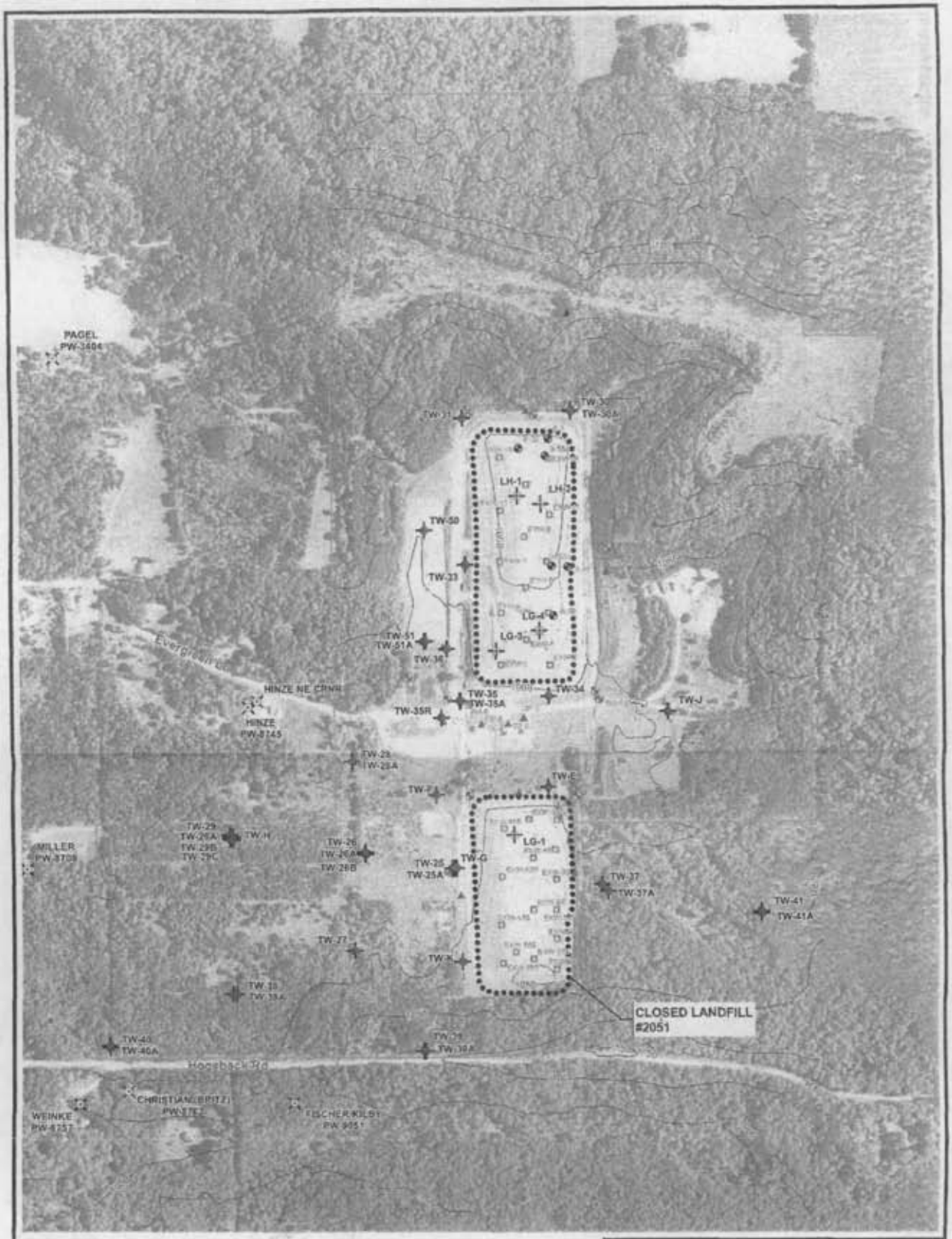
SITE LOCATION MAP

DRAWN BY:	PAPEZ J
APPROVED BY:	FREE D
PROJECT NO:	09-22725.40
FILE NO:	227254001.mxd
DATE:	MARCH 2010

D:\22725\40\MXD\227254001.mxd 3/17/2010 09:53:16

FIGURE 1

Figure 2 – Site Layout Map



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)

0 250 500 FEET
1" = 500'

PROJECT
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE
SITE LAYOUT MAP

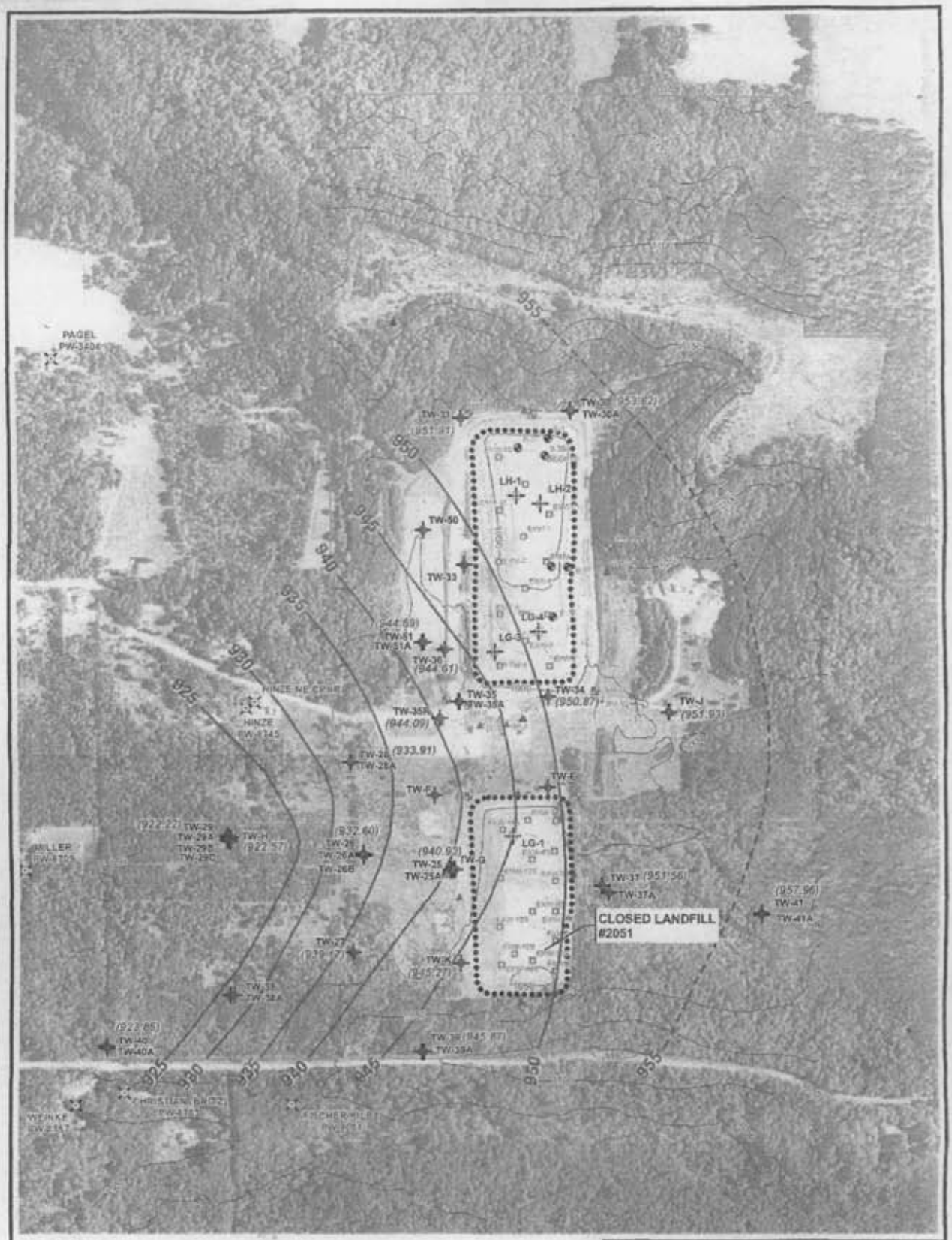
DRAWN BY:	PATRICK J	SCALE:	PROJ NO:
CHECKED BY:	MEETCHEN M	AS NOTED	FILE NO:
APPROVED BY:	PRIEB D	DATE PRINTED:	FIGURE 2
DATE:	MARCH 2010	3/17/2010	

RMT

114 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-821-4444
Fax: 608-831-3334

D:\227254\99\MXD\227254002.mxd 3/17/2010 08:56:43

Figure 3 – Water Table Map April 2009



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- WATER TABLE CONTOUR (DASHED WHERE INFERRED)
- (945.87) WATER TABLE ELEVATION

N

0 250 500 FEET

1" = 500'

PROJECT: SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE: WATER TABLE MAP
APRIL 2000

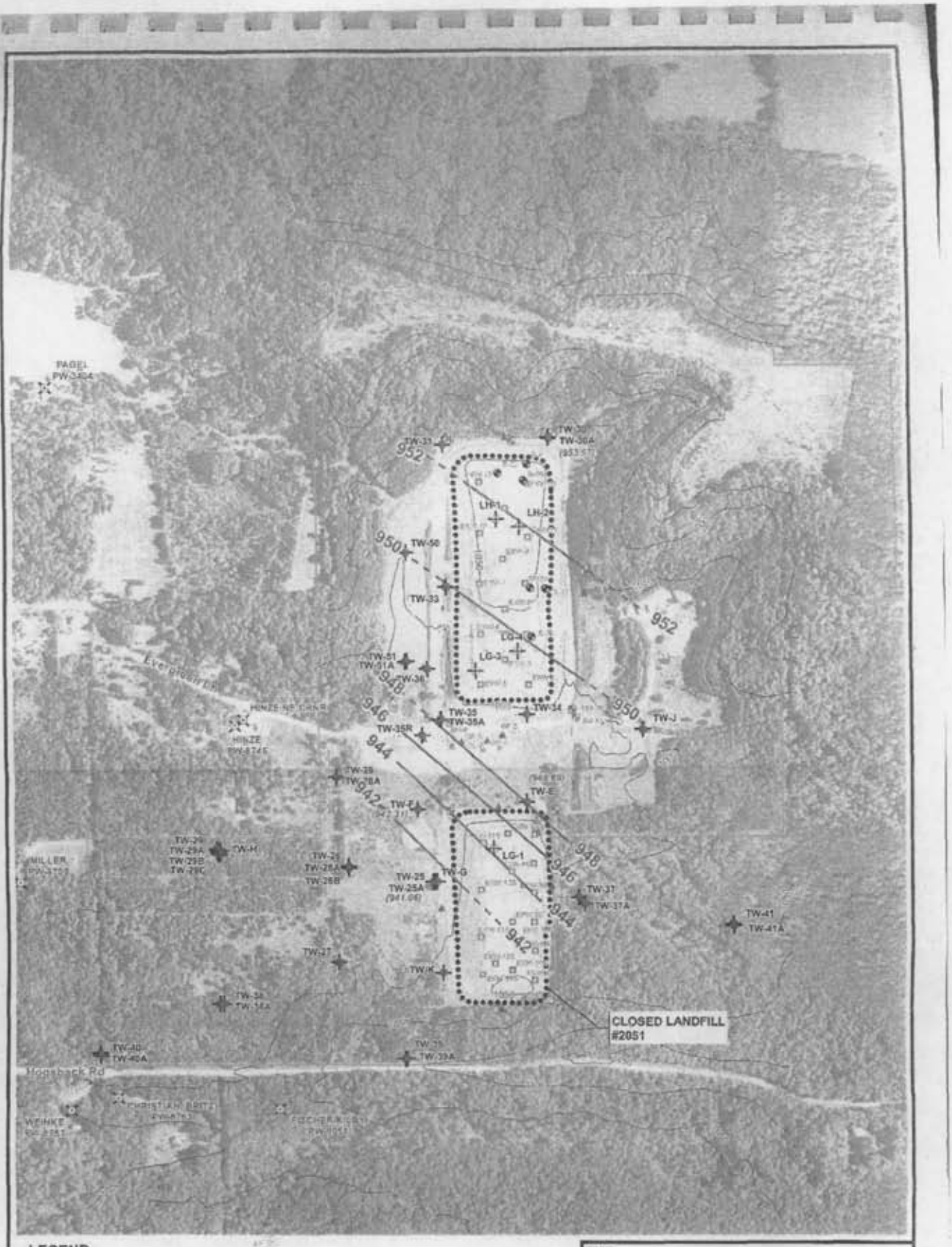
DRAWN BY:	SCALE:	PROJ. NO.	
CHECKED BY:	AS NOTED	FILE NO.	
APPROVED BY:	DATE PRINTED:	FIGURE 3	
DATE: MARCH 2000			

RMT

744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\227254\GIS\MXD\227254301.mxd 5/17/2010 09:59:35

Figure 4 – Upper Intermediate Potentiometric Map April 2009



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
- (941.06) POTENTIOMETRIC SURFACE ELEVATION

0 200 400 FEET
1" = 50'
1:600

PROJECT
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE
UPPER INTERMEDIATE POTENTIOMETRIC MAP
APRIL 2009

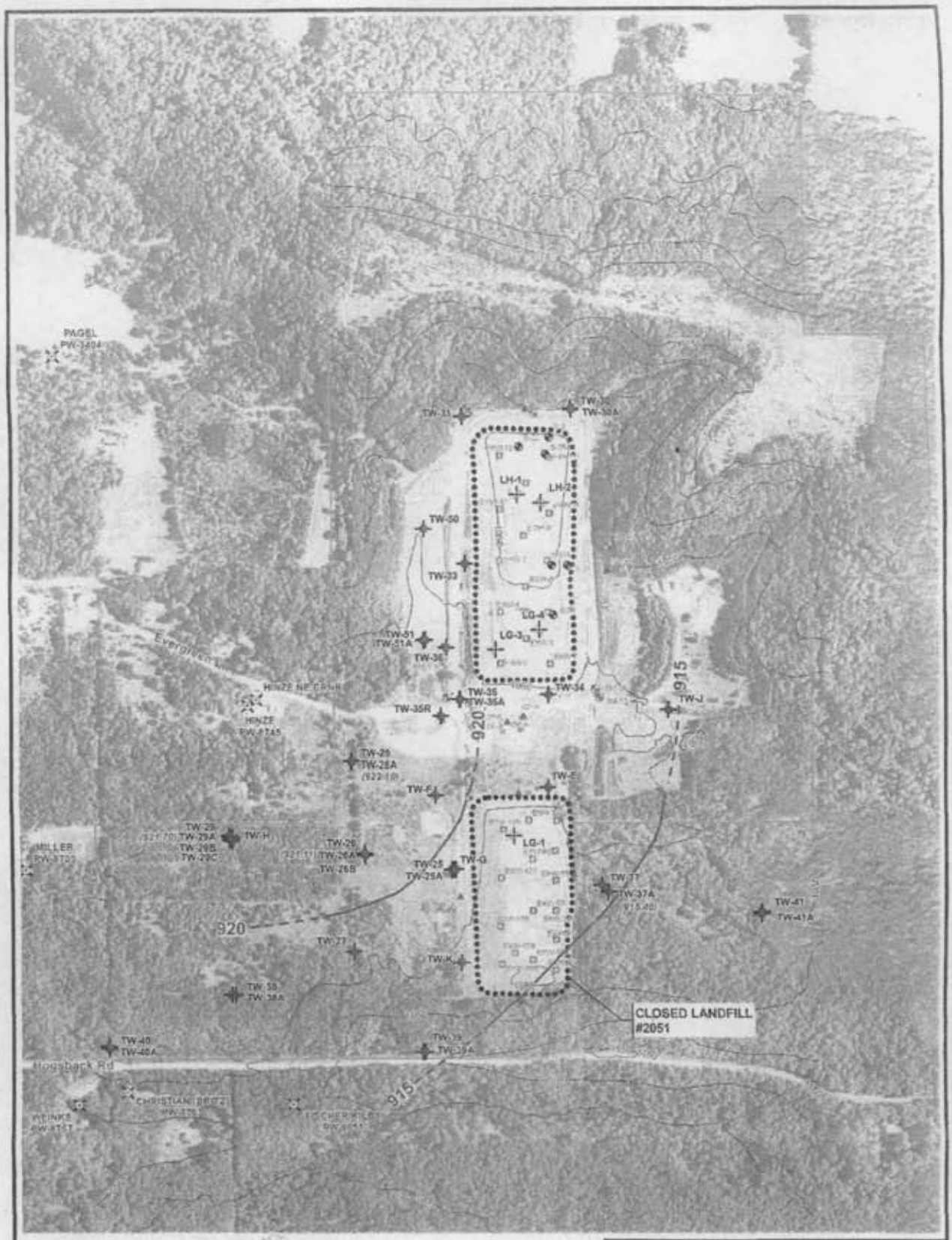
DRAWN BY:	PAPEZ J.	SCALE:	PROJ. NO.
CHECKED BY:	WESTOVER M.	AS NOTED	FILE NO.
APPROVED BY:	PAPE D.	DATE PRINTED:	**FIGURE 4**
DATE:	MARCH 2010	3/17/2010	

RMT

744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-821-3988
Fax: 608-831-3334

D:\22725409\MXD\227254065.mxd 3/17/2010 10:09:02

Figure 5 – Lower Intermediate Potentiometric Map April 2009



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
- (921.11) POTENTIOMETRIC SURFACE ELEVATION

0 200 400 FEET
1" = 400'
1:4,800

PROJECT:
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE:
LOWER INTERMEDIATE POTENTIOMETRIC MAP
APRIL 2009

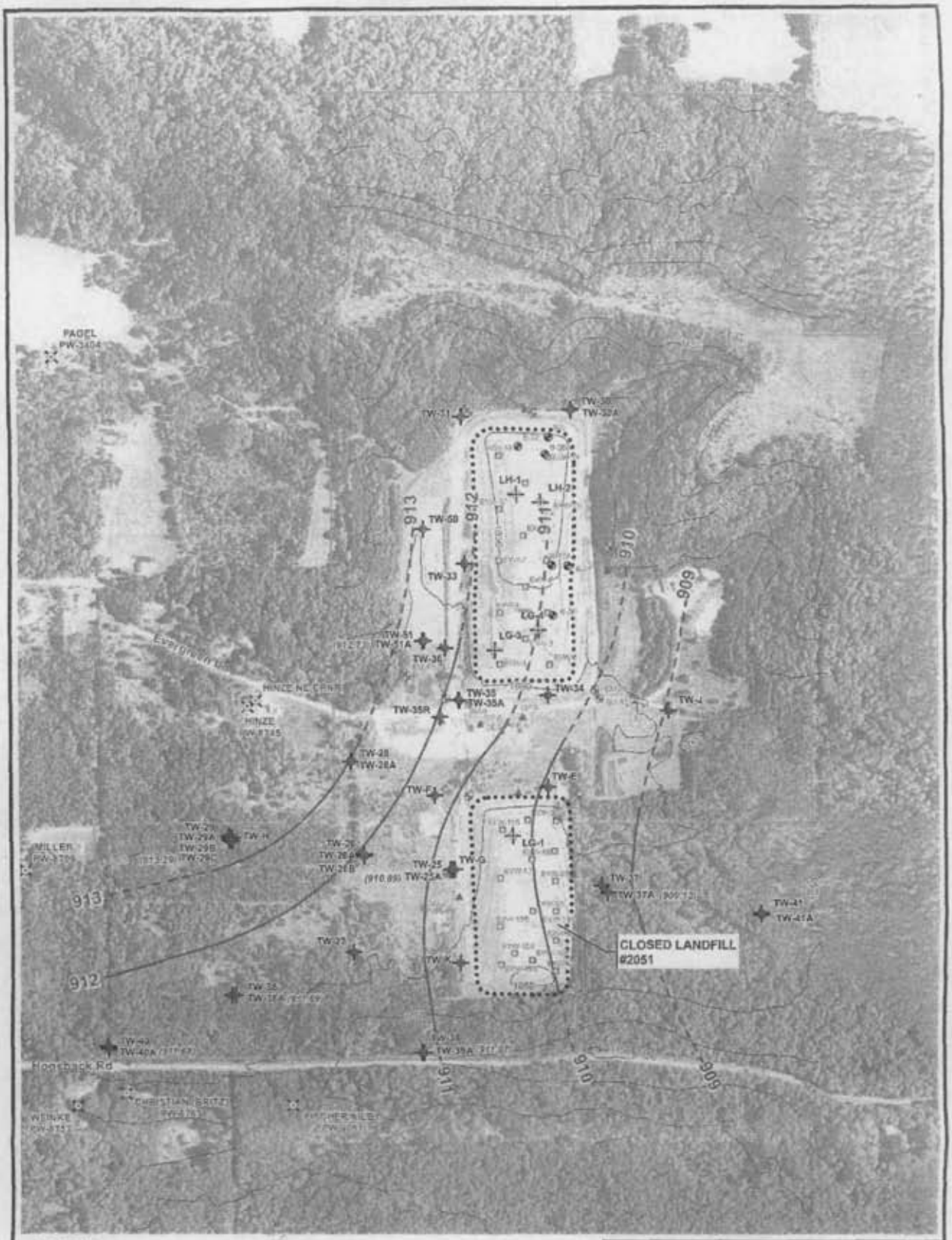
DRAWN BY:	PAREZ	SCALE:	PROJ. NO:
CHECKED BY:	WESTOVER	AS NOTED	FILE NO:
APPROVED BY:	FREE	DATE PLOTTED:	FIGURE 5
DATE:	MARCH 2010	3/17/2010	

RMT

744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\406\MXD\22725406.mxd 3/17/2010 10:01:13

Figure 6 – Deep Potentiometric Map April 2008



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
- (911.07) POTENTIOMETRIC SURFACE ELEVATION

0 200 300 FEET
1" = 500'
1:6,000

PROJECT: SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE: DEEP POTENTIOMETRIC MAP
APRIL 2008

DRAWN BY:	PAPEZ J	SCALE:	PROJ. NO.
CHECKED BY:	WESTOVER	AS NOTED	FILE NO.
APPROVED BY:	FREE D	DATE PRINTED:	FIGURE 6
DATE:	MARCH 2010	3/1/2010	

RMT

744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\227259\03\MXD\227259008.mxd 3/17/2010 10:02:14

Figure 7 – Total VOC Concentration Map October 2009

LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- TOTAL VOC CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)
- (0.58) TOTAL VOC CONCENTRATION (µg/L)

SAMPLE LOCATION WITH PAL EXCEEDENCE - LABEL FORMAT:

SAMPLE ID
CHEMICAL - SAMPLE DATE: CONCENTRATION

NOTES

1. BASE MAP IMAGERY FROM USDA – NATIONAL AGRICULTURE IMAGERY PROGRAM. PHOTOGRAPHY DATE: 30 JULY, 2008.
2. * RESULT FROM PAGEL WELL FROM MOST RECENT SAMPLING EVENT IN OCTOBER 2007.
3. ** RESULT FROM KLEMM WELL FROM MOST RECENT SAMPLING EVENT IN APRIL 2006.
4. ABBREVIATIONS IN TEXT BOXES ARE AS FOLLOWS:
   "R-40" = CHLOROMETHANE
   "DCM" = METHYLENE CHLORIDE
   "PCE" = TETRACHLOROETHENE
   "THF" = TETRAHYDROFURAN
   "TCE" = TRICHLOROETHENE

N

0 600 1,200 FEET

1" = 600'

PROJECT: SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE: TOTAL VOC ISOCONCENTRATION MAP
OCTOBER 2009

DRAWN BY:		SCALE:	PROJ. NO.
CHECKED BY:		AS NOTED	FILE NO.
APPROVED BY:		DATE PRINTED:	FIGURE 7
DATE:			

RMT

3rd Floor
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

Figure 8 – 1,1-Dichloroethane Isoconcentration Map October 2009

LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- 1,1-DICHLOROETHANE CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)
- (1.0) 1,1-DICHLOROETHANE CONCENTRATION (µg/L)

NOTES

1. BASE MAP IMAGERY FROM USDA – NATIONAL AGRICULTURE IMAGERY PROGRAM. PHOTOGRAPHY DATE: 30 JULY, 2008.
2. * RESULT FROM PAGEL WELL FROM MOST RECENT SAMPLING EVENT IN OCTOBER 2007.
3. ** RESULT FROM KLEMM WELL FROM MOST RECENT SAMPLING EVENT IN APRIL 2006.

PROJECT
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE
1,1-DICHLOROETHANE ISOCONCENTRATION MAP
OCTOBER 2009

DRAWN BY:	PAPEZ J.	SCALE:	PROJ. NO.
CHECKED BY:	WESTOVER M.	AS NOTED	FILE NO. 227254006.mxd
APPROVED BY:	PRES D.	DATE PRINTED:	**FIGURE 8**
DATE:	MARCH 2010	3/17/2010	

RMT

744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\227254\09\MXD\227254006.mxd 3/17/2010 10:04:57

Tables

Table 1 – Groundwater Monitoring Program Summary

Table 1
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	1979				1980				1981				1982				19	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
HINZE WELL (LIPKE)												FIM						FIM
PW-3404 PAGE	FIM	FIM	FIM							FIM	FIM	FIM						
PW 8709 MILLER																		
PW-3613																		
PW-3652 KLEMM (MILLER)																		
PW-3688																		
PW-8581																		
PW-8757 WEINKE																		
PW-8763 CHRISTIAN (BRITZ)																		
PW-9051 KILBY																		
PW-9097																		
TW-E	FIM	FIM			F	FIM	FIM	FIM	FIM	FIM	FIM	FIM					FI	
TW-F	FIM	FIM			F	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-J		FIM				FIM			FIM	FIM	FIM	FIM	FIM	F	FIM	FIM	FIM	FIM
TW-K		*FIM*				*FIM*			*FIM*	*FIM*	*FIM*	*FIM*	*FIM*	*F*	*FIM*	*FIM*	*FIM*	*FIM*
TW-25													FIM	FIM	FIM	FIM	FIM	FIM
TW-25A																		
TW-26													FIM	FIM	FIM	FIM	FIM	FIM
TW-26A													FIM	FIM	FIM	FIM	FIM	FIM
TW-26B																		
TW-27													FIM	FIM	FIM	FIM	FIM	FIM
TW-28													FIM	FIM	FIM	FIM	FIM	FIM
TW-28A																		
TW-29													FIM	FIM	FIM	FIM	FIM	FIM
TW-29A																		
TW-29B																		
TW-29C																		
TW-37																		
TW-37A																		
TW-38																		
TW-38A																		
TW-39																		
TW-39A																		
TW-40																		
TW-40A																		
TW-41																		

TW-41A																		

Note:

Wells TW-E and TW-F were sampled 2 rounds in 1975 and 1 round in 1978 (FIM)

F = Field Measurements

I = Indicator parameters wet chemistry analysis

M = Metals analysis

V = Volatile organic compound analysis

83		1984				1985				1986			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
I		FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM

Table 1 (continued)
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	1987				1988				1989				1990				19	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
HINZE WELL (LIPKE)	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
PW-3404 PAGEL																		
PW 8709 MILLER																		
PW-3613																		
PW-3652 KLEMM (MILLER)																		
PW-3688																		
PW-8581																		
PW-8757 WEINKE																		
PW-8763 CHRISTIAN (BRITZ)																		
PW-9051 KILBY																		
PW-9097																		
TW-E	FI	FI	FI	FI	FI	FI					FI	FI	FI	FI	FI	FI	FI	FI
TW-F	FIM	FIM	FIM	FIM	FIM	FIM					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-J	FIM	FIM	FIM	FIM	FIM	FIM					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-K	FIM	FIM	FIM	FIM	FIM	FIM					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-25	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-25A																		
TW-26	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-26A	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-26B	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-27	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-28	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-28A	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29A	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29B	FIM	FIM	FIM	FIM							FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29C	FIM	FIM	FIM	FIM							FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-37																		
TW-37A																		
TW-38																		
TW-38A																		
TW-39																		
TW-39A																		
TW-40																		
TW-40A																		
TW-41																		

TW-41A																		

Note:

F = Field Measurements

I = Indicator parameters, wet chemistry analysis

M = Metals analysis

V = Volatile organic compound analysis

91		1992				1993				1994			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FI	FIM
FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	

Table 1 (continued)
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	1995				1996				1997				1998				19	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
HINZE WELL (LIEKE)	FIMV	FIM	FIM	FIM	FIM	FIMV	FIM	FIMV	FIMV	IMV	IV			IV		IV		IMV
PW-3404 PAGEL										V		V		V		V		V
PW 8709 MILLER																		
PW-3613						V				V				V				V
PW-3652 KLEMM (MILLER)								V				V				V		
PW-3688						V				V				V				V
PW-8581						V		V		V		V		V		V		V
PW-8757 WEINKE																		V
PW-8763 CHRISTIAN BRITZ						V		V		V		V		V		V		V
PW-9051 KILBY								V				V				V		
PW-9097								V				V				V		
TW-E		FI		FI	FI	FI	FI	FI	FI	I		I						
TW-F		FI		FI	FI	FI	FI	FI	FI	I		I						
TW-J		F		F	F	F	F	FI	FI									
TW-K				F		FV		FV		V		V				V		V
TW-25				F		FV		FV		V		V		V		V		V
TW-25A				F		FV		FV		V		V		V		V		V
TW-26																		
TW-26A				F		FV		FV		V		V		V		V		V
TW-26B				F		F		F										
TW-27				F		F		F										
TW-28	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	IMV		IV		I		IV		IM
TW-28A				F		F		FIM	FIMV	IMV		IV		I		IV		IM
TW-29				F		F		F										
TW-29A				F		F		F										
TW-29B				F		FV		FV										
TW-29C				F		FV		FV										
TW-37				F		FV		FV		V		V		V		V		V
TW-37A				F		FV		FV		V		V		V				
TW-38				F		FV		FV		V		V		V		V		V
TW-38A				F		FV		FV		V		V		V				
TW-39				F		F		F										
TW-39A				F		FV		FV		V		V		V				
TW-40				F		F		F										
TW-40A				F		FV		FV		V		V		V		V		V
TW-41				F		F		F										

TW-41A				F		F		F											

Note:

F = Field Measurements

I = Indicator parameters wet chemistry analysis

M = Metals analysis

V = Volatile organic compound analysis

99		2000				2001				2002			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	IMV		FIMV		IMV		FIV		FIMV		FIV		FIMV
	V		FV		V		FV		FV		FV		FV
							FV		FV		FV		FV
			FV								FV		
	V		FV		FV				FV				FV
			FV				FV				FV		
	V		FV		V		FV		FV		FV		FV
	V		FV		V		FV		FV		FV		FV
	V		FV		V		FV		FV		FV		FV
									FV				FV
	V				V				FV				FV
	V		FV		V		FV		FV		FV		FV
	V		FV		V		FV		FV		FV		FV
	V		FV		V		FV		FV		FV		FV
	V		FV		V		FV		FV		FV		FV
	IMV		FIM		IMV		FI		FIMV		FI		FIMV
	IMV		FIM		IMV		FI		FIMV		FI		FIMV
	V		FV		V		FV		FV		FV		FV
	V		FV		V		FV		FV		FV		FV
	V												
	V		FV		V		FV		FV		FV		FV

Table 1 (continued)
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	2003				2004				2005				2006				20	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
HINZE WELL (LIFKE)		FIM	FV	FIV		FIMV		FIV				IV		IV		FV		
PW-3404 PAGEL		FV		FV		FV		FV				FV		FV		FV		
PW 8709 MILLER		FV	FV	FV	FV	FV		FV	V			FV				FV		FV
PW-3613		FV				V								FV				
PW-3652 KLEMM (MILLER)				FV				FV				FV		FV				
PW-3688		FV				V								FV				
PW-8581		FV		FV		V		FV				FV		FV				
PW-8757 WEINKE		FV		FV		V		FV				FV		FV		FV		FV
PW-8763 CHRISTIAN BRITZ		FV		FV		V		FV				FV		FV		FV		
PW-9051 KILBY				FV				FV				FV				FV		
PW-9097				FV				FV				FV						
TW-E																		
TW-F																		
TW-J																		
TW-K		FV		FV		FV		FV				FV		FV		FV		
TW-25		FV		FV		FV		FV				FV		FV		FV		
TW-25A		FV		FV		FV						FV		FV		FV		
TW-26																		
TW-26A		FV		FV		FV		FV				FV		FV		FV		
TW-26B																		
TW-27																		
TW-28		FIM		FIV		FIM		FIV				FIV		FI		FIV		FI
TW-28A		FIM		FIV		FIM		FIV				FIV		FI		FIV		FI
TW-29																		
TW-29A																		
TW-29B																		
TW-29C																		
TW-37		FV		FV		FV		FV				FV		FV		FV		
TW-37A																		
TW-38		FV		FV				FV				FV		FV		FV		
TW-38A								FV										
TW-39																		
TW-39A																		
TW-40																		
TW-40A		FV		FV		FV		FV				FV		FV		FV		
TW-41																		

TW-41A																		

Note:

F = Field Measurements

I = Indicator parameters, wet chemistry analysis

M = Metals analysis

V = Volatile organic compound analysis

07		2008				2009			
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	V				FV				FV
	FV								
	FV		FV		FV		FV		FV
	FV		FV		FV		FV		FV
	FV				FV				FV
	FV				FV				FV
			F				F		
			F				F		
			F				F		
	FV		F		FV		F		FV
	FV		F		FV		F		FV
	FV		FV		FV		FV		FV
			F				F		
	FV		F		FV		F		FV
			F				F		
			F				F		
	FIV		FI		FIV		FI		FIV
	FIV		FI		FIV		FI		FIV
			F				F		
			F				F		
					FV				FV
			F		FV		F		FV
	FV				FV		F		FV
			F				F		
	FV		F		FV		F		FV
			F				F		
			F				F		
			F				F		
			F				F		
	FV		F		FV		F		FV
			F				F		

Table 2 – Parameters that Exceed Current NR140 Standards

TABLE 2
PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
SAUK COUNTY LANDFILL, LICENSE 02051
2005 - 2009

CHEMICAL PARAMETER	UNITS	NR140 PAL	NR140 ES	WELL ID	DATE	RESULT	DATA FLAGS	EXCEEDENCE	IN DMZ
BENZENE	UG/L	0.5	5	TW-25	10/19/2005	1.6		PAL	
				TW-25	4/24/2006	1.2		PAL	
				TW-25	10/10/2006	1.1		PAL	
				TW-25	10/16/2007	1.2		PAL	
				TW-25	10/29/2008	1.9		PAL	
				TW-K	10/15/2009	4.5		PAL	
CHLOROMETHANE	UG/L	0.3	3	HINZE WELL	11/3/2008	1.4		PAL	
				PW 8709 MILLER	10/30/2008	0.46	J	PAL	
				PW-8757 WEINKE	10/30/2008	0.45	J	PAL	
				PW-8763 BRITZ	10/30/2008	0.45	J	PAL	
				PW-9051 KILBY	10/30/2008	0.34	J	PAL	
				TW-25	10/29/2008	0.34	J	PAL	
				TW-25	10/14/2009	0.69	J	PAL	
				TW-25A	10/29/2008	0.46	J	PAL	
				TW-25A	10/15/2009	0.31	J	PAL	
				TW-26A	10/14/2009	0.58	J	PAL	
				TW-26A DUP	10/14/2009	0.5	J	PAL	
				TW-28	10/30/2008	0.82	J	PAL	
				TW-28A	10/30/2008	0.62	J	PAL	
				TW-29C	10/29/2008	0.56	J	PAL	
				TW-37	10/30/2008	1.6		PAL	
				TW-37	10/15/2009	0.38	J	PAL	
				TW-40A	10/14/2009	1.1		PAL	
				TW-K	10/30/2008	0.41	J	PAL	
METHYLENE CHLORIDE	UG/L	0.5	5	PW-3652	4/25/2006	1.2	J	PAL	

TABLE 2
PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
SAUK COUNTY LANDFILL, LICENSE 02051
2005 - 2009

CHEMICAL PARAMETER	UNITS	NR140 PAL	NR140 ES	WELL ID	DATE	RESULT	DATA FLAGS	EXCEEDENCE	IN DMZ
TETRACHLOROETHENE	UG/L	0.5	5	PW 8709 MILLER	1/28/2005	0.55	J	PAL	
				PW 8709 MILLER	10/19/2005	0.61	J	PAL	
				PW 8709 MILLER	10/15/2009	0.65	J	PAL	
				TW-25A	10/18/2005	2.6		PAL	
				TW-25A	4/24/2006	1.8		PAL	
				TW-25A	10/9/2006	1.9		PAL	
				TW-25A	10/15/2007	0.67	J	PAL	
				TW-25A	10/29/2008	1.3		PAL	
				TW-25A	10/15/2009	1.2	J	PAL	
TETRAHYDROFURAN	UG/L	10	50	TW-25	10/29/2008	28		PAL	
				TW-25	10/14/2009	22		PAL	
TRICHLOROETHENE	UG/L	0.5	5	TW-25A	10/18/2005	0.84		PAL	
				TW-25A	4/24/2006	0.67		PAL	
				TW-25A	10/9/2006	0.87		PAL	
				TW-25A	10/29/2008	0.66		PAL	
				TW-25A	10/15/2009	0.7		PAL	

DATA QUALIFIERS
J = REPORTED CONCENTRATION IS BETWEEN THE LIMIT OF DETECTION (LOD) AND LIMIT OF QUANTITATION (LOQ).

Table 3 – Addresses/Fire Numbers with, or potentially with, Potable Supply Wells

Sauk County Landfill (old) - Table 3

Addresses/Fire Numbers with, or potentially with, Potable Supply Wells

Address		Last Tested	Well Names (multiple where given)			
S 8603	Evergreen Ln	1992	PW-8603			
S 8659	Evergreen Ln					
S 8685A	Evergreen Ln	1992	PW-8685A			
S 8690A	Evergreen Ln	1992	PW-8690A			
*S 8795B	Evergreen Ln					
*S 8696	Evergreen Ln	1992	PW-8696			
S 8709	Evergreen Ln	2009	PW-8709	Miller		
S 8717	Evergreen Ln	1992	PW-8717			
S 8745	Evergreen Ln	2009	PW-8745	Hinze	Lipke	HSI#37
S 8748	Evergreen Ln	1992	PW-8748			
S 8770A	Evergreen Ln					
S 3404	Evergreen Rd	2007	PW-3404	Pagel		
S 3510	Evergreen Rd					
S 3520	Evergreen Rd	1992	PW-3520			
S 3527	Evergreen Rd					
S 3605	Evergreen Rd	1992	PW-3605			
S 3606	Evergreen Rd					
S 3610	Evergreen Rd					
S 3613	Evergreen Rd	2006	PW-3613	Hinz		HSI#33
S 3614	Evergreen Rd					
S 3626	Evergreen Rd					
S 3651	Evergreen Rd	1992	PW-3651			
S 3652	Evergreen Rd	2006	PW-3652	Klemm	Miller	
S 3653A	Evergreen Rd					
S 3688	Evergreen Rd	2006	PW-3688	Busser		HSI#34
*E 8446	Hogsback Rd					
E 8503	Hogsback Rd					
E 8581	Hogsback Rd	2006	PW-8581	Hoffman		
*E 8651	Hogsback Rd					
E 8757	Hogsback Rd	2009	PW-8757	Weinke		
E 8763	Hogsback Rd	2009	PW-8763	Christian	Britz	Britts
E 9013	Hogsback Rd					
E 9051	Hogsback Rd	2009	PW-9051	Kilby	Fischer	Killoy
E 9077	Hogsback Rd					
E 9097	Hogsback Rd	2009	PW-9097	Whalen		

Notes:

Most addresses were visually identified during the site inspection.

* Means the address/fire number was found using the New Sauk GIS website.

Attachments

Attachment A – May 24, 2006, Groundwater Monitoring Plan Modification

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Scott Hassett, Secretary
Ruthe E. Badger, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-275-3338
TTY Access via relay - 711

MAY 24 2006

FID #:157033140
Sauk County
SW Appr.

Mr. John Carroll
Sauk County Solid Waste Manager
E8795B Evergreen Lane
Baraboo, WI 53913

SUBJECT: Sampling Plan Modification Approval for the Old Closed Sauk County Sanitary Landfill, License #2051.

Dear Mr. Carroll:

The South Central Region of the Department of Natural Resources has reviewed and approved the plan modification request dated January 24, 2006. Please include the attached approval in the written operating record for the landfill as specified in s. NR 506.17, Wis. Adm. Code.

MODIFICATION SUMMARY

Geo Trans, Incorporated has requested a change to the monitoring and private well sampling plan and the gas monitoring plan on behalf of their client, the Sauk County Sanitary Landfill. The existing sampling plan calls for sampling the following monitoring wells on a semiannual basis.

TW-5, TW-25, TW-25A, TW-26A, TW-29B, TW-29C, TW-37, TW-38, TW-40A

The plan modification request proposes reducing the sampling frequency for all of the monitoring wells listed above from semiannual to annual sampling. VOC concentrations in the monitoring wells have declined since the installation of an engineered cap at the landfill and the installation of a gas extraction system. None of the monitoring wells listed above contain VOCs at concentrations that exceed their respective enforcement standards (ESs). TW-25, TW-25A, and TW-29C, did contain VOCs at concentrations slightly above their respective preventative action limits (PALs). All of the other monitoring wells have either no detects for VOCs or concentrations below the PAL.

The plan modification request proposes removing 5 private water supply wells from the sampling plan, reducing the sampling frequency of 2 of the 4 remaining wells, and maintaining the sampling frequency of 2 of the 4 of the remaining wells. The 5 wells that are proposed to be dropped from the sampling plan are wells that have produced water without any detectable VOCs for a period of not less than 7 years. The request proposes reducing the sampling frequency of 2 private water supply wells. The sampling history of those two wells can be characterized as having stable VOC concentrations that are well below their respective ESs.

The plan modification request proposes removing the requirement for validating the data from every 5th round of sampling. There is a data set that includes 26 rounds of monitoring well samples. The samples will continue to be analyzed by the same laboratory.

The plan modification request proposes reducing the sampling frequency of the 4 gas probes located outside the landfill from monthly to quarterly. There has been no gas detected in any of these gas probes in the monthly sampling.

If you have any questions regarding this approval, please contact Adam Hogan at (608) 275-3292.

Sincerely,

Gene R. Mitchell, P.E.
Waste Management Regional Team Leader
South Central Region

cc: Mark Harder - SCR

Gerald DeMers, PE, Senior Engineer, Associate,
GeoTrans, Inc., 175N. Corporate Drive, Brookfield, WI 53405

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PLAN OF OPERATION APPROVAL MODIFICATION
FOR
THE SAUK COUNTY SANITARY LANDFILL (#2051)

FINDINGS OF FACT

The Department of Natural Resources (Department) finds that:

1. Sauk County owns a closed non-hazardous solid waste disposal facility located in the E 1/2 of Section 15 and W 1/2 of Section 14, T12N, R5E, Town of Excelsior, Sauk County, WI.

2. The Department issued the Sauk County Landfill a landfill license in 1973.

3. The Department issued a closure approval on June 17, 1980 and subsequent approval modifications that define the current groundwater monitoring plan at the Sauk County Landfill (lic. #2051).

4. The most recent plan modification for sampling was issued on May 27, 1998.

5. The Sauk County Landfill is currently listed on the U.S. Environmental Protection Agency's National Priorities List ("Superfund"). The site has been remediated and Sauk County is seeking delisting with support from the Department.

6. GeoTrans, Inc, on behalf of Sauk County submitted a request for a plan modification to allow reduced monitoring frequency of monitoring wells in the sampling plan, remove 5 private wells from the sampling plan, reduce the monitoring frequency of 2 private water supply wells, remove data validation from the sampling plan requirements, and reduce the sampling frequency of the gas probes located outside the landfill. The request was dated January 24, 2006, and was received by the Department on January 30, 2006.

7. The plan review fee of $1650 for the plan modification request review was received by the Department on May 10, 2006.

8. Additional documents considered in connection with the review of the plan modification request include the following:

   a. The 5 year summary report prepared by GeoTrans, Inc. dated March 28, 2005

   b. The geologic cross section of the landfill and monitoring wells prepared by GeoTrans, Inc. dated March 20, 2003.

c. The well construction report for the Nathan Miller water supply well, Wisconsin Unique Well # NL 765.

d. Department files for the Sauk County Landfill (#2051).

9. The Department considered the following additional facts in reviewing the proposed plan modification.

a. VOCs have declined in both the monitoring wells and the private wells at this site since remediation.

b. VOC concentrations appear to be stable or declining in both private wells and monitoring wells.

c. None of the 5 private wells proposed to be removed from the sampling plan have had any VOC detects for a minimum of 7 years.

CONCLUSIONS OF LAW

The Department concludes that:

1. The Department has authority under s. 289.30(6), Wis. Stats., to modify a plan of operation if the modification will not inhibit compliance with chs. NR500-538, Wis. Adm. Code.

2. In accordance with the foregoing, the Department has the authority under s. 289.30, Stats., to issue the following plan of operation approval modification.

PLAN OF OPERATION APPROVAL MODIFICATION

The Department hereby approves the proposed modifications to reduce the sampling frequency of the monitoring wells listed in the proposed plan modification, to remove 5 private wells from the sampling plan, to reduce the sampling frequency of 2 other private wells, to remove data validation from the sampling plan, and to reduce the frequency of gas sampling in the four gas probes located outside the landfill.

This plan modification approval supersedes all previous plan modifications for monitoring well and private water supply well monitoring.

The Department retains the jurisdiction either to require the submittal of additional information or to modify these approvals at any time if, in the Department's opinion, conditions warrant further modifications. Unless specifically noted, the conditions of these approvals do not supersede or replace any previous conditions of approval for this facility.

NOTIFICATION OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to ss. 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

Dated: MAY 24 2006 KW

DEPARTMENT OF NATURAL RESOURCES
For the Secretary

Gene R. Mitchell, P.E.
Waste and Materials Management Regional Team Leader
South Central Region

Adam Hogan, R.S.
Waste and Materials Management Hydrogeologist
South Central Region

Marc Harder, P.E.
Waste and Materials Management Engineer
South Central Region

TABLE 1: GROUNDWATER MONITORING SCHEDULE FOR LICENSE #02051

Sampling Point (DNR ID)	Frequency	Parameters
Monitoring Wells: TW-K TW-25 TW-25A TW-26A TW-29B TW-29C TW-37 TW-38 TW-40A	Annual (October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00006 Well dry 00010 Field Temperature in °C 00094 Field Conductivity @25°C 00400 Field pH 72020 Groundwater elevation VOCs (EPA Method SW8021 or SW8260)
Private Water Supply Wells: E9051 Hogsback Road E8763 Hogsback Road	Annual (October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00010 Field Temperature in °C 00094 Field Conductivity @25°C 00400 Field pH VOCs (EPA Method SW8021 or SW8260)
E8727 Hogsback Road E8729 Hogsback Road	Semiannual (April, October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00010 Field Temperature in °C 00094 Field Conductivity @25°C 00400 Field pH VOCs (EPA Method SW8021 or SW8260)

Attachment B – March 2010, "5-Year Data Summary for the Period of 2005 through 2009" by RMT, Inc.

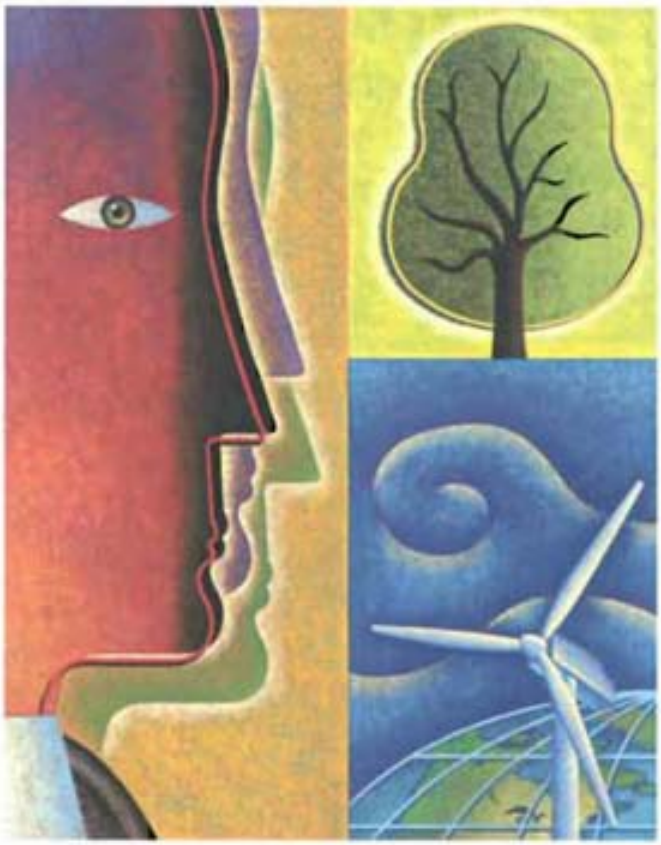
RMT

• ENVIRONMENT • ENERGY • ENGINEERING

5-Year Data Summary for the Period of 2005 through 2009

Closed Sauk County Landfill
WDNR License No. 02051

March 2010



RMT

ENVIRONMENT • ENERGY • ENGINEERING

March 15, 2010

Mr. Tim Stieve
Administrator – Emergency Management, Buildings & Safety
Sauk County
510 Broadway
Baraboo, WI 53913

Subject: 5-Year Data Summary for the Closed Sauk County Landfill (WDNR Lic. 02051)

Dear Mr. Stieve:

This letter provides RMT, Inc.'s (RMT's) 5-Year Data Summary for the period of 2005 through 2009, for the older, closed Sauk County Landfill (WDNR Lic. 02051). This "Data Summary" is required by the Source Control Record of Decision, issued on March 24, 1994, by the USEPA; and will be used by the WDNR to prepare a draft 5-Year Summary Report by April 30, so that the USEPA can finalize the report one to two months later. Follow-on work related to agency recommendations is anticipated and may include additional monitoring or changes to the monitoring programs. RMT will assist the County with addressing these subsequent requirements following issuance of the final report by the USEPA.

RMT appreciates the opportunity to continue to provide Sauk County with exceptional engineering services with the goal of controlling the County's liabilities and costs related to the closed landfills. Please contact me at 608-662-5476, if you have any questions regarding this Data Summary.

Sincerely,

RMT, Inc.

Dean Free
Senior Project Engineer

Attachment: Data Summary

cc: Curt Madsen, RMT
RMT Central Files

I:\WPMSN\PJT\00-22725\40\00001\L002272540-001.DOCX

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

5-Year Data Summary for the Period of 2005 through 2009

Closed Sauk County Landfill
WDNR License No. 02051

March 2010

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

Table of Contents

1. Introduction 1
   - 1.1 Background 1
   - 1.2 Project Objectives 2

2. Implemented Remedial Actions Summary 3

3. Current Environmental Monitoring Program 4

4. Data Gathered During Monitoring Period 5
   - 4.1 Final Cover System Monitoring Results 5
   - 4.2 Landfill Gas System Monitoring Results 5
   - 4.3 Groundwater Monitoring Results 7
     - 4.3.1 Monitoring Well/Supply Well Sampling History 7
     - 4.3.2 Groundwater Flow 7
     - 4.3.3 Volatile Organic Compounds in Groundwater 8

List of Drawings/Figures

Drawing 1	Site Plan
Figure 1	Site Location Map
Figure 2	Site Layout Map
Figure 3	Water Table Map – April 2009
Figure 4	Upper Intermediate Potentiometric Map – April 2009
Figure 5	Lower Intermediate Potentiometric Map – April 2009
Figure 6	Deep Potentiometric Map – April 2008
Figure 7	Total VOC Isoconcentration Map – October 2009
Figure 8	1,1-Dichloroethane Isoconcentration Map – October 2009

List of Appendices

Appendix A	Project Correspondence
Appendix B	Landfill Gas Monitoring Data 2005-2009
Appendix C	Groundwater Monitoring

Section 1
Introduction

1.1 Background

The older, closed, Sauk County Landfill, WDNR Lic. 02051, (Landfill 02051) was originally closed in 1983 and listed on the National Priorities List (NPL) by the United States Environmental Protection Agency (USEPA) in October 1989, due to off-site VOC groundwater contamination. Following the listing, a Remedial Investigation (RI) was required by the USEPA and the Wisconsin Department of Natural Resources (WDNR), and subsequently one was performed for the landfill. The RI characterized the contaminant migration pathways and the nature, extent, and magnitude of contaminant migration along those pathways for the site. Following the RI, a focused Feasibility Study (FS) was performed to select and evaluate remedial action alternatives for source control. On March 24, 1994, a Source Control Record of Decision (SCROD) was issued by the regulatory agencies. The SCROD selected and required specific remedies to be implemented. These remedies included:

- Continued groundwater monitoring at on-site wells and off-site private wells
- Regrading of the landfill surface to promote drainage
- Fencing the landfill
- Installing a landfill gas collection system
- Placing a deed restriction on the property
- Maintaining the landfill cap
- Providing a contingency for a composite landfill cover if groundwater quality does not meet objectives

A Groundwater ROD (GROD) was issued on August 19, 1995. The GROD required that no additional action was necessary, beyond the remedy prescribed in the SCROD. A copy of the SCROD is included in Appendix A for reference.

As part of the SCROD requirements, a 5-Year Summary Report must be prepared for ongoing 5-year periods. The initial report was submitted for the period of 1994 through 1998 (HSI GeoTrans (HSI), April 11, 1999). The subsequent report, for the period of 1999 through 2004, was prepared and submitted March 28, 2005 by HSI. In a recent meeting, the USEPA indicated that Sauk County is responsible for preparing a 5-Year Data Summary; the WDNR is responsible for reviewing and drafting a "Summary Report", and the USEPA is responsible for finalizing, approving, and issuing the report. Therefore, RMT, on behalf of Sauk County, is

providing this "Data Summary" to satisfy the indicated requirements. The WDNR has provided guidance to RMT during preparation of this Data Summary so that sufficient information was prepared for report preparation purposes.

1.2 Project Objectives

The required focus of the USEPA 5-Year Summary Report is to review the remedies that have been implemented for Landfill 02051 and to determine their protectiveness. To support this effort, RMT's Data Summary summarizes and briefly evaluates the implemented remedial actions, the current environmental monitoring programs, and the data gathered during the monitoring period. The evaluation includes analyses of the water supply and groundwater monitoring efforts, the landfill gas (LFG) extraction system operation and monitoring (O&M) efforts, and the final cover O&M efforts; and identifies potential issues and exceedences of applicable regulatory standards and the actions to address identified issues. The Data Summary includes this text, tables, drawings, and graphics to support the 5-year reporting effort.

Section 2
Implemented Remedial Actions Summary

The implemented remedial actions that will be evaluated for the USEPA's Summary Report include the landfill final cover, the LFG management system, and the groundwater monitoring systems (including the private water supply wells) for Landfill 02051. These implemented remedial actions will be evaluated to determine if they continue to function as intended and to be protective of human health and the environment. Where applicable, information for the more recently closed landfill, WDNR Lic. 02978 (Landfill 02978) is presented to assist in the evaluation of Landfill 02051 data.

Groundwater monitoring is a critical protective measure to both Landfill 02978 and Landfill 02051, and careful evaluation is necessary to differentiate monitoring results for each site with respect to the complicated flow regimes present. This Data Summary focuses on the groundwater data for the wells associated with Landfill 02051. Separating the potential effects of each landfill on groundwater quality is very important to ongoing environmental monitoring efforts at the facility, although the proximity of the two sites requires that some monitoring points are shared.

The landfill final cover, the LFG management system, and the groundwater monitoring system have been maintained in good working condition throughout the 5-year period. Sauk County has been diligent in addressing maintenance and repair issues as they are identified. Data and details for each of the remedial actions are discussed in the following sections.

Section 3
Current Environmental Monitoring Program

The environmental monitoring program, for each of the Landfill 02051 remedial actions, is managed to meet the SCROD requirements and is summarized as follows:

- **Landfill Final Cover System** – The SCROD requires that the landfill final cover system be inspected annually and to be maintained as designed. The inspection results and maintenance efforts are to be reported annually to the WDNR.
- **Landfill Gas Management System** – The SCROD requires that the LFG management system be operated to efficiently collect and combust LFG, and that the system be properly inspected, operated, monitored, and maintained. Landfill 02051 is monitored in accordance with the same monitoring requirements established for Landfill 02978, as specified in the December 12, 1997, Plan of Operation Approval Modification. A copy of this Plan Mod is provided in Appendix A for reference.
- **Groundwater Monitoring System** – The SCROD requires that the groundwater monitoring system be inspected and maintained in proper working condition. The groundwater monitoring system includes groundwater monitoring wells located around the landfill perimeter and a series of private water supply wells at neighboring residences. The monitoring program has varied over the years, with the most recent requirements specified in the WDNR's May 24, 2006 Plan Modification. A copy of this Plan Mod is included in Appendix A for reference. Table 1, in Appendix C, summarizes the groundwater sampling program from 1979 through 2009. The date for the years preceding the time frame of this summary (i.e., prior to 2005) are included for comparison purposes.

Section 4
Data Gathered During Monitoring Period

4.1 Final Cover System Monitoring Results

The final soil cover system for Landfill 2051 was installed in 1983 and consisted of 2 feet of clay on the top grades, 1 foot of clay on the sideslopes, and 6 inches of topsoil and vegetation over the entire site. The SCROD from 1994 required that the landfill surface be regraded to improve drainage of storm water off the landfill cover since settlement had negatively affected surface grades. These efforts were completed in early 1995 and documented in the May 1995 Remedial Action Construction Completion Report (prepared by RMT).

Throughout this 5-year period, the landfill cover has been mowed once or twice a year. In 2009, a few areas of woody vegetation encroaching upon the final cover area were removed and the stumps were treated with an herbicide to prevent re-growth. A comprehensive final cover system inspection is performed annually, and often includes representatives from the WDNR. Tom Bennwitz and Jim Kralick of the WDNR conducted a site inspection of both landfills on March 18, 2009. A copy of the 2009 WDNR inspection letter is attached for reference in Appendix A. Previous inspection details are included in the quarterly and annual landfill reports provided in Appendix B.

The WDNR inspection identified a settled LFG probe casing, some woody vegetation encroaching on the landfill, some differential settlement of the landfill surface, and a vole problem. In response to WDNR's findings, the LFG probe casing was repaired, the woody vegetation removed, and raptor perches are being installed to improve vole predation. Late in 2009, the settled areas of the landfill surface were surveyed and mapped as part of an effort to prepare a grade restoration plan. Efforts to fill settled areas to improve surface water flow off of the final cover are planned for the 2010 construction season.

4.2 Landfill Gas System Monitoring Results

The two LFG extraction systems are monitored and reported to the WDNR together, by Sauk County, since the combined flows support the operation of the County's LFG-to-energy (LFGTE) system. The LFG from both sites is combined and has historically been extracted using two compressor systems with a chiller system to reduce moisture in the LFG, and a treatment system for removal of siloxanes. The LFG is directed to 24 microturbines for combustion and generation of electricity. Excess LFG, not utilized by the microturbines, has been directed to a

utility flare for combustion. Refer to attached Drawing Sheet 1 showing the LFG extraction system monitoring locations.

For this Data Summary, the monitoring data for the LFG systems for the period of 2005 through 2009 have been assembled from the WDNR GEMS database. The electronic database has minimal data for the period of 2005 through 2006, since the electronic submittal of LFG data was generally initiated in approximately 2007. A copy of the applicable GEMS database output is provided in Appendix B. In addition to the GEMS data, the monthly monitoring forms submitted with the quarterly reports for each landfill, were reviewed to identify operational trends. A copy of the quarterly and annual reports containing the completed monthly monitoring forms, for the years 2007, 2008, and 2009, is included in Appendix B. The practice of preparing written quarterly LFG reports, for the combined landfills, was initiated in 2007, and therefore the reports for the first two years of the 5-year period are not available.

During the last few years and since final capping of Landfill 02978, the LFG generation rates have declined. With less LFG, only one compressor system has been necessary during 2009 and part of 2008, and fewer microturbines are utilized for the currently available LFG volume.

The older site contains approximately 400,000 tons of waste, with a higher percentage consisting of inorganic wastes including foundry sand. A review of the monthly LFG monitoring data indicates that the older landfill currently contributes approximately 50 to 75 cfm of LFG. The LFG generation model depicts that the landfill site is well past its respective peak of LFG generation. The current modeled LFG generation rate for Landfill 02051 is approximately 55 cfm. A copy of the LFG generation rate model (LandGEM model) for the site is included in Appendix B.

The LFG extraction system for Landfill 02051 was required by the SCROD as a selected source control remedy to efficiently collect and combust the LFG and to control LFG migration. The LFG extraction system has been operated to effectively extract available LFG and control LFG migration during the 5-year period. The LFG extraction wells are monitored and balanced approximately monthly. The completed monthly monitoring forms for the extraction wells are provided in the quarterly reports available in Appendix B for reference.

There are four primary LFG monitoring probes spaced evenly around the older landfill site, including GP-1 through GP-4. Additional LFG probes, GP-7, GP-8, and GP-9 are located in the area between the newer and older landfill sites. Refer to attached Drawing Sheet 1 showing the LFG extraction well and probe monitoring locations. The seven LFG monitoring probes associated with the older landfill site were monitored at least quarterly during the 5-year period. Data for the years 2005 and 2006 is missing from the files and is not available. Based on

the 2007, 2008, and 2009 LFG probe monitoring data, methane has not been detected in any of these probes. Refer to the LFG probe monitoring data in Appendix B.

4.3 Groundwater Monitoring Results

4.3.1 Monitoring Well/Supply Well Sampling History

Figures 1 and 2 show the location of Landfill 02051, the locations of the site monitoring wells, and the locations of the off-site private supply wells that are currently in the groundwater monitoring program. Table 1 in Appendix C presents a summary of the historical groundwater sampling program at the site, based on the data available in the WDNR GEMS database. This table includes only the wells associated with Landfill 2051, that have been monitored within the last 5 years.

In May 2006, the WDNR issued a Plan Modification Approval that altered the groundwater monitoring program (Appendix A). The Plan Modification eliminated 5 of the private well monitoring locations (PW-8581, PW-9097, PW-3613, PW-3652, and PW-3688) from the monitoring program (Table 1), as these wells had been reported to have no volatile organic compound (VOC) impacts. The frequency of monitoring was changed from semi-annual to annual for VOCs at most site monitoring wells and private wells; private wells PW-8757 (Weinke) and PW-8709 (Miller), and site monitoring wells TW-25A, TW-28, and TW-28A continue to be sampled for VOCs on a semi-annual basis. In addition, TW-28 and TW-28A are sampled for inorganic indicator parameters.

The Pagel private well has not been sampled since 2007. The reason for this modification to the monitoring program is not clear. The Pagel private well was not selected for elimination from the program in the 2006 Plan Modification Request; however, this well was not included in either the February 8, 2007 WDNR Table 1 Groundwater Monitoring Schedule for Lic. #2051, or the May 24, 2006 WDNR Sampling Plan Modification Approval for the Old Closed Sauk County Sanitary Landfill, Lic. #2051 (Appendix A).

4.3.2 Groundwater Flow

Groundwater levels are measured twice a year in April and October. Groundwater flow beneath the site was evaluated in the context of the historically defined hydrogeologic units. The flow regime was divided into four zones – the water table, the upper intermediate zone, the lower intermediate zone, and the deep zone (GeoTrans, 2005). Figures 3 through 5 present the April 2009 groundwater flow data for the water table, upper intermediate, and lower intermediate potentiometric surfaces, and Figure 6

presents the deep potentiometric surface interpreted from the April 2008 monitoring data. The April 2009 data for the deep potentiometric surface was not contoured due to a lack of data at the eastern portion of the site (TW-41A), and what appears to be an anomalously low water level reading at the western edge of the site (TW-40A). Water table maps for the October sampling events are generated as a part of the semi-annual groundwater monitoring reports, and have been submitted to the WDNR under separate cover.

Groundwater flow in the shallow portion of the aquifer (water table and upper intermediate potentiometric surface) is to the west and southwest, while groundwater flow in the lower intermediate and deep zones is generally to the southeast and east, respectively. The groundwater flow conditions observed in the April 2009/2008 monitoring events are consistent with the October monitoring events, and are consistent with historical observations (e.g. GeoTrans, 2005).

4.3.3 Volatile Organic Compounds in Groundwater

Current Conditions

During this reporting period, VOCs have been detected in most of the site monitoring wells, as well as several off-site private supply wells. The most frequently detected compounds are chlorinated VOCs (alkenes and alkanes). The alkane 1,1-dichloroethane (1,1-DCA), is the most frequently detected VOC in groundwater samples from the site. Figure 7 shows the distribution of total VOC concentrations detected in groundwater samples in October 2009, and Figure 8 shows the distribution of 1,1-DCA detected in groundwater during the October 2009 monitoring event. A review of the historical groundwater data indicated that VOCs have also been detected at two private wells that were removed from the monitoring program following the 2006 Plan Modification (PW-3652 [Klemm] and private well PW-Pagel). The most recent data from these two wells (April 2006 and October 2007, respectively) are also included on Figures 7 and 8.

In 2009, the concentrations of individual volatile organic compounds at each well were generally below 10 µg/L, and the maximum total VOC concentration reported was 67.3 µg/L at well TW-K, located immediately adjacent to the landfill. VOCs in groundwater form a plume extending to the west of the site past PW-3652 (Klemm), approximately 4,200 feet downgradient of the landfill.

Chlorinated VOCs have also been detected to the north and west of the site, at private well PW-Pagel. These data have been plotted on Figures 7 and 8; however, the relationship of these detections to the Landfill 02051 site are unclear.

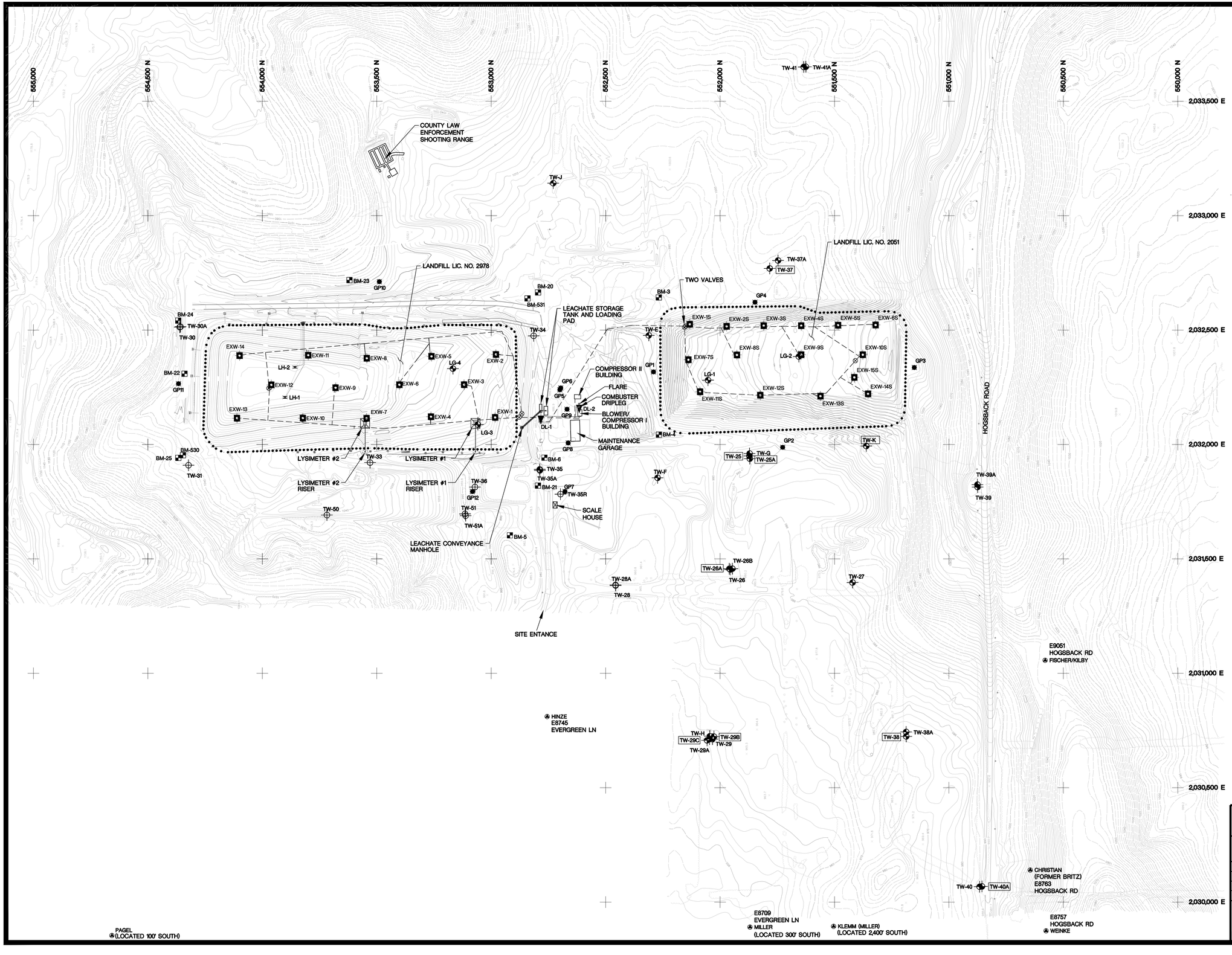
Exceedences of the NR 140 groundwater quality standards for the 5-year review period are summarized in Table 2 in Appendix C, and the most recent results are posted on Figure 7. No Enforcement Standard (ES) exceedences have been reported during the 5-year review period. Preventive Action Limits (PALs) have been exceeded for several compounds, including chlorinated VOCs and/or benzene at most of the site wells. The highest VOC concentrations, and greatest number of compounds exceeding NR 140 PALs were reported at wells TW-25, TW-25A, and TW-K, located immediately adjacent to the landfill. PAL exceedences for tetrachloroethene (PCE) have been reported at PW-8709 (Miller) during three events in this reporting period, and a PAL exceedence for methylene chloride was reported at PW-3652 (Klemm) during the most recent sampling event at this well (2006).

Trends

Concentrations of several key VOC parameters (PCE; TCE; cis-1,2-DCE; 1,1-DCE; 1,1,1-DCA; 1,1-DCE; and benzene) were evaluated at the site monitoring wells and private supply wells. Graphs of the parameter concentrations over time for selected wells are included in Appendix C.

In general, the concentration of each of these parameters has decreased over time, and current detection levels remain at or near the compound detection limits. At well TW-25A, concentrations of cis-1,2-dichloroethene (cis-1,2-DCE) have increased slightly over the last 5 years; however, concentrations of parent compounds tetrachloroethene (PCE) and trichloroethene (TCE) have decreased or remained stable. The most recent reported concentration of cis-1,2-DCE at this location (1.6 µg/L) is well below the PAL (7 µg/L).

Site well TW-38A has not been sampled during this reporting period, and was last sampled for VOCs in October, 2004. Prior to 2004, no detections were reported at this location. In October 2004, detections of several chlorinated VOCs were reported, including PAL exceedences for PCE (2.4 µg/L), TCE (0.77 µg/L), and 1,1-DCE (1.0 µg/L).



LEGEND

- EXW-7 — GAS EXTRACTION WELL
- TW-25 — GROUNDWATER MONITORING WELL (LIC. NO. 2051) (WELL NAMES WHICH ARE BOXED ARE INCLUDED IN CURRENT N.P.L. MONITORING PROGRAM)
- TW-50 — GROUNDWATER MONITORING WELL (LIC. NO. 2978)
- GAS HEADER PIPE
- GP-8 — GAS MONITORING PROBE
- LH-1 — LEACHATE HEAD WELL
- DL-2 — DRIPLEG
- BURRIED SERVICE VALVE
- LIMITS OF WASTE
- MANHOLES
- BM-21 — SURVEY BENCHMARK
- HINZE — PRIVATE WELL

NOTES

1. THE OLDER LANDFILL (WDNR LIC. NO. 2051) IS LOCATED SOUTH OF THE NEWER LANDFILL (WDNR LIC. NO. 2978).
2. THE NEWER LANDFILL (WDNR LIC. NO. 2978) WAS CLOSED IN OCTOBER 2006 WHEN PHASE III RECEIVED FINAL COVER. FINAL CLOSURE APPROVAL WAS RECEIVED FROM THE WDNR ON JULY 11, 2007.
3. THE PRIMARY GAS COMBUSTION SYSTEM CONSISTS OF TWO GAS CONDITIONING/COMPRESSOR SYSTEMS AND 24 CAPSTONE MICRO-TURBINES. A BLOWER/UTILITY FLARE IS THE BACK-UP GAS CONBUSTION SYSTEM.
4. GRID COORDINATES ARE IN NAD27 STATE PLANE WISCONSIN, SOUTH ZONE. UNITS ARE U.S. SURVEY FEET.

VERTICAL AND HORIZONTAL BENCH MARKS

DESC.	STATE PLANE COORDINATES	ELEVATION
BM-3	2,032,638.65 X 552,266.33 Y	987.92
BM-4	2,032,038.70 X 552,266.24 Y	980.82
BM-5	2,031,698.94 X 552,917.01 Y	987.13
BM-6	2,032,038.62 X 552,766.20 Y	982.85
BM-20	2,032,760.10 X 552,794.15 Y	996.58
BM-21	2,031,916.16 X 552,794.48 Y	981.05
BM-22	2,032,404.63 X 554,339.14 Y	1047.79
BM-23	2,032,814.10 X 553,618.82 Y	1044.16
BM-24	2,032,636.64 X 554,366.68 Y	1043.39
BM-25	2,032,038.17 X 554,366.44 Y	1040.57
BM-530	2,032,053.26 X 554,346.61 Y	1037.60
BM-531	2,032,738.15 X 552,841.40 Y	996.91

0 200 400 600 800
SCALE IN FEET

PROJECT:
SAUK COUNTY LANDFILLS
(WDNR LICENSE NOs. 2051 AND 2978)
SAUK COUNTY, WISCONSIN

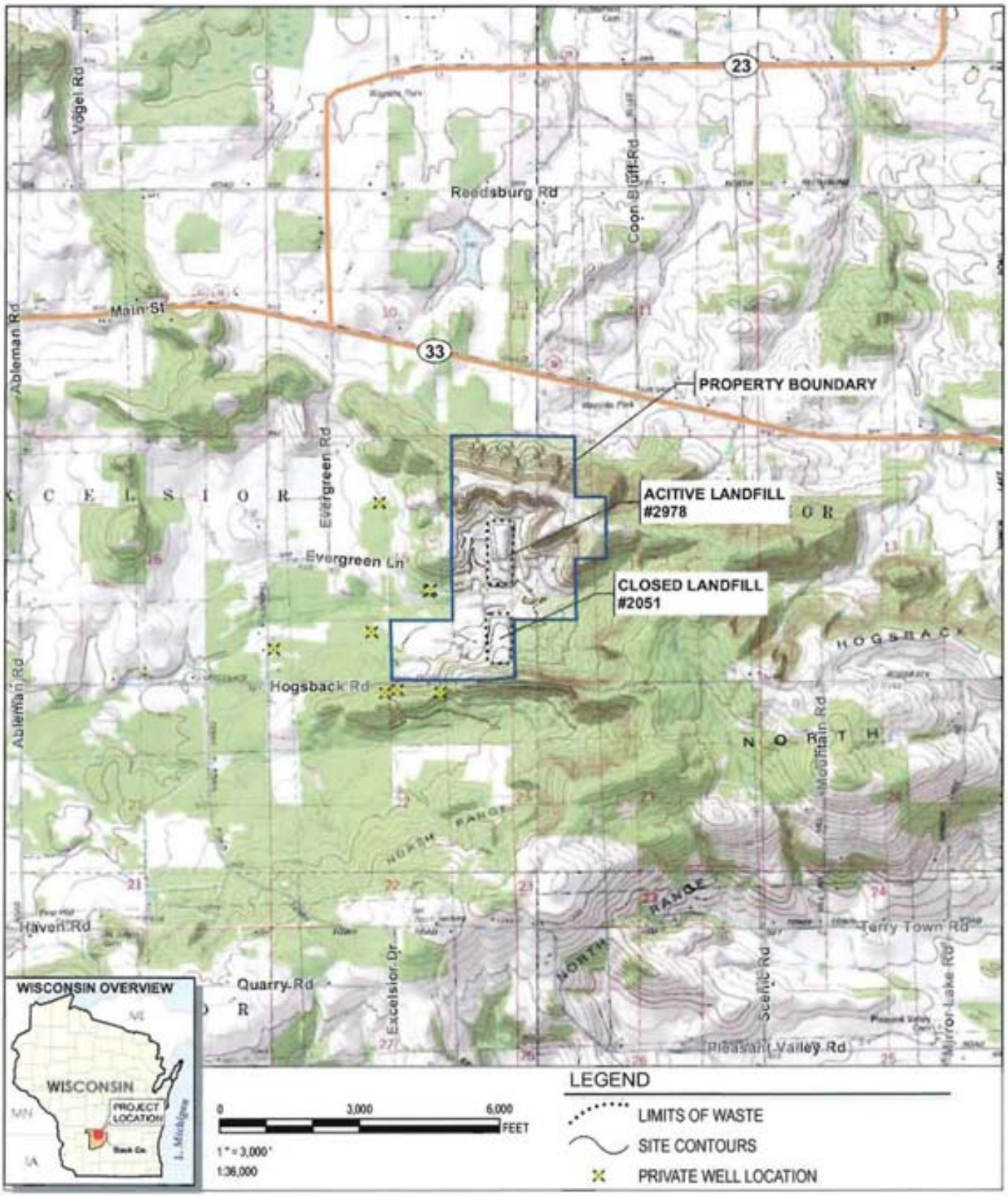
SHEET TITLE:
SITE PLAN

DRAWN BY: METZA	SCALE: 1"=200'	PROJ. NO.	22725.37
CHECKED BY: DRF		FILE NO.	227253703.DWG
APPROVED BY: CDM	DATE PRINTED:	**DRAWING 1**	
DATE: MARCH 2010			

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

PLOT DATA
Drawing Name: C:\DOCUME~1\FITZGERE\LOCALS~1\Temp\GWViewer\Sauk-base.dwg
Operator Name: FITZGERE
Scale: 1" = 1'
Dwg Size: x x x
Plot Time: x x x
Additional Xref's:
Attached Image:s: x
Attached Image:s: x

J:\227253\227253703.dwg, Model, 3/17/2010 9:47:31 AM, mleja, DWG To PDF.pc3, 22.54in / 1:200



RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

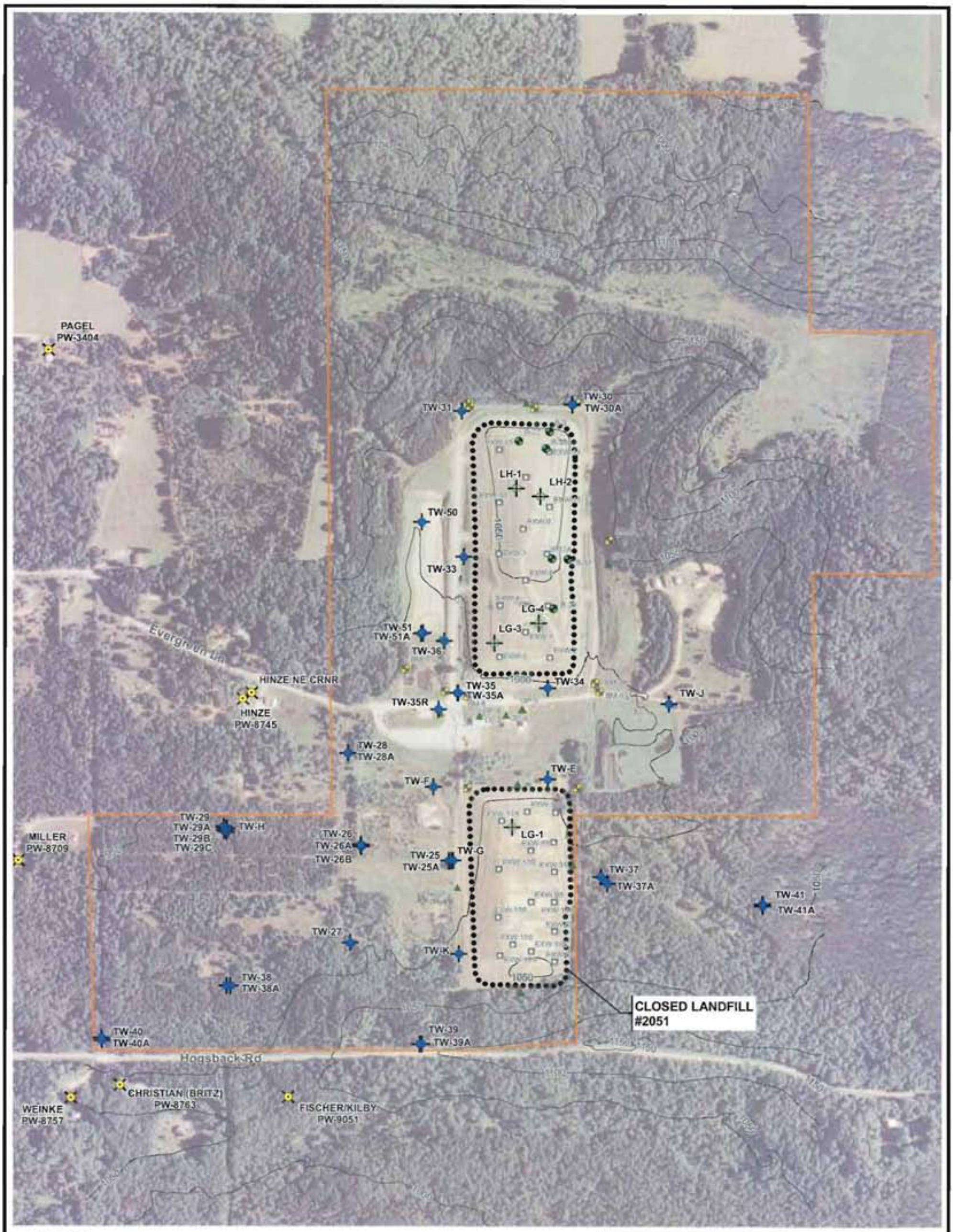
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SITE LOCATION MAP

DRAWN BY:	PAPEZ J
APPROVED BY:	FREE D
PROJECT NO	00-22725.40
FILE NO.	227254001.mxd
DATE:	MARCH 2010

D:\22725\40\MXD\227254001.mxd 3/17/2010 09:53:16

FIGURE 1



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)

N

0 250 500 FEET

1" = 500'
1:6,000

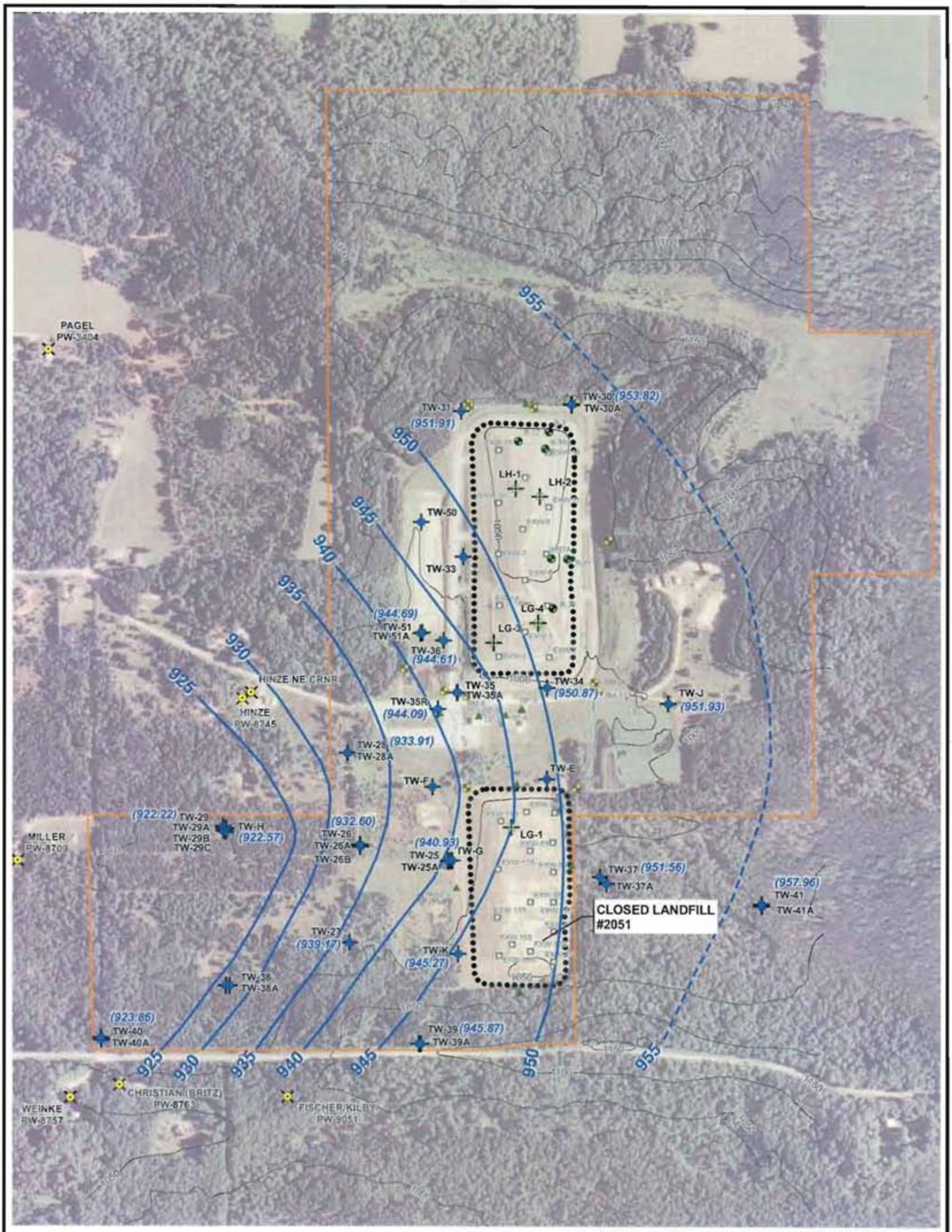
PROJECT:
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE:
SITE LAYOUT MAP

DRAWN BY:	PAPEZ J	SCALE:		PROJ. NO.	00-22725.40
CHECKED BY:	WESTOVER M		AS NOTED	FILE NO.	227254002.mxd
APPROVED BY:	FREE D	DATE PRINTED:			
DATE:	MARCH 2010		3/17/2010		FIGURE 2

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254002.mxd 3/17/2010 09:55:43



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- WATER TABLE CONTOUR (DASHED WHERE INFERRED)
- (945.87) WATER TABLE ELEVATION

N

0 250 500 FEET

1" = 500'
1:6,000

PROJECT:
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

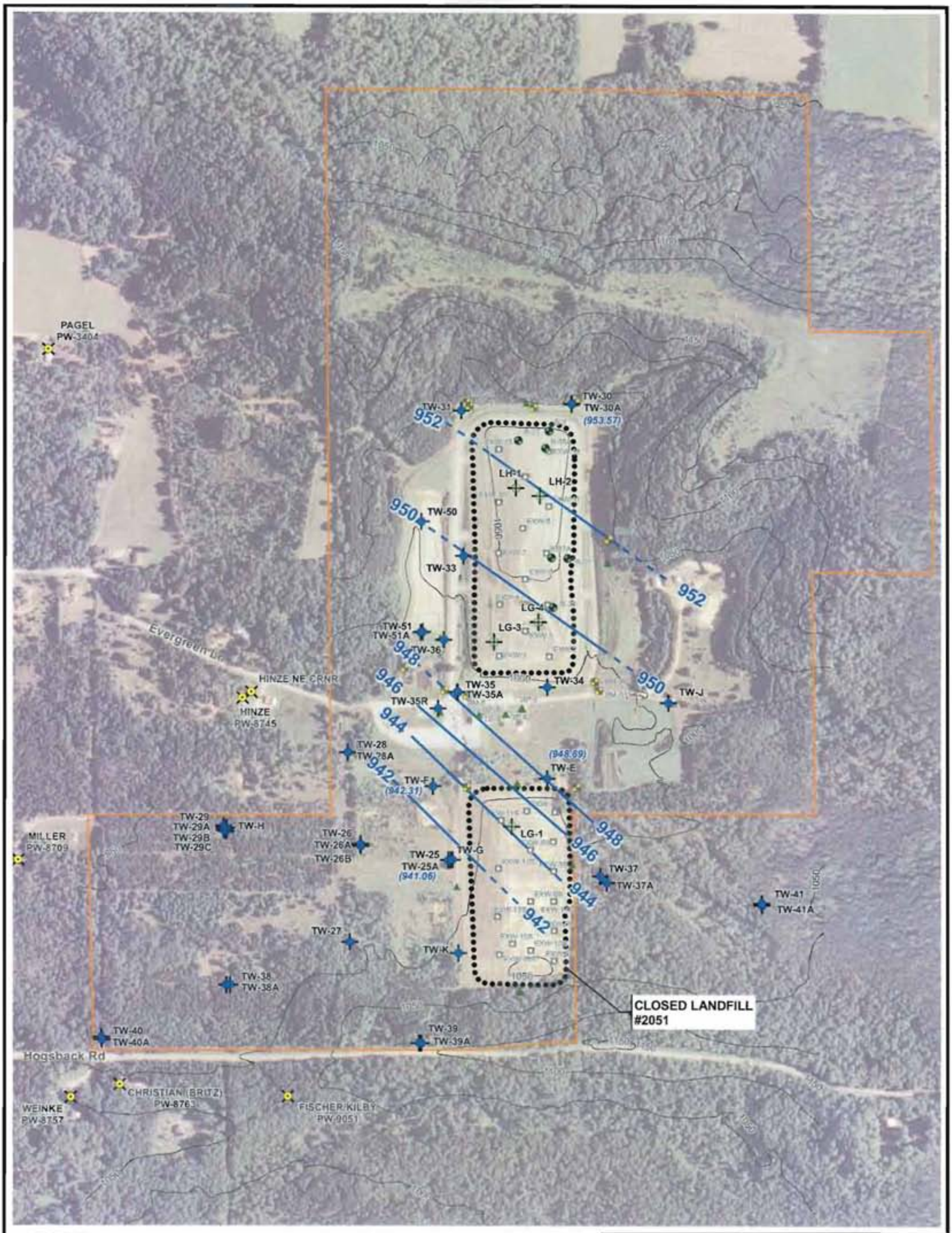
SHEET TITLE:
WATER TABLE MAP
APRIL 2009

DRAWN BY:	PAPEZ J	SCALE:		PROJ. NO.	00-22725.40
CHECKED BY:	WESTOVER M		AS NOTED	FILE NO.	227254003.mxd
APPROVED BY:	FREE D	DATE PRINTED:		**FIGURE 3**	
DATE:	MARCH 2010		3/17/2010		

RMT

744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254003.mxd 3/17/2010 09:58:35



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
- (941.06) POTENTIOMETRIC SURFACE ELEVATION

N

0 250 500 FEET

1" = 500'
1:6,000

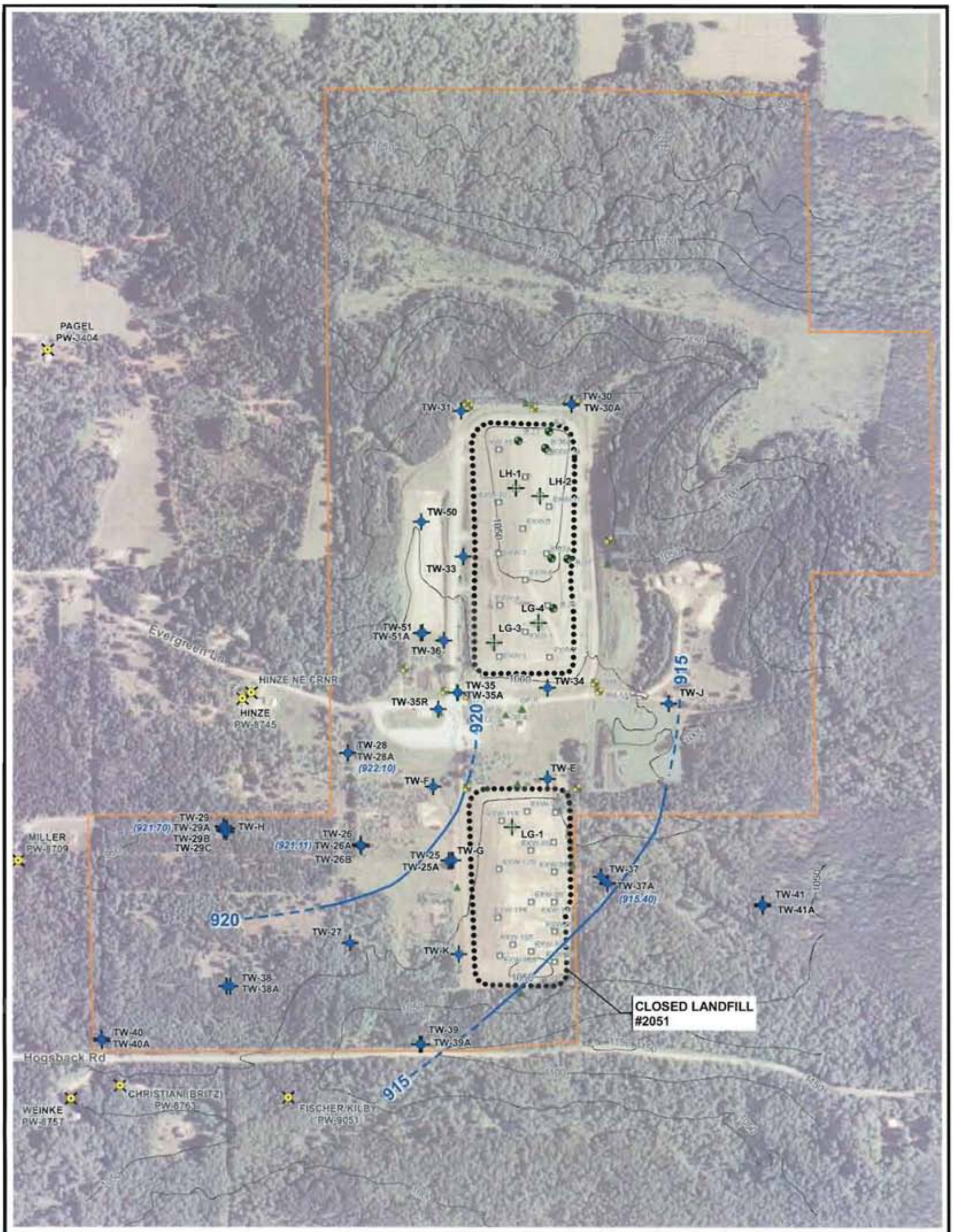
PROJECT
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE
UPPER INTERMEDIATE POTENTIOMETRIC MAP
APRIL 2009

DRAWN BY: PAPEZ J	SCALE: AS NOTED	PROJ. NO.	00-22725.40
CHECKED BY: WESTOVER M.		FILE NO.	227254005.mxd
APPROVED BY: FREE D.	DATE PRINTED: 3/17/2010	FIGURE 4	
DATE: MARCH 2010			

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254005.mxd 3/17/2010 10:00:02



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
- (921.11) POTENTIOMETRIC SURFACE ELEVATION

N

0 250 500 FEET

1" = 500'
1:6,000

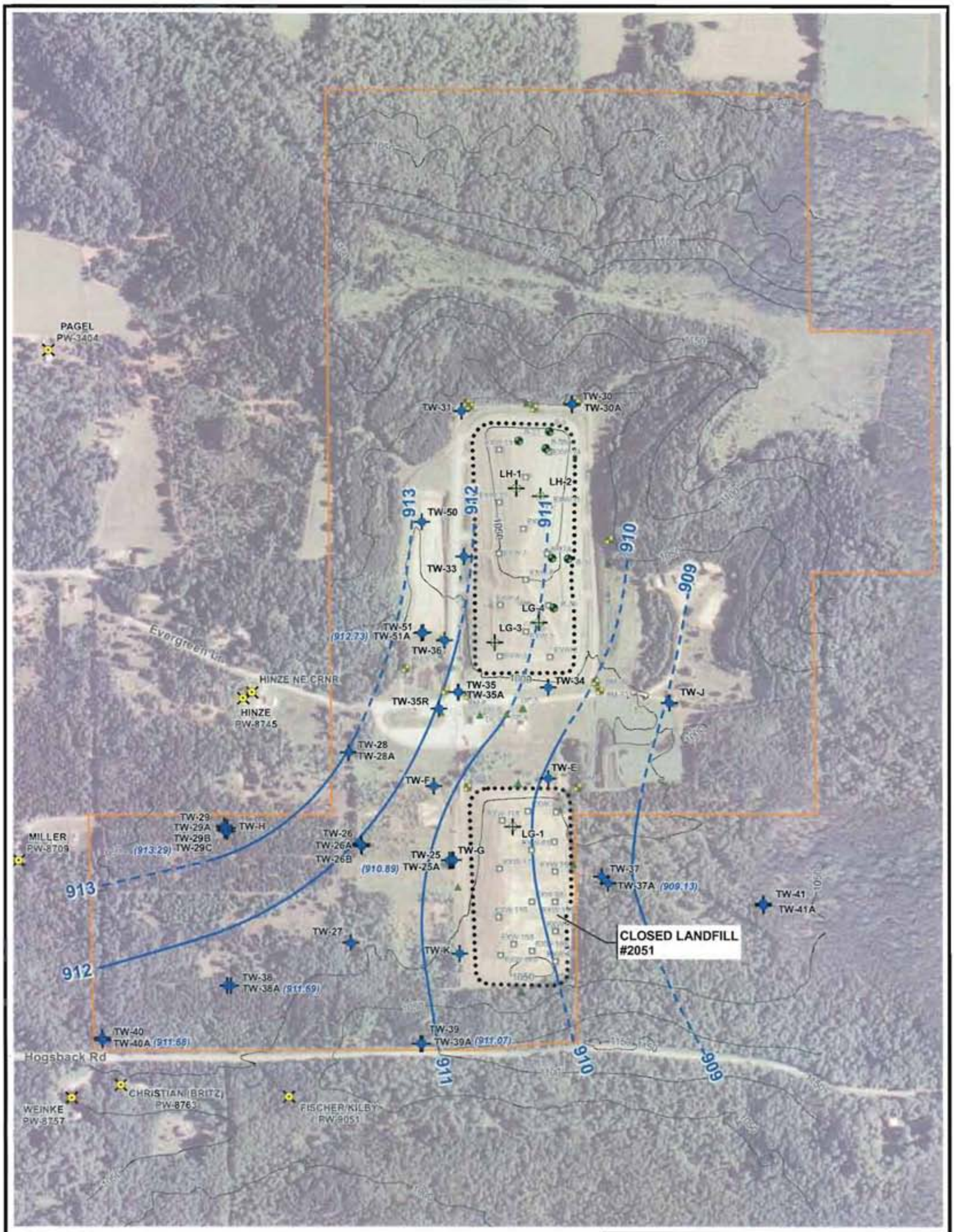
PROJECT
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE
LOWER INTERMEDIATE POTENTIOMETRIC MAP
APRIL 2009

DRAWN BY:	PAPEZ J	SCALE:		PROJ. NO.	00-22725.40
CHECKED BY:	WESTOVER M		AS NOTED	FILE NO.	227254004.mxd
APPROVED BY:	FREE D	DATE PRINTED:			
DATE:	MARCH 2010		3/17/2010		FIGURE 5

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254004.mxd 3/17/2010 10:01:13



LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- POTENTIOMETRIC CONTOUR (DASHED WHERE INFERRED)
- (911.07) POTENTIOMETRIC SURFACE ELEVATION

N

0 250 500 FEET

1" = 500'
1:6,000

PROJECT
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE
DEEP POTENTIOMETRIC MAP
APRIL 2008

DRAWN BY:	PAPEZ J	SCALE:	PROJ. NO. 00-22725.40
CHECKED BY:	WESTOVER M	AS NOTED	FILE NO. 227254008.mxd
APPROVED BY:	FREE D	DATE PRINTED:	
DATE:	MARCH 2010	3/17/2010	FIGURE 6

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254008.mxd 3/17/2010 10:02:14

LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- TOTAL VOC CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)
- (0.58) TOTAL VOC CONCENTRATION (µg/L)

SAMPLE LOCATION WITH PAL EXCEEDENCE - LABEL FORMAT:

SAMPLE ID
CHEMICAL - SAMPLE DATE: CONCENTRATION

NOTES

1. BASE MAP IMAGERY FROM USDA – NATIONAL AGRICULTURE IMAGERY PROGRAM. PHOTOGRAPHY DATE: 30 JULY, 2008.
2. * RESULT FROM PAGEL WELL FROM MOST RECENT SAMPLING EVENT IN OCTOBER 2007.
3. ** RESULT FROM KLEMM WELL FROM MOST RECENT SAMPLING EVENT IN APRIL 2006.
4. ABBREVIATIONS IN TEXT BOXES ARE AS FOLLOWS:
   "R-40" = CHLOROMETHANE
   "DCM" = METHYLENE CHLORIDE
   "PCE" = TETRACHLORCETHENE
   "THF" = TETRAHYDROFURAN
   "TCE" = TRICHLOROETHENE

0 600 1,200 FEET

1" = 600'
1:7,200

PROJECT:
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE:
TOTAL VOC ISOCONCENTRATION MAP
OCTOBER 2009

DRAWN BY:	PAPEZ J	SCALE:		PROJ. NO.	60-22725.40
CHECKED BY:	WESTOVER M		AS NOTED	FILE NO.	227254007.mxd
APPROVED BY:	FREE D	DATE PRINTED:			
DATE:	MARCH 2010		3/17/2010		FIGURE 7

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254007.mxd 3/17/2010 10:51:57

LEGEND

- GROUNDWATER MONITORING WELL
- PRIVATE WELL
- LEACHATE HEAD WELL
- SOIL BORING
- GAS EXTRACTION WELL
- GAS MONITORING PROBE
- BENCHMARK
- PROPERTY BOUNDARY
- LIMITS OF WASTE
- SITE AREA TOPOGRAPHIC CONTOURS (10' CONTOUR INTERVAL)
- 1,1-DICHLOROETHANE CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)
- (1.5) 1,1-DICHLOROETHANE CONCENTRATION (µg/L)

NOTES

1. BASE MAP IMAGERY FROM USDA – NATIONAL AGRICULTURE IMAGERY PROGRAM. PHOTOGRAPHY DATE: 30 JULY, 2008.
2. * RESULT FROM PAGEL WELL FROM MOST RECENT SAMPLING EVENT IN OCTOBER 2007.
3. ** RESULT FROM KLEMM WELL FROM MOST RECENT SAMPLING EVENT IN APRIL 2006.

N

0 600 1,200 FEET

1" = 600'
1:7,200

PROJECT:
SAUK COUNTY LANDFILL
SAUK COUNTY, WISCONSIN

SHEET TITLE:
1,1-DICHLOROETHANE ISOCONCENTRATION MAP
OCTOBER 2009

DRAWN BY: PAPEZ J	SCALE: AS NOTED	PROJ. NO.	03-22775.40
CHECKED BY: WESTOVER M.		FILE NO.	227254006.mxd
APPROVED BY: FREE D	DATE PRINTED: 3/17/2010	**FIGURE 8**	
DATE: MARCH 2010			

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

D:\22725\40\MXD\227254006.mxd 3/17/2010 10:04:57

Appendix A
Project Correspondence

EPA/ROD/R05-94/253
1994

EPA Superfund
Record of Decision:

SAUK COUNTY LANDFILL
EPA ID: WID980610141
OU 01
EXCELSIOR, WI
03/24/1994

PROPOSED RECORD OF DECISION

REMEDIAL ACTION FOR THE SOURCE CONTROL OPERABLE UNIT

Site Name and Location

Sauk County Landfill

The Sauk County landfill is located in the in the Town of Excelsior, Sauk County, Wisconsin (approximately 6 miles east of the City of Reedsburg and approximately 9 miles west and north of the City of Baraboo), SE 1/4 of Section 15, Township 12 North, Range 5 East.

Statement of Basis and Purpose

This decision document represents the selected source control remedial action for the Sauk County Landfill in the Town of Excelsior, Sauk City, Wisconsin, developed in accordance with CERCLA, as amended by SARA, and to the extent practicable, the National Contingency Plan. The attached Summary of Remedial Alternatives identifies the information contained in the administrative record for this site upon which the selection of the remedial action is based.

Assessment of the Site

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the remedial action selected in this Record of Decision ("ROD"), may present an imminent and substantial danger to public health, welfare, or the environment.

scription of the Selected Source Control Remedy

The selected source control remedy is Alternative B, Construction of a Gas Extraction System, as listed in the Focused Feasibility Study. The selected remedy is an operable unit that meets the solid waste disposal requirements of NR 500 to 520, Wis. Adm. Code. The specific components of the source control remedy include:

- continued monitoring of the groundwater at on-site groundwater monitoring wells and offsite private wells
- regrading of the landfill surface to promote drainage off of the landfill cover
- fencing the landfill
- installation of a gas extraction system to efficiently collect and combust landfill gases
- placing a deed restriction on the property to prohibit the disturbance of the surface of the landfill cap in the future
- future maintenance of the landfill cap to prevent erosion and differential settlement
- a contingency which requires a composite landfill cover system if groundwater quality preventive action limits are not achieved in the future

Statutory Determinations

This source control remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate requirements ("ARARs") for this action, and is cost effective. This remedy satisfies the stutory preference for remedies that employ treatment that

duces the toxicity, mobility or volume as a principal element because it includes the collection and treatment of landfill gas. Because this remedy will result in hazardous substances remaining on site, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within 5 years after the commencement of this source control remedial action.

A review of the remedy and groundwater quality will be conducted every five years. This review shall concentrate on whether the remedy is continuing to prevent and abate groundwater quality standards, and whether the standards in NR 140, Wis. Adm. Code are being met. If the VOC concentrations on groundwater start to increase, then additional source control measures will be taken, including the installation of a composite landfill cover.

A second operable unit for groundwater will be issued after the remedial investigation and feasibility study have been completed. This source control operable unit will be consistent with the final groundwater operable unit ROD for the site.

_____ _____

George Meyer, Secretary
Wisconsin Department of Natural
Resources

Date

SUMMARY OF REMEDIAL ALTERNATIVES SELECTION

SOURCE CONTROL REMEDY

SAUK COUNTY LANDFILL

Findings of Fact

The following findings of fact summarize the information contained in the administrative record for the Sauk County Landfill site. The selected source control remedy is based upon the information contained in the site's administrative record.

The Wisconsin Department of Natural Resources ("WDNR") finds that:

I. SITE NAME, LOCATION AND DESCRIPTION

The Sauk County Landfill was listed on the National Priorities List (NPL) by the U.S. Environmental Protection Agency (EPA) in October of 1989. This site does not include the active Sauk County landfill which is located a few hundred feet north of the closed Sauk County Landfill.

The Sauk County Landfill is located in the northeastern part of the county between Reedsburg and Baraboo, south of Hwy 33. The landfill is 14 acres in size and is part of a 320 acre parcel containing both the closed and active landfills in the Southeast 1/4 of Section 15, Township 12 North, Range 5 East, Town of Excelsior, Sauk County, Wisconsin. The location is depicted on Map 1. The landfill is unfenced. Vehicle access is limited by a gate across the road entering the landfill property.

The Sauk County landfill accepted municipal and industrial waste from Sauk County between the years 1973 and 1983. The site was designed as a natural attenuation landfill. This means it has no liner or leachate collection system designed into modern landfills. It has a volume of about 750,000 cubic yards. The landfill accepted large quantities of foundry sand, municipal wastes and industrial wastes from homes and businesses located within the
county.

<IMG SRC 0594253>

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Sauk County operated this landfill between 1973 and 1983. During operations, the site accepted municipal, commercial and industrial wastes, including over 200,000 tons of foundry sand. The foundry sand was used primarily in berms on the edge of the refuse. The site was closed in 1983 with a cover system consisting of 2' of clay on the landfill surface, 1' of clay on the sidewalls and 6" of topsoil over the entire site. The topsoil was vegetated. The site has been maintained by Sauk County since closure.

After reviewing groundwater quality data from this landfill, the WDNR recommended to EPA that the site be included on the National Priorities List (NPL). The site was listed on the NPL in 1989. In September, 1991, Sauk County entered into a contract with WDNR to perform a remedial investigation and feasibility study ("RI/FS") pursuant to s. 144.442, Wisconsin Statutes and the Comprehensive Response, Compensation and Liability Act ("CERCLA). Under terms of the contract, Sauk County also agreed to complete a Source Control Operable Unit. Since that time, Sauk County has been completing the RI.

In December, 1992 WDNR and Sauk County agreed to move ahead with a source control operable unit while completing the RI. The goal was to speed up the process and implement a source control action prior to completing the full RI/FS. Sauk County submitted the Alternatives Array Document in April, 1993 and the Focused Feasibility Study of Source Control Alternatives in August, 1993.

The WDNR issued a proposed plan in September, 1993. The proposed plan selected Alternative E, Construction

a Composite Landfill Cover and Gas Extraction System as the source control remedy. Data submitted during the public comment period caused WDNR to reconsider the proposed plan. Based upon the additional data, WDNR now believes that a modified Alternative B, Construction of a Gas Extraction System with a contingency plan is the best source control remedy for the site. Factors considered by WDNR in making it's decision are listed in Section III, Highlights of Community Participation.

III. HIGHLIGHTS OF THE COMMUNITY PARTICIPATION

An information repository has been established at the Reedsburg Public Library, 345 Vine Street, Reedsburg, Wisconsin. The administrative record is made available to the public at the Baraboo Public Library, 230 Fourth Street, Baraboo, Wisconsin.

In September, 1992 WDNR issued a Superfund Fact Sheet which provided a summary of the site history, explained the Superfund process and delineated the approved RI work plan. On September 29, 1992 the WDNR and the Wisconsin Department of Health and Social Services (WDHSS) held a public informational meeting at 7:00 p.m. in the Rock Springs Community Center. The meeting was held to discuss the landfill and to explain the RI field work which was about to start. Approximately 30 residents attended the meeting.

Residents living near the landfill created the Evergreen Property Owners Association. On November 11, 1992 the Property Owners Association organized a meeting attended by WDNR, WDHSS and Simon Hydro-Search (consultant to Sauk County) to answer questions from residents living near the landfill. Approximately 100 persons attended this meeting.

In March, 1993 WDNR issued a Superfund Fact Sheet containing a summary of the RI data up to that point in time. This fact sheet contained information on:

- groundwater quality from site monitoring wells
- groundwater quality from houses surrounding the landfill
- preliminary results from a vegetation survey designed to detect methane stress, and
- a timeline for installing new monitoring wells at the site.

In May, 1993 the Evergreen Property Owners Association was awarded a Technical Assistance Grant from EPA. The purpose of the grant is to allow persons affected by Superfund sites to retain their own technical staff to explain the Superfund process and the data generated during the RI.

In September, 1993 the WDNR issued another superfund Fact Sheet. This fact sheet also contained a summary of the RI data.

The Proposed Plan for the source control operable unit was made available for public comment on September 8, 1993. Notices announcing the availability of the proposed plan were published in the Reedsburg Time Press and the Wisconsin State Journal on September 2, 1993. A public meeting to explain the Proposed Plan, and to receive public comments was held on September 21, 1993. Approximately 40 persons attended the meeting. The public comment period was held between September 8, and November 9, 1992. Comments received from the public and WDNR's response to those comments are included in the attached Responsiveness Summary, which is part of this ROD.

In the Proposed Plan, WDNR had selected Alternative E, Construction of a Geosynthetic membrane as the preferred remedy. Based upon comments received during the public comment period, and information contained in Technical Memo #3, WDNR has changed it's decision as to the best source control remedy for the site. WDNR has selected and modified Alternative B, Construction of a Gas Extraction System with a contingency plan, aa the best source control remedy. Reasons for this include:

1. Sauk County presented groundwater quality data from TW-25 and TW-26A. Both of these wells have historical VOC data dating back to 1985 and 1987 reapectively. When the entire total VOC data set is graphed as concentration vs. time, both data sets indicate a strong downward trend in the VOC concentrations. Capping is the only remedial action that has

taken place on the landfill since closure in 1983. Thus, the cap that is on the site is having beneficial effects towards stopping the further release of contaminants to groundwater. The data from TW-25 and TW-26A are depicted on Figures 1 and 2, respectively.

2. Sauk County commented that the decrease in total VOCs at TW-25 and TW-26A can be explained using the exponential decay equation. This equation assumes that the source decays at a constant rate. Decay rates are often measured in half-lives, or the amount of time necessary for the concentration to decay (or decrease) to one-half of it's original concentration. The analysis presented by Simon Hydro-Search indicates that:

   - the half-life based upon data from TW-25 and TW-26A are the same and are approximately 1 year
   - the semi-log graph of data vs time has a straight line for both wells. This indicates the decay rate is constant and that there is not additional input of VOCs from the landfill.
   - a comparison of the two semi-log graphs shows that they have similar slopes. This indicates that the same process of releasing VOCs from the aquifer matrix is occurring at both locations. See Figures 3 and 4.
   - should the decreasing trend in VOC concentrations continue, NR 140, Wis. Adm. Code preventive action limits should be met for all parameters within two years
   -

<IMG SRC 0594253A>
<IMG SRC 0594253B>

WDNR agrees that VOC concentrations in groundwater are decreasing and exponential decay is probably playing a part in the decrease. However, other factors such as minimizing inputs to groundwater and dilution are also contributing to the decreasing VOC concentrations.

3. A graph comparing total VOC concentrations at TW-25 and the precipitation at Baraboo indicates that high precipitation years don't produce flushing events from the landfill. This means that the existing landfill cap has been successful in reducing percolation of water into the landfill. See Figure 5.

4. An analysis of the groundwater data indicates that the existing landfill cover is decreasing the amount of contamination entering groundwater. Since 1985, VOC concentrations have been declining. Installing the cap and maintaining it are the only actions that have taken place on the landfill since it closed. The existing cap must be helping to improve groundwater quality by reducing the amount of contamination entering groundwater.

5. Groundwater quality data from monitoring wells located next to the landfill show improving groundwater quality at this time. To address possible future releases from the site, the remedy includes a contingency plan which requires that if preventive action limits are not achieved in the future, a composite landfill cover must be placed on the landfill.

6. Residents living near the landfill utilize a sandstone formation beneath the area as their water supply source. VOC monitoring of homes in the area has detected VOCs in one home at concentrations far below drinking water standards. To address residential concerns about their water supply, the remedy includes monitoring of private homes for VOCs.

WDNR originally selected Alternative E, a composite cap as the best source control remedy for this landfill. However, based on the improving groundwater quality, WDNR has decided that the additional reduction of water into the landfill provided by the composite cap over the existing landfill cover is not necessary at this time. Should the results of future groundwater monitoring indicate that groundwater quality starts to degrade, other source control actions will be taken at that time.

These were the primary factors used by WDNR to select Alternative B, Construction of a Gas Extraction System as the source control remedy for this site.

The public participation requirements of s. 144.442(6)(f), Wisconsin Statutes, and the community relations requirements in the National Contingency Plan at 40 CFR s. 300.430(f) (3) have been met in this source control remedy selection process.

<IMG SRC 0594253C>
<IMG SRC 0594253D>
<IMG SRC 0594253E>

IV. SCOPE OF THE SOURCE CONTROL REMEDY

As with many Superfund sites, the hydrogeologic conditions at the landfill are complex. Because of this, and a desire to speed up the process, WDNR and Sauk County chose to complete work on the source control remedy while also completing the RI. Remedial actions at the site have been divided into two activities or "operable units". The first operable unit, or source control operable unit involves remedial actions taken to control the source of contamination to groundwater. For landfills, source control options primarily involve landfill caps or cover systems. This ROD addresses source control actions. The second, or groundwater operable unit involves remedial actions necessary to clean up groundwater and achieve compliance with established groundwater quality standards.

Because this is a source control operable unit, Sauk County has continued to work on the RI/FS work plan, in order to develop and evaluate final groundwater remedial alternatives for the site. WDNR has determined that this source control remedy will be consistent with the groundwater operable unit remedy for the site.

An expedited source control remedy is desirable from a public health standpoint. Taking action now rather than waiting for completion of the RI has shortened the time required to eliminate the potential for the public to be exposed to methane and volatile organic compounds which may have migrated from the site through soil or air. Direct contact with the waste is not possible because the site is capped with a soil cover. Gas migration will be controlled through a gas extraction and flaring system. Fencing the site will also reduce exposure by keeping trespassers off the landfill and away from the gas extraction system. In addition, adding soil to promote drainage off of the landfill cap will help to reduce the infiltration of rain and snow into the waste, reducing the potential for leachate generation. Maintaining the vegetative cover will continue to reduce infiltration through transpiration.

V. SUMMARY OF SITE CHARACTERISTICS

A. Topography

The Sauk County landfill is located along the eastern margin of the unglaciated area. Topography in the site vicinity is gently sloping to somewhat hilly. The landfill is located in an east-west trending valley bounded to the north and south by sandstone bedrock ridges. Elevations on the ridges are approximately 1200 feet above mean sea level. The valley is gently sloping to the west with elevations near the fill ranging from 1010 to 960 msl.

B. Geology/Hydrogeology

The geology near the landfill consists of approximately 50 feet of unconsolidated material, primarily sand with some silt and gravel layers present. The color of the sand is predominantly brownish yellow. Below the

consolidated material three different bedrock units were identified.

The top of the bedrock is a poorly lithified weathered sandstone. This is the Mazomanie Formation. It is medium grained and brown to yellow in color. It ranges in thickness from approximately 40' east of the landfill to only 5' at the western edge of the County property.

The next bedrock unit is the Lone Rock Formation. This unit consists of siltstone, shale and very fine grained sandstone. It ranges in thickness from 30' to over 50'. This unit acts as a semi-confining unit between the sandstone units above and below.

Below the Lone Rock Formation is the Wonewoc Formation. It is a medium grained sandstone that is brown, reddish brown to yellow in color. The entire thickness of the Wonewoc was not penetrated by monitoring wells, but it is at least 65' thick near the landfill. The Wonewoc Formation acts as a water supply aquifer for homes located to the west of the landfill.

Within the unconsolidated deposits, shallow groundwater at or near the water table flows west, southwest towards the Baraboo River. This upper flow system has an average horizontal gradient of 0.015 ft/ft west of the landfill. Near the base of the unconsolidated deposits and within the weathered sandstone (Mazomanie Fm) groundwater also flows west, southwest with a horizontal gradient ranging from 0.010 to 0.013 ft/ft. These groundwater flow directions are a result of the natural slope of the upper bedrock surface.

Directly beneath the siltstone and shale semi-confining layer (Lone Rock Fm), groundwater flows southeast with a gradient of 0.006 to 0.007 ft/ft. Deeper within the Wonewoc Formation groundwater flows to the east. This is consistent with the regional flow towards the Wisconsin River. The horizontal gradient in the deeper Wonewoc is approximately 0.0012 ft/ft.

All vertical gradients were downward and ranged from 0.02 to 0.76 ft/ft. The highest vertical gradient was noted to the east of the landfill where the semi-confining layer is thickest. Thickness of the confining layer as well as the lithology and competence of the Lone Rock Formation are likely to affect vertical gradients.

C. Groundwater Contamination

Based upon data collected as part of the RI, a total of 18 volatile organic compounds (VOCs) were detected in groundwater monitoring wells. The most common VOCs detected are 1,1-DCA which was found in 13 wells and 1,1,1-TCA which was found in 8 wells. Of the 18 VOCs detected, only two exceeded enforcement standards found in NR 140, Wis. Adm. Code during sampling events in 1993. Tetrachloroethylene (PCE) and vinyl chloride were detected in concentrations attaining or exceeding enforcement standards. Five additional VOCs exceeded NR 140, Wis. Adm. Code preventive action limits.

A total of 18 private wells surrounding the landfill have been tested for VOCs. A home located approximately 3000 feet west-southwest of the landfill has detected VOCs. 1,1-dichloroethane (1,1-DCA) has been detected on two occasions and 1,1,1-trichloroethane (1,1,1-TCA) has been detected three times.
These samples were taken in 1992, 1993 and 1994. In all three sampling events, the concentrations of these two compounds was far below their respective drinking water standards. A second home had detections of 1,1-DCA and 1,1,1-TCA the first time it was sampled. These detections were also far below the drinking water standards. Subsequent sampling of the well has failed to detect any VOCs. None of the other 16 wells tested have had VOCs
detected.

D. Landfill Gas

Three of the gas probes and one well located within the waste had landfill gas samples collected and analyzed for VOCs. Nineteen VOCs were detected with the highest concentration of total VOCs occurring in the gas probe on the east side of the landfill. The VOCs with the highest concentration (at any sampling point) are methyl ethyl ketone, toluene, vinyl chloride, total xylenes and 1,1-DCA.

addition, the gas probes, two wells screened within the waste, and a background location were measured for methane, oxygen and carbon dioxide. The background sample was not a soil gas sample, but was an ambient air sample near the access gate to the landfill. It can only be used for comparative purposes. All methane measurements except the background location and the gas probe on the southern edge of the landfill indicated combustible
concentrations of methane.

VI. SUMMARY OF SITE RISKS

A qualitative risk assessment was completed for the Sauk County landfill Superfund site. The purpose of the assessment was to identify human health hazards posed by environmental contamination from the site. The qualitative risk assessment evaluates current as well as future potential exposures to site related contamination. Sample results from the remedial investigation were used to evaluate all environmental pathways with potential human exposure routes.

The reasons that a qualitative, rather than a quantitative risk assessment was completed include:

- state standards for air and water quality are protective of human health and the environment
- the remedy must comply with state standards
- EPA guidance documents state that exceedances of state standards, as opposed to the site representing an unacceptable risk, are a cause for action at Superfund municipal landfill sites.

A copy of the qualitative assessment is found in the administrative record. Presented below is a brief summary of the assessment and it's conclusions.

The groundwater, surface soil/sediment, and air pathways were evaluated as possible exposure routes for contaminants. The groundwater data came from on site monitoring wells and off site private water supply wells. No surface water bodies are present on the site. The sediment samples were collected from areas which runoff water, when present, would settle out and deposit sediment. Soil gas samples and one ambient air sample were collected and used in the evaluation of the air pathway.

Groundwater Pathway

The following compounds were identified as contaminants of concern:

benzene	-barium	benzoic acid
chrysene	iron	diethylphthalate
tetrachloroethylene	manganese	2,4-dimethyl phenol
vinyl chloride		
1,1-dichloroethylene		

The compounds listed in the first column represent are probable carcinogens. The qualitative health assessment concludes that persons who drink groundwater every day, over a lifetime, with the highest concentration of these contaminants detected in on site monitoring wells are at an increased risk of getting cancer. This does not represent a present use scenario since the wells containing these concentrations are on Sauk County property and this water is not being used for water supply purposes. This represents a possible, though not probable future use scenario. The future use scenario is not probable since NR 112, Wis. Adm. Code on private water supplies requires a minimum setback distance of 1200 feet from landfills.

The compounds listed in the second and third columns are not carcinogens, but were evaluated for non-carcinogenic health effects. The qualitative risk assessment concludes that there are no adverse health effects associated with exposure to these compounds at the highest concentrations detected in on site groundwater monitoring wells.

Two additional compounds were detected in monitoring of private wells around the landfill.

1,1-trichloroethane and 1,1-dichloroethane were detected in two private wells. The concentrations detected are far below the drinking water standards for these compounds. The qualitative risk assessment concludes that there are no adverse health effects expected from exposure to these compounds in the private wells.

Surface Soil and Sediment Pathway

Because there are no surface water bodies at the site, the surface soil and sediment data were evaluated together. The following compounds were identified as contaminants of concern for surface soils:

arsenic	beryllium	polyaromatic hydrocarbons (PAHs)
lead	manganese	

Arsenic and beryllium are probable carcinogens. The concentrations of these metals in surface soils are at concentrations that could cause an increased risk of cancer if they were ingested at a rate of 100 mg/day for a lifetime. This exposure is only appropriate for assessing exposures in urban areas or in residential yards. Because the location of the surface soil contamination is in a rural area that has restricted access, no increased cancer risk would be expected from incidental exposures to the highest concentrations of arsenic and beryllium.

PAHs were detected in samples of surface soils on site. PAHs are created from the incomplete combustion of fossil fuels. They are often associated with vehicle emissions and/or oil and grease spills. Individual PAHs are rarely identified in the absence of others. The health effects of the individual PAHs may not be exactly alike. However, the coincident detection of a number of these compounds makes it difficult to isolate health effects for individual PAHs. For this reason the toxicity of these PAHs is evaluated as a group. There are over one hundred different PAH compounds. Long term exposure to some PAH compounds has been shown to cause cancer in humans exposed through inhalation and dermal absorption. These PAHs were detected in soils at concentrations that could cause an increased cancer risk if they were ingested a rate of 100 mg/day for a lifetime. This exposure scenario is only appropriate for aasessing surface soil exposures in urban areas or residential yards. Because the location of the surface soil contamination is in a rural area with restricted access, no increased cancer risk would be expected from incidental exposures to the highest concentrations of PAHs at the site.

Arsenic, beryllium, lead and manganese were also evaluated for non-carcinogenic health effects. Exposure to the highest concentrations of these compounds detected in the surface soil samples are not expected to cause adverse health effects.

Air Pathway

Gas samples collected as part of the investigation were primarily soil gas and not ambient air. Samples of soil gas are not indicative of ambient air quality. It is expected that concentrations in ambient air would be considerably less than those detected in soil gas. Because the data collected were for soil gas and not for ambient air, the qualitative risk assessment does not include estimates of potential exposure concentrations. The following compounds were identified as contaminants of concern for the air pathway:

benzene	freon
1,1-dichloroethylene	acetone
methylene chloride	methyl ethyl ketone
tetrachloroethylene	toluene
vinyl chloride	xylene
	1,2-dichloroethylene

Those compounds listed in the first column are probable carcinogens and were detected in soil gas at concentrations above that considered to pose a health concern in ambient air.

Compounds listed in the second column were evaluated for non-carcinogenic health effects. The highest concentration of these compounds detected in soil gas were below levels that would be expected to cause

verse health effects.

In addition to carcinogenic and non-carcinogenic health effects, landfill gas also represents another hazard. Methane generated by decomposing refuse, when mixed with oxygen in the right concentration, is an explosion hazard. Soil gas probes around the landfill detected methane at high enough concentrations to represent an explosion and fire hazard.

To control the methane and other landfill gases listed above, the selected remedy has an active gas collection and treatment system. The gas will be collected through a series of wells and piping. The gas is then routed to a flare where it is destroyed by controlled combustion.

VII. ENVIRONMENTAL STANDARDS NOT MET AT THE SITE

The Sauk County landfill does not meet the following applicable State environmental standards:

NR 504.05(7), Wis. Adm. Code
Administrative code that requires facilities accepting waste which may generate explosive gases must prevent the migration of the gas. The old landfill currently has no gas extraction system.

NR 504.05(8), Wis. Adm. Code
Administrative code that requires facilities accepting municipal solid waste to efficiently collect and combust hazardous air contaminants generated by waste decomposition.

NR 506.08(3), Wis. Adm. Code
Administrative code that requires that landfills must be sloped to allow surface water runoff and that the landfill surface must have at least a 2% slope.

NR 506.08(6), Wis. Adm. Code
Administrative code that requires all facilities which accepted greater than 500,000 cubic yards of waste to collect and combust hazardous air contaminants.

NR 445, Wis. Adm. Code
Administrative code which regulates the discharge of hazardous air contaminants

NR 140, Wis. Adm. Code
Administrative code which regulates groundwater quality and actions taken to restore groundwater quality. Tables 5 and 6 within NR 140 lists potential actions to be taken when preventive action limits and enforcement standards are exceeded. One potential action listed in both Tables includes a change in the design or construction of a facility.

Once the gas collection and flaring system part of the source control remedy is installed and properly operating, the Sauk County landfill will achieve compliance with the NR 445 and NR 500 series codes listed above. Regrading of the site to promote drainage from the landfill surface, and the gas extraction system will help to achieve compliance with NR 140.

VIII. Description of the Remedial Alternatives

A. Source Control Remedial Action Objectives

Remedial action objectives were developed for this site to address the source of contamination, to provide short and long term protection of human health and the environment, and to meet applicable or relevant and

propriate requirements. The site specific source control remedial objectives for this landfill are to:

1. Prevent direct contact with the landfill wastes
2. Reduce contaminant leaching to groundwater
3. Control surface water runoff and erosion of the landfill cap
4. Control and destroy landfill gas.

B. Development of Alternatives

The source control remedial action objectives for this site involve limiting the potential for exposure to contaminants via inhalation, ingestion, and dermal absorption pathways, and controlling landfill gas emission and migration.

The remedial alternatives were assembled from applicable remedial technology options. The alternatives surviving the initial screening were evaluated and compared with respect to the nine criteria set forth in the National Contingency Plan ("NCP"). In addition to the remedial action alternatives, the NCP requires that a no-action alternative also be considered for the site. The no action alternative serves primarily as a point of comparison for the other alternatives.

C. Source Control Alternatives

Alternative A - No Action
Alternative B - Construction of a Gas Extraction System
Alternative C - Side Slope Enhancement
Alternative D - Construction of a Soil Protective Layer
Alternative E - Construction of a Geosynthetic Membrane
Alternative G - Construction of a Composite Cover Over the Entire Landfill
Alternative H - Construction of a Composite Cover on the Landfill Top Only

A complete description of the various alternatives is provided in the Focused Feasibility Study. A brief narrative description of each alternative is provided below:

Alternative A: No Action

The No Action alternative is developed to act as a baseline to compare all other alternatives against. This alternative consists of continued monitoring of groundwater, regrading the site to eliminate low spots and promote positive drainage from the landfill, provide for proper surface water drainage, fencing the landfill and obtaining deed restrictions on the future use of this disposal area. Maintenance of the site includes inspection, mowing to prevent tree growth, filling low areas resulting from settling of the wastes and repairing any erosional problems.

Alternative B: Construction of a Gas Extraction System Only

As with Alternative A, groundwater monitoring, regrading as needed, fencing, deed restrictions and cap maintenance would be provided. In addition, an active gas collection system would be installed. The system would consist of eight extraction wells located as two rows of four in a north-south orientation in the landfill. The landfill gas would be collected in the wells and then sent to a flare using subsurface piping. The flare would then burn the gas, destroying the contaminants present in the gas. Condensate from the gas system will be treated as leachate.

The Evergreen Property Owners Association commented that they are concerned with contamination of the groundwater since all of the residents in the area use groundwater as their water source. VOCs are present in one home near the landfill. The concentrations of these VOCs are very low and are below drinking water standards. WDNR has included monitoring of some private homes as part of the remedy in order to make sure that the groundwater at private wells is safe. In addition, WDNR has created a contingency remedy. Should groundwater data from monitoring wells located next to the landfill indicate that groundwater quality should start getting worse, then additional source control measures, such as a new

ndfill cap are required to be placed on the landfill. WDNR will review the data at 5 year increments to determine if the remedy is still protective, or whether additional source control measures need to be taken.

Alternative C: Side Slope Enhancement

Clay thickness on the side slopes of the landfill averages about 12". Under this alternative, the topsoil would be removed and the clay would be compacted on the side slopes to provide a minimum clay thickness of 24". The top surface of the landfill already has a clay thickness of approximately 24". All of the provisions of Alternative B are also part of this alternative.

Alternative D: Construction of a Soil Protective Layer

The existing landfill does not have a frost protection and plant rooting zone layer. Under this alternative, the topsoil would be removed and stockpiled. As under Alternative C, compacted clay would be added to provide a minimum 24" clay layer on the side slopes. An 18"-30" soil protective layer would then be constructed over the entire landfill. The purpose of this layer is to provide a plant rooting soil for the surface vegetation and to protect the clay layer from freezing and desiccation. The topsoil would then be replaced and the site re-vegetated.

As under Alternatives B & C, an active gas recovery system would be installed, the site would be fenced, and groundwater monitoring and site maintenance provided.

Alternative E: Construction of a Geosynthetic Membrane

This alternative is identical to Alternative D except for the addition of geosynthetic membrane placed immediately above the clay layer. A 40-60 mil plastic geomembrane and drainage layer are placed on top the clay layer, and geotextile fabric is placed on top of the drainage layer. The purpose of the geotextile is to prevent soil from moving into the drainage layer and decreasing it's ability to drain water off the membrane. The 18"-30" protective layer and topsoil will be placed above the geotextile.

This alternative also has a gas extraction system as part of the remedy.

Alternative F: Construction of a Soil Cover

This alternative consists of constructing a soil cover in conformance with NR 504.07, Wis. Adm. Code. Specifically this alternative includes removing the topsoil and stockpiling it for re-use. The low spots on the cap would then be filled in and the site re-graded to promote surface water runoff. The landfill cover consists of (from the surface downward):

- A topsoil layer of at least 6" that will sustain plant growth, reduce erosion and promote drainage.
- An 18" to 30" frost protection and plant rooting layer.
- A low permeability clay layer that is at lesat 24 inches thick.
- A minimum 6" grading layer to attain a stable base and meet minimum elope requirements for the cover system.

A gas collection and combustion system are included with this alternative. The site would be fenced, deed restrictions on future property use, groundwater monitoring and maintenance of the cap are also part of this alternative.

Alternative G: Construction of a Composite Cover Over the Entire Landfill

This alternative consists of the construction of a composite cover over the entire landfill. A composite cover is one which has both soil and geomembrane component. The composite cover is identical to the soil cover described in Alternative F, with the addition of a geomembrane and drainage layer on top of the clay layer, and geotextile fabric placed on top of the drainage layer. The entire landfill is then covered with topsoil and seeded.

gas extraction system is also part of this alternative.

Alternative H: Construction of a Composite Cover on the Landfill Top Only

This alternative is identical to Alternative G except that the composite cover described in Alternative G would only be placed on the top surface of the landfill. The soil cover described on Alternative F would be constructed on the side slopes of the landfill.

IX. SUMMARY OF COMPARATIVE-ANALYSIS OF ALTERNATIVES

A. Introduction

U.S. EPA has established in the NCP nine criteria that balance health, technical, and cost considerations to determine the most appropriate remedial alternative. The criteria are designed to select a remedy that will be protective of human health and the environment, attain ARARs, utilize permanent solutions and treatment technologies to the maximum extent practicable, and to be cost effective. The relative performance of each of the remedial alternatives listed above has been evaluated using the nine criteria set forth in the NCP at 40 CFR 300.430(e)(9)(iii) as the basis of comparison. These nine criteria are summarized as follows:

THRESHOLD CRITERIA - The selected remedy must meet the threshold criteria.

1. Overall Protection of Human Health and the Environment
   A remedy must provide adequate protection and describe how risks are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
   A remedy must meet all applicable or relevant and requirements of federal/state laws. If not, a waiver may apply.

PRIMARY BALANCING CRITERIA are used to compare the effectiveness of the remedies.

3. Long-term Effectiveness and Permanence
   Once clean up goals have been met, this refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time.
4. Reduction of Toxicity, Mobility or Volume Through Treatment
   The purpose of this criteria is to anticipate the performance of the treatment technologies that may be employed.
5. Short-term Effectiveness
   This refers to how fast a remedy achieves protection. Also, it weighs potential adverse impacts on human health and the environment during the construction and implementation period.
6. Implementability
   This criteria requires consideration of the technical and administrative feasibility of a remedy, including whether needed services and materials are available.
7. Cost
   Capital, operation and maintenance, and 30 year present worth costs are addressed.

MODIFYING CRITERIA deal with support agency and community response to the alternatives.

8. State Acceptance
   After review of the Focused Fesaibility Study and the Proposed Plan, support agency's concurrence or objections are taken into consideration.
9. Community Acceptance

This criteria summarizes the public's response to the alternative remedies after the public comment period. The comments from the public are addressed in the Responsiveness Summary attached to this ROD.

B. Evaluation of the Remedial Alternatives for Source Control

1. Threshold Criteria

The threshold criteria are CERCLA statutory requirements that must be satisfied by any alternative in order for it to be eligible for selection as a CERCLA-quality remedy. These two criteria are discussed below:

a. Overall Protection of Human Health and the Environment

All of the alternatives provide a soil barrier which eliminates the direct exposure to the waste within the landfill. Fencing of the landfill will also eliminate potential exposure pathways by keeping persons from trespassing on to the landfill surface. The gas collection and combination system proposed as part of Alternatives B through H will eliminate the exposure to landfill gas.

Alternative A - Because this alternative fails to control the migration of landfill gas, persons working near or on the landfill, and persons who trespass on the landfill may be exposed to the contaminants and explosive hazard of landfill gas. This alternative is not protective of human health and the environment.

Alternative B - This alternative will efficiently collect and burn the landfill gas, eliminating the exposure to persons entering the site. Collecting landfill gas will capture some VOCs so they are unable to contaminate the groundwater. Regrading of the site will promote drainage from the landfill so that precipitation is able to run off rather than flow into the surface depressions currently present on the landfill surface.

ernatives C,D,E,F,G and H all provide improved barriers to the movement of precipitation into the waste. wever, the efficiency of each of the alternatives in reducing infiltration is variable.

b. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Alternative A - Administrative Rules relating to landfills require that landfills over 500,000 cubic yards must efficiently collect and burn landfill gas. This alternative fails to provide for the collection and combustion of landfill gas, and therefore does not comply with state laws and will not be evaluated further.

Alternatives B,C,D,E,F,G and H all propose gas collection and combustion systems and comply with state laws requiring these systems. Emissions from the gas system must comply with NR 445, Wis. Adm. Code.

Alternatives B,C,D - These alternatives will comply with the landfill capping requirements of NR 506.08(3), Wis. Adm. Code.

Alternatives E,F,G,H - These alternatives comply or exceed (on a performance basis) the solid waste capping requirements for landfills in NR 504.07, Wis. Adm. Code.

2. Primary Balancing Criteria

Alternatives which satisfy the two threshold criteria are then evaluated according to the five primary balancing criteria.

a. Long-term Effectiveness and Permanence

Alternatives B,C,D, & F - The long-term effectiveness and permanence of any of the landfill capping options is highly dependent upon how well the cap is maintained with time. These alternatives are multi-layer soil designs. All of these remedies have a maintenance component. With proper maintenance, these remedies will provide a landfill cap that is protective of human health and the environment with time.

Alternatives E,G & H - These remedies entail composite designs. This means that they have both soil and plastic components in the landfill cap. These types of landfill caps also need to be properly maintained. However, the presence of the plastic membrane will generally give these caps a higher degree of long-term effectiveness and permanence.

b. Reduction in Toxicity, Mobility or Volume Through Treatment

The gas extraction system proposed as part of Alternatives B,C,D,E,F,G & H will reduce the toxicity and mobility of the landfill gas by capturing the gas and destroying it rather than letting the gas diffuse from the landfill.

The toxicity, mobility or volume of the landfilled waste is not affected by any of the proposed alternatives. Instead, the alternatives eliminate the exposure to the waste and reduce the amount of contamination that can leave the waste and affect groundwater. This approach is consistent with EPA Guidance.

c. Short-term Effectiveness

All of the alternatives, B,C,D,E,F,G & H, will reduce the amount of contamination coming from the landfill by reducing infiltration and capturing the landfill gas. These benefits will occur immediately after the systems are in place. All of these alternatives should be operational within a single construction season.

Potential short term adverse impacts on human health include drilling into the landfill. Methane, an explosive gas, is generated by decomposing refuse. Installation of gas extraction wells will require that special precautions be taken by the drilling firm in order to protect the safety of their workers.

Another short term adverse impact of all the alternatives is damage to the vegetation currently on the ndfill. Vegetation removes water from the soil and transpires it back to the atmosphere. Until the getation has been restored, there is a potential for additional leachate generation. Another short term impact may be additional erosion of soil from the landfill cover until the vegetation is re-established.

d. Implementability

Installation of the gas extraction system common to all of the alternatives is easily implemented using established engineering and construction techniques.

Alternatives B,C,D & F are easily implemented using common earth moving and compaction equipment. In addition, because soil landfill caps have been used in this state for the past several years, there are many firms available with the expertise to construct a soil cap.

Alternatives E, G & H involve a plastic geomembrane. The sheets of membrane must be seamed together to eliminate leaks. Placing and seaming a geomembrane is more difficult than constructing a soil cover. However, these types of caps are becoming more common and there are many firms available with the expertise to construct this type of cap.

e. Costs

Alternative B
Capital Costs - $444,000
Annual Costs - $28,200
Present Worth - $832,000

Alternative C
Capital Costs - $737,600
Annual Costs - $28,200
Present Worth - $1,126,000

Alternative D
Capital Costs - $1,063,000
Annual Costs - $28,200
Present Worth - $1,452,000

Alternative E
Capital Costs - $1,720,000
Annual Costs - $28,200
Present Worth - $2,109,000

Alternative F
Capital Costs - $1,799,000
Annual Costs - $28,200
Present Worth - $2,187,000

Alternative G
Capital Costs - $2,456,000
Annual Costs - $28,200
Present Worth - $2,844,000

Alternative H
Capital Costs - $2,149,000
Annual Costs - $28,200
Present Worth - $2,537,000

The cost of each remedial alternative generally increases as the amount of material and construction required to implement the remedy increases.

Modifying Criteria

a. State Acceptance

The WDNR is the lead agency on this case and authors this ROD.

b. Community Acceptance

Comments by the Evergreen Property Owners Aassociation supported Alternative E as was listed in the Proposed Plan issued by WDNR. A Sauk County property owner and Sauk County officials submitted comments and data which support Alternative B as the best source control remedial action. All of the comments indicated that they want the solution to be cost effective. The substantive comments received by WDNR are listed in the attached Responsiveness Summary.

c. Summary

With the exception of Alternative A, all of the source control remedial alternatives meet the threshold criteria of being protective and complying with applicable or relevant and appropriate requirements.

A decision as to the best source control remedy is based upon an analysis of the balancing criteria. The criteria of Reduction in Toxicity, Mobility or Volume, Short-term Effectiveness, and Implementability are all equally met by each of the alternatives. The primary factors in the decision are Long-Term Effectiveness and Permanence, and Cost.

As stated earlier, the Long-term Effectiveness and Permanence is strongly controlled by how well the landfill cap is maintained. Proper maintenance of the landfill cover is part of this remedy. Annual reports detailing the maintenance are also required. WDNR also has the right to inspect the landfill to see that it is properly maintained. Long term effectiveness and permanence are also addressed through the contingency plan which monitors possible changes in groundwater quality.

The data and analysis provided by Sauk County in Technical Memo #3, and in comments submitted during the public comment period show that the existing landfill cap is having a beneficial effect on groundwater quality. A gas extraction system and regrading of the landfill are necessary to comply with ARARs, and to reduce or eliminate exposure pathways. These are the most substantive parts of Alternative B.

Alternative B is also the least costly of the alternatives that comply with ARARs. Since it meets the threshold criteria and other balancing criteria, cost becomes that final factor to consider. Alternative B is a cost effective source control remedy.

CONCLUSIONS OF LAW

Alternative B will protect human health and the environment from exposure pathways identified in the Summary of Site Risk section of this ROD, complies with all legally applicable, or relevant and appropriate requirements for this final source control remedy, and is cost effective.

A. Protection of Human Health and the Environment

The selected remedy provides protection of human health and the environment through capping to contain wastes, which will alleviate threats from direct contact and minimize leachate generation. It will also provide active gas extraction of VOCs and other landfill gases.

B. Attainment of ARARs

The selected remedy will be designed to meet all applicable, or relevant and appropriate requirements under federal and state environmental laws. Since the Sauk County landfill is a state lead cleanup, no CERCLA on site permit exemption is available. All permits and approvals required to implement the remedy must be obtained and strictly complied with. The primary ARARs that will be achieved by the selected ternative are:

1. Action specific ARARs

Wisconsin Statutes, section 114.43 to 144.47

Wis. Adm. Codes, ss. NR 504.05(7), NR 504.07(3), NR 506.08(6) and NR 508.04 - Landfill gas control. Standards for landfill gas control and monitoring practices. These requirements are applicable to the landfill gas collection system at the site.

Wis. Adm. Codes, ss. NR 504.08(3), NR 514.07 and NR 516 - Landfill Closure Requirements. Substantive requirements for the design, construction, upgrading, maintenance and documentation of landfill cape. Cap design, construction, maintenance and documentation must comply with these applicable requirements.

Wis. Adm. Codes, ss NR 508.04 and NR 140 - Groundwater monitoring requirements. Substantive requirements for groundwater monitoring plans must meet these applicable requirements.

Wis. Adm. Code, NR 600 series - Hazardous waste requirements. This code was enacted to regulate the transportation, storage and disposal of hazardous waste. This code is neither applicable, nor relevant and appropriate for this site.

RCRA, Subtitle C - Hazardous waste requirements. Subtitle C are the federal regulations enacted for hazardous waste. Hazardous waste was placed in the landfill, however, the disposal took place prior to promulgation to Subtitle C. This regulation is neither applicable, nor relevant and appropriate for this site.

RCRA, Subtitle D - Solid waste requirements. Subtitle D are federal regulations enacted for solid waste disposal. The regulations are applicable to facilities which accepted waste after October 9, 1991. The Sauk County landfill closed in 1983. The Subtitle D regulations are neither applicable, nor relevant and

propriate for this site.

2. Chemical Specific ARARs

Clean Air Act [42 U.S.C. 7401 et seq.]; Wisconsin Statutes, sections 144.30 to 144.426

40 CFR 50; Wis. Adm. Code, chs. NR 404, NR 415 to NR 449 - Emission Standards. Standards for emission of pollutants into ambient air and procedures for measuring specific air pollutants. Cap construction could cause air emissions of VOCs, particulate, fugitive dust or other contaminants which could adversely affect human health and the environment. The design of the remedy must reduce air emissions to acceptable levels or provide treatment to satisfy these applicable standards.

Wis. Adm. Code, NR 140 - Groundwater Quality Standards. The remedy is designed to reduce the amount of contamination entering groundwater and achieve compliance with standards found in NR 140.

C. Cost Effectiveness

The selected remedy provides for overall cost effectiveness. The evaluation showing that the existing landfill cap is having a beneficial effect on groundwater quality provides for flexibility in choosing from the remedial alternatives. The selected remedy will improve on the beneficial effects of this cap by capturing VOCs with the gas system. Since Alternative B complies with ARARs and is the least costly, Alternative B is also the most cost effective.

D. Utilization of Permanent Solutions and Alternative Treatment Technologies

The selected alternative represents the best balance of alternatives with respect to the nine evaluation criteria. The cap eliminates the direct exposure pathway and reduces the amount of leachate generated within the site. The active gas extraction system provides for removal and treatment of the dominant threat to groundwater (i.e. VOCs) and will effectively control other landfill gases. Potential future threats will be addressed, if necessary, through the contingency aspect of the remedy.

E. Preference for Treatment as a Principal Element

By treating the waste mass with active gas extraction, the remedy satisfies the statutory preference for remedies that employ treatment of the principal contaminant threat to permanently and significantly reduce toxicity, mobility or volume through treatment.

DECISION: THE SELECTED REMEDY

Based on an evaluation of the alternatives, the Wisconsin Department of Natural Resources believes that Alternative B, the selected remedy, will be protective of human health and the environment, comply with ARARs, be cost effective, and will use permanent solutions to the maximum extent practicable.

The selected source control remedy for the site includes the following:

- continued monitoring of the groundwater at on site groundwater monitoring wells and off site private wells
- regrading of the landfill surface to promote drainage off of the landfill cover
- fencing the landfill
- installation of a gas extraction system to efficiently collect and combust landfill gases
- placing a deed restriction on the property to prohibit the disturbance of the surface of the landfill cap in the future
- future maintenance of the landfill cap
- a contingency plan to address unexpected releases from the site.

Regrading of the landfill surface conforms to the applicable provisions of the NR 500 rule series in the Wisconsin Administrative Code, including the final cover requirements of NR 506.08(3) which require that the

ıdfill surface maintain at least 2% slopes and convey surface water from the landfill cap.

The remedy also complies with the following applicable provisions of the NR 500 Rule which pertain to active landfill gas extraction and treatment: NR 504.05(7), NR 504.07(3), NR 506.08(6) and NR 508.04. The remedy also complies with the air emission rules in ch. NR 445.

Annual maintenance is an important aspect of this remedy. Annual reports will be required summarizing the previous years maintenance of the cap, and an evaluation of the effectiveness of the gas extraction system. This report shall also contain the results of all groundwater monitoring completed at the site during the previous year and include an evaluation relative to compliance with NR 140, Wis. Adm Code standards. The report is to be submitted by July 15 of each year, starting in 1995.

At the 5 year review of this source control remedy (i.e. by October 15, 1999), WDNR will study the annual reports to determine whether the remedy continues to effectively protect human health and the environment, and whether the source control remedy is being adequately maintained. The groundwater quality data will be evaluated to determine if the groundwater quality continues to improve. If the data indicates that groundwater quality is no longer improving, then WDNR may require additional source control actions.

In order to determine if the existing landfill cover continues to prevent or abate attainment or exceedence of groundwater standards, by July 15, 2004 and in 5 year intervals after this, a report will be prepared which summarizes the monitoring data at all groundwater monitoring wells. The point of compliance for groundwater quality standards is the edge of the waste boundary. If the data shows that NR 140, Wis. Adm Code preventive action limits for VOCs are not consistently met at wells in the monitoring plan, then the remedy requires that a landfill cover as described in Alternative E of the Source Control Focused Feasability Study be designed and constructed on the landfill. "Consistently met" is defined as 50% or more of the VOC data points from each well, within the previous three years, must be less than the NR 140 preventive action limit for each VOC detected respectively.

WDNR has determined that the selected remedy, Alternative B, will achieve the source control remedial ıion objectives for this site.

RESPONSIVENESS SUMMARY

This Responsiveness Summary has been prepared to meet the requirements of Sections 113 (k) (2) (B) (iv) and 117(b) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), which requires the United States Environmental Protection Agency (EPA) or the state on state lead sites to respond ". . . to each of the significant comments, criticisms, and new data submitted in written or oral presentations" on a proposed plan or draft Record of Decision for the remedial action. The Responsiveness Summary addresses concerns by the public and potentially responsible parties (PRPs) in written and oral comments received by the state regarding the proposed source control remedy at the Sauk County Landfill Superfund site.

A. OVERVIEW

I. BACKGROUND/PROPOSED PLAN

The Sauk County landfill Superfund site is situated on a 320 acre parcel of land located between the Cities of Reedsburg and Baraboo. Also located on this parcel is the active Sauk County solid waste landfill. This active landfill is located approximately several hundred feet north of the old, closed landfill. The active landfill is not part of this Record of Decision (ROD).

The Sauk County landfill accepted municipal and industrial waste from Sauk County between the years 1973 and 1983. The site was designed as a natural attenuation landfill. This means it has no liner or leachate collection system designed into modern landfills. It is approximately 14 acres in size and has a volume of about 750,000 cubic yards. The landfill accepted large quantities of foundry sand, municipal wastes and industrial wastes from homes and businesses located within the county.

Proposed Plan for this landfill called for the construction of a multi-layered composite landfill cap and gas extraction system. Because of comments received during the public comment period, the WDNR has changed the remedial action to call for additional soil being added to the existing landfill cap which will promote drainage off of the landfill surface, construction of an gas extraction system, continued groundwater monitoring, and a contingency plan to address possible future releases of VOCs from the site.

II. PUBLIC COMMENT PERIOD

A public comment period was held from September 8, 1993 to November 9, 1993 to allow interested parties to comment on the Proposed Plan in accordance with Section 117 of CERCLA. In addition, a public meeting was held on September 21, 1993 at the Rock Springs Community Center. The WDNR presented the Proposed Plan, answered questions and accepted comments from the public. During the public comment period, WDNR received 31 written and verbal comments concerning the Proposed Plan. These comments focused primarily on the extent to which the existing landfill cover is working to reduce leaching of contaminants to groundwater, and the cost associated with implementing the Proposed Plan.

B. COMMUNITY INVOLVEMENT

Public interest in the project has been high, particularly among landowners and residents living near the landfill. The residents organized themselves into the Evergreen Property Owners Association. The Association applied for, and was awarded a Technical Assistance Grant from EPA. The purpose of the grant is to provide funding which allows parties affected by Superfund sites to retain their own technical consultant.

The property owners primary concern is that the contaminated groundwater will affect their wells, and possibly their health. In order to get answers to their queations, residents have written letters to WDNR, and to the Division of Health. In addition, the residents organized a public meeting on November 30, 1992 in which staff from WDNR, the Division of Health and Simon Hydro-Search (consultant for Sauk County) attended snd responded to questions from the public.

Evergreen Property Owners Association submitted written comments in support of the Proposed Plan. This group believes that the membrane cap is a superior source control action when compared to the other alternatives presented.

In addition to comments received from the Evergreen Property Owners Association, Sauk County submitted comments concerning the effectiveness of the existing cap, and the cost associated with placing the membrane landfill cover discussed in the Proposed Plan.

The above concerns will be responded to in the following sections.

C. SUMMARY OF SIGNIFICANT PUBLIC COMMENTS

Comment 1

Sauk County, through their consultant, commented that the existing landfill cap is effective in reducing the contamination entering groundwater. Evidence for this includes:

- Concentrations of total VOCs in well TW-25 have dropped from over 15,000 ppb to about 100 ppb since VOCs have been measured in this well (1985-1993)

- vinyl chloride is the only parameter for which NR 140 Enforcement Standards are exceeded at TW-25
- TW-25 is located immediately downgradient of the landfill and has historically shown the highest level of contamination
- Changes for tetrachloroethylene are proposed for NR 140, Wis. Adm. Code. Once these changes become effective, groundwater enforcement standards will only be exceeded at wells within 150' of the landfill.

Response

These comments have been reviewed and were taken into account in re-evaluating the alternatives for the source control remedy for the site.

Comment 2

Sauk County commented that Alternative B of the Focused Feasibility Study calls for regrading the site to promote positive drainage from the site. The WDNR Proposed Plan states that Alternative B doesn't address regrading of the site.

Response

WDNR acknowledges that the Proposed Plan contained an error in the description of Alternative B with respect to regrading the site.

Comment 3

Several comments were received such that if the present cap is working, then to require Sauk County to install a new membrane cap is a waste of money.

Response

WDNR reviewed the technical arguments, as well as the cost considerations in their decision on the source control remedy for the site.

Comment 4

A Sauk County Board Chairman commented that the proper response for this landfill is to install a gas extraction system.

Response

A gas extraction system is incorporated as part of the source control remedial action for the site.

Comment 5

The Evergreen Property Owners Association (EPOA), through their consultant, commented that they wish to work with WDNR to derive remedial remedies which use tax dollars wisely, and protect public health, safety and welfare.

Response

WDNR believes the final source control remedial action is protective of public health, safety and the environment. WDNR also believes that the remedial action is cost effective.

Comment 6

EPOA commented that the condition of the existing cap (i.e. areas where surface water can collect rather than drain off) is of poor quality.

Response

The selected remedial action calls for regrading of the landfill surface to promote drainage off of the landfill surface. The remedy also requires that the positive drainage and vegetative cover be maintained.

ment 7

EPOA was concerned that a water balance calculation hadn't been performed to estimate the amount of infiltration entering the waste.

Response

Simon Hydro-Search submitted (on 11/08/93) a water balance analysis using the Hydrologic Evaluation of Landfill Performance (or HELP) model. Simon Hydro-Search believes that the initial analysis using HELP completed by Warzyn in 1987 was inaccurate. Warzyn estimated 4.4 inches/year of infiltration. Simon Hydro-Search, using the HELP model predicts that 0.4 inches/year is entering the waste.

The difference between these two calculations is primarily due to the value used for hydraulic conductivity of the clay soil capping layer. Simon Hydro-Search believes that permeability data from lab testing of the soils is applicable over the entire two foot thickness of the clay layer.

WDNR believes that the Simon Hydro-Search analysis is flawed. First, lab permeability testing is usually an order of magnitude or more less than that measured in the field for similar soils. Second, WDNR doesn't believe Simon Hydro-Search's assumption that the full two feet of clay has the permeability measured in the lab is valid. This soil is only covered by approximately 6 inches of topsoil. It is likely that cracks from freeze/thaw and desiccation extend into the clay. It is also likely that plant roots extend into the clay.

Regardless of the analyses from the HELP model, VOC concentrations in groundwater monitoring wells are decreasing. This is probably the best measure of the current effectiveness of the existing cap.

Comment 8

EPOA commented that without water table wells installed through the waste and directly beneath the landfill, re is no way to be certain that leachate is not mounding up beneath the landfill.

Response

Wells installed through the waste and into the water table would be the best method of determining if leachate is mounding beneath the site. However, it is unlikely that leachate is mounding beneath the site. For mounding to occur, water must move through the waste faster than the underlying aquifer material can move it. The wells installed into the waste indicate no leachate is present so the waste is not saturated and acting as a constant source of water to the water table. In addition, groundwater elevations measured on the edges of the landfill indicate a flow direction at the water table from east to west. The data corresponds to this flow direction and doesn't indicate a mound beneath the landfill. A third factor to consider is that once the cap was placed on the waste, infiltration was reduced and there is less water available to support mounding of the water table.

Comment 9

EPOA has commented that the VOC data at TW-25 has stabilized in the samples collected between 1991 and 1993. Their comment indicates this indicates a continuing source of VOCs to groundwater.

Response

An analysis of the data from TW-25 and TW-26A was presented by Simon Hydro-Search in their letter received on November 15, 1993. This analysis indicates that the reduction in VOC concentrations in well TW-25 and TW-26A can be explained by exponential decay. Semi-log plots of the data versus time indicate that the VOCs have a half-life of about 1 year. Simon Hydro-Search's analysis indicates that the contamination has already left the landfill and the VOCs found in TW-25 are likely residual contamination attached to the aquifer matrix. If significant concentrations of VOCs were continually released from the landfill, then the data wouldn't correspond to the analysis.

WDNR agrees with the Simon Hydro-Search analysis of the data. However, other factors besides exponential decay, such as minimizing infiltration and dilution, are probably also playing a role in the declining VOC concentrations. Future sampling and analysis of the monitoring wells will determine if the landfill is releasing VOCs.

Comment 10

EPOA commented that the data from TW-25A (screened in the Wonewoc Formation) shows a continuing release to the Wonewoc Formation. EPOA is concerned since this is the sole source drinking water aquifer to the area.

Response

Simon Hydro-Search prepared a similar analysis using the data from TW-26A. This well is screened in the Lone Rock Formation, just above the Wonewoc Formation. The data from this well also indicates there doesn't appear to be a continual-loading of VOCs from the rock and soil units above.

Because the Wonewoc Formation acts as the water supply aquifer for residents in the area, WDNR included as part of the remedy monitoring of private wells, and a contingency plan should VOC concentrations at monitoring wells near the landfill start to increase. If VOCs are released from the landfill in the future and detrimentally affect groundwater, then a composite landfill cap is to be installed.

Comment 11

EPOA commented that the VOC data distribution isn't explained by the groundwater flow regimes presented in Technical Memo #3.

Response

flow systems from the landfill towards the west are adequately defined. The water table aquifer and the upper potentiometric surface (i.e. the upper portion of the Lone Rock Formation) flow predominantly to the west, southwest. Once below the confining layers of the Lone Rock Formation, gradients indicate groundwater flow towards the east. Additional groundwater monitoring wells were installed east of the landfill. One well was screened at the water table; the second well was screened in the Wonewoc Formation. Water samples collected in November, 1993 from these new wells east of the landfill had no detections of VOCs

Comment 12

EPOA commented that the beat source control solution for this landfill is Alternative E, a composite landfill cover and gas extraction system.

Response

WDNR initially selected Alternative E as the source control action for the landfill. However, data presented during the public comment period show that Alternative B, regrading the site and installing a gas extraction system is the best source control remedy. The existing cap is limiting the amount of leachate being generated by the landfill, is cost effective and is protective of public health and the environment, and complies with state law.

Comment 13

Sauk County commented that NR 504.07, Wis. Adm. Code isn't an Applicable or Relevant and Appropriate Requirement (ARAR) becanae the landfill was approved prior to the promulgation date of the NR 500 code series.

Response

504 is an ARAR when a site receives a plan approval after the promulgation date of NR 500, or when the criteria of NR 506.08(3) are met. NR 506.08(3) states that the final cover requirements of NR 504.07 are to be used when it is necessary to..."prevent or abate attainment or exceedances of groundwater quality standards of Ch. NR 140, Wis. Adm. Code". Based upon the groundwater quality data from well TW-25 and other wells at the site, the existing landfill cap is currently preventing the exceedance of groundwater quality standards.

Comment 14

Sauk County commented that NR 140.26, Wis. Adm. Code isn't an ARAR because it doesn't mandate a cap design or composition.

Response

NR 140.26 is an ARAR because groundwater enforcement standards in NR 140 are exceeded at monitoring wells at the site. Table 2 of NR 140.26 is a list of actions that WDNR may take in order to achieve compliance with the groundwater quality standards. A change in the design of a facility is included in the list of actions. NR 140.26 is an applicable requirement to this site.

Comment 15

Sauk County commented that the water balance presented by their consultant shows little difference in infiltration between the existing cap and the cap listed in Alternative E. Sauk County further comments that if the caps behave similarly, then the more expensive composite cap of Alternative E is not cost effective.

Response

WR believes the water balance presented by the County 's consultant is flawed. Please see response to Comment 7.

Comment 16

Sauk County commented that WDNR placed too great an emphasis on permanence as compared to cost effectiveness when issuing the Proposed Plan. Sauk County cites a court case in which the judge ruled that permanence has no greater emphasis than cost effectiveness or any of the other balancing criteria.

Response

WDNR agrees that cost effectiveness and permanence have equal weight when making remedial decisions at Superfund sites. But before an alternatives cost effectiveness is evaluated, the alternative must meet the threshold criteria.

Comment 17

Sauk County commented that with the proposed changes to NR 140, groundwater enforcement standards are only exceeded at wells located within 150 feet of the site. Also, in general, the number of compounds exceeding groundwater enforcement standards has declined over the past several years.

Response

WDNR used this information in it's decision to select the source control remedial action for the site.

Comment 18

By providing semi-log plots of time vs. concentration of total VOCs data, Sauk County commented that the half-life of total VOCs is about 1.1 years. This estimate was provided by using data between 1985 and

93. Assuming this relationship holds true, all of the VOCs should fall below preventive action limits in about 2 years.

Response

WDNR has reviewed the plots of data provided by Sauk County. This data was used by WDNR in selecting the source control remedial action for the site. However, should the decreasing trend in VOC concentrations not continue, the remedy includes a contingency for possible future VOC releases from the landfill.

Comment 19
Sauk County provided plots of precipitation for Baraboo. A comparison of the precipitation data and the total VOC data at TW-25 indicates that wet years and dry years do not appear to have affected the amount of VOCs being released from the landfill. Sauk County comments that this is further data showing the landfill is not releasing significant quantities of VOCs to groundwater.

Response

WDNR has reviewed the plots of data provided by Sauk County. This data was used by WDNR in selecting the source control remedial action for the site.

Comment 20

Sauk County commented that except for the surface depressions from settlement of waste, the existing landfill cap has been well maintained. Erosion gullies have been repaired as soon as possible and the vegetation is in good shape. In addition, all of the Alternatives, except Alternative A (the no-action alternative) call for regrading the surface of the landfill to promote positive drainage from the landfill.

Response

WDNR believes Sauk County has properly maintained the vegetation on the existing landfill cap.

Comment 21

Sauk County commented that the decline in total VOCs as shown by the data from TW-25 and TW-26A can be explained using the exponential decay equation. Sauk County presented an analysis using the exponential decay equation which concludes it is mathematically not possible for the landfill to be releasing significant quantities of VOCs.

Response

WDNR has reviewed the analysis presented by Sauk County. WDNR used this data in selecting the source control remedy for this site. However, other factors, such as dilution are also contributing to the declining VOC concentrations.

Comment 22

Sauk County commented that except for east of the landfill, the flow regime has been defined as well as it needs to be. Preventive action limit exceedances have been delineated. Sauk County has installed two wells to the east of the landfill to help define the flow regimes in that direction.

Response

WDNR agrees that with the additional wells installed to the east of the landfill, the flow regime is adequately delineated.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Scott Hassett, Secretary
Ruthe E. Badger, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-275-3338
TTY Access via relay - 711

MAY 2 4 2006

FID #:157033140
Sauk County
SW Appr.

Mr. John Carroll
Sauk County Solid Waste Manager
E8795B Evergreen Lane
Baraboo, WI 53913

SUBJECT: Sampling Plan Modification Approval for the Old Closed Sauk County Sanitary Landfill, License #2051.

Dear Mr. Carroll:

The South Central Region of the Department of Natural Resources has reviewed and approved the plan modification request dated January 24, 2006. Please include the attached approval in the written operating record for the landfill as specified in s. NR 506.17, Wis. Adm. Code.

MODIFICATION SUMMARY

Geo Trans, Incorporated has requested a change to the monitoring and private well sampling plan and the gas monitoring plan on behalf of their client, the Sauk County Sanitary Landfill. The existing sampling plan calls for sampling the following monitoring wells on a semiannual basis.

TW-K, TW-25, TW-25A, TW-26A, TW-29B, TW-29C, TW-37, TW-38, TW-40A

The plan modification request proposes reducing the sampling frequency for all of the monitoring wells listed above from semiannual to annual sampling. VOC concentrations in the monitoring wells have declined since the installation of an engineered cap at the landfill and the installation of a gas extraction system. None of the monitoring wells listed above contain VOCs at concentrations that exceed their respective enforcement standards (ESs). TW-25, TW-25A, and TW-29C, did contain VOCs at concentrations slightly above their respective preventative action limits (PALs). All of the other monitoring wells have either no detects for VOCs or concentrations below the PAL.

The plan modification request proposes removing 5 private water supply wells from the sampling plan, reducing the sampling frequency of 2 of the 4 remaining wells, and maintaining the sampling frequency of 2 of the 4 of the remaining wells. The 5 wells that are proposed to be dropped from the sampling plan are wells that have produced water without any detectable VOCs for a period of not less than 7 years. The request proposes reducing the sampling frequency of 2 private water supply wells. The sampling history of these two wells can be characterized as having stable VOC concentrations that are well below their respective ESs.

The plan modification request proposes removing the requirement for validating the data from every 5th round of sampling. There is a data set that includes 26 rounds of monitoring well samples. The samples will continue to be analyzed by the same laboratory.

The plan modification request proposes reducing the sampling frequency of the 4 gas probes located outside the landfill from monthly to quarterly. There has been no gas detected in any of these gas probes in the monthly sampling.

If you have any questions regarding this approval, please contact Adam Hogan at (608) 275-3292.

Sincerely,

Gene R. Mitchell, P.E.
Waste Management Regional Team Leader
South Central Region

cc: Mark Harder - SCR

Gerald DeMers, PE, Senior Engineer, Associate,
GeoTrans, Inc., 175N. Corporate Drive, Brookfield, WI 53405

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PLAN OF OPERATION APPROVAL MODIFICATION
FOR
THE SAUK COUNTY SANITARY LANDFILL (#2051)

FINDINGS OF FACT

The Department of Natural Resources (Department) finds that:

1. Sauk County owns a closed non-hazardous solid waste disposal facility located in the E 1/2 of Section 15 and W 1/2 of Section 14, T12N, R5E, Town of Excelsior, Sauk County, WI.

2. The Department issued the Sauk County Landfill a landfill license in 1973.

3. The Department issued a closure approval on June 17, 1980 and subsequent approval modifications that define the current groundwater monitoring plan at the Sauk County Landfill (lic. #2051).

4. The most recent plan modification for sampling was issued on May 27, 1998.

5. The Sauk County Landfill is currently listed on the U.S. Environmental Protection Agency's National Priorities List ("Superfund"). The site has been remediated and Sauk County is seeking delisting with support from the Department.

6. GeoTrans, Inc, on behalf of Sauk County submitted a request for a plan modification to allow reduced monitoring frequency of monitoring wells in the sampling plan, remove 5 private wells from the sampling plan, reduce the monitoring frequency of 2 private water supply wells, remove data validation from the sampling plan requirements, and reduce the sampling frequency of the gas probes located outside the landfill. The request was dated January 24, 2006, and was received by the Department on January 30, 2006.

7. The plan review fee of $1650 for the plan modification request review was received by the Department on May 10, 2006.

8. Additional documents considered in connection with the review of the plan modification request include the following:

   a. The 5 year summary report prepared by GeoTrans, Inc. dated March 28, 2005

   b. The geologic cross section of the landfill and monitoring wells prepared by GeoTrans, Inc. dated March 20, 2003.

c. The well construction report for the Nathan Miller water supply well, Wisconsin Unique Well # NL 765.

d. Department files for the Sauk County Landfill (#2051).

9. The Department considered the following additional facts in reviewing the proposed plan modification.

a. VOCs have declined in both the monitoring wells and the private wells at this site since remediation.

b. VOC concentrations appear to be stable or declining in both private wells and monitoring wells.

c. None of the 5 private wells proposed to be removed from the sampling plan have had any VOC detects for a minimum of 7 years.

CONCLUSIONS OF LAW

The Department concludes that:

1. The Department has authority under s. 289.30(6), Wis. Stats., to modify a plan of operation if the modification will not inhibit compliance with chs. NR500-538, Wis. Adm. Code.

2. In accordance with the foregoing, the Department has the authority under s. 289.30, Stats., to issue the following plan of operation approval modification.

PLAN OF OPERATION APPROVAL MODIFICATION

The Department hereby approves the proposed modifications to reduce the sampling frequency of the monitoring wells listed in the proposed plan modification, to remove 5 private wells from the sampling plan, to reduce the sampling frequency of 2 other private wells, to remove data validation from the sampling plan, and to reduce the frequency of gas sampling in the four gas probes located outside the landfill.

This plan modification approval supersedes all previous plan modifications for monitoring well and private water supply well monitoring.

The Department retains the jurisdiction either to require the submittal of additional information or to modify these approvals at any time if, in the Department's opinion, conditions warrant further modifications. Unless specifically noted, the conditions of these approvals do not supersede or replace any previous conditions of approval for this facility.

18B

NOTIFICATION OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to ss. 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

Dated: MAY 24 2006 KW
DEPARTMENT OF NATURAL RESOURCES
For the Secretary

Gene R. Mitchell, P.E.
Waste and Materials Management Regional Team Leader
South Central Region

Adam Hogan, R.S.
Waste and Materials Management Hydrogeologist
South Central Region

Mark Harder, P.E.
Waste and Materials Management Engineer
South Central Region

TABLE 1: GROUNDWATER MONITORING SCHEDULE FOR LICENSE #02051

Sampling Point (DNR ID)	Frequency	Parameters
Monitoring Wells: TW-K 111 TW-25 114 TW-25A 125 TW-26A 116 TW-29B 123 TW-29C 124 TW-37 126 TW-38 128 TW-40A 133	Annual (October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00006 Well dry 00010 Field Temperature in ° C 00094 Field Conductivity @25° C 00400 Field pH 72020 Groundwater elevation VOCs (EPA Method SW8021 or SW8260)
Private Water Supply Wells: Faith Fisher Kelley FFZ00 — E9051 Hogsback Road — 137 E8763 Hogsback Road — 142 KV008 Christian Prall Baitts	Annual (October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00010 Field Temperature in ° C 00094 Field Conductivity @25° C 00400 Field pH VOCs (EPA Method SW8021 or SW8260)
4/30/08 E8757 Hogsback Road Weinke MK609 — E8727 Hogsback Road — 143 E8720 Hogsback Road 87093 Miller — 144 NL765 E8709 Evergreen Lane	Semiannual (April, October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00010 Field Temperature in ° C 00094 Field Conductivity @25° C 00400 Field pH VOCs (EPA Method SW8021 or SW8260)

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-6397
Telephone 608-275-3266
FAX 608-275-3338
TTY Access via relay - 711

Jim Doyle, Governor
Scott Hassett, Secretary
Lloyd L. Eagan, Regional Director

February 8, 2007

FID #:157033140
Sauk County
SW Appr.

Mr. John Carroll
Sauk County Solid Waste Manager
E8795B Evergreen Lane
Baraboo, WI 53913

SUBJECT: Sampling Schedule for the Old Closed
Sauk County Sanitary Landfill, License #2051

Dear Mr. Carroll:

I have enclosed a corrected table 1 groundwater monitoring schedule for the landfill listed above. Please attach this schedule to the May 24, 2006, Plan Modification Approval. The replacement table includes the DNR ID #s and corrects an address mistake for DNR ID # 144.

If you have any questions regarding the attached table 1, please feel free to contact me at (608) 275-3292.

Sincerely,

Adam Hogan
Hydrogeologist
Waste and Materials Management
South Central Region
Phone (608) 275-3292

C: Tom Bennwitz – SCR
Gerald DeMers, PE, Senior Engineer, Associate,
Geo Trans Inc., 175 N. Corporate Drive, Brookfield, WI 53405

TABLE 1: GROUNDWATER MONITORING SCHEDULE FOR LICENSE #02051

Sampling Point (DNR ID)	Frequency	Parameters
Monitoring Wells: TW-K (111) TW-25 (114) TW-25A (125) TW-26A (116) TW-29B (123) TW-29C (124) TW-37 (126) TW-38 (128) TW-40A (133)	Annual (October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00006 Well dry 00010 Field Temperature in °C 00094 Field Conductivity @25°C 00400 Field pH 72020 Groundwater elevation VOCs (EPA Method SW8021 or SW8260)
Private Water Supply Wells: E9 051 Hogsback Road (137) E8763 Hogsback Road (142)	Annual (October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00010 Field Temperature in °C 00094 Field Conductivity @25°C 00400 Field pH VOCs (EPA Method SW8021 or SW8260)
E8757 (Weinke) E8727 Hogsback Road (143) E8709 Hogsback Road (144) Evergreen Lane (Miller)	Semiannual (April, October)	00001 Sample odor present 00002 Sample color present 00003 Sample turbidity present 00010 Field Temperature in °C 00094 Field Conductivity @25°C 00400 Field pH VOCs (EPA Method SW8021 or SW8260)

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew Frank, Secretary
Lloyd Eagan, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-275-3338
TTY 608-275-3231

MAR 23 2009

Mr. Tim Stieve, Administrator
Emergency Management Building & Safety
Courthouse
510 Broadway
Baraboo, WI 53913

FID#157049970
Sauk County
SW/Cor

Subject: Landfill Inspection-Lic: 2978 & 2051, Sauk County, WI.

Dear Mr. Stieve:

This letter is a follow up to the site inspection conducted by Jim Kralick (WDNR-Hydrogeologist), and myself on March 18, 2009. Curt Madsen, and Dean Free from RMT were also present during the inspection.

Landfill Cap - Lic: 2978 The cap is generally in very good condition. Vegetative cover on the cap appears to be excellent at this time. It was indicated that the cap is mowed twice per season. I did not see any excessive amounts of woody vegetation growing on the cap, although some trees are beginning to take a foothold on the western side of the fill area. These trees will need to be removed. It appears that a vole population is getting established on the cap. Burrowing animals may lead to bigger problems later on if not addressed soon. Raptor stands are a popular, and inexpensive option for controlling voles. The access road leading to the top of the landfill is experiencing significant erosion, and at some point will need to be re-graded. All gas probes, and monitoring wells need to be properly labeled. The depression on the cap, where differential settlement has occurred, will need to be filled in this summer along with providing proper drainage off the landfill. This is an issue we have discussed before and it appears this will be addressed later this year. Please contact the Department when completed.

The 2008 annual report that was submitted RMT indicates that the landfill is in good working order. The gas probes indicate that gas is being controlled with the active system, and no gas is migrating off the property.

Landfill Cap - Lic: 2051 The cap was in good shape with no major erosion problems noticed. The landfill does experience significant differential settlement, and rutting that has resulted in ponding on the cap in different areas (east-central). Sauk County will need to address these issues at some point before the situation becomes worse. One of the gas probes will need to be repaired because the casing has settled to the point where the cap can not be closed (GP-2). There is also a stand of stag horn sumac getting established on the southern side of the landfill that will need to be removed. Voles appear to be a problem on this landfill, also. This issue will need to be addressed at some point before erosion becomes a concern.

A proposal to establish a shooting range directly adjacent to landfill Lic: 2978 will not pose a problem to the landfill, although a monitoring well is located in an area that will need to be properly marked and protected. Establishing the shooting range will not need an approval from the Department providing the landfill will continue to have restricted access.

Both inspection reports are attached for your review.

If you have any questions regarding this letter please call Jim Kralick at (608) 743-4841, or myself at (608) 275-3211.

Sincerely,

Tom Bennwitz

Thomas Bennwitz, P.E.
Waste & Materials Program.
South Central Region

Cc: Jim Kralick - Janesville (e-mail)
Dennis Mack - Fitchburg (e-mail)
Curt Madsen/ Dean Free - RMT

25B

State of Wisconsin
Department of Natural Resources

Form 4430-5 (R. 03/06)

SOLID WASTE
COMPLIANCE MONITORING AND EVALUATION FORM

A. GENERAL INFORMATION

FIST SEQ #: 34394

Facility Name (current)	FID #	EPA ID #	LIC/RU/RA #	Case #	Complaint #
SAUK CNTY LF	157049970		2978	34394	

Street/Location	Solid Waste Notification Status
E8795 B EVERGREEN LN	LANDFILL > 500,000 CU YD

City	Zip Code	County	Type of Contact	Contact Date/Time
EXCELSIOR TN	53913-	SAUK	FIELD	03/18/2009 00:00

Contact Name/Phone Number		Activity Type	Case Close Out Date:
TIM STIEVE	(608) 524-6515	COMPLIANCE	03/18/2009

B. FACILITY INSPECTED AS

Inspection Type
LANDFILL > 500,000 CU YD

C. NOTIFICATION CHANGE

Date processed SHWIMS_____, EPA Data System_____

Status Change: Field Verified Status Is _____

Name Change: Former Name _____

D. ADDITIONAL ACTIVITY TYPES

E. ACTIONS AND VIOLATIONS

F. CASE CONTACTS

G. COMMENTS

SITE NARRATIVE

Narrative:

Jim Kralick and I inspected the landfill on 3-18-2009. Curt Madsen and Dean Free from RMT were also present, with Tim Stieve from Sauk County. The landfill was is good condition. Their were no erosion problems on the site. Some areas that need attention include: Removal of trees that are beginning to become established, a vole problem that needs to be addressed, runoff from access road needs to be regraded, labeling of all monitoring devices, and filling in of depressed area on cap. All of the items are easily repairable, and the County has agreed to complete. The County also wants to establish a shooting range directly adjacent to the landfill. This is acceptable as long as it is a controlled site (Law Enforcement use only).

SITE INSPECTION FORM(S)

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

A. Gate provided at the entrance and kept locked when authorized personnel not on site.	C	NR 506.07(1)(j)
B. Entrance area clean and no solid waste indiscriminately dumped at or near the entrance. (e.g. operating an unlicensed storage or disposal facility)	C	NR 289.31(1)

Region Signature(s)	Date Signed	
BENNWITZ, THOMAS		d_report_matrix_site_contacts_pima_package_f

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

C. Sign posted at the entrance to the facility indicating that the landfill is closed, and includes the landfill name, license number, penalty for unauthorized use and any other pertinent information unless the approved final use does not require signage.	C	NR 506.08(1)(b)
D. Access to the landfill restricted by use of gates, fencing, or other appropriate means unless approved final use allowing access (e.g. baseball playfields, soccer fields, dog runs, etc.) does not require these restrictions.	C	NR 506.08(2)

Section 2: Sediment and Erosion Control

A. Runoff channels are protected to prevent scour and erosion that generates sediment. Some of the drainage ditches appeared to have vole intrusion that may need to be addressed at some point before erosion becomes an issue.	C	NR 506.07(2)(a)(5)
B. Storm water drainage ditches, structures and sedimentation basins cleaned and maintained.	C	NR 506.07(2)(b)
C. The entire solid waste disposal area is covered with compacted earth and final grades are adequately sloped to allow storm water runoff. (e.g. no depressions with ponded water or wetland vegetation on the disposal area). Their is one area on the cap that has significant settleing over the years were water has ponded. Souk county is aware and will fill the artea, and possible tile it later to promote proper drainage.	CA	NR 506.08(3)(a) Photo(s): Y
D. Storm water run-on diverted around all areas used for solid waste disposal to limit erosion of the cover soils and infiltration.	C	NR 506.08(3)(b)
E. The finished surface of the disposal area is covered with a minimum of 6 inches of topsoil.	C	NR 506.08(3)(d)
F. Vegetation established to minimize erosion (e.g. no bare spots or woody vegetation). Vegetation was well established over entire landfill.	C	NR 506.08(4) Photo(s): Y

Section 3: Gas Control

A. Effective means being utilized to prevent migration of explosive gases generated by the waste fill (e.g. no noticeable gas odors or indication of stressed vegetation, and gas control system operating, if applicable). Gas extraction system was working well over the past two years.	C	NR 506.07(4) Photo(s): Y

Section 4: Leachate Collection System

A. Any liquid that comes in contact with waste being handled as leachate and properly managed (e.g. no leachate seeps or discolored surface water/soil).	C	NR 506.07(5)(b)
B. Leachate removal from all leachate storage structures to maintain gravity flow (e.g. no leachate storage on landfill base or liner).	C	NR 506.07(5)(a)

263

CLOSED LANDFILL INSPECTION FORM

Section 4: Leachate Collection System

C. All leachate removed from the leachate collection system is being disposed of at a wastewater treatment facility unless the facility has approval to recirculate leachate or gas condensate.	C	NR 506.07(5)(a)
D. Leachate lines cleaned on an annual basis or other frequency approved by the Department.	C	NR 506.07(5)(c)
E. Leachate head wells protected and being monitored for leachate head levels.	C	NR 507.21(3)

Section 5: Monitoring Devices

A. Monitoring and sampling devices protected to prevent contaminant entry and damage (e.g. caps present and locked, protective casing in good condition and not affected by frost heave or sunk relative to the well casing that prevents closure). All monitoring devices will need to be labled.	C	NR 507.04(3)
B. All monitoring devices clearly and permanently labeled on the outside of the device. Sauk County will lable all devices this summer.	CA	NR 507.04(4) Photo(s): Y
C. Any permanent monitoring well no longer being used to gather information is properly abandoned within 60 days after its use has been discontinued.	C	NR 141.25(1)(b)
D. Any monitoring devise that has been damaged, provides a conduit to the subsurface or otherwise fails to function is properly abandoned and replaced within 60 days after discovery.	C	NR 507.13
E. Surface water sampling locations surveyed and permanently and clearly marked.	NA	NR 507.23(2)

Section 6: Final Use

A. Waste disposal area not being used for agricultural purposes unless approved by the Department.	C	NR 506.085(1)
B. No structures or other development over waste disposal area unless approved by the Department.	C	NR 506.085(2)
C. No excavation of the final cover or any waste materials.	C	NR 506.085(3)

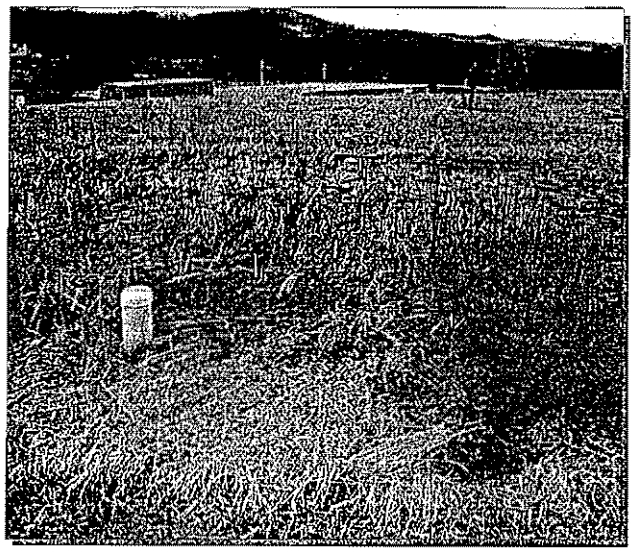
Key : C: Compliance CA: Compliance with Concern R: Returned to Compliance X: Non-Compliance NA: Not Applicable ND: Not Determined NI: Not Inspected
Y: Yes N: No UN: Unknown

Notes : 1. * Dept. approved alternate may apply 2. Questions without a status entry use narrative responses

SITE PHOTOS

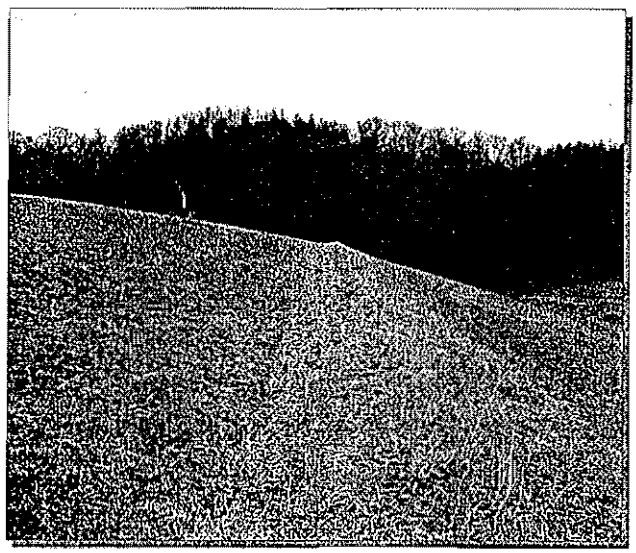
Site Photo # | Photo # 8107
Photo Date & Time 03/18/2009 00:00
Photo Direction N
Photographer BENNWITZ, THOMAS

Photo Description
Depressed area in Phase 1. The County plans to fill in depressed area this year, and control ponding.



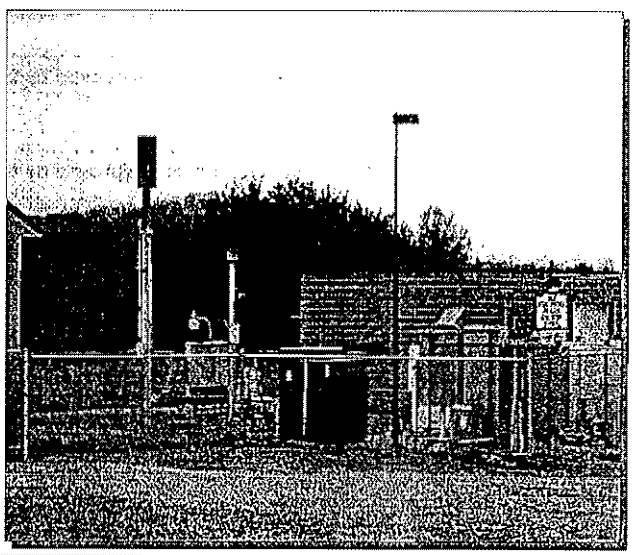
Site Photo # | Photo # 8108
Photo Date & Time 03/18/2009 00:00
Photo Direction NE
Photographer BENNWITZ, THOMAS

Photo Description
Vegetation on entire cap is well established.



Site Photo # | Photo # 8109
Photo Date & Time 03/18/2009 00:00
Photo Direction
Photographer BENNWITZ, THOMAS

Photo Description
Gas extraction system is working well, with only minor repairs needed.



27B

Site Photo # Photo # 8110

Photo Date & Time 03/18/2009 00:00

Photo Direction

Photographer BENNWITZ, THOMAS

Photo Description

All monitoring devices will need to be labled.

State of Wisconsin
Department of Natural Resources

Form 4430-5 (R. 03/06)

SOLID WASTE
COMPLIANCE MONITORING AND EVALUATION FORM

A. GENERAL INFORMATION

FIST SEQ #: 34396

Facility Name (current)	FID #	EPA ID #	LIC/RU/RA #	Case #	Complaint #
SAUK CNTY LF	157033140	WID980610141	2051	34396	

Street/Location	Solid Waste Notification Status
EVERGREEN ROAD	LANDFILL > 500,000 CU YD

City	Zip Code	County	Type of Contact	Contact Date/Time
EXCELSIOR TN	53913-	SAUK	FIELD	03/18/2009 00:00

Contact Name/Phone Number		Activity Type	Case Close Out Date:
TIM STIEVE	(608) 355-4419	COMPLIANCE	03/18/2009

B. FACILITY INSPECTED AS

Inspection Type
LANDFILL > 500,000 CU YD

C. NOTIFICATION CHANGE

Date processed SHWIMS_____, EPA Data System_____

Status Change: Field Verified Status Is _____

Name Change: Former Name _____

D. ADDITIONAL ACTIVITY TYPES

E. ACTIONS AND VIOLATIONS

F. CASE CONTACTS

G. COMMENTS

SITE NARRATIVE

Narrative:

Kralick and Bennwitz conducted site inspections at Sauk County LFs #2051 and 2978. Curt Madsen and Dean Free of RMT accompanied us. Overall landfill #2051 was in very good shape. For the most part, vegetation is thick, well established, and properly maintained. Some areas of minor concern included an area of settlement and shallow water ponding on the east-central side of the cap, as well as some tire rutting on the east-central side of the cap. Sauk County should provide drainage and repair these areas as necessary. There were also some woody shrubs (staghorn sumac) growing on the southern edge of the cap which should be cut down to limit potential cap damage in that area. It was noted that gas probe GP2 no longer fit within its protective casing, which should be corrected. All other gas probes and monitoring wells should be inspected for similar problems and other damage this spring. Any wells that do not have their numbers clearly marked on the outer protective casing should have that done.

SITE INSPECTION FORM(S)

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

A. Gate provided at the entrance and kept locked when authorized personnel not on site.	C	NR 506.07(1)(j)

Region Signature(s)	Date Signed	
KRALICK, JAMES		

28B

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

B. Entrance area clean and no solid waste indiscriminately dumped at or near the entrance. (e.g. operating an unlicensed storage or disposal facility)	C	NR 289.31(1)
C. Sign posted at the entrance to the facility indicating that the landfill is closed, and includes the landfill name, license number, penalty for unauthorized use and any other pertinent information unless the approved final use does not require signage.	C	NR 506.08(1)(b)
D. Access to the landfill restricted by use of gates, fencing, or other appropriate means unless approved final use allowing access (e.g. baseball playfields, soccer fields, dog runs, etc.) does not require these restrictions.	C	NR 506.08(2)

Section 2: Sediment and Erosion Control

A. Runoff channels are protected to prevent scour and erosion that generates sediment.	C	NR 506.07(2)(a)(5)
B. Storm water drainage ditches, structures and sedimentation basins cleaned and maintained.	C	NR 506.07(2)(b)
C. The entire solid waste disposal area is covered with compacted earth and final grades are adequately sloped to allow storm water runoff. (e.g. no depressions with ponded water or wetland vegetation on the disposal area).	CA	NR 506.08(3)(a)
D. Storm water run-on diverted around all areas used for solid waste disposal to limit erosion of the cover soils and infiltration.	C	NR 506.08(3)(b)
E. The finished surface of the disposal area is covered with a minimum of 6 inches of topsoil.	C	NR 506.08(3)(d)
F. Vegetation established to minimize erosion (e.g. no bare spots or woody vegetation).	CA	NR 506.08(4)

Section 3: Gas Control

A. Effective means being utilized to prevent migration of explosive gases generated by the waste fill (e.g. no noticeable gas odors or indication of stressed vegetation, and gas control system operating, if applicable).	C	NR 506.07(4)

Section 4: Leachate Collection System

A. Any liquid that comes in contact with waste being handled as leachate and properly managed (e.g. no leachate seeps or discolored surface water/soil).	C	NR 506.07(5)(b)
B. Leachate removal from all leachate storage structures to maintain gravity flow (e.g. no leachate storage on landfill base or liner).	C	NR 506.07(5)(a)

CLOSED LANDFILL INSPECTION FORM

Section 4: Leachate Collection System

C. All leachate removed from the leachate collection system is being disposed of at a wastewater treatment facility unless the facility has approval to recirculate leachate or gas condensate.	C	NR 506.07(5)(a)
D. Leachate lines cleaned on an annual basis or other frequency approved by the Department.	C	NR 506.07(5)(c)
E. Leachate head wells protected and being monitored for leachate head levels.	C	NR 507.21(3)

Section 5: Monitoring Devices

A. Monitoring and sampling devices protected to prevent contaminant entry and damage (e.g. caps present and locked, protective casing in good condition and not affected by frost heave or sunk relative to the well casing that prevents closure).	CA	NR 507.04(3)
B. All monitoring devices clearly and permanently labeled on the outside of the device.	CA	NR 507.04(4)
C. Any permanent monitoring well no longer being used to gather information is properly abandoned within 60 days after its use has been discontinued.	C	NR 141.25(1)(b)
D. Any monitoring devise that has been damaged, provides a conduit to the subsurface or otherwise fails to function is properly abandoned and replaced within 60 days after discovery.	C	NR 507.13
E. Surface water sampling locations surveyed and permanently and clearly marked.	NA	NR 507.23(2)

Section 6: Final Use

A. Waste disposal area not being used for agricultural purposes unless approved by the Department.	C	NR 506.085(1)
B. No structures or other development over waste disposal area unless approved by the Department.	C	NR 506.085(2)
C. No excavation of the final cover or any waste materials.	C	NR 506.085(3)

Key : C: Compliance CA: Compliance with Concern R: Returned to Compliance X: Non-Compliance NA: Not Applicable ND: Not Determined NI: Not Inspected
Y: Yes N: No UN: Unknown

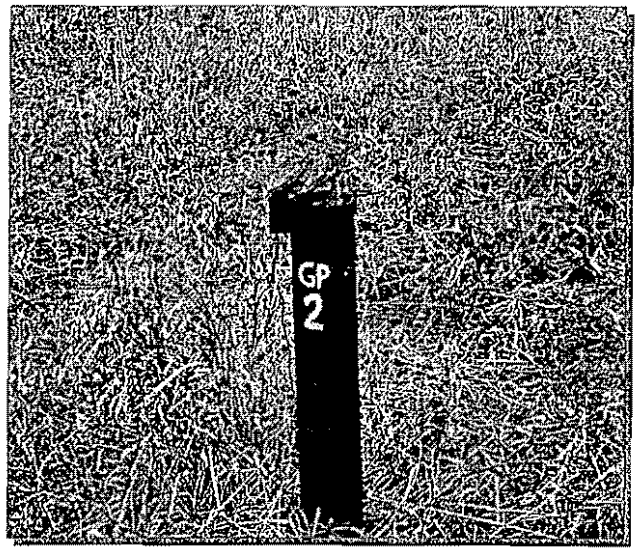
Notes : 1. * Dept. approved alternate may apply 2. Questions without a status entry use narrative responses

29B

SITE PHOTOS

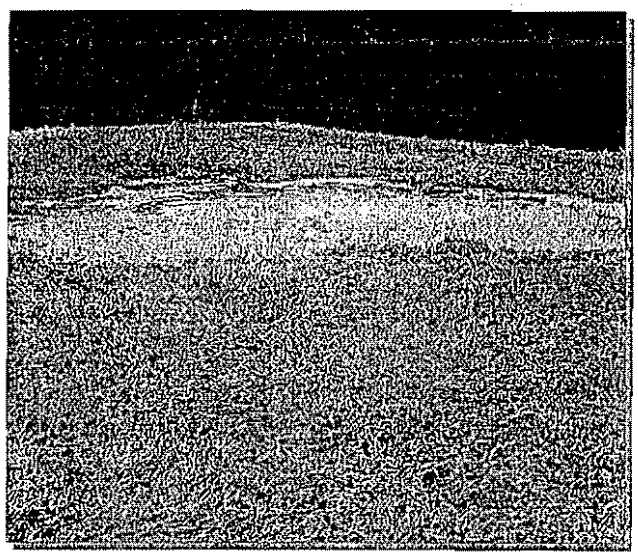
Site Photo # | Photo # 8111
Photo Date & Time 03/18/2009 00:00
Photo Direction UNK
Photographer KRALICK, JAMES

Photo Description
Gas Probe GP2 and protective top



Site Photo # | Photo # 8112
Photo Date & Time 03/18/2009 00:00
Photo Direction NE
Photographer KRALICK, JAMES

Photo Description
Depression on east side of cap.



Site Photo # | Photo # 8113
Photo Date & Time 03/18/2009 00:00
Photo Direction N
Photographer KRALICK, JAMES

Photo Description
Tire ruts in cap.

SITE PHOTOS

Site Photo # | Photo # 8114

Photo Date & Time 03/18/2009 00:00

Photo Direction S

Photographer KRALICK, JAMES

Photo Description

Sumac on southern cap area.

30B

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

PO Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

December 12, 1997

Mr. John Carroll
Sauk County Solid Waste Manager
Sauk County Landfills
E8795B Evergreen Lane
Baraboo, WI 53913

FILE REF: FID# 157049970
Sauk Co.
SW
Approval

SUBJECT: Plan of Operation Approval Modification Establishing PALs, ACLs, and a Revised Monitoring Program for the Sauk County Landfill, License Number 02978, Sauk County, Wisconsin

Dear Mr. Carroll:

We have reviewed the reports titled "Ground Water Monitoring Plan Modification, Sauk County Landfill, License Number 02978", dated July 1995 and received by the Department on July 13, 1995, and "Ground Water Monitoring Plan Modification Addendum", dated March 13, 1997 and received by the Department on March 19, 1997, submitted on behalf of Sauk County by Owen Ayres & Associates, Inc. The plan modification proposed changes to the monitoring program at the landfill to comply with requirements of the RCRA Subtitle D rules and current Department requirements for monitoring the performance of municipal solid waste landfills.

As a result of our review, we are issuing the attached conditional modification to the plan of operation approval issued on July 21, 1993. We have concluded that the methods used to calculate Preventive Action Limits (PALs) and Alternative Concentration Limits (ACLs) are acceptable, and the proposed PAL and ACL values are approved, with several exceptions. We are also approving the proposed landfill monitoring plan.

We mailed a draft of this letter and the attached approval on October 31, 1997. We received comments from you by telephone on December 8, 1997. Our response to your comments is below. The remainder of this letter describes some of the more important conditions of the approval.

Response to Comments

We have received only one comment from you requesting a change from weekly to monthly recording of condensate volume collected (Condition 10.e.). This change has been made.

Department Response to Documents Submitted by Sauk County

Groundwater Standards

We have approved your calculated Preventive Action Limit (PAL) values (see Condition #1) for the indicator parameters (i.e., field conductivity, total hardness, total alkalinity, and COD) that you are currently monitoring at your facility. We have also reviewed your request for exemptions to groundwater standards and approved the associated calculated Alternative Concentration Limits (ACLs), with two exceptions (see Condition #2 and Finding of Fact #11.

After the issuance of this approval, you must evaluate your monitoring results using the approved indicator PALs and either the standards for health and welfare parameters listed in Tables 1 and 2 of ch. NR 140, or the ACLs for those standards. After evaluating the monitoring results, you must attach a notification summary of any exceedances of these standards to your electronic monitoring data diskette submittal. The notification must include a preliminary analysis of the cause and significance of the exceedance. Periodically, we will assess your facility to ensure that you are reporting ch. NR 140 PAL and enforcement standard (ES) exceedances with your monitoring results.

The PALs apply at all wells where groundwater can be monitored, while ESs apply beyond your design management zone (DMZ) of 300 feet from the waste boundary. For your facility, therefore, both the ESs and the PALs apply at TW-28 (118) and TW-28A (120); the PALs apply at all other wells. An ACL is to be treated as a PAL within the DMZ. Outside the DMZ, an ACL is to be treated as a PAL if it is less than the ES in ch. NR 140; otherwise it acts as an ES.

The groundwater monitoring program is approved as proposed. Note that, in the approved program, semi-annual volatile organic compound (VOC) monitoring is required only at the four designated Subtitle D wells. In addition, the conditional approval modification includes requirements for routine lysimeter, leachate, and landfill gas monitoring.

If you wish to discuss this letter, please contact Hank Kuehling at (608) 275-3286 or Janet Battista at (608) 267-3533.

Sincerely,

Michael C. Degen
Waste Management Team Supervisor
South Central Region

MCD:hhk

Attachments: Draft Cover Letter
Draft Conditional Approval

cc: Jack Connelly - WA/3
Janet Battista - WA/3
Ann Bekta - WA/3
Hank Kuehling - SCR
Jim Bakken - SCR, Dodgeville
Sue Vasey/Steve Bischoff - Ayres Associates

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL APPROVAL
MODIFYING THE PLAN OF OPERATION
FOR THE SAUK COUNTY LANDFILL
(License #02978)

FINDINGS OF FACT

The Department finds that:

1. Sauk County owns the currently operating nonhazardous municipal solid waste disposal facility located in the east half of Section 15, T12N, R5E, Town of Excelsior, Sauk County, Wisconsin.

2. The Department has issued the landfill the license number 02978.

3. The Department issued a conditional plan of operation approval for the facility on January 5, 1983.

4. On July 13, 1995, the Department received a report titled "Ground Water Monitoring Plan Modification, Sauk County Landfill", dated July 1995, submitted on behalf of Sauk County by Ayres Associates.

5. On March 19, 1997, the Department received a report titled "Ground Water Monitoring Plan Modification Addendum, Sauk County Landfill", dated March 13, 1997, submitted on behalf of Sauk County by Ayres Associates.

6. Sauk County submitted the appropriate review fee of $1,500 on August 14, 1995.

7. Other documents considered as part of the review of the groundwater monitoring plan modification request include reports from the Department's electronic groundwater monitoring data management system.

8. In the vicinity of the site, groundwater flow direction is generally to the southwest, and depth to the water table is approximately 80 feet at the north end of the site to approximately 35 feet at the south end.

9. No drinking water supply wells occur within 1,200 feet of the limits of filling of the landfill, other than the one supplying water to the landfill office building.

10. A minimum of 8 values were included in computing the mean and standard deviation for each calculated PAL and ACL.

11. ACLs are proposed in the report for the parameters and wells listed below, but no verified (a minimum of two) groundwater standard exceedances have occurred for these substances at these monitoring wells; exemptions and ACLs are therefore unwarranted and not approved for the following substances and wells.

Substance	Well Name (ID #)	Well Name (ID #)
Lead, dissolved	TW-30 (101)	
Manganese, dissolved	TW-51A (206)	

12. Based on an examination of site conditions, the Department finds the following:

    a. Groundwater concentrations of iron, lead, manganese, and nitrate and nitrite in the landfill facility area found at levels exceeding the ch. NR 140, Wis. Adm. Code, groundwater standards are representative of background groundwater quality because they reflect natural groundwater conditions.

b. The current landfill design was approved to achieve the lowest possible concentration of the substance in groundwater that was technically and economically feasible at the time of approval.

13. Based on an examination of the groundwater quality data for the facility for public health substances except nitrate (as N) and the Finding of Fact #12, the Department finds the following:

a. Background concentrations above the PALs but below the enforcement standards for the following substances were observed at the monitoring wells listed below:

Substance	Well Name & ID #	Well Name & ID #
Lead, dissolved	TW-34 (116)	Lndfll (119)

b. The facility has not caused and will not cause the concentration of these substances to exceed the enforcement standard for these substances at a point of standards application.

c. The facility is designed to achieve the lowest possible concentrations for these substances in groundwater that are technically and economically feasible.

14. Based on an examination of the groundwater quality data for the facility for public welfare substances and nitrate and nitrite (as N) and the Finding of Fact #12, the Department finds the following:

a. Background concentrations above the PALs but below the enforcement standards for the following substances were observed at the monitoring wells listed below:

Substance	Well Name & ID #	Well Name & ID #
Nitrate + Nitrite, diss.	TW-28 (118)	TW-28A (120)
	TW-33 (107)	TW-34 (116)
	TW-50 (202)	TW-51 (204)
	TW-51A (206)	Hinze (111)

b. Background concentrations above the ESs for the following substances were observed at the monitoring wells listed below:

Substance	Well Name & ID #	Well Name & ID #
Iron, dissolved	TW-28 (118)	TW-28A (120)
	TW-30 (101)	TW-30A (102)
	TW-31 (103)	TW-33 (107)
	TW-36 (108)	Hinze (111)
	Lndfll (119)	
Manganese, dissolved	TW-28 (118)	TW-51 (204)
Nitrate + Nitrite, diss.	TW-35R (200)	

c. The facility is designed to achieve the lowest possible concentrations for iron and manganese in groundwater that are technically and economically feasible.

d. The anticipated increase in the concentrations of iron and manganese does not present a threat to public health or welfare because of the landfill design and construction.

15. The indicator parameter PALs, the ACLs, and the special conditions set forth below are needed to assure that an increase in the concentration of lead, iron, manganese, and nitrate and nitrite as nitrogen does not cause an increased threat to public health or welfare or inhibit compliance with chs. NR 500-520, Wis. Adm. Code.

16. The Department sent to Sauk County a draft version of the conditional approval modifying the plan of operation of the landfill on October 31,

1997. The Department received a response from Sauk County on December 8, 1997.

CONCLUSIONS OF LAW

The Department concludes that:

1. The Department has authority under s. 289.30, Stats., to modify a Plan of Operation if the modification would not inhibit compliance with the applicable standards in ch. NR 500-520, Wis. Adm. Code.

2. The Department has the authority to approve a modification to the plan of operation with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500 to 520, Wis. Adm. Code.

3. The Department has authority under s. 289.30(8), Stats., and ch. NR 508, Wis. Adm. Code, to modify a plan of operation approval for an approved facility to ensure compliance with RCRA Subtitle D.

4. The Department has the authority under s. 160.15(3), Stats., and s. NR 140.20, Wis. Adm. Code, to establish preventive action limits for indicator parameters.

5. The Department has the authority under s. 160.19(8), Stats., and s. NR 140.28, Wis. Adm. Code, to grant exemptions to groundwater standards and establish alternative concentration limits, and to specify terms and conditions under which the Department may seek remedial action to gain compliance with groundwater quality standards.

6. The "Solid Waste Disposal Facility Criteria; Final Rule" (also known as RCRA Subtitle D) was published as 40 CFR 257 & 258 in the Federal Register on October 9, 1991 and is applicable to the Sauk County Landfill.

7. As of December 29, 1992, the State of Wisconsin has the sole authority to issue and enforce solid waste landfill permits for all of its municipal solid waste landfills, except those on tribal lands.

8. RCRA Subtitle D requires that the background monitoring be completed by October 9, 1994 for wells designated to demonstrate compliance with RCRA Subtitle D.

9. The conditions of approval set forth below are needed to assure compliance with s. NR 140, Wis. Adm. Code and applicable portions of chs. NR 500-520, Wis. Adm. Code.

10. In accordance with the foregoing, the Department has authority under ch. 289 and ch. 160, Stats., and s. NR 508.10, Wis. Adm. Code, to issue the following conditional approval modifying the plan of operation.

GRANT OF EXEMPTIONS

Sauk County has demonstrated circumstances that warrant exemptions to groundwater standards in ch. NR 140 for iron, lead, manganese, and nitrate & nitrite as nitrogen as specified in s. NR 140.28, Wis. Adm. Code. Therefore, the Department grants exemptions to the groundwater standards for the following parameters and monitoring wells. The Department may modify this approval, based on additional information.

Iron, dissolved
DNR ID #01046

Well Name	Well ID #	Well Name	Well ID #
TW-30	101	TW-30A	102
TW-31	103	TW-33	107
TW-36	108	TW-28	118
TW-28A	120	Hinze Well	111
Lf. Well	119		

Lead, dissolved
DNR ID #00240

Well Name	Well ID #	Well Name	Well ID #
TW-34	116	Lf. Well	119

Manganese, dissolved
DNR ID #00316

Well Name	Well ID #	Well Name	Well ID #
TW-28	118	TW-51	204

Nitrate & Nitrite as N, dissolved
DNR ID #00631

Well Name	Well ID #	Well Name	Well ID #
TW-33	107	TW-34	116
TW-28	118	TW-28A	120
TW-35R	200	TW-50	202
TW-51	204	TW-51A	206
Hinze Well	111		

CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION

The Department hereby modifies the plan of operation approval for the Sauk County Landfill by adding the following conditions. The following conditions shall supersede previous requirements when a conflict occurs.

Calculated PALs and ACLs

1. The preventive action limits (PALs) for the indicator parameters at this facility shall be as follows:

Alkalinity, filtered (mg/L)
DNR ID #39036

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	200	TW-30A (102)	190
TW-31 (103)	200	TW-33 (107)	180
TW-36 (108)	190	TW-34 (116)	200
TW-28 (118)	200	TW-28A (120)	230
TW-35R (200)	230	TW-50 (202)	190
TW-51 (204)	370	TW-51A (206)	210
Hinze (111) Well	170	Lndfll (119) Well	230

Sauk County Landfill

Chemical Oxygen Demand (COD), filtered (mg/L)
DNR ID #00341

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	37	TW-30A (102)	36
TW-31 (103)	32	TW-33 (107)	32
TW-36 (108)	32	TW-34 (116)	46
TW-28 (118)	32	TW-28A (120)	32
TW-35R (200)	32	TW-50 (202)	32
TW-51 (204)	31	TW-51A (206)	31
Hinze (111) Well	31	Lndfll (119) Well	31

Field Conductivity (mhos/cm @ 25°C)
DNR ID #00872

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	500	TW-30A (102)	400
TW-31 (103)	410	TW-33 (107)	400
TW-36 (108)	480	TW-34 (116)	500
TW-28 (118)	490	TW-28A (120)	500
TW-35R (200)	510	TW-50 (202)	450
TW-51 (204)	740	TW-51A (206)	470
Hinze (111) Well	380	Lndfll (119) Well	480

Hardness, filtered (mg/L)
DNR ID #22413

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	220	TW-30A (102)	210
TW-31 (103)	220	TW-33 (107)	210
TW-36 (108)	200	TW-34 (116)	220
TW-28 (118)	250	TW-28A (120)	270
TW-35R (200)	240	TW-50 (202)	240
TW-51 (204)	400	TW-51A (206)	240
Hinze (111) Well	190	Lndfll (119) Well	260

2. The following alternative concentration limits (ACLs) apply to the exemptions granted in this approval:

Iron, dissolved (mg/L)
DNR ID #01046

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-30 (101)	0.59	TW-30A (102)	0.69
TW-31 (103)	0.92	TW-33 (107)	0.71
TW-36 (108)	0.36	TW-28 (118)	0.88
TW-28A (120)	0.28	Hinze (111) Well	0.33
Lndfll (119) Well	0.42		

Lead, dissolved (ug/L)
DNR ID #00240

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-34 (116)	2.8	Lndfll (119) Well	2.2

Manganese, dissolved (ug/L)
DNR ID #00316

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-28 (118)	0.07	TW-51 (204)	0.16

Nitrate + Nitrite, dissolved (mg/L)
DNR ID #00631

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-33 (107)	4.8	TW-34 (116)	7.2
TW-28 (118)	6.2	TW-28A (120)	8.5
TW-35R (200)	19	TW-50 (202)	9.3
TW-51 (204)	2.5	TW-51A (206)	2.8
Hinze (111) Well	2.8		

PALs and ESs for all other substances shall be as specified in ch. 140, Wis. Adm. Code.

Groundwater Monitoring

3. The results of all of the required environmental monitoring shall be reported to the Department electronically on diskette, tape, or microdisk. All monitoring specified as occurring on a quarterly basis shall be completed during the months of March, June, September, and December of each year. All monitoring specified as occurring on a semi-annual basis shall be completed during the months of March and September of each year. Annual monitoring shall be completed in September of each year.

4. The groundwater monitoring program for inorganic parameters listed below shall be conducted semi-annually at the monitoring wells that are also listed. Sample color, odor, and turbidity shall be noted at the time of sampling.

Well Name	Well ID #	Well Name	Well ID #
TW-30	101	TW-30A	102
TW-31	103	TW-33	107
TW-36	108	TW-34	116
TW-28	118	TW-28A	120
TW-35R	200	TW-50	202
TW-51	204	TW-51A	206
Hinze Well	111	Landfill Well	119

Parameter	ID #
Groundwater temperature	00010
Chloride	00940
COD, filtered	00341
Field pH	00400
Groundwater elevation	72020
Field conductivity at 25°C	00094
Hardness, filtered	22413
Alkalinity, filtered	39036

5. The groundwater monitoring program for volatile organic compounds (VOCs) shall be conducted as follows:

a. Monitoring for VOCs at the following Subtitle D wells shall be conducted on a semi-annual basis:

Well Name	Well ID #	Well Name	Well ID #
TW-30	101	TW-35R	200
TW-50	202	TW-51	204

b. Monitoring for VOCs at the following wells shall be conducted on an annual basis:

Well Name	Well ID #	Well Name	Well ID #
TW-30A	102	TW-31	103
TW-33	107	TW-36	108
TW-34	116	TW-28	118
TW-28A	120	TW-51A	204
Hinze Well	111	Landfill Well	119

c. Analysis for VOCs shall be conducted in accordance with ch. NR 507 Appendix 1, Table 1.

6. The four Subtitle D wells shall be monitored during the semi-annual monitoring events for antimony until a total of four rounds of antimony results have been reported to the Department that have not been influenced by contaminated field filters.

Lysimeter Monitoring

7. The collection lysimeters shall be monitored in accordance with ch. NR 507 Appendix 1, Table 5 for municipal solid waste.

Leachate Monitoring Program

8. A leachate monitoring program shall be conducted during the active life of the landfill and after landfill closure. The leachate monitoring program shall consist of the following:

a. All leachate samples shall be obtained from the leachate storage tanks. Leachate samples shall not be filtered prior to analysis.

b. Leachate shall be monitored in accordance with ch. NR 507 Appendix 1, Table 4 for municipal solid waste.

9. The leachate head elevation (ID# 00023) and the depth of leachate (ID# 00031) in the leachate head monitoring devices shall be measured monthly and the results reported quarterly with the TADs.

Landfill Gas Monitoring

10. A landfill gas monitoring program shall be conducted during the active life of the landfill and during the period of long-term care. The landfill gas monitoring program shall consist of the following:

a. All gas extraction wells shall be monitored for the parameters listed below on a monthly basis and reported to the Department quarterly.

Parameters	ID #
% Methane	85547
% Oxygen	85550
Pressure - in. of Water	46385

Flow Rate - CFM	46386
Valve Opening - % Open	46387
Gas Temperature - °F	46388

b. The site conditions shall be monitored for the parameters listed below on a monthly basis at the time of gas extraction well monitoring. These results shall be reported to the Department quarterly.

Parameters	ID #
Ambient Air Temperature °F	00021
Barometric Pressure	00025
Trend in Barometric Pressure	00024
Ground Conditions	No ID

c. The gas blower shall be monitored for the parameters listed below biweekly and reported to the Department quarterly.

monthly

Parameters	ID #
% Methane	85547
% Oxygen	85550
Pressure - in. of Water	46385
Flow Rate - CFM	46386

The gas blower shall also be monitored annually for the VOC scan (ID# 84085) parameters that are listed on the Volatile Organic Compound Monitoring Report Form 4400-107A.

d. All gas monitoring probes installed at the site shall be monitored for % Methane (#85547), % Oxygen (#85550), and Soil Gas Pressure (#46389) on a quarterly basis.

The gas condensate shall be monitored for the parameters listed below on a quarterly basis. Condensate volume collected (ID# 46391) shall be recorded on a monthly basis and reported to the Department quarterly.

Parameters	ID #
Field Conductivity (corrected to 25°C)	00872
Field pH	00400
COD	00340
Total Suspended Solids -	00134

f. The gas condensate shall be monitored for VOCs as listed in ch. 507 Appendix III on an annual basis.

The Department reserves the right to require either the submittal of additional information or to further modify this approval at any time if, in the Department's opinion, further modifications to this approval are necessary. Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this position, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to Sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed or otherwise served by the Department to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

This notice is provided pursuant to section 227.48(2), Stats.

DATE December 12, 1997

DEPARTMENT OF NATURAL RESOURCES
For The Secretary

Michael C. Degen
Waste Management Team Supervisor
South Central Region

Harlan Kuehling, P.G.
Hydrogeologist

Mark Harder, P.E.
Engineer, Waste Management Program

Appendix B
Landfill Gas Monitoring Data 2005-2009

Landfill Gas Blower Monitoring 2007-2009

WDNR GEMS Database Data (Key Parameters Only)

SAMPLEID	SAMPLEDATE	PARMNAME	CONC	UNITS
BLOWER	1/26/2007	GAS FLOW RATE	217.7	CFM
BLOWER	3/7/2007	GAS FLOW RATE	281.3	CFM
BLOWER	5/4/2007	GAS FLOW RATE	381	CFM
BLOWER	5/23/2007	GAS FLOW RATE	348	CFM
BLOWER	6/19/2007	GAS FLOW RATE	543	CFM
BLOWER	8/31/2007	GAS FLOW RATE	400	CFM
BLOWER	9/18/2007	GAS FLOW RATE	420	CFM
BLOWER	10/29/2007	GAS FLOW RATE	364	CFM
BLOWER	11/21/2007	GAS FLOW RATE	453	CFM
BLOWER	3/28/2008	GAS FLOW RATE	410	CFM
BLOWER	4/23/2008	GAS FLOW RATE	305	CFM
BLOWER	5/9/2008	GAS FLOW RATE	254	CFM
BLOWER	6/20/2008	GAS FLOW RATE	283	CFM
BLOWER	7/18/2008	GAS FLOW RATE	267	CFM
BLOWER	8/14/2008	GAS FLOW RATE	180	CFM
BLOWER	9/17/2008	GAS FLOW RATE	277	CFM
BLOWER	10/21/2008	GAS FLOW RATE	78	CFM
BLOWER	11/25/2008	GAS FLOW RATE	182	CFM
BLOWER	12/30/2008	GAS FLOW RATE	297	CFM
BLOWER	2/5/2009	GAS FLOW RATE	303	CFM
BLOWER	2/24/2009	GAS FLOW RATE	233	CFM
BLOWER	4/23/2009	GAS FLOW RATE	203	CFM
BLOWER	5/6/2009	GAS FLOW RATE	165	CFM
BLOWER	6/16/2009	GAS FLOW RATE	148	CFM
BLOWER	7/21/2009	GAS FLOW RATE	152	CFM
BLOWER	8/25/2009	GAS FLOW RATE	189	CFM
BLOWER	9/15/2009	GAS FLOW RATE	157	CFM
BLOWER	10/27/2009	GAS FLOW RATE	150	CFM
BLOWER	11/11/2009	GAS FLOW RATE	166	CFM
BLOWER	12/2/2009	GAS FLOW RATE	174	CFM
BLOWER	1/26/2007	METHANE, PERCENT BY VOLUME	58.6	%
BLOWER	3/7/2007	METHANE, PERCENT BY VOLUME	55.8	%
BLOWER	4/17/2007	METHANE, PERCENT BY VOLUME	56.5	%
BLOWER	5/4/2007	METHANE, PERCENT BY VOLUME	39.2	%
BLOWER	5/23/2007	METHANE, PERCENT BY VOLUME	43.2	%
BLOWER	6/19/2007	METHANE, PERCENT BY VOLUME	43.9	%
BLOWER	7/12/2007	METHANE, PERCENT BY VOLUME	47.4	%
BLOWER	8/31/2007	METHANE, PERCENT BY VOLUME	48.2	%
BLOWER	9/18/2007	METHANE, PERCENT BY VOLUME	51.5	%
BLOWER	10/29/2007	METHANE, PERCENT BY VOLUME	46.4	%
BLOWER	11/21/2007	METHANE, PERCENT BY VOLUME	50.8	%
BLOWER	3/7/2008	METHANE, PERCENT BY VOLUME	46.9	%
BLOWER	3/28/2008	METHANE, PERCENT BY VOLUME	41.1	%
BLOWER	4/23/2008	METHANE, PERCENT BY VOLUME	41.3	%
BLOWER	5/9/2008	METHANE, PERCENT BY VOLUME	44.8	%
BLOWER	6/20/2008	METHANE, PERCENT BY VOLUME	42.3	%
BLOWER	7/18/2008	METHANE, PERCENT BY VOLUME	48.9	%
BLOWER	8/14/2008	METHANE, PERCENT BY VOLUME	46.4	%
BLOWER	9/17/2008	METHANE, PERCENT BY VOLUME	41.8	%
BLOWER	10/21/2008	METHANE, PERCENT BY VOLUME	33.4	%
BLOWER	11/25/2008	METHANE, PERCENT BY VOLUME	61.1	%

1/184B

BLOWER	12/30/2008	METHANE, PERCENT BY VOLUME	41.4	%
BLOWER	2/5/2009	METHANE, PERCENT BY VOLUME	38.3	%
BLOWER	2/24/2009	METHANE, PERCENT BY VOLUME	43.1	%
BLOWER	4/23/2009	METHANE, PERCENT BY VOLUME	49.7	%
BLOWER	5/6/2009	METHANE, PERCENT BY VOLUME	47.0	%
BLOWER	6/16/2009	METHANE, PERCENT BY VOLUME	51.9	%
BLOWER	7/21/2009	METHANE, PERCENT BY VOLUME	46.8	%
BLOWER	8/25/2009	METHANE, PERCENT BY VOLUME	44.4	%
BLOWER	9/15/2009	METHANE, PERCENT BY VOLUME	41.2	%
BLOWER	10/27/2009	METHANE, PERCENT BY VOLUME	42.2	%
BLOWER	11/11/2009	METHANE, PERCENT BY VOLUME	44.0	%
BLOWER	12/2/2009	METHANE, PERCENT BY VOLUME	46.9	%
BLOWER	1/26/2007	OXYGEN, PERCENT BY VOLUME	0	%
BLOWER	3/7/2007	OXYGEN, PERCENT BY VOLUME	0.4	%
BLOWER	4/17/2007	OXYGEN, PERCENT BY VOLUME	0.7	%
BLOWER	5/4/2007	OXYGEN, PERCENT BY VOLUME	0.8	%
BLOWER	5/23/2007	OXYGEN, PERCENT BY VOLUME	0.4	%
BLOWER	6/19/2007	OXYGEN, PERCENT BY VOLUME	0.6	%
BLOWER	7/12/2007	OXYGEN, PERCENT BY VOLUME	0.6	%
BLOWER	8/31/2007	OXYGEN, PERCENT BY VOLUME	0.1	%
BLOWER	9/18/2007	OXYGEN, PERCENT BY VOLUME	0.5	%
BLOWER	10/29/2007	OXYGEN, PERCENT BY VOLUME	0.5	%
BLOWER	11/21/2007	OXYGEN, PERCENT BY VOLUME	0.7	%
BLOWER	3/7/2008	OXYGEN, PERCENT BY VOLUME	0.7	%
BLOWER	3/28/2008	OXYGEN, PERCENT BY VOLUME	0.7	%
BLOWER	4/23/2008	OXYGEN, PERCENT BY VOLUME	0.4	%
BLOWER	5/9/2008	OXYGEN, PERCENT BY VOLUME	0.8	%
BLOWER	6/20/2008	OXYGEN, PERCENT BY VOLUME	0.4	%
BLOWER	7/18/2008	OXYGEN, PERCENT BY VOLUME	0.5	%
BLOWER	8/14/2008	OXYGEN, PERCENT BY VOLUME	0.5	%
BLOWER	9/17/2008	OXYGEN, PERCENT BY VOLUME	0.6	%
BLOWER	10/21/2008	OXYGEN, PERCENT BY VOLUME	3.1	%
BLOWER	11/25/2008	OXYGEN, PERCENT BY VOLUME	0.0	%
BLOWER	12/30/2008	OXYGEN, PERCENT BY VOLUME	4.3	%
BLOWER	2/5/2009	OXYGEN, PERCENT BY VOLUME	2.3	%
BLOWER	2/24/2009	OXYGEN, PERCENT BY VOLUME	3.0	%
BLOWER	4/23/2009	OXYGEN, PERCENT BY VOLUME	0.7	%
BLOWER	5/6/2009	OXYGEN, PERCENT BY VOLUME	1	%
BLOWER	6/16/2009	OXYGEN, PERCENT BY VOLUME	1	%
BLOWER	7/21/2009	OXYGEN, PERCENT BY VOLUME	1.3	%
BLOWER	8/25/2009	OXYGEN, PERCENT BY VOLUME	0.5	%
BLOWER	9/15/2009	OXYGEN, PERCENT BY VOLUME	0.5	%
BLOWER	10/27/2009	OXYGEN, PERCENT BY VOLUME	0	%
BLOWER	11/11/2009	OXYGEN, PERCENT BY VOLUME	0.1	%
BLOWER	12/2/2009	OXYGEN, PERCENT BY VOLUME	0	%
BLOWER	1/26/2007	VACUUM, HEADER	0.55	IN/WATER
BLOWER	3/7/2007	VACUUM, HEADER	-2	IN/WATER
BLOWER	4/17/2007	VACUUM, HEADER	-4.6	IN/WATER
BLOWER	5/4/2007	VACUUM, HEADER	-9.7	IN/WATER
BLOWER	5/23/2007	VACUUM, HEADER	-3.4	IN/WATER
BLOWER	6/19/2007	VACUUM, HEADER	-10	IN/WATER
BLOWER	8/31/2007	VACUUM, HEADER	-14.2	IN/WATER
BLOWER	9/18/2007	VACUUM, HEADER	-17	IN/WATER
BLOWER	10/29/2007	VACUUM, HEADER	-15	IN/WATER
BLOWER	11/21/2007	VACUUM, HEADER	-19	IN/WATER
BLOWER	3/7/2008	VACUUM, HEADER	-10.5	IN/WATER

BLOWER	3/28/2008	VACUUM, HEADER	-20.5	IN/WATER
BLOWER	4/23/2008	VACUUM, HEADER	-19.0	IN/WATER
BLOWER	5/9/2008	VACUUM, HEADER	-12.5	IN/WATER
BLOWER	6/20/2008	VACUUM, HEADER	-24	IN/WATER
BLOWER	7/18/2008	VACUUM, HEADER	-17.5	IN/WATER
BLOWER	8/14/2008	VACUUM, HEADER	-23.0	IN/WATER
BLOWER	9/17/2008	VACUUM, HEADER	-23.0	IN/WATER
BLOWER	10/21/2008	VACUUM, HEADER	-12.0	IN/WATER
BLOWER	11/25/2008	VACUUM, HEADER	-7.0	IN/WATER
BLOWER	12/30/2008	VACUUM, HEADER	-9.6	IN/WATER
BLOWER	2/5/2009	VACUUM, HEADER	-6.5	IN/WATER
BLOWER	2/24/2009	VACUUM, HEADER	-4.6	IN/WATER
BLOWER	4/23/2009	VACUUM, HEADER	-7.8	IN/WATER
BLOWER	5/6/2009	VACUUM, HEADER	-8.5	IN/WATER
BLOWER	6/16/2009	VACUUM, HEADER	-6.4	IN/WATER
BLOWER	7/21/2009	VACUUM, HEADER	-7.4	IN/WATER
BLOWER	8/25/2009	VACUUM, HEADER	-9.5	IN/WATER
BLOWER	9/15/2009	VACUUM, HEADER	-9.4	IN/WATER
BLOWER	10/27/2009	VACUUM, HEADER	-8	IN/WATER
BLOWER	11/11/2009	VACUUM, HEADER	-9.2	IN/WATER
BLOWER	12/2/2009	VACUUM, HEADER	-10.5	IN/WATER
BLOWER	7/12/2007	VACUUM, HEADER	-12.5	IN/WATER

Landfill Gas Monitoring Probes 2007-2009

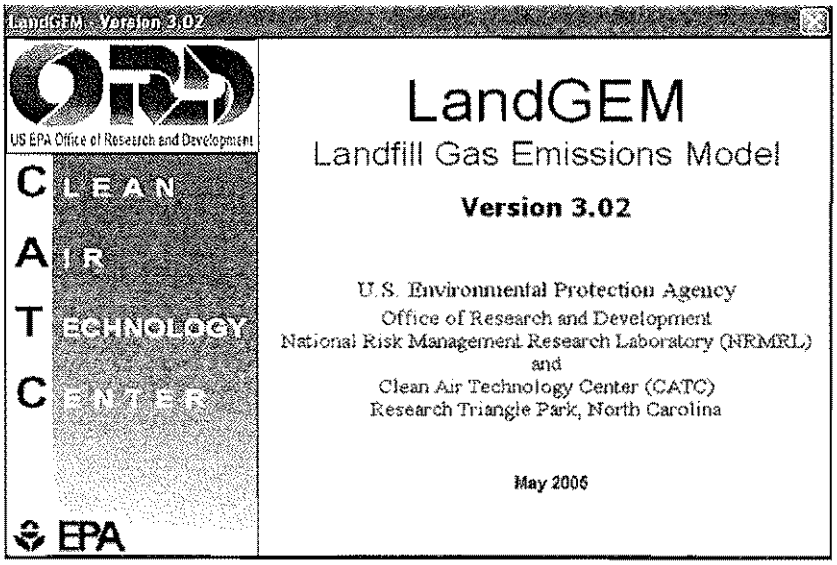
WDNR GEMS Database Data (Key Parameters Only)

SAMPLEID	SAMPLEDATE	PARMNAME	CONC	UNITS
GP-01	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-01	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-01	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	1	%
GP-01	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	1	%
GP-01	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	0.4	%
GP-01	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-01	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	1.2	%
GP-01	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	0.5	%
GP-01	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	0.5	%
GP-01	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-01	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	0.4	%
GP-01	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	0.6	%
GP-01	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-01	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-01	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-01	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-01	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-01	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-01	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-01	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-01	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-01	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-01	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-01	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-01	1/26/2007	SOIL GAS PRESSURE	0.04	IN/WATER
GP-01	3/7/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-01	4/17/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-01	8/22/2007	SOIL GAS PRESSURE	0.01	IN/WATER
GP-01	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-01	10/29/2007	SOIL GAS PRESSURE	-0.01	IN/WATER
GP-01	3/28/2008	SOIL GAS PRESSURE	0.0	IN/WATER
GP-01	7/18/2008	SOIL GAS PRESSURE	0.00	IN/WATER
GP-01	9/17/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-01	2/25/2009	SOIL GAS PRESSURE	-0.04	IN/WATER
GP-01	5/6/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-01	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-01	12/2/2009	SOIL GAS PRESSURE	0.00	IN/WATER
GP-02	1/26/2007	CARBON DIOXIDE, PERCENT BY VOL	1.6	%
GP-02	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.9	%
GP-02	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	1.5	%
GP-02	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	0	%
GP-02	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-02	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	1.1	%
GP-02	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	0.0	%
GP-02	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	1.5	%
GP-02	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	0.7	%
GP-02	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	3.6	%
GP-02	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	3.2	%
GP-02	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	2.1	%
GP-02	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	1.1	%
GP-02	1/26/2007	METHANE, PERCENT BY VOLUME	0	%
GP-02	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-02	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-02	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-02	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-02	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-02	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-02	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-02	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-02	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-02	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-02	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-02	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-02	1/26/2007	SOIL GAS PRESSURE	0.14	IN/WATER
GP-02	3/7/2007	SOIL GAS PRESSURE	-0.1	IN/WATER
GP-02	4/17/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-02	8/22/2007	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-02	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER

GP-02	10/29/2007	SOIL GAS PRESSURE	-0.01	IN/WATER
GP-02	3/28/2008	SOIL GAS PRESSURE	-0.08	IN/WATER
GP-02	7/18/2008	SOIL GAS PRESSURE	0.00	IN/WATER
GP-02	9/17/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-02	2/25/2009	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-02	5/6/2009	SOIL GAS PRESSURE	0.04	IN/WATER
GP-02	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-02	12/2/2009	SOIL GAS PRESSURE	-0.04	IN/WATER
GP-03	1/26/2007	CARBON DIOXIDE, PERCENT BY VOL	1.9	%
GP-03	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-03	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	0.4	%
GP-03	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	2.1	%
GP-03	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	1.1	%
GP-03	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	0.9	%
GP-03	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	0.5	%
GP-03	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	1.4	%
GP-03	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	0.8	%
GP-03	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	0.6	%
GP-03	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	0.5	%
GP-03	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	0.9	%
GP-03	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	0.7	%
GP-03	1/26/2007	METHANE, PERCENT BY VOLUME	0	%
GP-03	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-03	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-03	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-03	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-03	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-03	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-03	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-03	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-03	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-03	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-03	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-03	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-03	1/26/2007	PRESSURE, BAROMETRIC	770	MM HG
GP-03	3/7/2007	PRESSURE, BAROMETRIC	755.9	MM HG
GP-03	4/17/2007	PRESSURE, BAROMETRIC	756.9	MM HG
GP-03	8/22/2007	PRESSURE, BAROMETRIC	759.5	MM HG
GP-03	9/18/2007	PRESSURE, BAROMETRIC	762	MM HG
GP-03	10/29/2007	PRESSURE, BAROMETRIC	772.2	MM HG
GP-03	3/28/2008	PRESSURE, BAROMETRIC	769.6	MM HG
GP-03	7/18/2008	PRESSURE, BAROMETRIC	762	MM HG
GP-03	9/17/2008	PRESSURE, BAROMETRIC	764.5	MM HG
GP-03	2/25/2009	PRESSURE, BAROMETRIC	769.6	MM HG
GP-03	5/6/2009	PRESSURE, BAROMETRIC	756.9	MM HG
GP-03	9/15/2009	PRESSURE, BAROMETRIC	764.5	MM HG
GP-03	12/2/2009	PRESSURE, BAROMETRIC	756.9	MM HG
GP-03	1/26/2007	SOIL GAS PRESSURE	0.05	IN/WATER
GP-03	3/7/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-03	4/17/2007	SOIL GAS PRESSURE	-0.05	IN/WATER
GP-03	8/22/2007	SOIL GAS PRESSURE	0.01	IN/WATER
GP-03	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-03	10/29/2007	SOIL GAS PRESSURE	-0.01	IN/WATER
GP-03	3/28/2008	SOIL GAS PRESSURE	0.0	IN/WATER
GP-03	7/18/2008	SOIL GAS PRESSURE	0.00	IN/WATER
GP-03	9/17/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-03	2/25/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-03	5/6/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-03	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-03	12/2/2009	SOIL GAS PRESSURE	-0.04	IN/WATER
GP-04	1/26/2007	CARBON DIOXIDE, PERCENT BY VOL	2.9	%
GP-04	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.5	%
GP-04	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	1.5	%
GP-04	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	1.9	%
GP-04	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	1.5	%
GP-04	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	0.9	%
GP-04	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	0.4	%
GP-04	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	1.8	%
GP-04	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	1	%
GP-04	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	4.1	%
GP-04	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	2.7	%
GP-04	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	0.8	%

GP-04	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	3.1	%
GP-04	1/26/2007	METHANE, PERCENT BY VOLUME	0	%
GP-04	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-04	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-04	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-04	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-04	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-04	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-04	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-04	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-04	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-04	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-04	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-04	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-04	1/26/2007	SOIL GAS PRESSURE	0.04	IN/WATER
GP-04	3/7/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-04	4/17/2007	SOIL GAS PRESSURE	-0.01	IN/WATER
GP-04	8/22/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-04	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-04	10/29/2007	SOIL GAS PRESSURE	-0.01	IN/WATER
GP-04	3/28/2008	SOIL GAS PRESSURE	0.0	IN/WATER
GP-04	7/18/2008	SOIL GAS PRESSURE	0.00	IN/WATER
GP-04	9/17/2008	SOIL GAS PRESSURE	0	IN/WATER
GP-04	2/25/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-04	5/6/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-04	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-04	12/2/2009	SOIL GAS PRESSURE	0.00	IN/WATER
GP-07	1/26/2007	CARBON DIOXIDE, PERCENT BY VOL	3.1	%
GP-07	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-07	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-07	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	0	%
GP-07	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	0	%
GP-07	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	3.2	%
GP-07	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-07	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	0.0	%
GP-07	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	0.6	%
GP-07	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	3.2	%
GP-07	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	2.9	%
GP-07	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	0.7	%
GP-07	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-07	1/26/2007	METHANE, PERCENT BY VOLUME	0	%
GP-07	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-07	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-07	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-07	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-07	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-07	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-07	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-07	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-07	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-07	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-07	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-07	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-07	1/26/2007	SOIL GAS PRESSURE	0.12	IN/WATER
GP-07	3/7/2007	SOIL GAS PRESSURE	-0.2	IN/WATER
GP-07	4/17/2007	SOIL GAS PRESSURE	0.09	IN/WATER
GP-07	8/22/2007	SOIL GAS PRESSURE	0.1	IN/WATER
GP-07	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-07	10/29/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-07	3/28/2008	SOIL GAS PRESSURE	-0.08	IN/WATER
GP-07	7/18/2008	SOIL GAS PRESSURE	-0.04	IN/WATER
GP-07	9/17/2008	SOIL GAS PRESSURE	-0.03	IN/WATER
GP-07	2/25/2009	SOIL GAS PRESSURE	-0.15	IN/WATER
GP-07	5/6/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-07	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-07	12/2/2009	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-08	1/26/2007	CARBON DIOXIDE, PERCENT BY VOL	1	%
GP-08	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.2	%
GP-08	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	0.8	%
GP-08	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	0.8	%
GP-08	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-08	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	0.9	%

GP-08	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	0.5	%
GP-08	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	0.4	%
GP-08	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-08	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	1.8	%
GP-08	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	0.6	%
GP-08	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-08	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	0.2	%
GP-08	1/26/2007	METHANE, PERCENT BY VOLUME	0	%
GP-08	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-08	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-08	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-08	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-08	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-08	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-08	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-08	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-08	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-08	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-08	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-08	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-08	1/26/2007	SOIL GAS PRESSURE	0.04	IN/WATER
GP-08	3/7/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-08	4/17/2007	SOIL GAS PRESSURE	-0.03	IN/WATER
GP-08	8/22/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-08	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-08	10/29/2007	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-08	3/28/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-08	7/18/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-08	9/17/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-08	2/25/2009	SOIL GAS PRESSURE	-0.08	IN/WATER
GP-08	5/6/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-08	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-08	12/2/2009	SOIL GAS PRESSURE	-0.03	IN/WATER
GP-09	1/26/2007	CARBON DIOXIDE, PERCENT BY VOL	2.2	%
GP-09	3/7/2007	CARBON DIOXIDE, PERCENT BY VOL	0.1	%
GP-09	4/17/2007	CARBON DIOXIDE, PERCENT BY VOL	0.4	%
GP-09	8/22/2007	CARBON DIOXIDE, PERCENT BY VOL	2.2	%
GP-09	9/18/2007	CARBON DIOXIDE, PERCENT BY VOL	0	%
GP-09	10/29/2007	CARBON DIOXIDE, PERCENT BY VOL	2.5	%
GP-09	3/28/2008	CARBON DIOXIDE, PERCENT BY VOL	2.3	%
GP-09	7/18/2008	CARBON DIOXIDE, PERCENT BY VOL	4.6	%
GP-09	9/17/2008	CARBON DIOXIDE, PERCENT BY VOL	0.2	%
GP-09	2/25/2009	CARBON DIOXIDE, PERCENT BY VOL	2.6	%
GP-09	5/6/2009	CARBON DIOXIDE, PERCENT BY VOL	0.3	%
GP-09	9/15/2009	CARBON DIOXIDE, PERCENT BY VOL	1.8	%
GP-09	12/2/2009	CARBON DIOXIDE, PERCENT BY VOL	1.6	%
GP-09	1/26/2007	METHANE, PERCENT BY VOLUME	0	%
GP-09	3/7/2007	METHANE, PERCENT BY VOLUME	0	%
GP-09	4/17/2007	METHANE, PERCENT BY VOLUME	0	%
GP-09	8/22/2007	METHANE, PERCENT BY VOLUME	0	%
GP-09	9/18/2007	METHANE, PERCENT BY VOLUME	0	%
GP-09	10/29/2007	METHANE, PERCENT BY VOLUME	0	%
GP-09	3/28/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-09	7/18/2008	METHANE, PERCENT BY VOLUME	0.0	%
GP-09	9/17/2008	METHANE, PERCENT BY VOLUME	0	%
GP-09	2/25/2009	METHANE, PERCENT BY VOLUME	0	%
GP-09	5/6/2009	METHANE, PERCENT BY VOLUME	0	%
GP-09	9/15/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-09	12/2/2009	METHANE, PERCENT BY VOLUME	0.0	%
GP-09	1/26/2007	SOIL GAS PRESSURE	0.9	IN/WATER
GP-09	3/7/2007	SOIL GAS PRESSURE	-0.2	IN/WATER
GP-09	4/17/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-09	8/22/2007	SOIL GAS PRESSURE	-0.05	IN/WATER
GP-09	9/18/2007	SOIL GAS PRESSURE	0	IN/WATER
GP-09	10/29/2007	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-09	3/28/2008	SOIL GAS PRESSURE	-0.04	IN/WATER
GP-09	7/18/2008	SOIL GAS PRESSURE	-0.02	IN/WATER
GP-09	9/17/2008	SOIL GAS PRESSURE	-0.03	IN/WATER
GP-09	2/25/2009	SOIL GAS PRESSURE	-0.1	IN/WATER
GP-09	5/6/2009	SOIL GAS PRESSURE	0	IN/WATER
GP-09	9/15/2009	SOIL GAS PRESSURE	0.0	IN/WATER
GP-09	12/2/2009	SOIL GAS PRESSURE	-0.03	IN/WATER



Summary Report

Landfill Name or Identifier: Sauk County WDNR Lic. # 2051

Date: Thursday, March 04, 2010

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation: $$Q_{CH_4} = \sum_{i=1}^{n} \sum_{j=0.1}^{1} kL_o \left(\frac{M_i}{10} \right) e^{-kt_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation (m^3/year)
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate ($year^{-1}$)
L_o = potential methane generation capacity (m^3/Mg)
M_i = mass of waste accepted in the i^{th} year (Mg)
t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (decimal years, e.g., 3.2 years)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at http://www.epa.gov/ttnatw01/landfill/landflpg.html.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for convential landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1973	
Landfill Closure Year (with 80-year limit)	1983	
Actual Closure Year (without limit)	*1983*	
Have Model Calculate Closure Year?	No	
Waste Design Capacity		*short tons*

MODEL PARAMETERS

Methane Generation Rate, k	0.038	$year^{-1}$
Potential Methane Generation Capacity, L_o	100	m^3/Mg
NMOC Concentration	4,000	*ppmv as hexane*
Methane Content	50	*% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1973	36,364	40,000	0	0
1974	36,364	40,000	36,364	40,000
1975	36,364	40,000	72,727	80,000
1976	36,364	40,000	109,091	120,000
1977	36,364	40,000	145,455	160,000
1978	36,364	40,000	181,818	200,000
1979	36,364	40,000	218,182	240,000
1980	36,364	40,000	254,545	280,000
1981	36,364	40,000	290,909	320,000
1982	36,364	40,000	327,273	360,000
1983	0	0	363,636	400,000
1984	0	0	363,636	400,000
1985	0	0	363,636	400,000
1986	0	0	363,636	400,000
1987	0	0	363,636	400,000
1988	0	0	363,636	400,000
1989	0	0	363,636	400,000
1990	0	0	363,636	400,000
1991	0	0	363,636	400,000
1992	0	0	363,636	400,000
1993	0	0	363,636	400,000
1994	0	0	363,636	400,000
1995	0	0	363,636	400,000
1996	0	0	363,636	400,000
1997	0	0	363,636	400,000
1998	0	0	363,636	400,000
1999	0	0	363,636	400,000
2000	0	0	363,636	400,000
2001	0	0	363,636	400,000
2002	0	0	363,636	400,000
2003	0	0	363,636	400,000
2004	0	0	363,636	400,000
2005	0	0	363,636	400,000
2006	0	0	363,636	400,000
2007	0	0	363,636	400,000
2008	0	0	363,636	400,000
2009	0	0	363,636	400,000
2010	0	0	363,636	400,000
2011	0	0	363,636	400,000
2012	0	0	363,636	400,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-in-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2013	0	0	363,636	400,000
2014	0	0	363,636	400,000
2015	0	0	363,636	400,000
2016	0	0	363,636	400,000
2017	0	0	363,636	400,000
2018	0	0	363,636	400,000
2019	0	0	363,636	400,000
2020	0	0	363,636	400,000
2021	0	0	363,636	400,000
2022	0	0	363,636	400,000
2023	0	0	363,636	400,000
2024	0	0	363,636	400,000
2025	0	0	363,636	400,000
2026	0	0	363,636	400,000
2027	0	0	363,636	400,000
2028	0	0	363,636	400,000
2029	0	0	363,636	400,000
2030	0	0	363,636	400,000
2031	0	0	363,636	400,000
2032	0	0	363,636	400,000
2033	0	0	363,636	400,000
2034	0	0	363,636	400,000
2035	0	0	363,636	400,000
2036	0	0	363,636	400,000
2037	0	0	363,636	400,000
2038	0	0	363,636	400,000
2039	0	0	363,636	400,000
2040	0	0	363,636	400,000
2041	0	0	363,636	400,000
2042	0	0	363,636	400,000
2043	0	0	363,636	400,000
2044	0	0	363,636	400,000
2045	0	0	363,636	400,000
2046	0	0	363,636	400,000
2047	0	0	363,636	400,000
2048	0	0	363,636	400,000
2049	0	0	363,636	400,000
2050	0	0	363,636	400,000
2051	0	0	363,636	400,000
2052	0	0	363,636	400,000

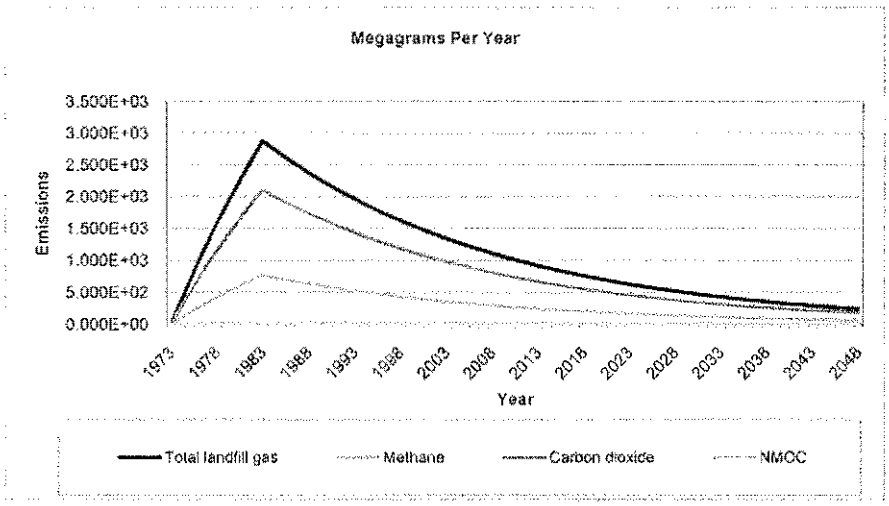
Pollutant Parameters

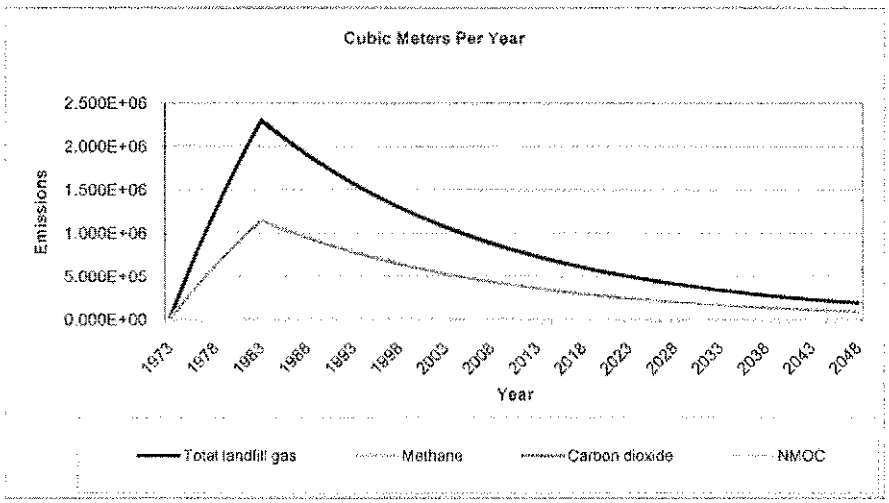
		Gas / Pollutant Default Parameters:		*User-specified Pollutant Parameters:*	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Gases	Total landfill gas		0.00		
	Methane		16.04		
	Carbon dioxide		44.01		
	NMOC	4,000	86.18		
Pollutants	1,1,1-Trichloroethane (methyl chloroform) - HAP	0.48	133.41		
	1,1,2,2-Tetrachloroethane - HAP/VOC	1.1	167.85		
	1,1-Dichloroethane (ethylidene dichloride) - HAP/VOC	2.4	98.97		
	1,1-Dichloroethene (vinylidene chloride) - HAP/VOC	0.20	96.94		
	1,2-Dichloroethane (ethylene dichloride) - HAP/VOC	0.41	98.96		
	1,2-Dichloropropane (propylene dichloride) - HAP/VOC	0.18	112.99		
	2-Propanol (isopropyl alcohol) - VOC	50	60.11		
	Acetone	7.0	58.08		
	Acrylonitrile - HAP/VOC	6.3	53.06		
	Benzene - No or Unknown Co-disposal - HAP/VOC	1.9	78.11		
	Benzene - Co-disposal - HAP/VOC	11	78.11		
	Bromodichloromethane - VOC	3.1	163.83		
	Butane - VOC	5.0	58.12		
	Carbon disulfide - HAP/VOC	0.58	76.13		
	Carbon monoxide	140	28.01		
	Carbon tetrachloride - HAP/VOC	4.0E-03	153.84		
	Carbonyl sulfide - HAP/VOC	0.49	60.07		
	Chlorobenzene - HAP/VOC	0.25	112.56		
	Chlorodifluoromethane	1.3	86.47		
	Chloroethane (ethyl chloride) - HAP/VOC	1.3	64.52		
	Chloroform - HAP/VOC	0.03	119.39		
	Chloromethane - VOC	1.2	50.49		
	Dichlorobenzene - (HAP for para isomer/VOC)	0.21	147		
	Dichlorodifluoromethane	16	120.91		
	Dichlorofluoromethane - VOC	2.6	102.92		
	Dichloromethane (methylene chloride) - HAP	14	84.94		
	Dimethyl sulfide (methyl sulfide) - VOC	7.8	62.13		
	Ethane	890	30.07		
	Ethanol - VOC	27	46.08		

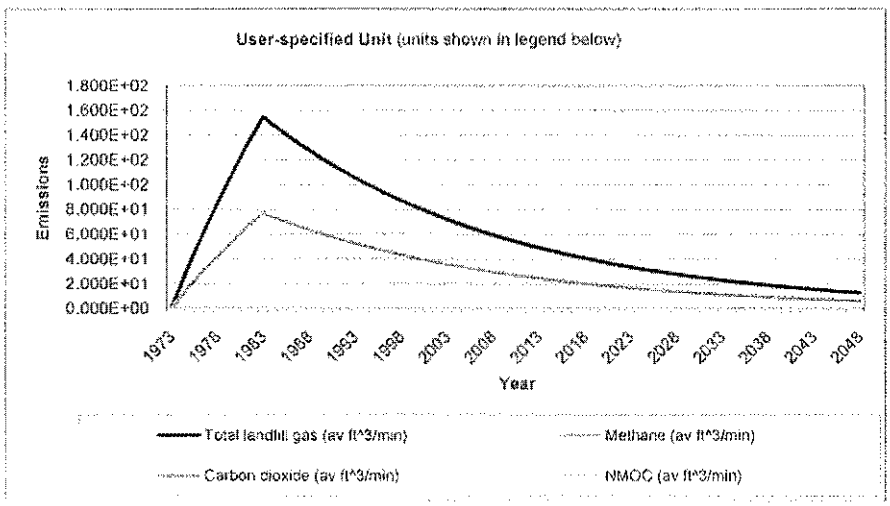
Pollutant Parameters (Continued)

		Gas / Pollutant Default Parameters:		*User-specified Pollutant Parameters:*	
	Compound	Concentration (*ppmv*)	Molecular Weight	Concentration (*ppmv*)	Molecular Weight
Pollutants	Ethyl mercaptan (ethanethiol) - VOC	2.3	62.13		
	Ethylbenzene - HAP/VOC	4.6	106.16		
	Ethylene dibromide - HAP/VOC	1.0E-03	187.88		
	Fluorotrichloromethane - VOC	0.76	137.38		
	Hexane - HAP/VOC	6.6	86.18		
	Hydrogen sulfide	36	34.08		
	Mercury (total) - HAP	2.9E-04	200.61		
	Methyl ethyl ketone - HAP/VOC	7.1	72.11		
	Methyl isobutyl ketone - HAP/VOC	1.9	100.16		
	Methyl mercaptan - VOC	2.5	48.11		
	Pentane - VOC	3.3	72.15		
	Perchloroethylene (tetrachloroethylene) - HAP	3.7	165.83		
	Propane - VOC	11	44.09		
	t-1,2-Dichloroethene - VOC	2.8	96.94		
	Toluene - No or Unknown Co-disposal - HAP/VOC	39	92.13		
	Toluene - Co-disposal - HAP/VOC	170	92.13		
	Trichloroethylene (trichloroethene) - HAP/VOC	2.8	131.40		
	Vinyl chloride - HAP/VOC	7.3	62.50		
	Xylenes - HAP/VOC	12	106.16		

Graphs


Megagrams Per Year
Emissions
3.500E+03
3.000E+03
2.500E+03
2.000E+03
1.500E+03
1.000E+03
5.000E+02
0.000E+00
1973 1978 1983 1988 1993 1998 2003 2008 2013 2018 2023 2028 2033 2038 2043 2048
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


Cubic Meters Per Year
Emissions
2.500E+06
2.000E+06
1.500E+06
1.000E+06
5.000E+05
0.000E+00
1973 1978 1983 1988 1993 1998 2003 2008 2013 2018 2023 2028 2033 2038 2043 2048
Year
Total landfill gas
Methane
Carbon dioxide
NMOC


User-specified Unit (units shown in legend below)
Emissions
1.800E+02
1.600E+02
1.400E+02
1.200E+02
1.000E+02
8.000E+01
6.000E+01
4.000E+01
2.000E+01
0.000E+00
1973 1978 1983 1988 1993 1998 2003 2008 2013 2018 2023 2028 2033 2038 2043 2048
Year
Total landfill gas (av ft^3/min)
Methane (av ft^3/min)
Carbon dioxide (av ft^3/min)
NMOC (av ft^3/min)

Results

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1973	0	0	0	0	0	0
1974	3.393E+02	2.717E+05	1.826E+01	9.063E+01	1.358E+05	9.128E+00
1975	6.659E+02	5.333E+05	3.583E+01	1.779E+02	2.666E+05	1.791E+01
1976	9.804E+02	7.851E+05	5.275E+01	2.619E+02	3.925E+05	2.637E+01
1977	1.283E+03	1.027E+06	6.904E+01	3.427E+02	5.137E+05	3.452E+01
1978	1.575E+03	1.261E+06	8.472E+01	4.206E+02	6.304E+05	4.236E+01
1979	1.855E+03	1.486E+06	9.981E+01	4.955E+02	7.428E+05	4.991E+01
1980	2.125E+03	1.702E+06	1.143E+02	5.677E+02	8.509E+05	5.717E+01
1981	2.385E+03	1.910E+06	1.283E+02	6.372E+02	9.550E+05	6.417E+01
1982	2.636E+03	2.111E+06	1.418E+02	7.040E+02	1.055E+06	7.090E+01
1983	2.877E+03	2.304E+06	1.548E+02	7.684E+02	1.152E+06	7.739E+01
1984	2.769E+03	2.218E+06	1.490E+02	7.398E+02	1.109E+06	7.450E+01
1985	2.666E+03	2.135E+06	1.434E+02	7.122E+02	1.067E+06	7.172E+01
1986	2.567E+03	2.055E+06	1.381E+02	6.856E+02	1.028E+06	6.905E+01
1987	2.471E+03	1.979E+06	1.330E+02	6.601E+02	9.894E+05	6.648E+01
1988	2.379E+03	1.905E+06	1.280E+02	6.354E+02	9.525E+05	6.400E+01
1989	2.290E+03	1.834E+06	1.232E+02	6.117E+02	9.170E+05	6.161E+01
1990	2.205E+03	1.766E+06	1.186E+02	5.889E+02	8.828E+05	5.931E+01
1991	2.123E+03	1.700E+06	1.142E+02	5.670E+02	8.499E+05	5.710E+01
1992	2.043E+03	1.636E+06	1.099E+02	5.458E+02	8.182E+05	5.497E+01
1993	1.967E+03	1.575E+06	1.058E+02	5.255E+02	7.877E+05	5.292E+01
1994	1.894E+03	1.517E+06	1.019E+02	5.059E+02	7.583E+05	5.095E+01
1995	1.823E+03	1.460E+06	9.810E+01	4.870E+02	7.300E+05	4.905E+01
1996	1.755E+03	1.406E+06	9.444E+01	4.689E+02	7.028E+05	4.722E+01
1997	1.690E+03	1.353E+06	9.092E+01	4.514E+02	6.766E+05	4.546E+01
1998	1.627E+03	1.303E+06	8.753E+01	4.346E+02	6.514E+05	4.376E+01
1999	1.566E+03	1.254E+06	8.427E+01	4.184E+02	6.271E+05	4.213E+01
2000	1.508E+03	1.207E+06	8.112E+01	4.028E+02	6.037E+05	4.056E+01
2001	1.452E+03	1.162E+06	7.810E+01	3.877E+02	5.812E+05	3.905E+01
2002	1.397E+03	1.119E+06	7.519E+01	3.733E+02	5.595E+05	3.759E+01
2003	1.345E+03	1.077E+06	7.238E+01	3.594E+02	5.386E+05	3.619E+01
2004	1.295E+03	1.037E+06	6.968E+01	3.460E+02	5.186E+05	3.484E+01
2005	1.247E+03	9.985E+05	6.709E+01	3.331E+02	4.992E+05	3.354E+01
2006	1.200E+03	9.612E+05	6.458E+01	3.206E+02	4.806E+05	3.229E+01
2007	1.156E+03	9.254E+05	6.218E+01	3.087E+02	4.627E+05	3.109E+01
2008	1.113E+03	8.909E+05	5.986E+01	2.972E+02	4.454E+05	2.993E+01
2009	1.071E+03	8.577E+05	5.763E+01	2.861E+02	4.288E+05	2.881E+01
2010	1.031E+03	8.257E+05	5.548E+01	2.754E+02	4.128E+05	2.774E+01
2011	9.927E+02	7.949E+05	5.341E+01	2.652E+02	3.974E+05	2.670E+01
2012	9.557E+02	7.653E+05	5.142E+01	2.553E+02	3.826E+05	2.571E+01
2013	9.200E+02	7.367E+05	4.950E+01	2.458E+02	3.684E+05	2.475E+01
2014	8.857E+02	7.093E+05	4.765E+01	2.366E+02	3.546E+05	2.383E+01
2015	8.527E+02	6.828E+05	4.588E+01	2.278E+02	3.414E+05	2.294E+01
2016	8.209E+02	6.573E+05	4.417E+01	2.193E+02	3.287E+05	2.208E+01
2017	7.903E+02	6.328E+05	4.252E+01	2.111E+02	3.164E+05	2.126E+01
2018	7.608E+02	6.092E+05	4.093E+01	2.032E+02	3.046E+05	2.047E+01
2019	7.325E+02	5.865E+05	3.941E+01	1.956E+02	2.933E+05	1.970E+01
2020	7.052E+02	5.647E+05	3.794E+01	1.884E+02	2.823E+05	1.897E+01
2021	6.789E+02	5.436E+05	3.652E+01	1.813E+02	2.718E+05	1.826E+01
2022	6.535E+02	5.233E+05	3.516E+01	1.746E+02	2.617E+05	1.758E+01

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2023	6.292E+02	5.038E+05	3.385E+01	1.681E+02	2.519E+05	1.693E+01
2024	6.057E+02	4.850E+05	3.259E+01	1.618E+02	2.425E+05	1.629E+01
2025	5.831E+02	4.669E+05	3.137E+01	1.558E+02	2.335E+05	1.569E+01
2026	5.614E+02	4.495E+05	3.020E+01	1.500E+02	2.248E+05	1.510E+01
2027	5.405E+02	4.328E+05	2.908E+01	1.444E+02	2.164E+05	1.454E+01
2028	5.203E+02	4.166E+05	2.799E+01	1.390E+02	2.083E+05	1.400E+01
2029	5.009E+02	4.011E+05	2.695E+01	1.338E+02	2.006E+05	1.347E+01
2030	4.822E+02	3.861E+05	2.594E+01	1.288E+02	1.931E+05	1.297E+01
2031	4.642E+02	3.717E+05	2.498E+01	1.240E+02	1.859E+05	1.249E+01
2032	4.469E+02	3.579E+05	2.405E+01	1.194E+02	1.789E+05	1.202E+01
2033	4.303E+02	3.445E+05	2.315E+01	1.149E+02	1.723E+05	1.157E+01
2034	4.142E+02	3.317E+05	2.229E+01	1.106E+02	1.658E+05	1.114E+01
2035	3.988E+02	3.193E+05	2.146E+01	1.065E+02	1.597E+05	1.073E+01
2036	3.839E+02	3.074E+05	2.066E+01	1.025E+02	1.537E+05	1.033E+01
2037	3.696E+02	2.960E+05	1.989E+01	9.872E+01	1.480E+05	9.943E+00
2038	3.558E+02	2.849E+05	1.914E+01	9.504E+01	1.425E+05	9.572E+00
2039	3.425E+02	2.743E+05	1.843E+01	9.150E+01	1.371E+05	9.215E+00
2040	3.298E+02	2.641E+05	1.774E+01	8.809E+01	1.320E+05	8.871E+00
2041	3.175E+02	2.542E+05	1.708E+01	8.480E+01	1.271E+05	8.541E+00
2042	3.056E+02	2.447E+05	1.644E+01	8.164E+01	1.224E+05	8.222E+00
2043	2.942E+02	2.356E+05	1.583E+01	7.860E+01	1.178E+05	7.916E+00
2044	2.833E+02	2.268E+05	1.524E+01	7.567E+01	1.134E+05	7.620E+00
2045	2.727E+02	2.184E+05	1.467E+01	7.284E+01	1.092E+05	7.336E+00
2046	2.625E+02	2.102E+05	1.413E+01	7.013E+01	1.051E+05	7.063E+00
2047	2.528E+02	2.024E+05	1.360E+01	6.751E+01	1.012E+05	6.799E+00
2048	2.433E+02	1.948E+05	1.309E+01	6.500E+01	9.742E+04	6.546E+00
2049	2.343E+02	1.876E+05	1.260E+01	6.257E+01	9.379E+04	6.302E+00
2050	2.255E+02	1.806E+05	1.213E+01	6.024E+01	9.029E+04	6.067E+00
2051	2.171E+02	1.739E+05	1.168E+01	5.799E+01	8.693E+04	5.841E+00
2052	2.090E+02	1.674E+05	1.125E+01	5.583E+01	8.369E+04	5.623E+00
2053	2.012E+02	1.611E+05	1.083E+01	5.375E+01	8.056E+04	5.413E+00
2054	1.937E+02	1.551E+05	1.042E+01	5.174E+01	7.756E+04	5.211E+00
2055	1.865E+02	1.493E+05	1.003E+01	4.982E+01	7.467E+04	5.017E+00
2056	1.795E+02	1.438E+05	9.660E+00	4.796E+01	7.188E+04	4.830E+00
2057	1.728E+02	1.384E+05	9.300E+00	4.617E+01	6.920E+04	4.650E+00
2058	1.664E+02	1.332E+05	8.953E+00	4.445E+01	6.662E+04	4.476E+00
2059	1.602E+02	1.283E+05	8.619E+00	4.279E+01	6.414E+04	4.310E+00
2060	1.542E+02	1.235E+05	8.298E+00	4.120E+01	6.175E+04	4.149E+00
2061	1.485E+02	1.189E+05	7.988E+00	3.966E+01	5.945E+04	3.994E+00
2062	1.429E+02	1.145E+05	7.690E+00	3.818E+01	5.723E+04	3.845E+00
2063	1.376E+02	1.102E+05	7.404E+00	3.676E+01	5.510E+04	3.702E+00
2064	1.325E+02	1.061E+05	7.128E+00	3.539E+01	5.304E+04	3.564E+00
2065	1.275E+02	1.021E+05	6.862E+00	3.407E+01	5.106E+04	3.431E+00
2066	1.228E+02	9.832E+04	6.606E+00	3.280E+01	4.916E+04	3.303E+00
2067	1.182E+02	9.465E+04	6.360E+00	3.157E+01	4.733E+04	3.180E+00
2068	1.138E+02	9.112E+04	6.123E+00	3.040E+01	4.556E+04	3.061E+00
2069	1.096E+02	8.773E+04	5.894E+00	2.926E+01	4.386E+04	2.947E+00
2070	1.055E+02	8.445E+04	5.674E+00	2.817E+01	4.223E+04	2.837E+00
2071	1.015E+02	8.131E+04	5.463E+00	2.712E+01	4.065E+04	2.731E+00
2072	9.775E+01	7.827E+04	5.259E+00	2.611E+01	3.914E+04	2.630E+00
2073	9.411E+01	7.536E+04	5.063E+00	2.514E+01	3.768E+04	2.532E+00

Results (Continued)

Year	Total landfill gas			Methane		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2074	9.060E+01	7.255E+04	4.874E+00	2.420E+01	3.627E+04	2.437E+00
2075	8.722E+01	6.984E+04	4.693E+00	2.330E+01	3.492E+04	2.346E+00
2076	8.397E+01	6.724E+04	4.518E+00	2.243E+01	3.362E+04	2.259E+00
2077	8.084E+01	6.473E+04	4.349E+00	2.159E+01	3.236E+04	2.175E+00
2078	7.782E+01	6.232E+04	4.187E+00	2.079E+01	3.116E+04	2.093E+00
2079	7.492E+01	5.999E+04	4.031E+00	2.001E+01	3.000E+04	2.015E+00
2080	7.213E+01	5.776E+04	3.881E+00	1.927E+01	2.888E+04	1.940E+00
2081	6.944E+01	5.560E+04	3.736E+00	1.855E+01	2.780E+04	1.868E+00
2082	6.685E+01	5.353E+04	3.597E+00	1.786E+01	2.678E+04	1.798E+00
2083	6.435E+01	5.153E+04	3.462E+00	1.719E+01	2.577E+04	1.731E+00
2084	6.196E+01	4.961E+04	3.333E+00	1.655E+01	2.481E+04	1.667E+00
2085	5.965E+01	4.776E+04	3.209E+00	1.593E+01	2.388E+04	1.605E+00
2086	5.742E+01	4.598E+04	3.089E+00	1.534E+01	2.299E+04	1.545E+00
2087	5.528E+01	4.427E+04	2.974E+00	1.477E+01	2.213E+04	1.487E+00
2088	5.322E+01	4.262E+04	2.863E+00	1.422E+01	2.131E+04	1.432E+00
2089	5.123E+01	4.103E+04	2.757E+00	1.369E+01	2.051E+04	1.378E+00
2090	4.932E+01	3.950E+04	2.654E+00	1.318E+01	1.975E+04	1.327E+00
2091	4.748E+01	3.802E+04	2.555E+00	1.268E+01	1.901E+04	1.277E+00
2092	4.571E+01	3.661E+04	2.460E+00	1.221E+01	1.830E+04	1.230E+00
2093	4.401E+01	3.524E+04	2.368E+00	1.176E+01	1.762E+04	1.184E+00
2094	4.237E+01	3.393E+04	2.280E+00	1.132E+01	1.696E+04	1.140E+00
2095	4.079E+01	3.266E+04	2.195E+00	1.090E+01	1.633E+04	1.097E+00
2096	3.927E+01	3.144E+04	2.113E+00	1.049E+01	1.572E+04	1.056E+00
2097	3.780E+01	3.027E+04	2.034E+00	1.010E+01	1.514E+04	1.017E+00
2098	3.639E+01	2.914E+04	1.958E+00	9.721E+00	1.457E+04	9.791E-01
2099	3.504E+01	2.806E+04	1.885E+00	9.359E+00	1.403E+04	9.425E-01
2100	3.373E+01	2.701E+04	1.815E+00	9.010E+00	1.351E+04	9.074E-01
2101	3.247E+01	2.600E+04	1.747E+00	8.674E+00	1.300E+04	8.736E-01
2102	3.126E+01	2.503E+04	1.682E+00	8.351E+00	1.252E+04	8.410E-01
2103	3.010E+01	2.410E+04	1.619E+00	8.039E+00	1.205E+04	8.096E-01
2104	2.897E+01	2.320E+04	1.559E+00	7.739E+00	1.160E+04	7.794E-01
2105	2.789E+01	2.234E+04	1.501E+00	7.451E+00	1.117E+04	7.504E-01
2106	2.685E+01	2.150E+04	1.445E+00	7.173E+00	1.075E+04	7.224E-01
2107	2.585E+01	2.070E+04	1.391E+00	6.906E+00	1.035E+04	6.955E-01
2108	2.489E+01	1.993E+04	1.339E+00	6.648E+00	9.965E+03	6.695E-01
2109	2.396E+01	1.919E+04	1.289E+00	6.400E+00	9.593E+03	6.446E-01
2110	2.307E+01	1.847E+04	1.241E+00	6.162E+00	9.236E+03	6.205E-01
2111	2.221E+01	1.778E+04	1.195E+00	5.932E+00	8.891E+03	5.974E-01
2112	2.138E+01	1.712E+04	1.150E+00	5.711E+00	8.560E+03	5.751E-01
2113	2.058E+01	1.648E+04	1.107E+00	5.498E+00	8.241E+03	5.537E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
1973	0	0	0	0	0	0
1974	2.487E+02	1.358E+05	9.128E+00	3.896E+00	1.087E+03	7.302E-02
1975	4.881E+02	2.666E+05	1.791E+01	7.646E+00	2.133E+03	1.433E-01
1976	7.185E+02	3.925E+05	2.637E+01	1.126E+01	3.140E+03	2.110E-01
1977	9.404E+02	5.137E+05	3.452E+01	1.473E+01	4.110E+03	2.761E-01
1978	1.154E+03	6.304E+05	4.236E+01	1.808E+01	5.043E+03	3.389E-01
1979	1.360E+03	7.428E+05	4.991E+01	2.130E+01	5.942E+03	3.993E-01
1980	1.558E+03	8.509E+05	5.717E+01	2.440E+01	6.807E+03	4.574E-01
1981	1.748E+03	9.550E+05	6.417E+01	2.739E+01	7.640E+03	5.134E-01
1982	1.932E+03	1.055E+06	7.090E+01	3.026E+01	8.442E+03	5.672E-01
1983	2.108E+03	1.152E+06	7.739E+01	3.303E+01	9.214E+03	6.191E-01
1984	2.030E+03	1.109E+06	7.450E+01	3.180E+01	8.871E+03	5.960E-01
1985	1.954E+03	1.067E+06	7.172E+01	3.061E+01	8.540E+03	5.738E-01
1986	1.881E+03	1.028E+06	6.905E+01	2.947E+01	8.221E+03	5.524E-01
1987	1.811E+03	9.894E+05	6.648E+01	2.837E+01	7.915E+03	5.318E-01
1988	1.744E+03	9.525E+05	6.400E+01	2.731E+01	7.620E+03	5.120E-01
1989	1.678E+03	9.170E+05	6.161E+01	2.629E+01	7.336E+03	4.929E-01
1990	1.616E+03	8.828E+05	5.931E+01	2.531E+01	7.062E+03	4.745E-01
1991	1.556E+03	8.499E+05	5.710E+01	2.437E+01	6.799E+03	4.568E-01
1992	1.498E+03	8.182E+05	5.497E+01	2.346E+01	6.545E+03	4.398E-01
1993	1.442E+03	7.877E+05	5.292E+01	2.259E+01	6.301E+03	4.234E-01
1994	1.388E+03	7.583E+05	5.095E+01	2.174E+01	6.066E+03	4.076E-01
1995	1.336E+03	7.300E+05	4.905E+01	2.093E+01	5.840E+03	3.924E-01
1996	1.286E+03	7.028E+05	4.722E+01	2.015E+01	5.622E+03	3.778E-01
1997	1.238E+03	6.766E+05	4.546E+01	1.940E+01	5.413E+03	3.637E-01
1998	1.192E+03	6.514E+05	4.376E+01	1.868E+01	5.211E+03	3.501E-01
1999	1.148E+03	6.271E+05	4.213E+01	1.798E+01	5.017E+03	3.371E-01
2000	1.105E+03	6.037E+05	4.056E+01	1.731E+01	4.830E+03	3.245E-01
2001	1.064E+03	5.812E+05	3.905E+01	1.667E+01	4.649E+03	3.124E-01
2002	1.024E+03	5.595E+05	3.759E+01	1.604E+01	4.476E+03	3.007E-01
2003	9.860E+02	5.386E+05	3.619E+01	1.545E+01	4.309E+03	2.895E-01
2004	9.492E+02	5.186E+05	3.484E+01	1.487E+01	4.149E+03	2.787E-01
2005	9.138E+02	4.992E+05	3.354E+01	1.432E+01	3.994E+03	2.683E-01
2006	8.798E+02	4.806E+05	3.229E+01	1.378E+01	3.845E+03	2.583E-01
2007	8.470E+02	4.627E+05	3.109E+01	1.327E+01	3.702E+03	2.487E-01
2008	8.154E+02	4.454E+05	2.993E+01	1.277E+01	3.564E+03	2.394E-01
2009	7.850E+02	4.288E+05	2.881E+01	1.230E+01	3.431E+03	2.305E-01
2010	7.557E+02	4.128E+05	2.774E+01	1.184E+01	3.303E+03	2.219E-01
2011	7.275E+02	3.974E+05	2.670E+01	1.140E+01	3.180E+03	2.136E-01
2012	7.004E+02	3.826E+05	2.571E+01	1.097E+01	3.061E+03	2.057E-01
2013	6.743E+02	3.684E+05	2.475E+01	1.056E+01	2.947E+03	1.980E-01
2014	6.491E+02	3.546E+05	2.383E+01	1.017E+01	2.837E+03	1.906E-01
2015	6.249E+02	3.414E+05	2.294E+01	9.790E+00	2.731E+03	1.835E-01
2016	6.016E+02	3.287E+05	2.208E+01	9.425E+00	2.629E+03	1.767E-01
2017	5.792E+02	3.164E+05	2.126E+01	9.074E+00	2.531E+03	1.701E-01
2018	5.576E+02	3.046E+05	2.047E+01	8.735E+00	2.437E+03	1.637E-01
2019	5.368E+02	2.933E+05	1.970E+01	8.409E+00	2.346E+03	1.576E-01
2020	5.168E+02	2.823E+05	1.897E+01	8.096E+00	2.259E+03	1.518E-01
2021	4.975E+02	2.718E+05	1.826E+01	7.794E+00	2.174E+03	1.461E-01
2022	4.790E+02	2.617E+05	1.758E+01	7.503E+00	2.093E+03	1.406E-01

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2023	4.611E+02	2.519E+05	1.693E+01	7.224E+00	2.015E+03	1.354E-01
2024	4.439E+02	2.425E+05	1.629E+01	6.954E+00	1.940E+03	1.304E-01
2025	4.274E+02	2.335E+05	1.569E+01	6.695E+00	1.868E+03	1.255E-01
2026	4.114E+02	2.248E+05	1.510E+01	6.445E+00	1.798E+03	1.208E-01
2027	3.961E+02	2.164E+05	1.454E+01	6.205E+00	1.731E+03	1.163E-01
2028	3.813E+02	2.083E+05	1.400E+01	5.974E+00	1.667E+03	1.120E-01
2029	3.671E+02	2.006E+05	1.347E+01	5.751E+00	1.604E+03	1.078E-01
2030	3.534E+02	1.931E+05	1.297E+01	5.536E+00	1.545E+03	1.038E-01
2031	3.402E+02	1.859E+05	1.249E+01	5.330E+00	1.487E+03	9.991E-02
2032	3.276E+02	1.789E+05	1.202E+01	5.131E+00	1.432E+03	9.618E-02
2033	3.153E+02	1.723E+05	1.157E+01	4.940E+00	1.378E+03	9.260E-02
2034	3.036E+02	1.658E+05	1.114E+01	4.756E+00	1.327E+03	8.915E-02
2035	2.923E+02	1.597E+05	1.073E+01	4.578E+00	1.277E+03	8.582E-02
2036	2.814E+02	1.537E+05	1.033E+01	4.408E+00	1.230E+03	8.262E-02
2037	2.709E+02	1.480E+05	9.943E+00	4.243E+00	1.184E+03	7.954E-02
2038	2.608E+02	1.425E+05	9.572E+00	4.085E+00	1.140E+03	7.658E-02
2039	2.511E+02	1.371E+05	9.215E+00	3.933E+00	1.097E+03	7.372E-02
2040	2.417E+02	1.320E+05	8.871E+00	3.786E+00	1.056E+03	7.097E-02
2041	2.327E+02	1.271E+05	8.541E+00	3.645E+00	1.017E+03	6.832E-02
2042	2.240E+02	1.224E+05	8.222E+00	3.509E+00	9.790E+02	6.578E-02
2043	2.156E+02	1.178E+05	7.916E+00	3.378E+00	9.425E+02	6.332E-02
2044	2.076E+02	1.134E+05	7.620E+00	3.252E+00	9.073E+02	6.096E-02
2045	1.999E+02	1.092E+05	7.336E+00	3.131E+00	8.735E+02	5.869E-02
2046	1.924E+02	1.051E+05	7.063E+00	3.014E+00	8.409E+02	5.650E-02
2047	1.852E+02	1.012E+05	6.799E+00	2.902E+00	8.096E+02	5.440E-02
2048	1.783E+02	9.742E+04	6.546E+00	2.794E+00	7.794E+02	5.237E-02
2049	1.717E+02	9.379E+04	6.302E+00	2.690E+00	7.503E+02	5.041E-02
2050	1.653E+02	9.029E+04	6.067E+00	2.589E+00	7.223E+02	4.853E-02
2051	1.591E+02	8.693E+04	5.841E+00	2.493E+00	6.954E+02	4.672E-02
2052	1.532E+02	8.369E+04	5.623E+00	2.400E+00	6.695E+02	4.498E-02
2053	1.475E+02	8.056E+04	5.413E+00	2.310E+00	6.445E+02	4.331E-02
2054	1.420E+02	7.756E+04	5.211E+00	2.224E+00	6.205E+02	4.169E-02
2055	1.367E+02	7.467E+04	5.017E+00	2.141E+00	5.974E+02	4.014E-02
2056	1.316E+02	7.188E+04	4.830E+00	2.061E+00	5.751E+02	3.864E-02
2057	1.267E+02	6.920E+04	4.650E+00	1.984E+00	5.536E+02	3.720E-02
2058	1.220E+02	6.662E+04	4.476E+00	1.910E+00	5.330E+02	3.581E-02
2059	1.174E+02	6.414E+04	4.310E+00	1.839E+00	5.131E+02	3.448E-02
2060	1.130E+02	6.175E+04	4.149E+00	1.771E+00	4.940E+02	3.319E-02
2061	1.088E+02	5.945E+04	3.994E+00	1.705E+00	4.756E+02	3.195E-02
2062	1.048E+02	5.723E+04	3.845E+00	1.641E+00	4.578E+02	3.076E-02
2063	1.009E+02	5.510E+04	3.702E+00	1.580E+00	4.408E+02	2.961E-02
2064	9.709E+01	5.304E+04	3.564E+00	1.521E+00	4.243E+02	2.851E-02
2065	9.347E+01	5.106E+04	3.431E+00	1.464E+00	4.085E+02	2.745E-02
2066	8.999E+01	4.916E+04	3.303E+00	1.410E+00	3.933E+02	2.642E-02
2067	8.663E+01	4.733E+04	3.180E+00	1.357E+00	3.786E+02	2.544E-02
2068	8.340E+01	4.556E+04	3.061E+00	1.307E+00	3.645E+02	2.449E-02
2069	8.029E+01	4.386E+04	2.947E+00	1.258E+00	3.509E+02	2.358E-02
2070	7.730E+01	4.223E+04	2.837E+00	1.211E+00	3.378E+02	2.270E-02
2071	7.441E+01	4.065E+04	2.731E+00	1.166E+00	3.252E+02	2.185E-02
2072	7.164E+01	3.914E+04	2.630E+00	1.122E+00	3.131E+02	2.104E-02
2073	6.897E+01	3.768E+04	2.532E+00	1.080E+00	3.014E+02	2.025E-02

Results (Continued)

Year	Carbon dioxide			NMOC		
	(Mg/year)	(m^3/year)	(av ft^3/min)	(Mg/year)	(m^3/year)	(av ft^3/min)
2074	6.640E+01	3.627E+04	2.437E+00	1.040E+00	2.902E+02	1.950E-02
2075	6.392E+01	3.492E+04	2.346E+00	1.001E+00	2.794E+02	1.877E-02
2076	6.154E+01	3.362E+04	2.259E+00	9.640E-01	2.689E+02	1.807E-02
2077	5.924E+01	3.236E+04	2.175E+00	9.281E-01	2.589E+02	1.740E-02
2078	5.703E+01	3.116E+04	2.093E+00	8.935E-01	2.493E+02	1.675E-02
2079	5.491E+01	3.000E+04	2.015E+00	8.602E-01	2.400E+02	1.612E-02
2080	5.286E+01	2.888E+04	1.940E+00	8.281E-01	2.310E+02	1.552E-02
2081	5.089E+01	2.780E+04	1.868E+00	7.972E-01	2.224E+02	1.494E-02
2082	4.899E+01	2.676E+04	1.798E+00	7.675E-01	2.141E+02	1.439E-02
2083	4.717E+01	2.577E+04	1.731E+00	7.389E-01	2.061E+02	1.385E-02
2084	4.541E+01	2.481E+04	1.667E+00	7.113E-01	1.984E+02	1.333E-02
2085	4.371E+01	2.388E+04	1.605E+00	6.848E-01	1.910E+02	1.284E-02
2086	4.208E+01	2.299E+04	1.545E+00	6.593E-01	1.839E+02	1.236E-02
2087	4.051E+01	2.213E+04	1.487E+00	6.347E-01	1.771E+02	1.190E-02
2088	3.900E+01	2.131E+04	1.432E+00	6.110E-01	1.705E+02	1.145E-02
2089	3.755E+01	2.051E+04	1.378E+00	5.882E-01	1.641E+02	1.103E-02
2090	3.615E+01	1.975E+04	1.327E+00	5.663E-01	1.580E+02	1.062E-02
2091	3.480E+01	1.901E+04	1.277E+00	5.452E-01	1.521E+02	1.022E-02
2092	3.350E+01	1.830E+04	1.230E+00	5.249E-01	1.464E+02	9.838E-03
2093	3.225E+01	1.762E+04	1.184E+00	5.053E-01	1.410E+02	9.471E-03
2094	3.105E+01	1.696E+04	1.140E+00	4.864E-01	1.357E+02	9.118E-03
2095	2.989E+01	1.633E+04	1.097E+00	4.683E-01	1.306E+02	8.778E-03
2096	2.878E+01	1.572E+04	1.056E+00	4.508E-01	1.258E+02	8.451E-03
2097	2.771E+01	1.514E+04	1.017E+00	4.340E-01	1.211E+02	8.136E-03
2098	2.667E+01	1.457E+04	9.791E-01	4.178E-01	1.166E+02	7.832E-03
2099	2.568E+01	1.403E+04	9.425E-01	4.023E-01	1.122E+02	7.540E-03
2100	2.472E+01	1.351E+04	9.074E-01	3.873E-01	1.080E+02	7.259E-03
2101	2.380E+01	1.300E+04	8.736E-01	3.728E-01	1.040E+02	6.989E-03
2102	2.291E+01	1.252E+04	8.410E-01	3.589E-01	1.001E+02	6.728E-03
2103	2.206E+01	1.205E+04	8.096E-01	3.455E-01	9.640E+01	6.477E-03
2104	2.124E+01	1.160E+04	7.794E-01	3.327E-01	9.281E+01	6.236E-03
2105	2.044E+01	1.117E+04	7.504E-01	3.203E-01	8.935E+01	6.003E-03
2106	1.968E+01	1.075E+04	7.224E-01	3.083E-01	8.601E+01	5.779E-03
2107	1.895E+01	1.035E+04	6.955E-01	2.968E-01	8.281E+01	5.564E-03
2108	1.824E+01	9.965E+03	6.695E-01	2.857E-01	7.972E+01	5.356E-03
2109	1.756E+01	9.593E+03	6.446E-01	2.751E-01	7.675E+01	5.157E-03
2110	1.691E+01	9.236E+03	6.205E-01	2.648E-01	7.388E+01	4.964E-03
2111	1.628E+01	8.891E+03	5.974E-01	2.550E-01	7.113E+01	4.779E-03
2112	1.567E+01	8.560E+03	5.751E-01	2.455E-01	6.848E+01	4.601E-03
2113	1.508E+01	8.241E+03	5.537E-01	2.363E-01	6.592E+01	4.429E-03

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

March 3, 2010

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: 2009 Annual Landfill O&M Report
Closed Sauk County Landfills
WDNR License Numbers 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT) is submitting this Annual Landfill Operation and Maintenance (O&M) Report to the Wisconsin Department of Natural Resources (WDNR). This report updates regulatory site information and discusses the site O&M activities that have taken place during 2009 for the two adjacent and closed Sauk County landfills. The following information is included in this annual report:

- Licensing and certification updates
- Regulatory permit activities
- Final cover systems O&M information
- Leachate management system O&M information (Lic. No. 02978 only)
- Landfill gas (LFG) collection and landfill gas-to-energy (LFGTE) systems O&M information
- Actions proposed for 2010

The 2009 groundwater and leachate monitoring data, including the single annual LFG sample data, are reported separately by MSA of Baraboo, WI.

Licensing and Certifications Updates

Landfill - WDNR Lic. No. 02978

Background

This landfill was closed in 2006 and the final phase of the final cover system (Phase III) was completed in October of that year. Final closure approval was issued by the WDNR in a letter dated July 11, 2007. The Long Term Care License for the landfill (WDNR Lic. No. 02978) was issued by the WDNR

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

on February 11, 2008 (effective January 30, 2008; and does not expire). A copy of this license is included in Attachment 1.

Long Term Care Funds

Sauk County maintains a long term care account with the WDNR for necessary long term care responsibilities. The annual long term care cost estimate is reviewed and updated annually based on current knowledge of actual O&M expenditures. The anticipated 2010 annual O&M costs are expected to be similar to the 2009 annual cost of approximately $121,000.

Annual Compliance Certification

As part of maintaining the Long Term Care License, Sauk County has submitted their Annual Landfill Compliance Certification statement, as required by Wisconsin Administrative Code (WAC), Ch. NR506.19. A copy of the County's letter, dated February 23, 2010, is provided in Attachment 1.

Landfill - WDNR Lic. No. 02051

This landfill was closed in 1983 in accordance with WDNR requirements at that time. The site was added to the National Priorities List (NPL) in 1989. The County entered into a contract with the WDNR (No. SF-91-01), effective September 30, 1991, to perform a Remedial Investigation and Feasibility Study (RI/FS) pursuant to WAC Ch. NR144.42 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The WDNR issued a Record of Decision (ROD) requiring source control, dated March 24, 1994, which selected a specific remedy for the site. The remedial design and construction effort included a LFG collection system and additional grading of the final cover surface. The active and remaining items of the ROD include:

- The continued monitoring of the groundwater at on-site groundwater monitoring wells and off-site private wells
- The continued maintenance of the landfill cap to prevent erosion and differential settlement
- A contingency that requires a composite landfill cover system if groundwater quality Preventative Action Limits are not achieved in the future

A groundwater ROD was issued on August 19, 1995. The selected remedy of the groundwater ROD was "no additional action". Groundwater monitoring has continued in accordance with the source control ROD and data is submitted separately by MSA of Baraboo, WI.

A copy of the Environmental Monitoring Plan drawing is included in Attachment 2.

Regulatory Activities

Wisconsin Regulatory Activities

In late 2007, Sauk County submitted a request for an expedited Plan Modification (Plan Mod) for the elimination of existing settlement plate monitoring, and the soil filling of a final cover surface depression. In response, the WDNR requested in an October 4, 2007 letter that additional information be provided by the County in a regular Plan Mod. After reviewing site data, RMT submitted, on behalf of the County, the Lysimeter #2 Evaluation report, dated June 11, 2008.

After receiving concurrence from the WDNR, Sauk County submitted a Plan Mod request dated September 2, 2008.

The WDNR approved the Plan Mod in a letter dated November 3, 2008. A copy of this approval is included in Attachment 2. The approval permitted the following:

- Filling of the final cover surface depression in accordance with NR504.07 specifications
- Elimination of the existing settlement plates and the monitoring requirements
- Abandonment of existing gas probes GP-5 and GP-6.

The activities associated with the above Plan Mod were completed during the 2009 reporting period and are further discussed later in this submittal.

The current WDNR project engineer for this project is Mr. Tom Bennwitz and the current WDNR project Hydrogeologist is Mr. Jim Kralick.

Federal Regulatory Activities

Since the older Sauk County Landfill (WDNR Lic. No. 02051) is on the NPL, additional efforts are necessary before the groundwater monitoring requirements may be modified. As part of the ROD requirements, a 5-year summary (1999-2004) was prepared for Sauk County and submitted to the USEPA (GeoTrans, Inc. March 28, 2005). Currently, the latest 5-year summary (2005-2009) is being prepared and will be submitted in early 2010. The data summarizes the groundwater, LFG, and final cap monitoring and maintenance activities that were performed during the review period.

Also during 2009, Sauk County initiated a more in-depth review of the older site's data to determine if changes to the site's environmental systems or monitoring program's are prudent. Sauk County is interested in pursuing the delisting of this site from the NPL and developing a more efficient and single point of contact with the WDNR regarding ongoing site efforts. The current USEPA remedial project manager for this site is Mr. Nabil Fayoumi, based on a July 2009 communication.

Final Cover Systems O&M

Surface Care

The final cover systems of both landfills were observed during each LFG system monitoring event in 2008. A formal inspection of the final cover systems was performed on October 27, 2009. The final cover inspection report is included in Attachment 2. Repairs were completed in 2009 to the final cover system of the more recently closed landfill (WDNR Lic. No. 02978). These repairs are further discussed later in this submittal. The vegetation on the Phase III final cover area has continued to improve since being planted in late 2006. Only minor areas of erosion damage required repairs in 2009. The landfill cap on the older landfill (WDNR Lic. No. 02051) remained well-vegetated throughout 2009 and surface repairs were not necessary. The vegetation on both caps was mowed twice during 2009. Trees and brush were removed from both landfills during the cover repair and improvement work during 2009.

Tom Bennwitz and Jim Kralick of the WDNR conducted a site inspection of both landfills on March 18, 2009. A copy of the inspection and evaluation was included in the first quarter 2009 LFG monitoring report. Efforts to address the issues outlined in the inspection and evaluation are discussed below.

Landfill Lysimeter Monitoring

The two landfill lysimeters (WDNR Lic. No. 02978 only) were pumped dry of liquids twice in 2009, during the April and October (September for Lysimeter #1) monitoring rounds. The pumped liquid was transferred to the on site leachate storage tank. The liquid removed was sampled and analyzed only during the fall monitoring round for the required annual parameters. The volumes of liquid pumped in April and September 2009 in Lysimeter #1 were 17.8 and 21.2 gallons, respectively. The volumes pumped from Lysimeter #2 were 39.7 and 115.7 gallons, respectively, for the same monitoring events.

Overall, the volume of liquid pumped from both lysimeters in 2009 was lower than during the 2008 monitoring period. The volume of liquid pumped from Lysimeter #2 was higher during the October pumping event. The volume however was similar to historical values. Refer to the June 11, 2008, Lysimeter #2 Evaluation report submitted by RMT, on behalf of Sauk County. The semi-annual pumping frequency for the lysimeters was initiated in 2007. The pumped liquid's quality data was submitted separately by MSA of Baraboo, Wisconsin.

Landfill Cover Repairs and Improvements

Sauk County implemented various on-site repairs and modifications to Site No. 2978 and 2051 during October 2009. The repairs were performed as a result of the WDNR site inspection and the approved Plan Mod mentioned above. The Plan Mod requested the elimination of settlement survey requirements, presented the repair of a depression, and the abandonment of two LFG monitoring probes. The repairs and modifications for both sites are listed below.

Site No. 2978

- Cut trees/brush and treated stumps with an appropriate herbicide to prevent future growth
- Installed raptor perches and next boxes
- Removed settlement plates (riser pipe markers)
- Abandoned LFG monitoring probes GP-5 and GP-6
- Restored positive drainage to a depression at the southeastern corner of the landfill

Site No. 2051

- Cut trees/brush and treated stumps with an appropriate herbicide to prevent future growth
- Installed raptor perches and nest boxes

Additional raptor perches and nest boxes will be installed at both sites in 2010.

Leachate Management System O&M (WDNR Lic. No. 02978 only)

Leachate Volume

The leachate monitoring requirements for this landfill are specified in the December 12, 1997, Plan of Operation Approval Modification. The leachate management system consists of the base liner leachate collection system, a gravity leachate conveyance system, and an underground leachate holding tank located just outside the south limits of waste. The leachate holding tank is periodically pumped and the leachate is hauled by tanker truck to the City of Baraboo wastewater treatment plant for treatment and disposal. The 2009 total annual leachate volume collected and hauled for the landfill was 503,753 gallons, which is less than the 2008 volume of 685,131. The annual totals for 2005 through 2009 are included in a table in Attachment 3.

The volume of leachate pumped from the holding tank is totaled each month and recorded. A bar graph showing the monthly leachate volumes (2005-2009) removed and hauled from the holding tank is provided in Attachment 3. The graph includes a trend line showing that the monthly leachate volumes have continued to decline since the final phase of the landfill was closed (Phase III) and final-covered in October 2006. Since closure, there are only a few spikes in leachate pumped volumes and they appear to be related to significant periods of rainfall. The Phase I cover area does not include a membrane layer as do the Phase II and III areas. The Phase I area only includes a compacted clay layer as the barrier layer of the final cover system.

Leachate Line Cleaning

The last annual leachate line cleaning event was successfully performed in early 2009 and the system was found to be in sound condition.

Leachate Head Monitoring

The levels in leachate head monitoring wells LH-1 and LH-2, for the newer landfill, were monitored monthly during 2009. Leachate head was not detected during any monitoring round. These two leachate head wells are located along the east side of the landfill toward the north end. Refer to the attached Environmental Monitoring Plan drawing for leachate head well locations in Attachment 2.

The levels in leachate head monitoring wells LG-3 and LG-4 are monitored monthly by MSA. The levels have remained consistently low throughout 2009 at both locations

LFG Collection and LFGTE Systems O&M

The LFG monitoring requirements for landfill 02978 are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site 02051 is being monitored in accordance with the same requirements. The two LFG extraction systems are monitored and reported together since the combined flows support the operation of the County's LFGTE system. The monitoring results are submitted separately and quarterly on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison. This annual report provides only the data for the fourth quarter of 2009, since the earlier data were submitted in their respective quarterly reports.

Routine monitoring of the wellfields was accomplished monthly to the extent possible during 2009. The system continued to effectively extract available LFG and control migration throughout the year. The system monitoring efforts are summarized below. Refer to Attachment 4 for a copy of the GEMS certification sheet and for the monthly field data for the fourth quarter of 2009. Following are brief summaries of the key operating systems.

- **LFGTE system:** The LFG collection/ LFGTE system operated efficiently to control odors and migration during the quarter. The small utility flare combusted the excess LFG that was not used by the LFGTE system microturbine generators. The methane concentrations ranged from approximately 42% to 47%, by volume, while the total flows ranged from approximately 150 to 175 cfm. The variability was based on the number of compressors operating (one or two) and the number of microturbines operating (24 total available). A recirculation loop was added to the older compression system to improve its operation.
- **LFG extraction wells:** The LFG extraction wells on both sites were monitored and balanced approximately monthly in 2009, to control migration and to maintain LFG quality for use by the LFGTE system.
- **LFG monitoring probes:** The LFG monitoring probes around both landfill sites were monitored quarterly in 2009. Methane was not detected in the probes during any monitoring event in 2009.

Actions Proposed for 2010

- LFGTE system: The LFG conditioning and compression system components are continually evaluated and updated based on their performance.
- Additional and routine preventative and restorative maintenance will continue to be performed to keep the LFG collection and LFGTE systems, the leachate management system (site 02978 only), the final cover systems, and the related site infrastructure functioning as intended.
- The next 5-year summary for landfill 02051 will be submitted in early 2010 for the period of 2005 through 2009, as required by the ROD. Further evaluation of the monitoring data for both landfills is anticipated to be completed in 2010.

Closing

Overall, the environmental systems at the Sauk County landfill site are functioning as designed and are being maintained in proper condition. The WDNR and USEPA are actively reviewing site data with respect to the 5-year summary effort in progress for the older landfill site. This effort may result in changes to the monitoring programs and requirements for both closed landfill sites. If you have any comments, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Jason R. Schoephoester
Environmental Scientist

Attachments: 1. Licensing and Certification Information
2. 2009 Final Cover Inspection and Environmental Monitoring Plan Drawing
3. 2009 Leachate Management System Data
4. 2009 LFG Management System Data

cc: Jim Kralick, WDNR
Nabil Fayoumi, USEPA-Region V
Tim Stieve, Sauk County (2 copies)
Curt Madsen, RMT
Dean Free, RMT

Attachment 1

Licensing and Certification Information

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

February 11, 2008

FID# 157049970

Ms. Kathryn Schauf, Administrative Coordinator
Sauk County
West Square Building, 505 Broadway
Baraboo, WI 53913

Subject: WDNR Closure and Long-Term Care License #2978
Sauk County Sanitary Landfill

Dear Ms. Schauf:

Enclosed is the Closure and Long-Term Care License issued for the landfill located in the E ½ of Section 15, Town 12N, Range 5E, and the W ½ of Section 14, Town 12N, Range 5E, Township of Excelsior, Sauk County. The location address for this landfill is E 8795 B. Evergreen Lane, Baraboo, WI 53913.

Information printed on the license should be checked for accuracy. Please contact me if there is a need for corrections or changes in the information provided.

If you have any questions regarding this information, please contact me at 608-267-7515 or via e-mail at Colleen.Storck@wisconsin.gov.

Sincerely,

Colleen Storck

Colleen Storck, Chief
Business Support & Information Technology Section
Bureau of Waste & Materials Management

Enclosure

cc: Gene Mitchell/Kathy Warren – SCR
Tom Bennwitz – SCR

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Solid Waste Facility Closure and Long-Term Care License

Form 4400-118 (R 5/01)

Authorized Contact:

KATHRYN SCHAUF, ADMINISTRATIVE COORDINATOR
SAUK COUNTY
WEST SQUARE BUILDING, 505 BROADWAY
BARABOO, WI 53913

License Number
02978

Facility Identification Number
157049970

Type of Facility
Landfill

Effective Date
01/30/2008

Date of Expiration
Does Not Expire

Licensee
Sauk County

Name of Facility
Sauk County Sanitary Landfill

Location of Facility:

Legal Description
E 1/2 of Section 15, Town 12N, Range 5E
W 1/2 of Section 14, Town 12N, Range 5E

Address
E 8795 B. Evergreen Lane, Baraboo, WI

Town / Municipality
Township of Excelsior

County
Sauk

This license is required under s. NR 520.04(3), Wis. Adm. Code, during the period when the owner is required to provide proof of financial responsibility for long-term care of the facility as provided in s. 289.41, Wis. Stats.

Pursuant to s. 289.46, Wis. Stats., any person acquiring rights of ownership, possession, or operation of the facility is subject to all requirements of the license approved for the facility, including requirements relating to the long-term care of the facility, and is subject to any negotiated agreement or arbitration award related to the facility under s. 289.33, Wis. Stats.

This license does not authorize disposal of solid or hazardous waste at this facility.

This license is subject to and conditioned upon compliance with the provisions of Chapter 289, Wis. Stats., and Chapters NR 500 - 590, Wis. Adm. Code, any plan approval and modifications thereof, and any special order and modifications thereof issued by the Department.

Copies to: Licensee
Region
Bureau

Emergency Management, Buildings & Safety

Sauk County Courthouse
510 Broadway
Baraboo, Wisconsin 53913

February 23rd, 2010

Kathy Warren
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711-5397

Subject: Annual Landfill Compliance Certification, NR 506.19
Sauk County Landfill, WDNR License # 02978

Kathy:

As the representative for Sauk County, the party responsible for oversight of the closed Sauk County Landfill, I hereby certify that I am aware of all approved plans for the landfill, all Department conditions of approval, and all applicable solid waste statutory and administrative rules. To the best of my knowledge, information, and belief, the landfill is in substantial compliance with all approved plans and requirements.

If you have any questions or need additional information regarding this matter, please call me at (608) 355-4419.

Sincerely,

Timothy R. Stieve, Administrator
Sauk County Emergency Management, Buildings & Safety

cc via e-mail:
Kathy Schauf, Sauk County Administrative Coordinator
Dean Free, RMT
Jason Schoephoester, RMT

Timothy R. Stieve, Administrator
E-Mail: tstieve@co.sauk.wi.us
Direct Line (608) 355-4419

Jeff Jelinek, EM Director
E-Mail: jjelinek@co.sauk.wi.us
Direct Line (608) 355-4410

Carl Gruber, Safety Director
E-Mail: cgruber@co.sauk.wi.us
Direct Line (608) 355-4400

Dick Mielke, Facility Manager
E-Mail: dmielke@co.sauk.wi.us
Direct Line (608) 355-4417

Philip Raab, Communications Technician
E-Mail: praab@co.sauk.wi.us
Direct Line (608) 355-4418

MAIN OFFICE NUMBER (608) 355-3200 · OFFICE FAX: (608) 355-3299

Attachment 2

2009 Final Cover Inspection and Environmental Monitoring Plan Drawing

2009 Annual Final Cover Inspection
Sauk County Landfills (WDNR Lic. Nos. 02051 and 2978)

Date Performed: October 27, 2009
Performed By: John Roelke – RMT, Inc.

The following items were noted during the inspection:

Site License No. 02051

1. The vegetation is well-established and in very good condition. A few areas of settlement have resulted in shallow ponded areas with periodic standing surface water. These areas remain minor and have not been corrected to date. The landfill gas piping appears to have similarly settled in varying locations, however, settlement has not been significant enough to cause gas flow to be blocked by accumulating condensate. The surface areas will continue to be evaluated.
2. Site perimeter chain-link fencing and gates are in good working condition and no repairs are necessary at this time.
3. Site access road enters site from northwest corner through large vehicle gate. The road extends along the west side of the landfill and terminates at the southwest corner. A grassed roadway extends up the southwest corner of the landfill to the top of the site. The roads are in good condition and no repairs are necessary at this time.
4. Trees and brush were cut and removed as part of the cover repair work discussed below.

Site License No. 02978

1. The vegetation has improved over the northern third of the landfill (Phase III) and the vegetation is in good condition over the remaining, previously covered, areas of the site. As vegetation continues to improve over Phase III, intermittent erosion will be less prominent on the sideslopes and perimeter ditches.
2. The County continues to repair minor eroded areas of the site gravel access roads.
3. The primary area of past settlement just west of the gravel access road on top of the site has been addressed during the 2009 cover repair work as approved in the WDNR's November 3, 2008 response to the Plan Modification Request. Refer to the Final Cover System O&M in the 2009 Annual Report for more information.
4. Trees and brush were cut and removed as part of the cover repair work discussed above.
5. The raptor perches and nest boxes are in good condition.

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke	DATE:	12/2/2009
		START TIME:	8:30 AM
		END TIME:	9:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT 1762	WEATHER CONDITIONS:	cloudy
DATE LAST CALIBRATED:	12/2/2009	TEMPERATURE (11):	35 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.82 in. Hg falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.00	-0.04	-0.04	0.00	-0.02	-0.03	-0.03	0.00	-0.06	0.00
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.6	1.1	0.7	3.1	0.1	0.2	1.6	6.7	0.2	1.4
OXYGEN (%, by vol.) [85550]:	18.4	17	18.4	16.7	19	18.8	17.7	14.4	18.6	18.1

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: RMT 1762
DATE LAST CALIBRATED: 12/2/2009
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 12/2/2009
START TIME: 8:30 AM
END TIME: 11:00 AM

WEATHER CONDITIONS: cloudy
TEMPERATURE (11): 35 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 29.82 mm Hg decreasing
GROUND CONDITIONS: moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [1]
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	34	-9.20	-0.02	0.40	1	0	14.4	9.6	0.25	NC	NC
EXW-02S	732	34	-9.20	-0.03	0.30	2	4.2	22.7	0.0	0.25	NC	NC
EXW-03S	733	36	-9.20	-0.01	0.04	1	23.2	31	0.0	0.5	NC	NC
EXW-04S	734	34	-8.80	-0.15	0.55	2	11.1	26.5	0.0	0.125	NC	NC
EXW-05S	735	36	-9.40	-0.06	0.80	3	25.9	28.1	0.0	0.5	NC	NC
EXW-06S	736	28	-9.20	-0.01	0.03	1	0	4.6	1.3	trace	NC	NC
EXW-07S	737	40	-8.80	-0.2	2.20	4	42	36	0.0	1	NC	NC
EXW-08S	738	42	-9.40	-0.4	9.00	7	54.6	41.5	0.0	7	8	-0.4
EXW-09S	739	38	-9.20	-0.9	8.60	7	57.6	36.4	0.0	5	7	-1
EXW-10S	740	38	-9.40	-0.35	3.00	4	37.7	29.8	0.0	1	NC	NC
EXW-11S	741	40	-9.00	-0.15	1.80	4	40.8	37.5	0.0	0.75	NC	NC
EXW-12S	742	42	-9.20	-0.25	9.00	7	49.3	38.2	0.0	5	6	-0.25
EXW-13S	743	44	-9.40	-0.40	8.20	7	47.9	35.6	0.0	2	3	-0.45
EXW-14S	744	32	-9.40	-7.60	2.20	4	62.2	37.8	0.0	12	NC	NC
EXW-15S	745	44	-9.20	-0.7	2.60	6	30.0	21.6	0.6	0.75	NC	NC
SBSV-1(E)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[2]						100%	NC	NC

Comments:
1. Increased differential pressure due to an 3/8" orifice plate.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

31B

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	12/2/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	11:15 AM
SERIAL NO.:	RMT 1762	END TIME:	1:00 PM
DATE LAST CALIBRATED:	12/2/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	36 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	29.78 In. Hg steady
		GROUND CONDITIONS (No DNR ID):	moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	1.0	44	-8.8	-3.40	0.04	3	39.1	30.2	0.2	10	NC	NC
EXW-02	[732]	1.0	38	-8.8	-1.75	0.06	3	0.0	0.3	18.6	CL	NC	NC
EXW-03	[733]	1.0	42	-8.8	-2.60	0.10	4	39.7	25.4	0.0	2	NC	NC
EXW-04	[734]	1.0	38	-8.8	-1.40	0.05	3	37.9	21.3	4.6	2	NC	NC
EXW-05	[735]	1.0	46	-7.6	-6.70	0.03	2	34.2	28.4	0.0	5	NC	NC
EXW-06	[736]	1.0	58	-7.8	-7.60	0.60	10	43.7	31.1	0.0	60	50	-7
EXW-07	[737]	1.0	42	-7.8	-2.40	0.10	4	28.2	21.4	7.8	2	NC	NC
EXW-08	[738]	1.0	84	-7.6	-4.40	0.20	6	42.6	34.8	1.5	15	NC	NC
EXW-09	[739]	1.0	80	-7.6	-6.60	1.00	12	48.0	39.2	0.0	85	NC	NC
EXW-10	[740]	1.0	78	-7.6	-7.20	0.15	5	60.5	39.5	0.0	100	NC	NC
EXW-11	[741]	1.0	38	-7.6	-1.60	0.40	9	0.0	0.3	18.8	2	1	-1.4
EXW-12	[742]	1.0	96	-7.6	-6.20	1.20	13	57.1	34.9	0.0	100	NC	NC
EXW-13	[743]	1.0	96	-7.6	-5.40	1.40	14	38.5	38.4	0.0	30	NC	NC
EXW-14	[744]	1.0	100	-7.4	-4.40	2.60	19	44.5	39.2	0.0	40	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	107						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

32

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 12/2/09 TIME: 7:30 AMBIENT TEMP.: 35 °F

BAROMETRIC PRESSURE & TREND: 29.82 in. Hg. decreasing

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	NA	NA	0	NA	NA	NA	NA	CL
NEW SKID	11.5	1.00	174	52	45.4	33.1	0.1	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			**174**	AVE. **52**				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 12/2/09 TIME: 1300 AMBIENT TEMP.: 36 °F

BAROMETRIC PRESSURE & TREND: 29.78 in. Hg. STEADY

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]			[85547]	[85544]	[85550]		[46387]
OLD SKID	NA	NA	0	NA	NA	NA		CL
NEW SKID	-10.5	1.00	174	52	46.9	37.6	0	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			**174**	AVE. **52**	[46388]			

COMMENTS: Old skid is off line

No. Turbines Running	Pre	Post
old	7	7
new	5	5

December 2009

December 2009

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: rmt 1762
DATE LAST CALIBRATED: 11/11/2009
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 11/11/2009
START TIME: 8:15 AM
END TIME: 10:45 AM

WEATHER CONDITIONS: Cloudy
TEMPERATURE (11): 30 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 30.5 mm Hg Falling
GROUND CONDITIONS: moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85547	85544	85560	46387		
EXW-01S	731	42	-8.00	-0.05	0.1	2	1.3	4.5	14.2	0.5	0.25	-0.02
EXW-02S	732	42	-8.00	-0.02	0.01	1	3	20.7	1.0	0.25	NC	NC
EXW-03S	733	42	-8.00	-0.06	0.25	2	11	24.6	0.0	1	0.5	-0.04
EXW-04S	734	36	-7.80	-0.25	0.45	3	7.4	23.8	0.0	0.125	NC	NC
EXW-05S	735	38	-8.00	-0.08	0.75	3	21.6	24.9	0.0	0.5	NC	NC
EXW-06S	736	28	-8.00	-0.01	0.02	1	0	4	4.4	trace	NC	NC
EXW-07S	737	48	-8.00	-0.25	2.2	4	39.1	30.4	0.0	1	NC	NC
EXW-08S	738	48	-8.00	-0.35	7.4	6	52.8	35.9	0.0	6	7	-0.35
EXW-09S	739	44	-8.00	-0.75	7.2	6	56.2	32.3	0.0	3	5	-0.75
EXW-10S	740	38	-8.00	-0.25	2	4	34.2	27.2	0.0	1	NC	NC
EXW-11S	741	50	-8.00	-0.20	1.2	4	36.0	31	0.0	0.75	NC	NC
EXW-12S	742	48	-8.00	-0.25	7.4	6	46.5	33.1	0.0	5	NC	NC
EXW-13S	743	50	-8.00	-0.35	7.2	6	41.7	30.7	0.0	2	NC	NC
EXW-14S	744	32	-8.00	-5.80	2.2	4	58	40.9	0.0	12	NC	NC
EXW-15S	745	42	-8.00	-0.5	0.9	3	25.9	20.4	0.5	0.75	NC	NC
SBSV-1(E)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[2]						100%	NC	NC

Comments:
1. Increased differential pressure due to an 3/8" orifice plate.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

34

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	11/11/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	11:00 AM
SERIAL NO.:	RMT 1762	END TIME:	1:00 PM
DATE LAST CALIBRATED:	11/11/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	56 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	30.42 In. Hg Falling
		GROUND CONDITIONS (No DNR ID):	moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (In. W.C.)	Applied Well Pressure (In. W.C.)	Orifice Plate Differential Pressure (In. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (In. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	1.0	54	-7.6	-2.6	0.03	2	37.0	26.8	0.0	10	NC	NC
EXW-02	[732]	1.0	52	-7.6	-1.3	0.04	3	0.0	0.1	18.7	CL	NC	NC
EXW-03	[733]	1.0	54	-7.6	-2.2	0.02	2	37.3	22.1	0.0	2	NC	NC
EXW-04	[734]	1.0	54	-7.2	-0.9	0.02	2	5.5	6.7	13.1	2	NC	NC
EXW-05	[735]	1.0	54	-6.4	-6.0	0.10	4	31.7	26.3	0.0	5	NC	NC
EXW-06	[736]	1.0	62	-6.6	-6.2	0.10	4	40.8	26.3	0.0	60	NC	NC
EXW-07	[737]	1.0	56	-6.2	-1.8	0.05	3	27.7	18.2	7.7	2	NC	NC
EXW-08	[738]	1.0	90	-6.4	-3.0	0.17	5	40.8	28.2	1.4	15	NC	NC
EXW-09	[739]	1.0	84	-6.2	-5.6	1.15	13	47.1	33.7	0.0	75	85	-5.6
EXW-10	[740]	1.0	82	-6.4	-5.6	0.50	9	56.8	35.0	0.0	100	NC	NC
EXW-11	[741]	1.0	58	-6.2	-1.4	0.05	3	8.9	5.5	16.3	2	NC	NC
EXW-12	[742]	1.0	100	-6.4	-5.6	0.65	10	56.7	37.9	0.5	100	NC	NC
EXW-13	[743]	1.0	100	-6.2	-4.6	1.35	14	35.5	31.4	0.1	30	NC	NC
EXW-14	[744]	1.0	105	-6.2	-3.4	2.00	17	42.2	32.9	0.3	30	40	-3.8
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	91						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

348

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 11/11/09 TIME: 8:00 AMBIENT TEMP.: 30 °F

BAROMETRIC PRESSURE & TREND: 30.5 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	CARBON METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	NA	NA	0		NA	NA	NA	NA	Closed
NEW SKID	-9.6	0.90	167		52	43.6	31.7	0.3	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			167	AVE.	52				

Were wellfield adjustments made (Yes/No)?: (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 11/11/09 TIME: 13:30 AMBIENT TEMP.: 56 °F

BAROMETRIC PRESSURE & TREND: 30.42 in. Hg.

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	CARBON METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]					[85547]	[85544]	[85550]	[46387]
OLD SKID	NA	NA	NA		NA	NA	NA	NA	Closed
NEW SKID	-9.2	0.90	166		54	44.0	32.2	0.1	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			166	AVE.	54	[46388]			

COMMENTS: Old skid is off line. Eleven turbines running, Seven from old skid & four from new skid.

November 2009

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	10/27/2009
		START TIME:	8:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:30 AM
SERIAL NO.:	RMT1762		
DATE LAST CALIBRATED:	10/27/2009	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	33 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.04 mm Hg Steady
OTHER:		GROUND CONDITIONS:	Moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	86547	86544	86550	46387		
EXW-01S	731	42	-7.00	-0.02	0.02	1	7.6	19.9	0.3	0.5	NC	NC
EXW-02S	732	42	-7.20	-0.02	0.15	2	6.4	24.4	0.0	0.25	NC	NC
EXW-03S	733	44	-7.20	-0.02	0.18	2	14.5	29	0.2	1	NC	NC
EXW-04S	734	36	-7.00	-0.17	0.35	3	9.1	26.7	0.0	0.125	NC	NC
EXW-05S	735	34	-7.00	-0.07	0.7	3	22.9	28.4	0.0	0.5	NC	NC
EXW-06S	736	30	-7.00	-0.01	0.03	1	0	3.2	7.0	trace	NC	NC
EXW-07S	737	50	-7.00	0.06	0.02	1	11.4	17.2	5.6	0.75	1	-0.04
EXW-08S	738	38	-7.20	-0.3	6.8	6	51.9	41.1	0.0	5	6	-0.3
EXW-09S	739	44	-7.20	-0.7	5.2	5	55.4	35.2	0.0	1.5	3	-0.7
EXW-10S	740	38	-7.00	-0.20	1.9	4	34.8	30.0	0.0	1	NC	NC
EXW-11S	741	52	-7.00	-0.05	1.7	4	40.0	35.2	0.0	0.75	NC	NC
EXW-12S	742	50	-7.20	-0.15	6.8	6	47.7	38.2	0.0	4	5	-0.15
EXW-13S	743	50	-7.20	-0.20	3.4	5	45.6	35.2	0.0	1.125	2	-0.3
EXW-14S	744	32	-7.40	-5.60	0.8	3	56.4	45.6	0.0	12	NC	NC
EXW-15S	745	46	-7.40	-0.5	1.75	4	27.3	21.4	0.5	0.75	NC	NC
SBSV-1(E)			NA	[3]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[3]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[3]						100%	NC	NC

Comments: 1. Increased differential pressure due to an 3/8" orifice plate.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

36

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	10/27/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	11:00 AM
SERIAL NO.:	RMT 1762	END TIME:	1:00 PM
DATE LAST CALIBRATED:	10/27/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Clear
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	33 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	30.04 in. Hg Steady
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46396]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	1.0	56	-6.4	-2.2	0.04	3	34.4	28.9	0.0	10	NC	NC
EXW-02	[732]	1.0	54	-6.4	-0.9	0.02	2	0.0	0.1	18.2	CL	NC	NC
EXW-03	[733]	1.0	56	-6.4	-1.5	0.02	2	36.4	24.0	0.0	2	NC	NC
EXW-04	[734]	1.0	56	-6.4	-0.5	0.03	2	4.5	6.4	12.1	2	NC	NC
EXW-05	[735]	1.0	54	-5.6	-5.2	0.04	3	30.7	26.7	0.0	5	NC	NC
EXW-06	[736]	1.0	62	-5.6	-5.4	0.01	1	41.2	29.9	0.0	60	NC	NC
EXW-07	[737]	1.0	60	-5.4	-1.5	0.01	1	33.2	23.9	6.0	2	NC	NC
EXW-08	[738]	1.0	88	-5.4	-3.0	0.15	5	40.7	32.6	0.7	15	NC	NC
EXW-09	[739]	1.0	84	-5.4	-4.6	1.00	12	45.6	37.2	0.0	75	NC	NC
EXW-10	[740]	1.0	82	-5.4	-4.2	0.35	7	53.7	38.3	0.0	100	NC	NC
EXW-11	[741]	1.0	60	-5.4	-0.9	0.01	1	39.4	26.5	5.5	2	NC	NC
EXW-12	[742]	1.0	100	-5.4	-4.6	0.05	3	54.2	40.9	0.5	100	NC	NC
EXW-13	[743]	1.0	100	-5.4	-3.6	1.20	13	32.6	34.0	0.0	30	NC	NC
EXW-14	[744]	1.0	102	-5.4	-2.8	1.40	14	39.4	35.2	0.1	30	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	69						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

368

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 10/27/09 TIME: 8:00 AMBIENT TEMP.: 33 °F

BAROMETRIC PRESSURE & TREND: 30.04 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	NA	NA	0		NA				CLOSED
NEW SKID	-8.6	0.75	150		54	42.6	35.9	0.2	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			**150**	**AVE.**	**54**				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 10/27/09 TIME: 13:00 AMBIENT TEMP.: 50 °F

BAROMETRIC PRESSURE & TREND: 29.98 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]					[85547]	[85544]	[85550]	[46387]
OLD SKID	NA	NA	0		NA				CLOSED
NEW SKID	-8	0.75	150		54	42.2	36.7	0	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			**150**	**AVE.**	**54**	[46388]			

COMMENTS: Old skid is off line. Five (5) turbines running on "new skid" and six (6) turbines running on "old skid".

October 2009

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- Prepare one form for each license or monitoring ID.
- Please type or print legibly.
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	10/27/2009, 11/11/2009, 12/2/2009

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

October, November, December 2009

Type of Data Submitted (Check all that apply)

- [ ] Groundwater monitoring data from monitoring wells
- [ ] Groundwater monitoring data from private water supply wells
- [ ] Leachate monitoring data
- [X] Gas monitoring data
- [ ] Air monitoring data
- [ ] Other (specify) _____

Notification attached?

- [X] No. No groundwater standards or explosive gas limits were exceeded.
- [ ] Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- [ ] Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schorpharster | Environmental Scientist | (608) 662-5268

Facility Representative Name (Print) | Title | (Area Code) Telephone No.

Jason Schorpharster | 2/10/10

Signature | Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- [ ] Found uploading problems on _____ Initials _____
- [ ] Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): [ ] Diskette [ ] CD (initial submittal and follow-up) [ ] E-mail (follow-up only) Other _____

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- Prepare one form for each license or monitoring ID.
- Please type or print legibly.
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	10/27/2008, 11/11/2009, 12/2/2009

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

October, November, December 2009

Type of Data Submitted (Check all that apply)

- [ ] Groundwater monitoring data from monitoring wells
- [ ] Groundwater monitoring data from private water supply wells
- [ ] Leachate monitoring data
- [x] Gas monitoring data
- [ ] Air monitoring data
- [ ] Other (specify)

Notification attached?

- [x] No. No groundwater standards or explosive gas limits were exceeded.
- [ ] Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- [ ] Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schoephoester — Environmental Scientist — (608) 662-5268

Facility Representative Name (Print) | Title | (Area Code) Telephone No.

Signature — 2/18/10

Signature | Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

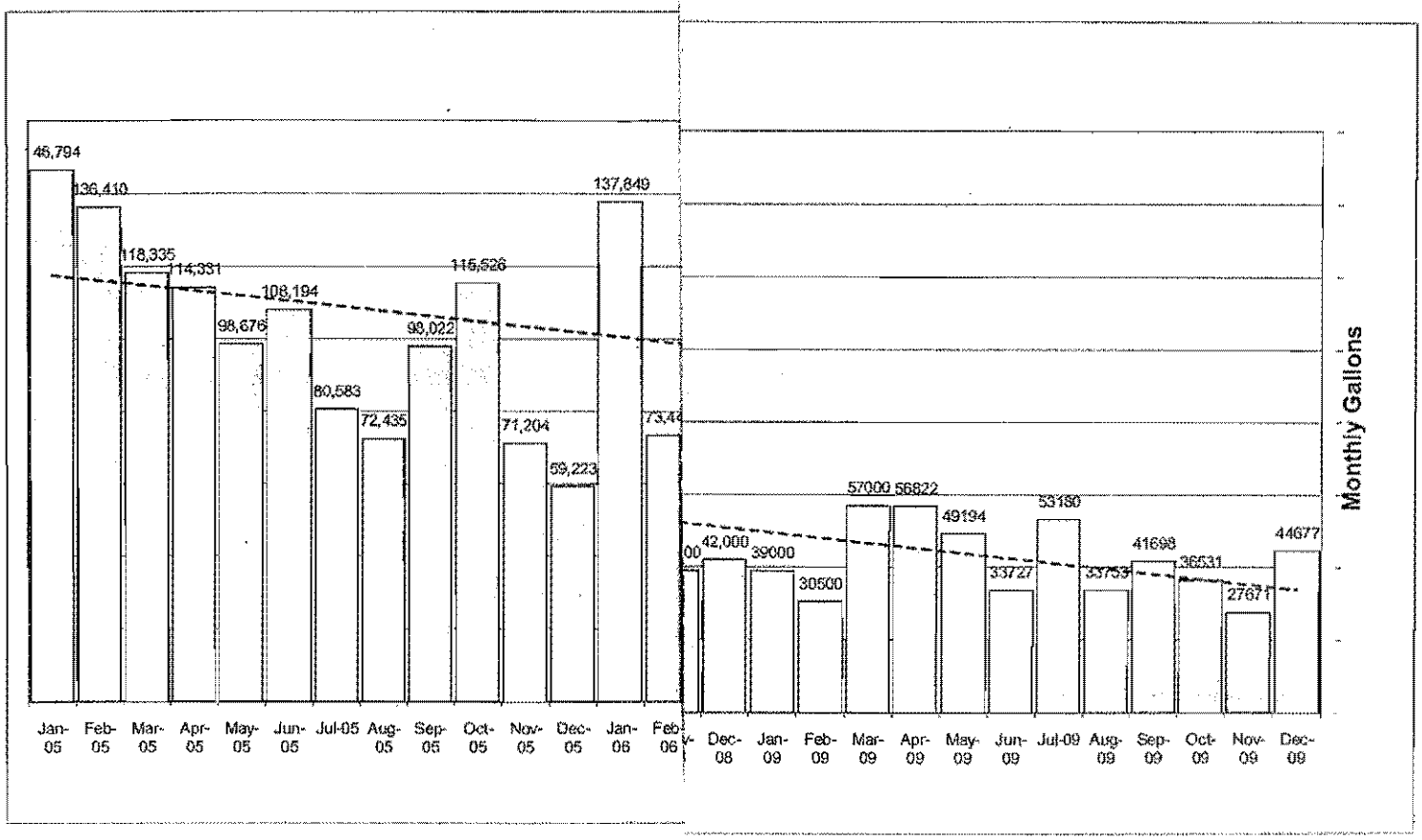
- [ ] Found uploading problems on _____ Initials _____
- [ ] Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): [ ] Diskette [ ] CD (initial submittal and follow-up) [ ] E-mail (follow-up only) Other _____

38B

Attachment 4

2009 LFG Management System Data



Data provided by Sauk County

I:\WPMSN\PJT\00-22725\36\002272536-025.XLS 3/1/2010

Leachate Removed and Hauled Annual Totals 2005 - 2009
Sauk County Landfill, WDNR Lic. No. 02978

MONTH	GALLONS
Jan-05	146,794
Feb-05	136,410
Mar-05	118,335
Apr-05	114,331
May-05	98,676
Jun-05	108,194
Jul-05	80,583
Aug-05	72,435
Sep-05	98,022
Oct-05	115,526
Nov-05	71,204
Dec-05	59,223
TOTAL	**1,219,733**

MONTH	GALLONS
Jan-06	137,849
Feb-06	73,444
Mar-06	96,974
Apr-06	112,081
May-06	128,649
Jun-06	111,737
Jul-06	81,699
Aug-06	70,856
Sep-06	105,464
Oct-06	109,767
Nov-06	102,593
Dec-06	96,707
TOTAL	**1,227,820**

MONTH	GALLONS
Jan-07	92,545
Feb-07	87,750
Mar-07	70,625
Apr-07	83,215
May-07	81,244
Jun-07	70,096
Jul-07	67,569
Aug-07	97,937
Sep-07	70,847
Oct-07	58,116
Nov-07	62,571
Dec-07	58,267
TOTAL	**900,782**

MONTH	GALLONS
Jan-08	61,232
Feb-08	50,958
Mar-08	81,297
Apr-08	62,260
May-08	59,774
Jun-08	83,610
Jul-08	63,500
Aug-08	39,000
Sep-08	58,500
Oct-08	44,000
Nov-08	39,000
Dec-08	42,000
TOTAL	**685,131**

MONTH	GALLONS
Jan-09	39,000
Feb-09	30,500
Mar-09	57,000
Apr-09	56,822
May-09	49,194
Jun-09	33,727
Jul-09	53,180
Aug-09	33,753
Sep-09	41,698
Oct-09	36,531
Nov-09	27,671
Dec-09	44,677
TOTAL	**503,753**

4h

Attachment 3

2009 Leachate Management System Data

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

December 14, 2009

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Third Quarter 2009 Landfill Gas System Monitoring Report
Closed Sauk County Landfills
WDNR License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this third quarter 2009 report to the Wisconsin Department of Natural Resources (WDNR) detailing the results of the landfill gas (LFG) system monitoring and related maintenance activities for the closed Sauk County Landfills. The monitoring requirements for landfill # 02978 are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site # 02051 is being monitored in accordance with the same requirements. The two LFG extraction systems are monitored and reported together since the combined flows support the operation of the County's LFG-to-energy (LFGTE) system.

The monitoring results have been submitted on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison. A copy of the environmental monitoring data certification form for both landfill sites for the third quarter of 2009 is provided in Attachment 1.

Summary of Third Quarter 2009 Monitoring Results

Routine monitoring of the wellfields was accomplished during the second quarter of 2009. Wellfield monitoring rounds were performed on July 21, August 25, and September 15. Overall, operating personnel were confident that the system continued to effectively extract the available LFG and control migration during the quarter. The system monitoring efforts are summarized as follows (refer to Attachment 2):

- **Blower/Flare System:** The LFGTE system operated efficiently to control odors and migration during the quarter. The LFGTE system was operational for most of the monitoring period, with just brief periods of downtime for routine maintenance. When the system did experience downtime, Unison Solutions technicians and/or Sauk County staff worked to repair and restart the system in a timely manner. The small utility flare combusted the excess LFG that was not

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

used by the LFGTE system. The methane concentration ranged from approximately 41% to 47%, by volume, while the total flow ranged from approximately 127 to 189 cubic feet per minute (cfm). The variability in flow rate and methane concentration was based on the number of compressors operating (one or two) and the number of microturbines operating (24 total available). During the third quarter, only one of the compressors was operating and the number of microturbines operating varied from 11 to 14.

- **LFG Extraction Wells:** The LFG extraction wells on both sites were monitored and balanced three times during the quarter, to control migration and to maintain LFG quality for use by the LFGTE system.
- **LFG Monitoring Probes:** The LFG monitoring probes around both landfill sites were monitored once during the third quarter. The probes were monitored in September as part of quarterly routine monitoring. Methane was not detected in any probe during the third quarter.
- **Leachate Head:** Leachate head wells LH-1 and LH-2, located in the newer site (Lic. #02978), were monitored monthly during the quarter, and leachate head was not detected.

Maintenance and Repairs Summary

A summary of the maintenance and repairs performed at the site is as follows:

- Unison Solutions performed routine maintenance on the LFGTE during the third quarter 2009.
- RMT performed an evaluation of the leachate storage tank interstitial space monitoring and alarm system. Repairs will be made during the fourth quarter.
- Typical routine maintenance and repairs were completed on the LFG collection system during the third quarter 2009

Landfill Inspection

Efforts to address the issues outlined in the March 18, 2009, WDNR site inspection and evaluation were initiated during the quarter and will be completed during the fourth quarter. These repairs will be discussed in more detail in a subsequent documentation report.

Conclusion

The LFG system continues to successfully extract available LFG. Modifications are continually evaluated and implemented to improve operations and maximize economic returns.

If you have any comments, please feel free to contact me, at (608) 662-5268, or Dean Free, at (608) 662-5476.

Sincerely,

RMT, Inc.

Jason R. Schoephoester
Project Scientist

Attachments: Environmental Monitoring Data Certification Form
Landfill Gas Monitoring Data

cc: Jim Kralick – WDNR
Tim Stieve – Sauk County
Dean Free – RMT, Inc.

Environmental Monitoring Data Certification Form

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	2009: 7/21,8/25, 9/15

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

July, August, September 2009

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify) _____

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Scharpbecster — Environmental Scientist — (608) 662-5268

Facility Representative Name (Print) — Title — (Area Code) Telephone No.

Jason Scharpbecster — 12/1/09

Signature — Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- ☐ Found uploading problems on _____ Initials _____
- ☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	1S7049970	2009: 7/21, 8/25, 9/15

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

July, August, September 2009

Type of Data Submitted (Check all that apply)

- [ ] Groundwater monitoring data from monitoring wells
- [ ] Groundwater monitoring data from private water supply wells
- [ ] Leachate monitoring data
- [x] Gas monitoring data
- [ ] Air monitoring data
- [ ] Other (specify)

Notification attached?

- [x] No. No groundwater standards or explosive gas limits were exceeded.
- [ ] Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- [ ] Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schoephoester | Environmental Scientist | (608) 662-5268

Facility Representative Name (Print) | Title | (Area Code) Telephone No.

Jason Schoephoester | 12/1/09

Signature | Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- [ ] Found uploading problems on _____ Initials _____
- [ ] Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): [ ] Diskette [ ] CD (initial submittal and follow-up) [ ] E-mail (follow-up only) Other _____

43B

Landfill Gas Monitoring Data

July 2009

44B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 7/21/09 TIME: 7:00 AMBIENT TEMP.: 62 °F

BAROMETRIC PRESSURE & TREND: 30.02 in. Hg. steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	NA	NA	0		NA	NA	NA	NA	NA
NEW SKID	-8.2	0.55	127		62	46.4	32.8	1.5	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			**127**	**AVE.**	**62**				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 7/21/09 TIME: 13:00 AMBIENT TEMP.: 65 °F

BAROMETRIC PRESSURE & TREND: 30.02 in. Hg. rising

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]					[85547]	[85544]	[85550]	[46387]
OLD SKID	NA	NA	0		NA	NA	NA	NA	NA
NEW SKID	-7.4	0.80	152		64	46.8	33.1	**1.3**	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			**152**	**AVE.**	**64**	[46388]			

COMMENTS: Old skid is off line. Eight (8) turbines running on "new skid" and six (6) turbines running on "old skid"

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	7/21/2009
GAS/INSTRUMENT TYPE:	GEM 2000	START TIME:	9:45 AM
SERIAL NO.:	GM11668/09	END TIME:	11:30 AM
DATE LAST CALIBRATED:	7/21/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	62 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	30.02 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46392]	[46386]		[46386]	[85647]	[85644]	[85550]	[46387]		
EXW-01	[731]	0.5	66	-6.0	-2.8	0.03	2	55.4	31.2	0.9	10	15	-3.6
EXW-02	[732]	0.5	72	-5.8	-0.85	0.05	3	2.6	0.1	18.2	CL	NC	NC
EXW-03	[733]	0.5	70	-5.8	-2.0	0.03	2	44.4	24.1	0.8	5	NC	-2.4
EXW-04	[734]	0.5	68	-5.8	-0.45	0.03	2	39.4	26.8	0.9	10	NC	-1
EXW-05	[735]	0.5	64	-5.2	-4.8	0.05	3	37.4	22.8	0.8	15	10	-4.4
EXW-06	[736]	0.5	72	-5.2	-5.0	0.04	3	45.1	24.0	0.7	75	NC	NC
EXW-07	[737]	0.5	94	-4.8	-1.8	0.04	3	42.4	22.7	7.4	5	NC	NC
EXW-08	[738]	0.5	94	-4.8	-4.6	0.40	11	46.7	30.8	1.5	50	25	-4
EXW-09	[739]	0.5	88	-4.8	-4.2	0.75	16	55.5	37.3	0.7	100	NC	NC
EXW-10	[740]	0.5	88	-4.8	-4.0	0.35	10	58.8	37.4	0.9	100	NC	NC
EXW-11	[741]	0.5	72	-4.8	-0.4	0.05	3	49.9	31.4	4.0	CL	NC	NC
EXW-12	[742]	0.5	108	-4.8	-4.4	0.05	3	57.7	38.7	1.2	100	NC	NC
EXW-13	[743]	0.5	104	-4.8	-3.4	1.40	29	43.7	35.3	0.8	60	NC	NC
EXW-14	[744]	0.5	104	-4.8	-1.8	1.00	21	52.7	37.1	0.9	25	50	-2.6
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	111						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: GEM 2000
SERIAL NO.: GM11668/09
DATE LAST CALIBRATED: 7/21/2009
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 7/21/2009
START TIME: 7:15 AM
END TIME: 9:30 AM

WEATHER CONDITIONS: Cloudy
TEMPERATURE (11): 62 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 30.02 mm Hg Steady
GROUND CONDITIONS: moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85647	85644	85650	46387		
EXW-01S	731	64	-6.40	-0.35	0.4	1	30.6	19.6	6.4	1	0.75	-0.2
EXW-02S	732	64	-6.40	-0.12	4	4	25.6	27.5	1.7	1.25	NC	NC
EXW-03S	733	66	-6.40	-0.25	0.18	1	33.8	32.9	0.5	1.5	NC	NC
EXW-04S	734	62	-6.40	-0.5	0.1	1	43.3	28.8	0.5	0.125	0.25	-0.25
EXW-05S	735	60	-6.40	-0.22	2.4	3	40.2	32.6	0.7	0.75	NC	NC
EXW-06S	736	58	-6.40	-0.01	0.02	1	16.7	4.7	1.0	trace	NC	NC
EXW-07S	737	66	-6.40	-0.3	2	3	60.1	35.9	0.7	0.75	NC	NC
EXW-08S	738	62	-6.40	-0.35	6	6	67.4	32.6	0.0	5	NC	NC
EXW-09S	739	60	-6.40	-0.3	2.4	3	66.4	24	0.0	0.75	1	-0.5
EXW-10S	740	60	-6.40	-0.25	2.8	3	60.4	33.3	0.8	1	2	-0.5
EXW-11S	741	62	-6.40	-0.45	5.4	5	60.9	37.9	0.6	2.5	NC	NC
EXW-12S	742	64	-6.40	-0.10	6	6	62.2	39.8	0.0	3	NC	NC
EXW-13S	743	64	-6.40	-0.25	5	5	62.4	36.1	0.6	2.5	NC	NC
EXW-14S	744	56	-6.40	-6.20	0.1	1	58.2	38.9	1.2	12	NC	NC
EXW-15S	745	62	-6.40	-0.25	0.4	1	41.7	24.5	0.7	0.5	0.75	-0.75
SBSV-1(E)			NA	[1]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[1]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[1]						100%	NC	NC

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

August 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 8/25/09 TIME: 7:00 AMBIENT TEMP.: 63 °F

BAROMETRIC PRESSURE & TREND: 30.03 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-8.2	0.75	185		66	42.4	31.9	0.8	100%
NEW SKID		NA	0		NA				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			185	AVE.	66				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 8/25/09 TIME: 12:45 AMBIENT TEMP.: 75 °F

BAROMETRIC PRESSURE & TREND: 29.98 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]					[85547]	[85544]	[85550]	[46387]
OLD SKID	-9.5	0.80	189		68	44.4	33.4	0.5	100%
NEW SKID		NA	0		NA				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			189	AVE.	68	[46388]			

Comments: New skid off line. Five (5) turbines running on "new skid" and eight (8) turbines running on "old skid".

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	8/25/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90/GEM 500	START TIME:	10:40am
SERIAL NO.:	RMT 1762	END TIME:	12:30pm
DATE LAST CALIBRATED:	8/25/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	63 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	30.03 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46386]		[46386]	[86647]	[86644]	[86650]	[46387]		
EXW-01	[731]	0.5	68	-7.6	-4.4	0.02	2	33.1	27.1	0.4	15	10	-3
EXW-02	[732]	0.5	68	-7.6	-1.3	0.05	3	0.0	0.1	19.2	CL	NC	NC
EXW-03	[733]	0.5	68	-7.6	-2.6	0.06	3	30.2	20.0	0.8	5	2	-2.4
EXW-04	[734]	0.5	68	-7.6	-1.0	0.03	2	33.2	24.5	1.1	10	5	-1
EXW-05	[735]	0.5	68	-7.6	-7.2	0.20	7	32.5	23.0	0.4	10	5	-7
EXW-06	[736]	0.5	74	-7.6	-7.2	0.06	3	45.4	26.3	0.4	75	NC	NC
EXW-07	[737]	0.5	80	-7.6	-2.2	0.06	3	30.2	19.4	7.5	5	2	-2
EXW-08	[738]	0.5	96	-7.6	-6.2	0.30	9	41.1	30.3	1.3	25	15	-6
EXW-09	[739]	0.5	88	-7.0	-6.0	1.60	33	49.6	37.4	0.4	100	75	-6
EXW-10	[740]	0.5	88	-7.0	-6.0	0.50	13	57.1	38.7	0.2	100	NC	NC
EXW-11	[741]	0.5	72	-7.2	-1.4	0.05	3	0.1	0.1	19.0	0	NC	NC
EXW-12	[742]	0.5	106	-7.0	-6.0	0.75	16	55.5	38.5	0.6	100	NC	NC
EXW-13	[743]	0.5	104	-7.0	-5.0	1.75	36	36.0	33.6	0.4	60	40	-5
EXW-14	[744]	0.5	106	-7.0	-4.0	2.40	40	43.5	35.1	0.4	50	30	-4
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	173						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

GLH

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke	DATE:	8/25/2009
		START TIME:	7:30am
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:30am
SERIAL NO.:	RMT		
DATE LAST CALIBRATED:	8/25/2009	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	63 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.05 mm Hg Falling
OTHER:		GROUND CONDITIONS:	Moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [1]
GEMS Code		46388	46382	46386		46396	85647	85644	85650	46387		
EXW-01S	731	66	-7.2	-0.4	0.45	1	14.4	15.9	6.9	0.75	0.5	-0.15
EXW-02S	732	68	-7.2	-0.9	4.5	5	10.0	21.1	2.8	1.25	0.5	-0.04
EXW-03S	733	66	-7.2	-0.3	2.2	3	16.0	25.4	1.2	1.5	1	-0.13
EXW-04S	734	62	-7.2	-0.2	0.6	1	15.9	24.9	0.3	0.25	0.125	-0.05
EXW-05S	735	62	-7.0	-0.15	3.2	4	19.1	25.2	0.4	0.75	0.5	-0.08
EXW-06S	736	62	-7.0	0.08	0.01	1	0	3.3	2.4	trace	NC	NC
EXW-07S	737	64	-7.2	-0.2	0.04	1	38.7	31.7	0	0.75	NC	NC
EXW-08S	738	64	-7.2	-0.22	7	5	55.1	37.6	0.4	5	NC	NC
EXW-09S	739	62	-7.2	-0.2	3	4	58.2	31.4	0.1	1	1.5	-0.4
EXW-10S	740	64	-7.2	-0.4	6.8	5	34.6	26.8	0.3	2	1.25	-0.25
EXW-11S	741	68	-7.2	-0.6	6.2	5	34.7	31.9	0.1	2.5	1	-0.35
EXW-12S	742	64	-7.0	-0.05	6.8	5	52.5	35.9	0.3	3.0	4	-0.05
EXW-13S	743	64	-7.2	-0.1	5.8	5	47.6	31.6	0.4	2.5	1.125	-0.1
EXW-14S	744	60	-7.2	-6.6	0.5	1	60.2	42.7	0.4	12	NC	NC
EXW-15S	745	64	-7.2	-0.6	3.6	4	30.1	22.0	0.5	0.75	NC	NC
SBSV-1(E)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[2]						100%	NC	NC

Comments: 1. Increased differential pressure due to an 3/8" orifice plate.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

8h

September 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 9/15/09 TIME: 8:15 AMBIENT TEMP.: 62 °F

BAROMETRIC PRESSURE & TREND: 30.1 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	NA	NA	0		NA	NA	NA	NA	CLOSED
NEW SKID	-9.4	0.80	153		64	41.4	32.4	0.4	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			153	AVE.	64				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 9/15/09 TIME: 12:30 AMBIENT TEMP.: 80 °F

BAROMETRIC PRESSURE & TREND: 30.08 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]					[85547]	[85544]	[85550]	[46387]
OLD SKID	NA	NA	0		NA	NA	NA	NA	CLOSED
NEW SKID	-9.4	0.85	157		66	41.2	23.7	0.5	(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			157	AVE.	66	[46388]			

COMMENTS: Old skid is off line. Three (3) turbines are running on "new skid" and eight (8) turbines are running on "old skid".

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/15/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	10:45 AM
SERIAL NO.:	RMT 1762	END TIME:	12:15 PM
DATE LAST CALIBRATED:	9/15/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Clear
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	80 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	30.08 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[86547]	[86544]	[86550]	[46387]		
EXW-01	[731]	0.5	76	-7.2	-2.8	0.02	2	32.3	21.1	0.4	10	NC	NC
EXW-02	[732]	0.5	86	-6.8	-1.4	0.03	2	0.0	0.0	19.2	CL	NC	NC
EXW-03	[733]	0.5	80	-7.0	-2.4	0.02	2	31.9	16.4	0.8	2	NC	NC
EXW-04	[734]	0.5	80	-6.8	-0.95	0.04	2	3.8	8.0	8.4	5	2	-0.8
EXW-05	[735]	0.5	74	-6.4	-6.0	0.80	17	28.6	16.8	0.3	10	NC	NC
EXW-06	[736]	0.5	78	-6.4	-6.2	0.05	3	40.0	19.6	0.6	75	60	-6.2
EXW-07	[737]	0.5	88	-6.4	-2.2	0.05	3	29.4	16.6	7.1	5	NC	NC
EXW-08	[738]	0.5	98	-6.2	-4.0	0.20	7	38.9	22.4	1.5	15	NC	NC
EXW-09	[739]	0.5	92	-6.2	-5.0	1.05	21	43.2	25.4	0.5	75	NC	NC
EXW-10	[740]	0.5	88	-6.2	-5.4	0.40	11	51.1	29.5	0.4	100	NC	NC
EXW-11	[741]	0.5	88	-6.4	-1.5	0.02	2	35.8	17.8	7.8	CL	2	-1.5
EXW-12	[742]	0.5	108	-6.2	-5.2	0.50	13	52.4	29.8	0.6	100	NC	NC
EXW-13	[743]	0.5	106	-6.2	-4.5	1.30	27	30.3	24.2	0.6	40	30	-4
EXW-14	[744]	0.5	106	-6.4	-3.6	1.80	37	37.8	25.7	0.8	30	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	149						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

48

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/15/2009
		START TIME:	8:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:30 AM
SERIAL NO.:	RMT1762		
DATE LAST CALIBRATED:	9/15/2009	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	62 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.1 mm Hg Falling
OTHER:		GROUND CONDITIONS:	moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85647	85644	85650	46387		
EXW-01S	731	66	-7.60	-0.03	0.01	0	0	2	16.2	0.5	NC	NC
EXW-02S	732	74	-7.60	-0.03	0.4	1	3.6	16.3	1.1	0.5	0.25	-0.03
EXW-03S	733	72	-7.60	-0.3	4.2	4	45.7	27.2	0.4	1	NC	NC
EXW-04S	734	66	-7.60	-0.16	0.75	2	10.7	20.4	0.3	0.125	NC	NC
EXW-05S	735	66	-7.60	-0.12	1	2	21.2	22.2	0.3	0.5	NC	NC
EXW-06S	736	66	-7.60	-0.02	0.03	0	0	2.1	7.1	trace	NC	NC
EXW-07S	737	74	-7.60	-0.02	0.01	0	29.7	16.7	7.4	0.75	NC	NC
EXW-08S	738	62	-7.60	-0.35	7.2	5	50.9	31.7	0.3	5	NC	NC
EXW-09S	739	62	-7.60	-0.8	6.4	5	56	27.8	0.4	1.5	NC	NC
EXW-10S	740	68	-7.60	-0.40	4.4	4	32.8	24.5	0.4	1.25	1	-0.4
EXW-11S	741	76	-7.60	-0.25	1.75	2	35.1	25.1	0.5	1	0.75	-0.25
EXW-12S	742	70	-7.60	-0.25	6.6	5	47.1	29.6	0.4	4	NC	NC
EXW-13S	743	68	-7.60	-0.30	4.2	4	45.5	25.3	0.5	1.125	NC	NC
EXW-14S	744	64	-7.60	-6.80	1	2	57.6	40.5	0.5	12	NC	NC
EXW-15S	745	64	-7.60	-0.8	4.6	4	25.9	26.1	0.8	0.75	0.5	-0.7
SBSV-1(E)			NA	[1]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[1]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[1]						100%	NC	NC

Comments: 1. Increased differential pressure due to an 3/8" orifice plate.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

50

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke	DATE:	9/15/2009
		START TIME:	9:30 AM
		END TIME:	10:40 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT1762	WEATHER CONDITIONS:	Clear
DATE LAST CALIBRATED:	9/15/2009	TEMPERATURE (11):	62 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.10 in. Hg Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.4	2.1	0.9	0.8	0.7	0.3	1.8	0.6	0.1	0.7
OXYGEN (%, by vol.) [85550]:	18.5	16.8	18.4	17.9	18.6	19.1	17.8	18.7	19.2	18.9

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

SOB

RMT

ENVIRONMENT • ENERGY • ENGINEERING

September 24, 2009

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Second Quarter 2009 Landfill Gas System Monitoring Report
Closed Sauk County Landfills
WDNR Licenses No. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this second quarter 2009 report to the Wisconsin Department of Natural Resources (WDNR) detailing the results of the landfill gas (LFG) system monitoring and related maintenance activities for the closed Sauk County Landfills. The monitoring requirements for landfill #02978 are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site #02051 is being monitored in accordance with the same requirements. The two landfill gas extraction systems are monitored and reported together, since the combined flows support the operation of the County's LFG-to-energy (LFGTE) system.

The monitoring results have been submitted on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison. A copy of the environmental monitoring data certification form for both landfill sites for the second quarter of 2009 is provided in Attachment 1.

Summary of Second Quarter 2009 Monitoring Results

Routine monitoring of the well fields was accomplished during the second quarter of 2009. Well field monitoring rounds were performed on April 23, May 6, and June 16. Overall, operating personnel were confident that the system continued to effectively extract the available LFG and control migration during the quarter. The system monitoring efforts are summarized as follows (refer to Attachment 2):

- **Blower/Flare system:** The LFGTE system operated efficiently to control odors and migration during the quarter. The LFGTE system was operational for most of the monitoring period, with just a brief downtime for routine maintenance. When the system did experience downtime, Unison Solutions (Unison) technicians worked to repair and restart the system in a timely manner. The small utility flare combusted the excess LFG that was not used by the LFGTE

system. The methane concentration ranged from approximately 46% to 52%, by volume, while the total flow ranged from approximately 148 to 222 cubic feet per minute (cfm). The variability in flow rate and methane concentration was based on the number of compressors operating (one or two) and the number of microturbines operating (24 total available).

- **LFG extraction wells:** The LFG extraction wells on both sites were monitored and balanced three times during the quarter, to control migration and to maintain LFG quality for use by the LFGTE system.
- **LFG monitoring probes:** The LFG monitoring probes around both landfill sites were monitored once during the second quarter. The probes were monitored in May as part of quarterly routine monitoring. Methane was not detected in any probe during the second quarter.
- **Leachate head:** Leachate head wells LH-1 and LH-2, located in the newer site (Lic. #02978), were monitored monthly during the quarter, and leachate head was not detected.

Maintenance and Repairs Summary

A summary of the maintenance and repairs performed at the site follows:

- Unison performed routine maintenance on the LFGTE system during the second quarter 2009.
- Unison installed a recirculation line in the old LFG compression system in May 2009 to allow excess compressed LFG to be recirculated, instead of being combusted in the utility flare. The recirculation line will also allow for better control of the vacuum being applied to the well fields.
- Unison replaced the LFG chiller on the old skid during the second quarter 2009.
- Typical routine maintenance and repairs were completed on the LFG collection system during the second quarter 2009.

Landfill Inspection

Efforts to address the issues outlined in the March 18, 2009, site inspection and evaluation are currently being conducted and will be discussed in subsequent quarterly reports.

Conclusion

The LFG system continues to successfully extract available LFG. Modifications are continually evaluated and implemented to improve operations and maximize economic returns. If you have any comments, please feel free to contact me, at (608) 662-5268, or Dean Free, at (608) 662-5476.

Sincerely,

RMT, Inc.

Jason R. Schoephoester
Project Scientist

Attachments: Environmental Monitoring Data Certification Form
Landfill Gas Monitoring Data

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County
Dean Free, RMT, Inc.

Attachment 1

Environmental Monitoring Data Certification

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	2/5/09, 2/24-25/09, 4/23/09, 5/6/09, 6/16/09

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

Feb - June, 2009

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☒ No. No ~~groundwater standards or~~ explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schoephoester — Environmental Scientist — (608) 662-5268

Facility Representative Name (Print) — Title — (Area Code) Telephone No.

Jason Schoephoester — 7/31/09

Signature — Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- ☐ Found uploading problems on _____ Initials _____
- ☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	2/5/09, 2/24-25/09, 4/23/09, 5/6/09, 6/16/09

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

February-June, 2009

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify) _____

Notification attached?

- ☒ No. No ~~groundwater standards or~~ explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schoephoester | Environmental Scientist | (608) 662-5268

Facility Representative Name (Print) | Title | (Area Code) Telephone No.

Signature | 7/31/09 Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- ☐ Found uploading problems on _____ Initials _____
- ☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

53B

Attachment 2

Landfill Gas Monitoring Data

April 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 4/23/09 TIME: 9:00 AMBIENT TEMP.: 38 °F

BAROMETRIC PRESSURE & TREND: 30.05 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	-6.5	0.02	31
NEW SKID		1.20	191
TOTAL SYSTEM GAS FLOW [46386]			222

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	48	NA	NA	NA
	48	47.2	32.7	0.8
AVE.	48			

WELLFIELD VALVE SETTING (BEFORE)
0
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: Yes (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 4/23/09 TIME: 3:00 AMBIENT TEMP.: 65 °F

BAROMETRIC PRESSURE & TREND: 28.87 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	-7.8	0.02	30
NEW SKID		1.00	173
TOTAL SYSTEM GAS FLOW [46386]			203

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
		[85547]	[85544]	[85550]
	64	NA	NA	NA
	50	49.7	33.2	0.7
AVE.	57	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
0
(Old Skid Only)

COMMENTS: Old skid is down for repairs. Number of turbines running: New Skid = 8, Old Skid = 8.

By: J. Roelke
Checked By: J. Schoephoester

P:\22725\36\2009 Gas Monitoring Data\Second Quarter 09\Blower 04_ 2009.xls
9/23/2009

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	4/23/"09
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	1:00 PM
SERIAL NO.:	RMT 1762	END TIME:	2:30 PM
DATE LAST CALIBRATED:	4/23/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	65 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	29.87 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	Saturated

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	56	-7.0	-4.8	0.22	12	36.4	25.9	0.2	10	NC	NC
EXW-02	[732]	0.5	54	-7.0	-4.5	0.15	9	10.1	20.1	0.4	25	10	-3.8
EXW-03	[733]	0.5	54	-7.0	-6.4	0.10	8	33.4	21.6	0.4	50	25	-5.8
EXW-04	[734]	0.5	56	-6.0	-4.8	0.05	3	18.3	22.1	1.6	25	10	-2.2
EXW-05	[735]	0.5	54	-5.8	-5.8	0.25	14	50.0	24.9	0.0	10	NC	NC
EXW-06	[736]	0.5	58	-5.4	-5.0	0.05	3	41.2	24.3	0.3	75	NC	NC
EXW-07	[737]	0.5	96	-5.8	-3.2	0.20	11	30.1	21.8	6.4	10	5	-2.8
EXW-08	[738]	0.5	88	-5.4	-5.2	0.50	25	47.1	32.0	1.4	50	NC	NC
EXW-09	[739]	0.5	82	-5.2	-5.0	0.18	10	62.9	37.1	0.0	100	NC	NC
EXW-10	[740]	0.5	84	-5.4	-5.0	0.25	14	62.0	38.0	0.0	100	NC	NC
EXW-11	[741]	0.5	54	-5.6	-0.8	0.05	3	0.0	0.1	20.1	0	NC	NC
EXW-12	[742]	0.5	110	-5.2	-5.2	0.40	20	58.3	36.1	1.2	100	NC	NC
EXW-13	[743]	0.5	100	-5.2	-3.8	0.20	11	52.1	37.2	0.3	50	60	-4.2
EXW-14	[744]	0.5	105	-5.2	-3.0	2.00	38	0.0	0.2	20.1	50	5	-1.4
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	181						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

553

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Reolke	DATE:	4/23/2009
		START TIME:	9:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	12:30 PM
SERIAL NO.:	RMT1762		
DATE LAST CALIBRATED:	4/23/2009	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	38 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.05 mm Hg Falling
OTHER:		GROUND CONDITIONS:	Saturated

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	56	-7.00	-0.3	0.2	1	16.8	16.1	7.2	0.5	0.25	-0.25
EXW-02S	732	54	-7.00	-0.15	1.8	2	9.8	22.6	1.1	trace	NC	NC
EXW-03S	733	52	-7.00	-0.15	2	3	22.8	26.7	0.4	0.5	NC	NC
EXW-04S	734	52	-7.00	-0.25	0.2	1	18.1	23.7	0.4	0.25	0.125	-0.1
EXW-05S	735	50	-7.00	-0.02	0	0	29.7	23.6	0.3	0.5	NC	NC
EXW-06S	736	50	-7.00	0.05	0.01	0	0.7	14.5	0.3	trace	NC	NC
EXW-07S	737	48	-7.00	-1	6	5	37.4	30	0.1	2	1.75	-0.75
EXW-08S	738	48	-7.00	-0.3	6.2	5	56.4	35.8	0.0	1.5	1.75	-0.4
EXW-09S	739	50	-7.00	-0.4	6	5	55.6	30.5	0.2	1.25	1.5	-0.75
EXW-10S	740	50	-7.00	-0.35	5	4	38.6	26.9	0.4	1	NC	NC
EXW-11S	741	56	-7.00	-1.00	6	5	39.4	32	0.3	2.5	NC	NC
EXW-12S	742	56	-7.00	-0.40	5.6	4	51.5	33.4	0.1	1	1.25	-0.5
EXW-13S	743	52	-7.00	-0.40	5	4	44.5	31.5	0.4	1.25	NC	NC
EXW-14S	744	48	-7.00	-6.80	0.09	1	59.9	37	0.8	12	NC	NC
EXW-15S	745	48	-6.80	-0.9	5	4	32.4	22.2	0.4	1	NC	NC
SBSV-1(E)			NA	[3]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[3]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[3]						100%	NC	NC

Comments: 1. Differential pressure is excessively high.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

May 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 5/6/09 TIME: 9:45 AMBIENT TEMP.: 58 °F

BAROMETRIC PRESSURE & TREND: 29.77 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (In. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	NM	NM	0
NEW SKID	-10	1.10	182
TOTAL SYSTEM GAS FLOW [46386]			182

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	64	NM	NM	NM
	52	45.6	32.4	0.7
AVE.	58			

WELLFIELD VALVE SETTING (BEFORE)
0
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: Yes (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 5/6/09 TIME: 3:30 AMBIENT TEMP.: 70 °F

BAROMETRIC PRESSURE & TREND: 29.68 in. Hg. Rising

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (In. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	NM	NM	0
NEW SKID	-8.5	0.90	165
TOTAL SYSTEM GAS FLOW [46386]			165

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
		[85547]	[85544]	[85550]
	80	NM	NM	MN
	52	47.0	32.1	0.7
AVE.	66	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
0
(Old Skid Only)

COMMENTS: Old skid down 16 turbines running.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	5/6/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90/GEM 500	START TIME:	1:30 PM
SERIAL NO.:	RMT 1762	END TIME:	3:30 PM
DATE LAST CALIBRATED:	5/6/2029		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	58 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	29.77 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46386]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	76	-7.0	-4.0	0.03	3	36.0	24.4	0.6	10	NC	NC
EXW-02	[732]	0.5	74	-7.0	-2.2	0.04	3	6.4	17.5	0.7	10	5	-1.8
EXW-03	[733]	0.5	66	-7.0	-6.4	0.20	11	27.2	19.1	0.6	25	15	-6
EXW-04	[734]	0.5	76	-7.0	-0.8	0.02	2	3.5	10.9	8.2	10	NC	NC
EXW-05	[735]	0.5	68	-5.2	-4.2	0.02	2	38.4	23.4	0.5	10	NC	NC
EXW-06	[736]	0.5	88	-5.8	-5.2	0.03	3	44.2	22.9	0.7	75	NC	NC
EXW-07	[737]	0.5	100	-6.2	-3.2	0.15	10	30.7	20.0	6.4	5	2	-2.2
EXW-08	[738]	0.5	96	-5.2	-4.8	0.30	15	45.3	30.1	1.7	50	NC	NC
EXW-09	[739]	0.5	88	-5.2	-4.2	0.75	30	58.1	36.4	0.6	100	NC	NC
EXW-10	[740]	0.5	86	-6.2	-5.6	0.45	22	57.7	37.0	0.4	100	NC	NC
EXW-11	[741]	0.5	82	-5.2	-0.5	0.02	2	0.4	0.2	17.8	0	NC	NC
EXW-12	[742]	0.5	108	-6.2	-5.2	0.90	32	56.2	37.3	0.8	100	NC	NC
EXW-13	[743]	0.5	106	-6.2	-4.0	2.00	38	40.8	34.3	0.5	60	NC	NC
EXW-14	[744]	0.5	108	-6.2	-0.6	0.15	10	56.1	39.4	0.4	5	25	-2.2
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	183						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

518

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	5/6/2009
		START TIME:	10:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90 / GEM500	END TIME:	12:00 PM
SERIAL NO.:	RMT 1762		
DATE LAST CALIBRATED:	5/6/2009	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	58 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.77 mm Hg Falling
OTHER:		GROUND CONDITIONS:	Moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	72	-8.0	-0.3	0.2	1	13.8	14.0	7.0	1	0.75	-0.05
EXW-02S	732	74	-8.0	-0.03	0.35	1	6.7	20.0	1.2	trace	NC	NC
EXW-03S	733	64	-8.0	-0.25	2.6	3	19.7	24.5	1.4	0.5	NC	NC
EXW-04S	734	68	-8.0	-0.08	0.9	2	19.1	22.9	0.5	0.125	NC	NC
EXW-05S	735	68	-8.0	-0.07	0.35	1	27.5	22.4	0.6	0.5	NC	NC
EXW-06S	736	66	-8.0	-0.01	0.3	0	0	3.2	6.3	trace	NC	NC
EXW-07S	737	62	-8.0	-0.55	7	5	36.9	29.5	0.5	1.75	NC	NC
EXW-08S	738	62	-8.0	-0.35	7.8	5	54.5	34.7	0.5	3	4	-0.4
EXW-09S	739	58	-8.0	-0.75	7	5	54.5	29.2	0.3	1.5	3	-0.85
EXW-10S	740	62	-8.0	-0.55	6.2	4	36.2	25.3	3.0	1	NC	NC
EXW-11S	741	60	-8.0	-0.50	7	5	36.4	30.5	0.5	2.5	NC	NC
EXW-12S	742	64	-8.0	-0.12	7.2	5	49.7	32.4	0.4	2	NC	NC
EXW-13S	743	64	-8.0	-0.30	7	5	45.9	29.8	0.5	1.25	3	-0.5
EXW-14S	744	64	-8.0	-7.80	0.03	0	61.5	36.8	1.3	12	NC	NC
EXW-15S	745	58	-8.0	-1.5	5.8	4	30.7	20.4	0.5	1	NC	NC
SBSV-1(E)			NA	@			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	@			NA	NA	NA	100%	NC	NC
SBSV-3(S)				@						100%	NC	NC

Comments: 1. Differential pressure is very high, no change in Pw when value was opened.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

58

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke	DATE:	5/6/2009
		START TIME:	10:00 AM
		END TIME:	12:00 PM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT 1762	WEATHER CONDITIONS:	Cloudy
DATE LAST CALIBRATED:	5/6/2009	TEMPERATURE (11):	58 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.77 in. Hg steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.12	0.03
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.3	3.2	0.5	2.7	2.9	0.6	0.3	4.3	4.5	1.4
OXYGEN (%, by vol.) [85550]:	19.7	15.6	19.5	16.3	17.8	19.6	19.8	16.1	14.6	19.2

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

588

June 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 6/16/09 TIME: 9:15 AMBIENT TEMP.: 70 °F

BAROMETRIC PRESSURE & TREND: 29.95 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	NA	NA	0
NEW SKID	-5.8	0.75	148
TOTAL SYSTEM GAS FLOW [46386]			148

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	NA	NA	NA	NA
	60	49.8	33.2	0.7
AVE.	60			

WELLFIELD VALVE SETTING (BEFORE)
Close
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 6/16/09 TIME: 15:25 AMBIENT TEMP.: 75 °F

BAROMETRIC PRESSURE & TREND: 29.89 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	NA	NA	0
NEW SKID	-6.4	0.75	148
TOTAL SYSTEM GAS FLOW [46386]			148

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
		[85547]	[85544]	[85550]
	NA	NA	NA	NA
	60	51.9	34.8	0.5
AVE.	60	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
Closed
(Old Skid Only)

COMMENTS: Old skid is down - 14 turbines operating

Sq B

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	6/16/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	9:30 AM
SERIAL NO.:	RMT 1762	END TIME:	12:00 PM
DATE LAST CALIBRATED:	6/16/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	75 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	29.89 In. Hg STEADY
		GROUND CONDITIONS (No DNR ID):	Dry

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Applied Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85560]	[46387]		
EXW-01	[731]	0.5	76	-4.2	-2.4	0.02	2	31.4	25.1	0.4	10	NC	NC
EXW-02	[732]	0.5	82	-4.2	-0.8	0.01	1	9.6	14.0	4.1	5	CL	-0.75
EXW-03	[733]	0.5	68	-4.2	-3.6	0.08	8	23.0	19.3	0.4	15	5	-2.6
EXW-04	[734]	0.5	76	-5.0	-0.3	0.03	2	33.2	25.7	2.4	10	NC	NC
EXW-05	[735]	0.5	68	-5.2	-5.0	0.05	3	33.8	22.1	0.4	25	15	-4.8
EXW-06	[736]	0.5	74	-5.2	-5.0	0.04	2	40.1	23.6	0.4	75	NC	NC
EXW-07	[737]	0.5	94	-4.2	-1.0	0.02	2	38.5	24.6	5.1	2	NC	NC
EXW-08	[738]	0.5	96	-4.6	-4.2	0.45	22	47.3	31.9	0.6	50	NC	NC
EXW-09	[739]	0.5	88	-4.6	-3.6	0.11	9	57.8	36.4	0.4	100	NC	NC
EXW-10	[740]	0.5	88	-4.2	-3.8	0.30	17	61.0	38.8	0.2	100	NC	NC
EXW-11	[741]	0.5	78	-4.6	-0.2	0.02	2	25.5	15.8	1.5	0	NC	NC
EXW-12	[742]	0.5	106	-4.2	-3.8	0.40	20	58.3	39.4	0.7	100	NC	NC
EXW-13	[743]	0.5	104	-4.2	-3.0	1.30	32	49.6	34.9	0.4	60	NC	NC
EXW-14	[744]	0.5	106	-4.6	-2.2	1.75	35	34.4	23.9	7.0	25	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	157						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

8

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: RMT 1762
DATE LAST CALIBRATED: 6/16/2009
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 6/16/2009
START TIME: 1:00 PM
END TIME: 3:15 PM

WEATHER CONDITIONS: Cloudy
TEMPERATURE (11): 75 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 29.89 mm Hg Steady
GROUND CONDITIONS: Dry

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	78	-5.8	-0.01	0.03	1	36.3	25.2	0.5	0.75	1	-0.25
EXW-02S	732	78	-5.4	0.01	0.03	1	35.1	29	0.4	trace	0.25	-0.02
EXW-03S	733	68	-5.8	-0.12	1.8	2	31.2	26.9	0.5	0.5	NC	NC
EXW-04S	734	74	-5.8	-0.02	0.04	1	28.5	23.7	0.5	0.125	NC	NC
EXW-05S	735	78	-6.2	-0.03	0.3	1	34.6	23.8	0.4	0.5	0.75	-0.15
EXW-06S	736	82	-5.8	-0.02	0.03	1	1.8	4.5	0.4	trace	NC	NC
EXW-07S	737	78	-5.8	0.18	0.03	1	48.2	27.7	0.9	0.125	1.25	-0.1
EXW-08S	738	70	-5.8	0.22	0.03	1	70.2	29.4	0.0	0.25	0.5	-0.15
EXW-09S	739	78	-5.8	0.3	0.02	1	66.3	33.7	0.0	0.125	0.75	-0.15
EXW-10S	740	82	-6.2	0.16	0.01	1	62.4	33.4	0.3	0.125	1	-0.2
EXW-11S	741	78	-5.8	0.15	0.02	1	56.2	32.8	0.4	0.125	0.2	-0.35
EXW-12S	742	74	-5.4	0.20	0.02	1	59.5	33.7	0.4	0.125	0.3	-0.1
EXW-13S	743	78	-6.2	0.25	0.03	1	58.9	32.1	0.4	0.125	2.5	-1
EXW-14S	744	78	-6.2	-6.00	0.04	1	62.7	39.7	0.6	12	NC	NC
EXW-15S	745	78	-5.6	0.15	0.01	1	36.1	20.3	0.4	0.25	0.5	-0.15
SBSV-1(E)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	[2]			NA	NA	NA	100%	NC	NC
SBSV-3(S)				[2]						100%	NC	NC

Comments: 1.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

603

RMT

ENVIRONMENT • ENERGY • ENGINEERING

August 5, 2009

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: **First Quarter 2009 Landfill Gas System Monitoring Report**
Closed Sauk County Landfills
WDNR License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is herein submitting this first quarter 2009 report to the Wisconsin Department of Natural Resources (WDNR) detailing the results of the landfill gas (LFG) system monitoring and related maintenance activities for the closed Sauk County Landfills. The monitoring requirements for landfill #02978 are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill, site #02051, is being monitored in accordance with the same requirements. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's LFG-to-energy (LFGTE) system.

The monitoring results have been submitted on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison. A copy of the environmental monitoring data certification form for both landfill sites for the first quarter of 2009 is provided in Attachment 1.

Summary of First Quarter 2009 Monitoring Results

Routine monitoring of the wellfields was accomplished during the first quarter of 2009. Wellfield monitoring rounds were performed on February 5 and February 24. The January wellfield monitoring round was performed on February 5, due to system downtime at the end of January. Additionally, the system was not monitored in March due to system downtime related to irregular LFGTE system malfunctions. Overall, operating personnel were confident that the system continued to effectively extract the available LFG and control migration during the quarter. The system monitoring efforts are summarized as follows (refer to Attachment 2):

- Blower/Flare system: The LFGTE system operated efficiently to control odors and migration during the quarter. The LFGTE system did experience some downtime during the end of January and in the latter part of March, at which time Unison Solutions technicians worked to repair and restart the system in a timely manner. The small utility flare combusted the excess gas that was not used by the LFGTE system. The methane concentration ranged from approximately 35 to 45 percent, by volume, while the total flow ranged from approximately 180 to 315 cubic feet per minute (cfm). The variability in flow rate and methane concentration was based on the number of compressors operating (one or two) and the number of microturbines operating (24 total available).
- LFG extraction wells: The LFG extraction wells on both sites were monitored and balanced two times during the quarter, to control migration and to maintain LFG quality for use by the LFGTE system.
- LFG monitoring probes: The LFG monitoring probes around both landfill sites were monitored two times during the first quarter. The probes were monitored in February as part of quarterly routine monitoring. The probes were also monitored on January 21, to verify that there was no off-site migration of LFG, since at that time, the LFGTE system was temporarily down for repairs. Methane was not detected in any probe during either of the monitoring events.
- Leachate head: The leachate head wells LH-1 and LH-2, located in the newer site (Lic. #02978), were monitored monthly during the quarter, and leachate head was not detected.

Maintenance and Repairs Summary

A summary of the maintenance and repairs performed at the site is as follows:

- Unison Solutions performed repairs to the LFG-to-energy system in January and March 2009.
- Typical routine maintenance and repairs were completed during the first quarter 2009

Landfill Inspection

Tom Bennwitz and Jim Kralick of the WDNR conducted a site inspection of both landfills (sites #02978 and 02051) on March 18, 2009. A copy of the inspection and evaluation is included in Attachment 3. Efforts to address the issues outlined in the inspection and evaluation are currently being conducted and will be discussed in subsequent quarterly reports.

Conclusion

The LFG collection system continues to successfully extract available LFG. Modifications are continually evaluated and implemented to improve operations and maximize economic returns. If you have any comments, please feel free to contact Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Jason R. Schoephoester
Project Scientist

Attachments: Environmental Monitoring Data Certification Form
LFG Monitoring Data
WDNR Landfill Inspection Letter

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County
Dean Free, RMT, Inc.

Attachment 1

Environmental Monitoring Data Certification

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	2/5/09, 2/24-25/09, 4/23/09, 5/6/09, 6/16/09

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

Feb - June, 2009

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☒ No. No ~~groundwater standards or~~ explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schoephoester	Environmental Scientist	(608) 662-5268
Facility Representative Name (Print)	Title	(Area Code) Telephone No.

Jason Schoephoester 7/31/09

Signature Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	2/5/09, 2/24-25/09, 4/23/09, 5/6/09, 6/16/09

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

February-June, 2009

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify) _____

Notification attached?

- ☒ No. No ~~groundwater standards or~~ explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Jason Schoephoester | Environmental Scientist | (608) 662-5268

Facility Representative Name (Print) | Title | (Area Code) Telephone No.

Signature | 7/31/09 Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- ☐ Found uploading problems on _____ Initials _____
- ☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

63B

Attachment 2

LFG Monitoring Data

January 21, 2009

(Probe Monitoring Only)

64B

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke	DATE:	1/21/2009
		START TIME:	
		END TIME:	
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT 1762	WEATHER CONDITIONS:	cold
DATE LAST CALIBRATED:	1/21/2009	TEMPERATURE (11):	20 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.85 in. Hg steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Snow covered

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.00	0.00	0.00	0.00	-0.02	-0.02	-0.03	-0.02	-0.10	-0.02
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.4	0.9	0.7	0.8	0.9	0.0	0.1	0.4	0.0	0.3
OXYGEN (%, by vol.) [85550]:	19.7	19.1	19.3	19.6	19.3	20.4	20.4	19.9	20.4	19.9

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

5

February 5, 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 2/5/09 (For January) TIME: 8:30 AMBIENT TEMP.: 11 °F

BAROMETRIC PRESSURE & TREND: 30.29 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-9.5	1.65	291	36	36.5	28.7	3.1	100%
NEW SKID		0.04	21	10				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			312	AVE. 23				

Were wellfield adjustments made (Yes/No)?: **Yes** (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 2/5/09 (For January) TIME: 15:00 AMBIENT TEMP.: 28 °F

BAROMETRIC PRESSURE & TREND: 30.12 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]			[85547]	[85544]	[85550]		[46387]
OLD SKID	-6.5	1.40	265	42	38.3	31.4	2.3	100%
NEW SKID		0.04	38	10				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			303	AVE. 26	[46388]			

COMMENTS: New skid off line at the time of monitoring. Old skid has 6 turbines running, and small flare is lit.
This is January's monitoring round, since the system was down at the end of January.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	2/5/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	12:15 PM
SERIAL NO.:	RMT 1762	END TIME:	2:45 PM
DATE LAST CALIBRATED:	2/5/2009 for Jan.		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Clear
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	28 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (48381):	30.12 in. Hg Steady
		GROUND CONDITIONS (No DNR ID):	Snow covered

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46386]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	42	-6.8	0.8	0.03	3	37.4	27.1	0.5	1	5	-0.8
EXW-02	[732]	0.5	34	-6.8	0.4	0.02	2	18.1	23.4	0.6	0	5	-0.04
EXW-03	[733]	0.5	38	-6.8	0.5	0.02	2	70.9	13.4	0.1	0	20	-1.5
EXW-04	[734]	0.5	40	-6.8	0.5	0.03	3	48.4	26.1	0.4	0	5	-0.5
EXW-05	[735]	0.5	42	-6.8	-3.5	0.05	3	33.4	24.2	0.6	5	NC	NC
EXW-06	[736]	0.5	50	-4.0	-4.0	0.40	20	46.9	28.0	0.3	45	50	-4
EXW-07	[737]	0.5	40	-6.8	-0.5	0.02	2	3.5	3.0	15.1	0	NC	NC
EXW-08	[738]	0.5	84	-4.0	-2.2	0.03	3	35.7	30.2	1.5	25	NC	NC
EXW-09	[739]	0.5	76	-3.5	-3.5	0.08	8	44.2	36.4	0.1	100	NC	NC
EXW-10	[740]	0.5	72	-3.5	-3.5	0.60	28	56.1	40.0	0.3	100	NC	NC
EXW-11	[741]	0.5	64	-4.0	-3.0	0.20	11	46.4	36.4	1.5	25	NC	NC
EXW-12	[742]	0.5	94	-3.5	-3.5	0.40	20	54.2	40.7	0.9	100	NC	NC
EXW-13	[743]	0.5	94	-3.5	-2.8	0.05	3	32.4	34.6	0.5	25	NC	NC
EXW-14	[744]	0.5	98	-4.0	-2.2	0.04	3	36.7	35.1	0.4	75	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	111						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

6/23

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

DATE: 2/5/2009
START TIME: 12:15 PM
END TIME: 2:45 PM

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: RMT 1762
DATE LAST CALIBRATED: 2/5/2009
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

WEATHER CONDITIONS: Clear
TEMPERATURE (11): 28 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 30.12 mm Hg
GROUND CONDITIONS: Snow covered

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	28	-8.80	-0.14	0.04	2	40.5	32.1	0.6	trace	0.5	-0.08
EXW-02S	732	28	-8.80	-0.03	0.1	4	31.1	34.7	1.2	trace	NC	NC
EXW-03S	733	24	-8.80	0.02	0.05	3	32.4	28.3	0.4	trace	0.25	-0.04
EXW-04S	734	26	-8.80	-0.08	0.02	1	26.4	25.9	0.2	trace	NC	NC
EXW-05S	735	26	-8.80	-0.08	5.2	10	24.8	29.9	0.4	0.75	NC	NC
EXW-06S	736	16	-8.80	0.15	0.04	2	0	9.3	0.6	trace	NC	NC
EXW-07S	737	24	-8.80	-0.03	0.04	2	42.8	35.3	0.5	0.5	1	-0.15
EXW-08S	738	24	-8.80	0.02	8.2	12	57.4	41.3	0.3	1.5	(1)	NC
EXW-09S	739	22	-8.80	0.06	8.2	12	52.4	33.1	0.2	1.25	(1)	NC
EXW-10S	740	22	-8.40	0.00	8.2	12	39.1	30.1	0.4	1	(1)	NC
EXW-11S	741	30	-8.80	-0.02	0.2	6	53.1	39.4	0.5	1	1.5	-0.4
EXW-12S	742	28	-8.80	0.04	0.03	1	54.1	39.7	0.2	1	(1)	NC
EXW-13S	743	22	-9.00	0.22	5.2	10	47.5	31.9	0.3	1.25	(1)	NC
EXW-14S	744	18	-8.80	-3.80	4.6	8	57.4	42.6	0.2	12	NC	NC
EXW-15S	745	18	-9.00	0.04	8.2	12	30.7	23.8	0.3	1	(1)	NC
SBSV-1(E)			NA	(2)			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	(2)			NA	NA	NA	100%	NC	NC
SBSV-3(S)				(2)						100%	NC	NC

Comments: 1. Restricted gas flow due to frozen condensate in the flex hose.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

February 24, 2009

67B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 2/24/09 TIME: 7:45 AMBIENT TEMP.: 20 °F

BAROMETRIC PRESSURE & TREND: 30.3 in. Hg. Falling

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (In. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-6	0.40	144	36	36.7	36.4	5.1	100%
NEW SKID		0.03	32	22				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			176	AVE. 29				

Were wellfield adjustments made (Yes/No)?: **YES** (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 2/24/09 TIME: 2:00 AMBIENT TEMP.: 35 °F

BAROMETRIC PRESSURE & TREND: 30.17 in. Hg. Falling

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (In. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID	-4.6	0.80	201	42	43.1	30.5	3.0	100%
NEW SKID		0.03	32	22				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			233	AVE. 32	[46388]			

COMMENTS: 1. New skid was off line at time of monitoring event.
2. Leachate tank is full, Sauk County has knowledge of this.

By: J. Roelke
Checked By: J. Schoephoester

P:\22725\36\2009 Gas Monitoring Data\First Quarter 09\Blower 02_ 2009.xls
7/22/2009

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	2/24/2009
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	
SERIAL NO.:	RMT 1762	END TIME:	
DATE LAST CALIBRATED:	2/24/2009		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Sunny
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	35 °F
OTHER:		BAROMETRIC PRESSURE (25) & TREND (46381):	30.17 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	Snow covered

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
(GEMS Code)			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	46	-4.4	-1.2	0.03	3	46.0	30.4	0.3	5	10	-2
EXW-02	[732]	0.5	54	-4.4	-2.0	0.05	4	25.2	27.3	0.4	5	25	-1.5
EXW-03	[733]	0.5	50	-4.4	-3.6	0.20	11	53.3	28.1	0.3	20	50	-4
EXW-04	[734]	0.5	42	-3.8	-2.6	0.02	2	44.9	25.4	0.2	5	25	-3.2
EXW-05	[735]	0.5	46	-3.8	-1.5	0.03	3	46.0	32.9	0.3	5	10	-2
EXW-06	[736]	0.5	52	-3.8	-3.0	0.02	2	43.7	29.0	0.0	50	75	-3.8
EXW-07	[737]	0.5	48	-3.8	-0.1	0.02	2	52.9	32.8	0.5	0	10	-0.75
EXW-08	[738]	0.5	84	-3.0	-1.0	0.03	3	49.2	33.7	0.2	25	50	-2
EXW-09	[739]	0.5	78	-3.0	-1.5	0.03	3	56.2	38.0	0.3	100	NC	NC
EXW-10	[740]	0.5	76	-3.0	-3.0	0.05	4	64.4	36.6	0.0	100	NC	NC
EXW-11	[741]	0.5	70	-3.0	-1.5	0.02	2	0.0	0.5	19.7	25	0	NC
EXW-12	[742]	0.5	98	-1.8	-1.8	0.03	3	59.9	39.1	0.0	100	NC	NC
EXW-13	[743]	0.5	96	-3.0	-1.0	1.50	45	50.9	38.9	0.7	25	50	-1.5
EXW-14	[744]	0.5	96	-3.8	-0.8	0.05	4	34.7	26.4	6.9	75	50	-0.5
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	91						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.
2. Low header pressure due to leachate tank being full.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

8889

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: RMT 1762
DATE LAST CALIBRATED: 2/24/2009
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 2/24/2009
START TIME:
END TIME:

WEATHER CONDITIONS: Clear
TEMPERATURE (11): 20 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 30.3 mm Hg Falling
GROUND CONDITIONS: Snow covered

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46396	85547	85544	85550	46387		
EXW-01S	731	34	-5.00	-0.6	2.8	7	22.7	22.4	3.1	0.75	0.5	-0.1
EXW-02S	732	38	-5.00	0.05	0.02	1	32	29.4	0.4	trace	(1)	(1)
EXW-03S	733	32	-5.00	0.03	0.2	1	35.3	37.1	0.4	0.25	0.5	-0.05
EXW-04S	734	38	-5.00	0.05	0.06	2	28.5	25.3	0.3	trace	0.25	-0.03
EXW-05S	735	38	-5.00	-0.15	1.5	5	26.3	28.2	0.3	0.75	0.5	-0.1
EXW-06S	736	38	-5.00	0.05	0.02	1	0.1	8.9	0.3	trace	NC	NC
EXW-07S	737	34	-5.00	-0.08	1.8	5	53.2	36.1	0.1	1	2	-0.3
EXW-08S	738	30	-5.00	0.04	4.5	9	59.4	39.6	0.0	1.5	(1)	(1)
EXW-09S	739	34	-5.00	-0.25	4.2	9	54.6	32.9	0.4	1.25	(1)	(1)
EXW-10S	740	42	-5.00	-0.25	4	8	44.1	31.6	0.3	1	(1)	(1)
EXW-11S	741	34	-5.00	-0.10	2.6	6	49.8	36	0.3	1.5	2.5	-0.3
EXW-12S	742	34	-5.00	0.20	4.5	9	57.1	37.6	0.1	1	(1)	(1)
EXW-13S	743	42	-5.00	0.03	2.5	6	49.6	33.6	0.3	1.25	(1)	(1)
EXW-14S	744	38	-5.00	-4.40	0.8	3	53.3	33.6	0.0	12	NC	NC
EXW-15S	745	38	-5.00	-0.4	3.8	8	33.1	24	0.1	1	NC	NC
SBSV-1(E)			NA	(3)			NA	NA	NA	100%	NC	NC
SBSV-2(W)			NA	(3)			NA	NA	NA	100%	NC	NC
SBSV-3(S)				(3)						100%	NC	NC

Comments: 1. Ristricted gas flow due to frozen condensate in flex hose.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

69

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke	DATE:	2/25/2009
		START TIME:	
		END TIME:	
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT71762	WEATHER CONDITIONS:	Clear
DATE LAST CALIBRATED:	2/25/2009	TEMPERATURE (11):	20 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.30 in. Hg Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Snow covered

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	-0.04	-0.02	0.00	0.00	-0.15	-0.08	-0.10	0.10	0.30	0.00
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.5	3.6	0.6	4.1	3.2	1.8	2.6	2.9	3.8	2.0
OXYGEN (%, by vol.) [85550]:	20.4	16.5	19.7	16.3	17.8	18.7	18.1	18.5	16.9	19

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

GAB

March 2009

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = 7.611 New Skid: 6-in. SDR-17 HDPE; ID (in.) = 5.845

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = 4.0 New Skid: DIA. (in.) = 3.5

"BEFORE" Wellfield Monitoring DATE: March 2009 TIME: AMBIENT TEMP.: °F

BAROMETRIC PRESSURE & TREND: in. Hg.

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID			#DIV/0!					
NEW SKID			#DIV/0!					(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			#DIV/0!	AVE.	#DIV/0!			

Were wellfield adjustments made (Yes/No)?: (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: TIME: AMBIENT TEMP.: °F

BAROMETRIC PRESSURE & TREND: in. Hg.

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID			#DIV/0!					
NEW SKID			#DIV/0!					(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			#DIV/0!	AVE.	#DIV/0!	[46388]		

COMMENTS: System was not monitored, since the system was down at the end of the month and early April.

Attachment 3

WDNR Landfill Inspection – March 18, 2009

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew Frank, Secretary
Lloyd Eagan, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-275-3338
TTY 608-275-3231

MAR 23 2009

Mr. Tim Stieve, Administrator
Emergency Management Building & Safety
Courthouse
510 Broadway
Baraboo, WI 53913

FID#157049970
Sauk County
SW/Cor

Subject: Landfill Inspection-Lic: 2978 & 2051, Sauk County, WI.

Dear Mr. Stieve:

This letter is a follow up to the site inspection conducted by Jim Kralick (WDNR-Hydrogeologist), and myself on March 18, 2009. Curt Madsen, and Dean Free from RMT were also present during the inspection.

Landfill Cap - Lic: 2978 The cap is generally in very good condition. Vegetative cover on the cap appears to be excellent at this time. It was indicated that the cap is mowed twice per season. I did not see any excessive amounts of woody vegetation growing on the cap, although some trees are beginning to take a foothold on the western side of the fill area. These trees will need to be removed. It appears that a vole population is getting established on the cap. Burrowing animals may lead to bigger problems later on if not addressed soon. Raptor stands are a popular, and inexpensive option for controlling voles. The access road leading to the top of the landfill is experiencing significant erosion, and at some point will need to be re-graded. All gas probes, and monitoring wells need to be properly labeled. The depression on the cap, where differential settlement has occurred, will need to be filled in this summer along with providing proper drainage off the landfill. This is an issue we have discussed before and it appears this will be addressed later this year. Please contact the Department when completed.

The 2008 annual report that was submitted RMT indicates that the landfill is in good working order. The gas probes indicate that gas is being controlled with the active system, and no gas is migrating off the property.

Landfill Cap - Lic: 2051 The cap was in good shape with no major erosion problems noticed. The landfill does experience significant differential settlement, and rutting that has resulted in ponding on the cap in different areas (east-central). Sauk County will need to address these issues at some point before the situation becomes worse. One of the gas probes will need to be repaired because the casing has settled to the point where the cap can not be closed (GP-2). There is also a stand of stag horn sumac getting established on the southern side of the landfill that will need to be removed. Voles appear to be a problem on this landfill, also. This issue will need to be addressed at some point before erosion becomes a concern.

A proposal to establish a shooting range directly adjacent to landfill Lic: 2978 will not pose a problem to the landfill, although a monitoring well is located in an area that will need to be properly marked and protected. Establishing the shooting range will not need an approval from the Department providing the landfill will continue to have restricted access.

Both inspection reports are attached for your review.

If you have any questions regarding this letter please call Jim Kralick at (608) 743-4841, or myself at (608) 275-3211.

Sincerely,

Tom Bennwitz

Thomas Bennwitz, P.E.
Waste & Materials Program.
South Central Region

Cc: Jim Kralick - Janesville (e-mail)
Dennis Mack - Fitchburg (e-mail)
Curt Madsen/ Dean Free - RMT

State of Wisconsin
Department of Natural Resources

Form 4430-5 (R. 03/06)

SOLID WASTE
COMPLIANCE MONITORING AND EVALUATION FORM

A. GENERAL INFORMATION

FIST SEQ #: 34394

Facility Name (current)	FID #	EPA ID #	LIC/RU/RA #	Case #	Complaint #
SAUK CNTY LF	157049970		2978	34394	

Street/Location	Solid Waste Notification Status
E8795 B EVERGREEN LN	LANDFILL > 500,000 CU YD

City	Zip Code	County	Type of Contact	Contact Date/Time
EXCELSIOR TN	53913-	SAUK	FIELD	03/18/2009 00:00

Contact Name/Phone Number		Activity Type	Case Close Out Date:
TIM STIEVE	(608) 524-6515	COMPLIANCE	03/18/2009

B. FACILITY INSPECTED AS

Inspection Type
LANDFILL > 500,000 CU YD

C. NOTIFICATION CHANGE

Date processed SHWIMS_____, EPA Data System_____

Status Change: Field Verified Status Is _____

Name Change: Former Name _____

D. ADDITIONAL ACTIVITY TYPES

E. ACTIONS AND VIOLATIONS

F. CASE CONTACTS

G. COMMENTS

SITE NARRATIVE

Narrative:

Jim Kralick and I inspected the landfill on 3-18-2009. Curt Madsen and Dean Free from RMT were also present, with Tim Stieve from Sauk County. The landfill was is good condition. Their were no erosion problems on the site. Some areas that need attention include: Removal of trees that are beginning to become established, a vole problem that needs to be addressed, runoff from access road needs to be regraded, labeling of all monitoring devices, and filling in of depressed area on cap. All of the items are easily repairable, and the County has agreed to complete. The County also wants to establish a shooting range directly adjacent to the landfill. This is acceptable as long as it is a controlled site (Law Enforcement use only).

SITE INSPECTION FORM(S)

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

A. Gate provided at the entrance and kept locked when authorized personnel not on site.	C	NR 506.07(1)(j)
B. Entrance area clean and no solid waste indiscriminately dumped at or near the entrance. (e.g. operating an unlicensed storage or disposal facility)	C	NR 289.31(1)

Region Signature(s)	Date Signed	d_report_main_site_contact_one_package_f
BENNWITZ, THOMAS		Page 1 of 5

72B

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

C. Sign posted at the entrance to the facility indicating that the landfill is closed, and includes the landfill name, license number, penalty for unauthorized use and any other pertinent information unless the approved final use does not require signage.	C	NR 506.08(1)(b)
D. Access to the landfill restricted by use of gates, fencing, or other appropriate means unless approved final use allowing access (e.g. baseball playfields, soccer fields, dog runs, etc.) does not require these restrictions.	C	NR 506.08(2)

Section 2: Sediment and Erosion Control

A. Runoff channels are protected to prevent scour and erosion that generates sediment. Some of the drainage ditches appeared to have vole intrusion that may need to be addressed at some point before erosion becomes an issue.	C	NR 506.07(2)(a)(5)
B. Storm water drainage ditches, structures and sedimentation basins cleaned and maintained.	C	NR 506.07(2)(b)
C. The entire solid waste disposal area is covered with compacted earth and final grades are adequately sloped to allow storm water runoff. (e.g. no depressions with ponded water or wetland vegetation on the disposal area). Their is one area on the cap that has significant settleing over the years were water has ponded. Souk county is aware and will fill the artea, and possible tile it later to promote proper drainage.	CA	NR 506.08(3)(a) Photo(s): Y
D. Storm water run-on diverted around all areas used for solid waste disposal to limit erosion of the cover soils and infiltration.	C	NR 506.08(3)(b)
E. The finished surface of the disposal area is covered with a minimum of 6 inches of topsoil.	C	NR 506.08(3)(d)
F. Vegetation established to minimize erosion (e.g. no bare spots or woody vegetation). Vegetation was well established over entire landfill.	C	NR 506.08(4) Photo(s): Y

Section 3: Gas Control

A. Effective means being utilized to prevent migration of explosive gases generated by the waste fill (e.g. no noticeable gas odors or indication of stressed vegetation, and gas control system operating, if applicable). Gas extraction system was working well over the past two years.	C	NR 506.07(4) Photo(s): Y

Section 4: Leachate Collection System

A. Any liquid that comes in contact with waste being handled as leachate and properly managed (e.g. no leachate seeps or discolored surface water/soil).	C	NR 506.07(5)(b)
B. Leachate removal from all leachate storage structures to maintain gravity flow (e.g. no leachate storage on landfill base or liner).	C	NR 506.07(5)(a)

CLOSED LANDFILL INSPECTION FORM

Section 4: Leachate Collection System

C. All leachate removed from the leachate collection system is being disposed of at a wastewater treatment facility unless the facility has approval to recirculate leachate or gas condensate.	C	NR 506.07(5)(a)
D. Leachate lines cleaned on an annual basis or other frequency approved by the Department.	C	NR 506.07(5)(c)
E. Leachate head wells protected and being monitored for leachate head levels.	C	NR 507.21(3)

Section 5: Monitoring Devices

A. Monitoring and sampling devices protected to prevent contaminant entry and damage (e.g. caps present and locked, protective casing in good condition and not affected by frost heave or sunk relative to the well casing that prevents closure). All monitoring devices will need to be labled.	C	NR 507.04(3)
B. All monitoring devices clearly and permanently labeled on the outside of the device. Sauk County will lable all devices this summer.	CA	NR 507.04(4) Photo(s): Y
C. Any permanent monitoring well no longer being used to gather information is properly abandoned within 60 days after its use has been discontinued.	C	NR 141.25(1)(b)
D. Any monitoring devise that has been damaged, provides a conduit to the subsurface or otherwise fails to function is properly abandoned and replaced within 60 days after discovery.	C	NR 507.13
E. Surface water sampling locations surveyed and permanently and clearly marked.	NA	NR 507.23(2)

Section 6: Final Use

A. Waste disposal area not being used for agricultural purposes unless approved by the Department.	C	NR 506.085(1)
B. No structures or other development over waste disposal area unless approved by the Department.	C	NR 506.085(2)
C. No excavation of the final cover or any waste materials.	C	NR 506.085(3)

Key : C: Compliance CA: Compliance with Concern R: Returned to Compliance X: Non-Compliance NA: Not Applicable ND: Not Determined NI: Not Inspected
Y: Yes N: No UN: Unknown

Notes : 1. * Dept. approved alternate may apply 2. Questions without a status entry use narrative responses

73B

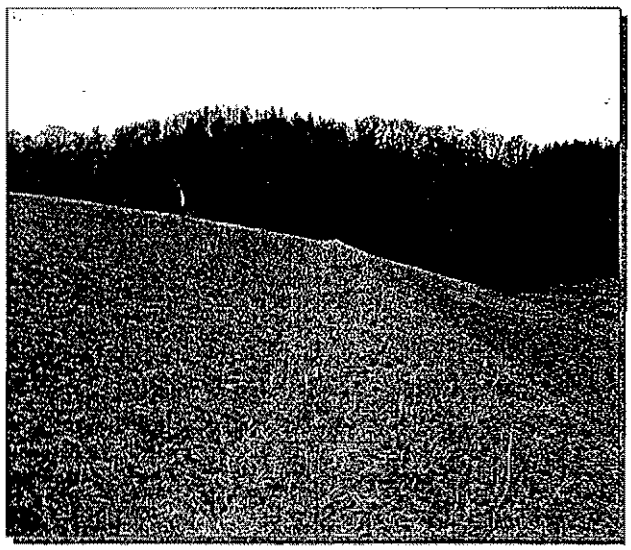
SITE PHOTOS

Site Photo # | Photo # 8107
Photo Date & Time 03/18/2009 00:00
Photo Direction N
Photographer BENNWITZ, THOMAS

Photo Description
Depressed area in Phase 1. The County plans to fill in depressed area this year, and control ponding.

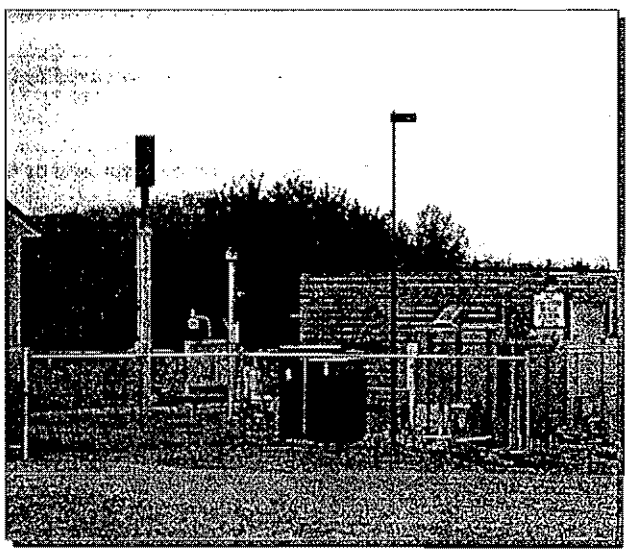
Site Photo # | Photo # 8108
Photo Date & Time 03/18/2009 00:00
Photo Direction NE
Photographer BENNWITZ, THOMAS

Photo Description
Vegetation on entire cap is well established.



Site Photo # | Photo # 8109
Photo Date & Time 03/18/2009 00:00
Photo Direction
Photographer BENNWITZ, THOMAS

Photo Description
Gas extraction system is working well, with only minor repairs needed.



SITE PHOTOS

Site Photo # | Photo # 8110

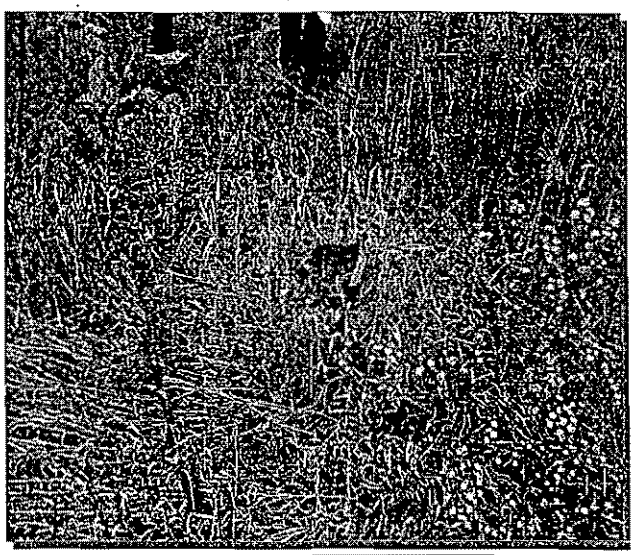
Photo Date & Time: 03/18/2009 00:00

Photo Direction:

Photographer: BENNWITZ, THOMAS

Photo Description

All monitoring devices will need to be labled.



74B

State of Wisconsin
Department of Natural Resources

Form 4430-5 (R. 03/06)

SOLID WASTE
COMPLIANCE MONITORING AND EVALUATION FORM

A. GENERAL INFORMATION

FIST SEQ #: 34396

Facility Name (current)	FID #	EPA ID #	LIC/RU/RA #	Case #	Complaint #
SAUK CNTY LF	157033140	WID980610141	2051	34396	

Street/Location	Solid Waste Notification Status
EVERGREEN ROAD	LANDFILL > 500,000 CU YD

City	Zip Code	County	Type of Contact	Contact Date/Time
EXCELSIOR TN	53913-	SAUK	FIELD	03/18/2009 00:00

Contact Name/Phone Number		Activity Type	Case Close Out Date:
TIM STIEVE	(608) 355-4419	COMPLIANCE	03/18/2009

B. FACILITY INSPECTED AS

Inspection Type
LANDFILL > 500,000 CU YD

C. NOTIFICATION CHANGE

Date processed SHWIMS_____, EPA Data System_____

Status Change: Field Verified Status Is _____

Name Change: Former Name _____

D. ADDITIONAL ACTIVITY TYPES

E. ACTIONS AND VIOLATIONS

F. CASE CONTACTS

G. COMMENTS

SITE NARRATIVE

Narrative:

Kralick and Bennwitz conducted site inspections at Sauk County LFs #2051 and 2978. Curt Madsen and Dean Free of RMT accompanied us. Overall landfill #2051 was in very good shape. For the most part, vegetation is thick, well established, and properly maintained. Some areas of minor concern included an area of settlement and shallow water ponding on the east-centrat side of the cap, as well as some tire rutting on the east-central side of the cap. Sauk County should provide drainage and repair these areas as necessary. There were also some woody shrubs (staghorn sumac) growing on the southern edge of the cap which should be cut down to limit potential cap damage in that area. It was noted that gas probe GP2 no longer fit within its protective casing, which should be corrected. All other gas probes and monitoring wells should be inspected for similar problems and other damage this spring. Any wells that do not have their numbers clearly marked on the outer protective casing should have that done.

SITE INSPECTION FORM(S)

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

A. Gate provided at the entrance and kept locked when authorized personnel not on site. **C** NR 506.07(1)(j)

Region Signature(s)	Date Signed	d_report_main_site_contact_cms_package_f
KRALICK, JAMES		Page 1 of 5

CLOSED LANDFILL INSPECTION FORM

Section 1: General Facility Requirements

B. Entrance area clean and no solid waste indiscriminately dumped at or near the entrance. (e.g. operating an unlicensed storage or disposal facility)	C	NR 289.31(1)
C. Sign posted at the entrance to the facility indicating that the landfill is closed, and includes the landfill name, license number, penalty for unauthorized use and any other pertinent information unless the approved final use does not require signage.	C	NR 506.08(1)(b)
D. Access to the landfill restricted by use of gates, fencing, or other appropriate means unless approved final use allowing access (e.g. baseball playfields, soccer fields, dog runs, etc.) does not require these restrictions.	C	NR 506.08(2)

Section 2: Sediment and Erosion Control

A. Runoff channels are protected to prevent scour and erosion that generates sediment.	C	NR 506.07(2)(a)(5)
B. Storm water drainage ditches, structures and sedimentation basins cleaned and maintained.	C	NR 506.07(2)(b)
C. The entire solid waste disposal area is covered with compacted earth and final grades are adequately sloped to allow storm water runoff. (e.g. no depressions with ponded water or wetland vegetation on the disposal area).	CA	NR 506.08(3)(a)
D. Storm water run-on diverted around all areas used for solid waste disposal to limit erosion of the cover soils and infiltration.	C	NR 506.08(3)(b)
E. The finished surface of the disposal area is covered with a minimum of 6 inches of topsoil.	C	NR 506.08(3)(d)
F. Vegetation established to minimize erosion (e.g. no bare spots or woody vegetation).	CA	NR 506.08(4)

Section 3: Gas Control

A. Effective means being utilized to prevent migration of explosive gases generated by the waste fill (e.g. no noticeable gas odors or indication of stressed vegetation, and gas control system operating, if applicable).	C	NR 506.07(4)

Section 4: Leachate Collection System

A. Any liquid that comes in contact with waste being handled as leachate and properly managed (e.g. no leachate seeps or discolored surface water/soil).	C	NR 506.07(5)(b)
B. Leachate removal from all leachate storage structures to maintain gravity flow (e.g. no leachate storage on landfill base or liner).	C	NR 506.07(5)(a)

75B

CLOSED LANDFILL INSPECTION FORM

Section 4: Leachate Collection System

C. All leachate removed from the leachate collection system is being disposed of at a wastewater treatment facility unless the facility has approval to recirculate leachate or gas condensate.	C	NR 506.07(5)(a)
D. Leachate lines cleaned on an annual basis or other frequency approved by the Department.	C	NR 506.07(5)(c)
E. Leachate head wells protected and being monitored for leachate head levels.	C	NR 507.21(3)

Section 5: Monitoring Devices

A. Monitoring and sampling devices protected to prevent contaminant entry and damage (e.g. caps present and locked, protective casing in good condition and not affected by frost heave or sunk relative to the well casing that prevents closure).	CA	NR 507.04(3)
B. All monitoring devices clearly and permanently labeled on the outside of the device.	CA	NR 507.04(4)
C. Any permanent monitoring well no longer being used to gather information is properly abandoned within 60 days after its use has been discontinued.	C	NR 141.25(1)(b)
D. Any monitoring devise that has been damaged, provides a conduit to the subsurface or otherwise fails to function is properly abandoned and replaced within 60 days after discovery.	C	NR 507.13
E. Surface water sampling locations surveyed and permanently and clearly marked.	NA	NR 507.23(2)

Section 6: Final Use

A. Waste disposal area not being used for agricultural purposes unless approved by the Department.	C	NR 506.085(1)
B. No structures or other development over waste disposal area unless approved by the Department.	C	NR 506.085(2)
C. No excavation of the final cover or any waste materials.	C	NR 506.085(3)

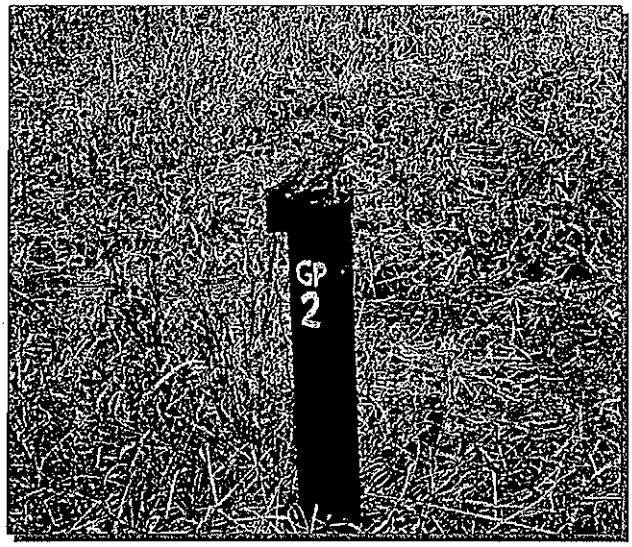
Key : C: Compliance CA: Compliance with Concern R: Returned to Compliance X: Non-Compliance NA: Not Applicable ND: Not Determined NI: Not Inspected
Y: Yes N: No UN: Unknown

Notes : 1. * Dept. approved alternate may apply 2. Questions without a status entry use narrative responses

SITE PHOTOS

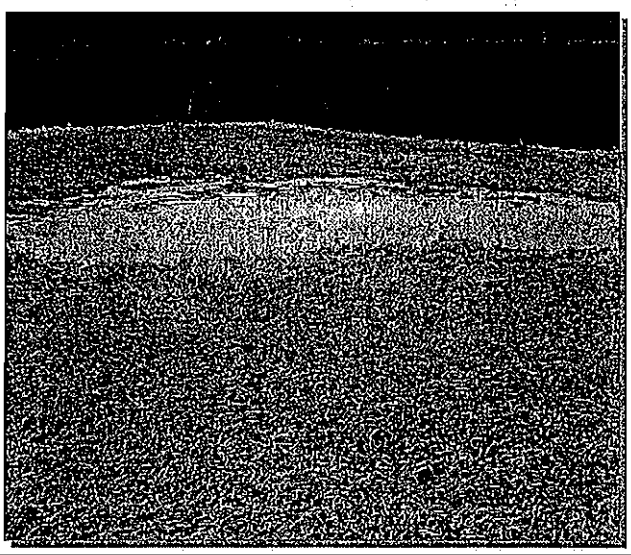
Site Photo # | Photo # 8111
Photo Date & Time 03/18/2009 00:00
Photo Direction UNK
Photographer KRALICK, JAMES

Photo Description
Gas Probe GP2 and protective top



Site Photo # | Photo # 8112
Photo Date & Time 03/18/2009 00:00
Photo Direction NE
Photographer KRALICK, JAMES

Photo Description
Depression on east side of cap.



Site Photo # | Photo # 8113
Photo Date & Time 03/18/2009 00:00
Photo Direction N
Photographer KRALICK, JAMES

Photo Description
Tire ruts in cap.

76B

SITE PHOTOS

* Site Photo # | Photo # 8114

Photo Date & Time: 03/18/2009 00:00

Photo Direction: S

Photographer: KRALICK, JAMES

Photo Description

Sumac on southern cap area.

Dear

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

March 6, 2009

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: 2008 Annual Landfill O&M Report
Closed Sauk County Landfills
WDNR License Numbers 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this Annual Landfill Operation and Maintenance (O&M) Report to the Wisconsin Department of Natural Resources (WDNR). This report updates regulatory site information and discusses the site O&M activities that have taken place during 2008 for the two adjacent and closed Sauk County landfills. The following information is included in this annual report:

- Licensing and certification updates
- Regulatory permit activities
- Final cover systems O&M information
- Leachate management system O&M information (Lic. No. 02978 only)
- Landfill gas (LFG) collection and landfill gas-to-energy (LFGTE) systems O&M information
- Actions proposed for 2009
- The 2008 groundwater and leachate monitoring data, including the single annual LFG sample data, are reported separately by MSA of Baraboo, WI.

I:\WPMSN\PJT\00-22725\36\L002272536-010.DOC

Licensing and Certifications Updates

Landfill - WDNR Lic. No. 02978

Background

This landfill was closed in 2006 and the final phase of the final cover system (Phase III) was completed in October of that year. Final closure approval was issued by the WDNR in a letter dated July 11, 2007. The Long Term Care License for the landfill (WDNR Lic. No. 02978) was issued by the WDNR on February 11, 2008 (effective January 30, 2008; and does not expire). A copy of this license is included in Attachment 1.

Long Term Care Funds

Sauk County maintains a long term care account with the WDNR for necessary long term care responsibilities. A copy of the most recent WDNR cost table is included in Attachment 1. The current balance in the Sauk County account ($2,674,892.45) as of 12/31/08, meets the required balance at the start of 2009 as required by the current WDNR cost table.

As part of this annual report submittal, the annual long term care cost estimate has been updated based on current knowledge of actual O&M expenditures. The updated cost table, included in Attachment 1, indicates that the anticipated annual O&M cost for 2009 is approximately $140,000.

Annual Compliance Certification

As part of maintaining the Long Term Care License, Sauk County has submitted their Annual Landfill Compliance Certification statement, as required by Wisconsin Administrative Code (WAC), Ch. NR 506.19. A copy of the County's letter, dated January 21, 2009, is provided in Attachment 1.

Landfill - WDNR Lic. No. 02051

This landfill was closed in 1983 in accordance with WDNR requirements at that time. The site was added to the National Priorities List (NPL) in 1989. The County entered into a contract with the WDNR (No. SF-91-01), effective September 30, 1991, to perform a Remedial Investigation and Feasibility Study (RI/FS) pursuant to WAC Ch. NR 144.42 and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The WDNR issued a Record of Decision (ROD) requiring source control, dated March 24, 1994, which selected a specific remedy for the site. The remedial design and construction effort included a LFG collection system and additional grading of the final cover surface. The active and remaining items of the ROD include:

- The continued monitoring of the groundwater at on-site groundwater monitoring wells and off-site private wells
- The continued maintenance of the landfill cap to prevent erosion and differential settlement
- A contingency that requires a composite landfill cover system if groundwater quality Preventative Action Limits are not achieved in the future

A groundwater ROD was issued on August 19, 1995. The selected remedy of the groundwater ROD was "no additional action". Groundwater monitoring has continued in accordance with the source control ROD and data is submitted separately by MSA of Baraboo, Wisconsin. Refer to the Environmental Monitoring Plan drawing in Attachment 3 for additional site information for both landfills.

Regulatory Activities

Wisconsin Regulatory Activities

- In a letter dated January 11, 2008, the WDNR expressed the need to update the groundwater monitoring program for the landfills. The WDNR request letter is included in Attachment 2. In response, Sauk County submitted an Expedited Plan Modification (EPM) dated March 19, 2008, requesting the designated changes. In response, the WDNR issued its acknowledgement and concurrence of the EPM with an email dated March 25, 2008. The WDNR-modified monitoring program requirements are included in Attachment 2.
- In late 2007, Sauk County submitted a request for an EPM for the elimination of existing settlement plate monitoring, and for approval to fill soil within a final cover surface depression. In response, the WDNR requested in an October 4, 2007 letter that additional information be provided by the County in the form of a Plan Modification (Plan Mod). After reviewing site data, RMT submitted, on behalf of the County, the Lysimeter #2 Evaluation report, dated June 11, 2008.

  After receiving concurrence from the WDNR, Sauk County submitted a Plan Mod requested dated September 2, 2008. The WDNR approved the Plan Modification in a letter dated November 3, 2008. A copy of this approval is included in Attachment 2. The approval permits the following:

  - Filling of the final cover surface depression in accordance with NR 504.07 specifications
  - Elimination of the existing settlement plate monitoring requirements
  - Abandonment of existing gas probes GP-5 and GP-6.

The activities associated with the Plan Mod items are further discussed later in this submittal. The current WDNR project engineer for this project is Mr. Tom Bennwitz and the current WDNR project Hydrogeologist is Mr. Jim Kralick.

Federal Regulatory Activities

Since the older Sauk County Landfill (WDNR Lic. No. 02051) is on the NPL, additional efforts are necessary before the groundwater monitoring requirements may be modified. As part of the ROD requirements, a five year summary report (1999-2004) was prepared for Sauk County and submittal to the USEPA (GeoTrans, Inc. March 28, 2005). The report summarized the groundwater, LFG, and final cap monitoring and maintenance activities that were performed during the review period.

Sauk County is preparing to initiate a more in-depth review of the site's data to determine if changes to the site's environmental systems or monitoring program's are prudent. Sauk County is interested in pursuing the delisting of this site from the NPL and developing a more efficient and single point of contact with the WDNR regarding ongoing site efforts. The current USEPA remedial project manager for this site is believed to be Mr. Nabil Fayoumi, based on an August 2007 communication.

Final Cover Systems O&M

Surface Care

The final cover systems of both landfills were each observed during gas system monitoring events in 2008. A formal inspection of the final cover systems was performed on September 17, 2008. The final cover inspection report is included in Attachment 3. Only minimal repairs were completed in 2008 to the final cover system of the more recently closed landfill (WDNR Lic. No. 02978). The vegetation on the Phase III final cover area has continued to improve since being planted in late 2006. Only minor areas of erosion damage required repairs in 2008. The landfill cap on the older landfill (WDNR Lic. No. 02051) remained well-vegetated throughout 2008 and surface repairs were not necessary. The vegetation on both caps was mowed twice during 2008.

Landfill Lysimeter Monitoring

The two landfill lysimeters (WDNR Lic. No. 02978 only) were pumped dry of liquids twice in 2008, during the April and October monitoring rounds. The pumped liquid is transferred to the on site leachate storage tank. The liquid removed was sampled and analyzed only during the April monitoring round for the required annual parameters. The volumes of liquid pumped in April and October 2008 in Lysimeter #1 were 18.5 and 19.7 gallons, respectively. The volumes pumped from Lysimeter #2 were 29.5 and 226.6 gallons, respectively, for the same monitoring events.

The volume of liquid pumped from Lysimeter #2 was higher during the October pumping event. The volume however was similar to historical values. Refer to the June 11, 2008, Lysimeter #2 Evaluation report submitted by RMT, on behalf of Sauk County. The semi-annual pumping frequency for the lysimeters was initiated in 2007. With only two years of semi-annual pumping information, additional time and data is needed before an evaluation of trends may be performed. The pumped volume and liquid quality data will be further evaluated as part of the groundwater evaluation effort being initiated in 2009.

Leachate Management System O&M (WDNR Lic. No. 02978 only)

Leachate Volume

The leachate monitoring requirements for landfill 2978 are specified in the December 12, 1997, Plan of Operation Approval Modification (copy in Attachment 2). The leachate management system for the Sauk County Landfill (WDNR Lic. No. 02978) consists of the base liner leachate collection system, a gravity leachate conveyance system, and an underground leachate holding tank located just outside the south limits of waste. The leachate holding tank is periodically pumped and the leachate is hauled by tanker truck to the City of Baraboo wastewater treatment plant for treatment and disposal. The 2008 total annual leachate volume collected and hauled for the landfill was 685,131 gallons. The annual totals for 2005 through 2008 are included in a table in Attachment 4.

The volume of leachate pumped from the holding tank is totaled each month and recorded. A bar graph showing the monthly leachate volumes (2005-2008) removed and hauled from the holding tank is provided in Attachment 4. The graph includes a trend line showing that the monthly leachate volumes have continued to decline since the final phase of the landfill was closed (Phase III) and final-covered in October 2006. Since closure, there are only a few spikes in leachate pumped volumes and they appear to be related to significant periods of rainfall. The Phase I cover area does not include a membrane layer, but the Phase II and III areas do. The Phase I area only includes a compacted clay layer as the barrier layer of the final cover system.

Leachate Line Cleaning

The last annual leachate line cleaning event was performed in September 2007. The 2008 annual leachate line cleaning will be performed in early 2009 and documentation will be provided in the first quarter O&M report. The 2009 annual leachate line cleaning will be performed in late 2009 and the documentation will be provided in the 2009 annual report, submitted in early 2010.

Leachate Head Monitoring (WDNR Lic. No. 02978 only)

The levels in leachate head monitoring wells LH-1 and LH-2, for the newer Sauk County Landfill (WDNR Lic. No. 02978), were monitored monthly during 2008. Leachate head was not detected during any monitoring round. These two leachate head wells are located along the east side of the landfill toward the north end. Refer to the attached Environmental Monitoring Plan drawing for leachate head well locations in Attachment 3.

The levels in leachate head monitoring wells LG-3 and LG-4 are monitored monthly by MSA. The levels have remained consistently low (e.g., less than the regulatory requirement of 1 foot) throughout 2008 at both locations.

LFG Collection and LFGTE Systems O&M

The LFG monitoring requirements for landfill 02978 are specified in the December 12, 1997, Plan of Operation Approval Modification (copy in Attachment 2). The older landfill site 02051 is being monitored in accordance with the same requirements. The two LFG extraction systems are monitored and reported together since the combined flows support the operation of the County's LFGTE system. The monitoring results are submitted separately and quarterly on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison. This annual report provides only the data for the third and fourth quarters of 2008, since the earlier data were submitted in their respective quarterly reports.

Routine monitoring of the wellfields was accomplished monthly to the extent possible during 2008. The system continued to effectively extract available LFG and control migration throughout the year. The system monitoring efforts are summarized below. Refer to Attachment 5 for a copy of the GEMS certification sheets and for the monthly field data for the third and fourth quarters of 2008. Following are brief summaries of the key operating systems.

- **LFGTE system:** The LFG collection/ LFGTE system operated efficiently to control odors and migration during the quarter. The small utility flare combusted the excess LFG that was not used by the LFGTE system microturbine generators. The methane concentration ranged from approximately 30% to 60%, by volume, while the total flow ranged from approximately 200 to 450 cfm. The variability was based on the number of compressors operating (one or two) and the number of microturbines operating (24 total available).
- **LFG extraction wells:** The LFG extraction wells on both sites were monitored and balanced approximately monthly in 2008, to control migration and to maintain LFG quality for use by the LFGTE system.

- **LFG monitoring probes:** The LFG monitoring probes around both landfill sites were monitored quarterly in 2008. Methane was not detected in the probes during any monitoring event in 2008.

Actions Proposed for 2009

- LFGTE system: The LFG conditioning and compression system components are continually evaluated and updated based on their performance.
- The landfill surface depression on the newer landfill (WDNR Lic. No. 02978) will be filled and restored, and LFG probes GP-5 and GP-6 will be abandoned, in accordance with the Plan Mod Approval dated November 3, 2008. A copy of this approval is included in Attachment 2.
- Additional and routine preventative and restorative maintenance will continue to be performed to keep the LFG collection and LFGTE system, the leachate management system (Landfill Site License No. 02051 only), the final cover systems, and the related site infrastructure functioning as intended.
- The next 5-year summary report for Landfill Site License No. 02051 will be prepared for submittal in early 2010 for the period of 2005 through 2009. A thorough evaluation of the monitoring data for both landfills will be initiated in 2009. The monitoring data will be reviewed with respect to the current extent of groundwater contamination and the effectiveness of the remedies that have been implemented.

Closing

Overall, the environmental systems at the Sauk County landfills site are functioning as designed and are being maintained in proper condition. Additional evaluation of site data is necessary so as to obtain a better understanding of the current aquifer geochemistry. Historical geochemical data and geologic data will be reviewed to develop information regarding contaminant pathways. With the evaluation of historical groundwater data, the horizontal and vertical distribution of groundwater constituents can be determined. Following this in-depth evaluation, the effectiveness of the existing site environmental systems will be better ascertained.

If you have any comments, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

Attachments:
1. Licensing and Certification Information
2. 2008 Regulatory Correspondences
3. 2008 Final Cover Inspection and Environmental Monitoring Plan Drawing
4. 2008 Leachate Management System Data
5. 2008 LFG Management System Data

cc: Jim Kralick, WDNR
Nabil Fayoumi, USEPA-Region V
Tim Stieve, Sauk County (2 copies)
Curt Madsen, RMT
Jason Schoephoester, RMT
James Wedekind, RMT

Attachment 1

Licensing and Certification Information

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

February 11, 2008

FID# 157049970

Ms. Kathryn Schauf, Administrative Coordinator
Sauk County
West Square Building, 505 Broadway
Baraboo, WI 53913

Subject: WDNR Closure and Long-Term Care License #2978
Sauk County Sanitary Landfill

Dear Ms. Schauf:

Enclosed is the Closure and Long-Term Care License issued for the landfill located in the E ½ of Section 15, Town 12N, Range 5E, and the W ½ of Section 14, Town 12N, Range 5E, Township of Excelsior, Sauk County. The location address for this landfill is E 8795 B. Evergreen Lane, Baraboo, WI 53913.

Information printed on the license should be checked for accuracy. Please contact me if there is a need for corrections or changes in the information provided.

If you have any questions regarding this information, please contact me at 608-267-7515 or via e-mail at Colleen.Storck@wisconsin.gov.

Sincerely,

Colleen Storck

Colleen Storck, Chief
Business Support & Information Technology Section
Bureau of Waste & Materials Management

Enclosure

cc: Gene Mitchell/Kathy Warren – SCR
Tom Bennwitz – SCR

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Solid Waste Facility Closure and Long-Term Care License

Form 4400-118 (R 5/01)

Authorized Contact:

KATHRYN SCHAUF, ADMINISTRATIVE COORDINATOR
SAUK COUNTY
WEST SQUARE BUILDING, 505 BROADWAY
BARABOO, WI 53913

License Number
02978

Facility Identification Number
157049970

Type of Facility
Landfill

Effective Date
01/30/2008

Date of Expiration
Does Not Expire

Licensee

Sauk County

Name of Facility

Sauk County Sanitary Landfill

Location of Facility: Legal Description

E 1/2 of Section 15, Town 12N, Range 5E
W 1/2 of Section 14, Town 12N, Range 5E

Address

E 8795 B. Evergreen Lane, Baraboo, WI

Town / Municipality	County
Township of Excelsior	**Sauk**

This license is required under s. NR 520.04(3), Wis. Adm. Code, during the period when the owner is required to provide proof of financial responsibility for long-term care of the facility as provided in s. 289.41, Wis. Stats.

Pursuant to s. 289.46, Wis. Stats., any person acquiring rights of ownership, possession, or operation of the facility is subject to all requirements of the license approved for the facility, including requirements relating to the long-term care of the facility, and is subject to any negotiated agreement or arbitration award related to the facility under s. 289.33, Wis. Stats.

This license does not authorize disposal of solid or hazardous waste at this facility.

This license is subject to and conditioned upon compliance with the provisions of Chapter 289, Wis. Stats., and Chapters NR 500 - 590, Wis. Adm. Code, any plan approval and modifications thereof, and any special order and modifications thereof issued by the Department.

Copies to: Licensee
Region
Bureau

88B

Sauk County Landfill (SW License #2978)
~~Closure~~ & Long-Term Care Costs

Today's Date is :	Aug-07
Proof Method is:	Deposit With Dept.
LTC Bal. on 6/30/07=	$2,485,622
Constant Dol. Ann. Inpayments Assumed	
Est. Remaining Life is:	NA
Appr'd LTC Costs in 03 $in	$80,700
Annual Interest Rate =	0.04
Annual Inflation Rate =	0.02

Closure Cost Calculations 8/9/2007

Approved Closure Costs in '03 $'s = $819,930
Estimated Closure Costs in '07 $'s = '03 costs X compound inflation '03 thru '07
= $819,930 X 1.1252
= $922,585
Necessary Escrow Balance in '07 $'s = $922,585(1.02/1.04) = $904,848
Current Closure Balance on 6/30/07 = $985,755

Reqd Jan07 balance

Year	Calendar Year	LTC Cost in 1/07 Dollars	Bal. Carried Forward	Beg. of Year Inpayment	Beg. of Year Balance	Interest Earned	End of Year Outpayment	End of Year Balance
1	2007	$90,804	$2,501,147	$0	$2,501,147	$100,046	($92,620)	$2,508,573
2	2008	$90,804	$2,508,573	$0	$2,508,573	$100,343	($94,472)	$2,514,444 *
3	2009	$90,804	$2,514,444 *	$0	$2,514,444	$100,578	($96,362)	$2,518,660
4	2010	$90,804	$2,518,660	$0	$2,518,660	$100,746	($98,289)	$2,521,118
5	2011	$90,804	$2,521,118	$0	$2,521,118	$100,845	($100,255)	$2,521,708
6	2012	$90,804	$2,521,708	$0	$2,521,708	$100,868	($102,260)	$2,520,316
7	2013	$90,804	$2,520,316	$0	$2,520,316	$100,813	($104,305)	$2,516,824
8	2014	$90,804	$2,516,824	$0	$2,516,824	$100,673	($106,391)	$2,511,106
9	2015	$90,804	$2,511,106	$0	$2,511,106	$100,444	($108,519)	$2,503,032
10	2016	$90,804	$2,503,032	$0	$2,503,032	$100,121	($110,689)	$2,492,464
11	2017	$90,804	$2,492,464	$0	$2,492,464	$99,699	($112,903)	$2,479,260
12	2018	$90,804	$2,479,260	$0	$2,479,260	$99,170	($115,161)	$2,463,269
13	2019	$90,804	$2,463,269	$0	$2,463,269	$98,531	($117,464)	$2,444,336
14	2020	$90,804	$2,444,336	$0	$2,444,336	$97,773	($119,813)	$2,422,296
15	2021	$90,804	$2,422,296	$0	$2,422,296	$96,892	($122,210)	$2,396,978
16	2022	$90,804	$2,396,978	$0	$2,396,978	$95,879	($124,654)	$2,368,203
17	2023	$90,804	$2,368,203	$0	$2,368,203	$94,728	($127,147)	$2,335,784
18	2024	$90,804	$2,335,784	$0	$2,335,784	$93,431	($129,690)	$2,299,525
19	2025	$90,804	$2,299,525	$0	$2,299,525	$91,981	($132,284)	$2,259,223
20	2026	$90,804	$2,259,223	$0	$2,259,223	$90,369	($134,929)	$2,214,662
21	2027	$90,804	$2,214,662	$0	$2,214,662	$88,586	($137,626)	$2,165,620
22	2028	$90,804	$2,165,620	$0	$2,165,620	$86,625	($140,381)	$2,111,865
23	2029	$90,804	$2,111,865	$0	$2,111,865	$84,475	($143,188)	$2,053,151
24	2030	$90,804	$2,053,151	$0	$2,053,151	$82,126	($146,052)	$1,989,225
25	2031	$90,804	$1,989,225	$0	$1,989,225	$79,569	($148,973)	$1,919,821
26	2032	$90,804	$1,919,821	$0	$1,919,821	$76,793	($151,952)	$1,844,662
27	2033	$90,804	$1,844,662	$0	$1,844,662	$73,786	($154,992)	$1,763,457
28	2034	$90,804	$1,763,457	$0	$1,763,457	$70,538	($158,091)	$1,675,903
29	2035	$90,804	$1,675,903	$0	$1,675,903	$67,036	($161,253)	$1,581,686
30	2036	$90,804	$1,581,686	$0	$1,581,686	$63,267	($164,478)	$1,480,476
31	2037	$90,804	$1,480,476	$0	$1,480,476	$59,219	($167,768)	$1,371,927
32	2038	$90,804	$1,371,927	$0	$1,371,927	$54,877	($171,123)	$1,255,681
33	2039	$90,804	$1,255,681	$0	$1,255,681	$50,227	($174,546)	$1,131,362
34	2040	$90,804	$1,131,362	$0	$1,131,362	$45,254	($178,037)	$998,580
35	2041	$90,804	$998,580	$0	$998,580	$39,943	($181,597)	$856,926
36	2042	$90,804	$856,926	$0	$856,926	$34,277	($185,229)	$705,974
37	2043	$90,804	$705,974	$0	$705,974	$28,239	($188,934)	$545,279
38	2044	$90,804	$545,279	$0	$545,279	$21,811	($192,712)	$374,378
39	2045	$90,804	$374,378	$0	$374,378	$14,975	($196,567)	$192,787
40	2046	$90,804	$192,787	$0	$192,787	$7,711	($200,498)	$0

* LTL ACCT. BALANCE AS OF 12-31-08 = $2,674,892.45
AND IT IS SUFFICIENT.

DRAFT Long-Term Care Cost Estimate

Updated: January 21, 2009

Sauk County Landfill (WDNR Lic. # 02978)

ITEM	UNIT	UNIT COST	QUANTITY	COST PER YEAR [1] [2]
Land Surface Care				
-Reseed Site Areas/Repair Erosion Damage	LS	$2,000	1	$2,000.00
-Lawn Mowing	event	$2,000	2	$4,000.00
-Sedimentation Basin Cleaning	basin	$1,000	1	$1,000.00
-Access Road Maintenance	LS	$2,000	1	$2,000.00
-Site Snow Plowing	LS	$2,000	1	$2,000.00
Leachate Collection System				
- Leachate Hauling/WWTP Treatment [2]	gallon	$0.05	700,000	$35,000.00
- Leachate Collection Line Cleaning	LS	$3,000	2	$6,000.00
- Repairs of Pumps/Controls [3]	LS	$2,000	1	$2,000.00
Environmental Monitoring and Maintenance				
- Groundwater, leachate, lysimeters	LS	$30,000	1	$30,000.00
- Gas and final cover systems [4]	LS	$38,000	1	$38,000.00
- Gas extraction components replacement [5]	LS	$3,000	1	$3,000.00
Engineering Assistance [7]	LS	$15,000	1	$15,000.00
			Subtotal:	$140,000.00
			Contingency (10 %):	$14,000.00
			ANNUAL GRAND TOTAL:	$154,000.00
			COST OF 38 YEARS OF LONG-TERM CARE [6] =	$5,852,000.00

Assumptions:

1. Annual costs are in 2009 dollars.
2. Cost per gallon includes treatment and transportation for 2009; 2008 leachate total approx. 690,000 gallons.
3. Assumes one leachate pump will be replaced every three years; at a total cost of $6,000.
4. The gas and cover system monitoring and maintenance includes both sites #2978 and # 2051 since both sites are monitored together to support the gas-to-energy system operation and overall site compliance.
5. Costs assume an average annual amount for repairing/replacing gas system components that are needed for operation of the gas extraction system for both sites #2978 and #2051; gas-to-energy system expenditures are not included.
6. The 40-year long term care period started with 2007; ends with 2046; site has 38 years remaining.
7. Engineering Assistance may include responding to design, operation, maintenance, monitoirng, and compliance issues.

Date: January 21, 2009
By: D. Free
Checked By: T. Halena

Emergency Management, Buildings & Safety

Sauk County Courthouse
510 Broadway
Baraboo, Wisconsin 53913

January 21st, 2009

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South-Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Annual Landfill Compliance Certification, NR 506.19
Sauk County Landfill, WDNR License # 02978

Dear Mr. Bennwitz:

As the representative for Sauk County, the party responsible for the closed Sauk County Landfill, I hereby certify that I am aware of all approved plans for the landfill, all Department conditions of approval, and all applicable solid waste statutory and administrative rules. To the best of my knowledge, information, and belief, the landfill is in substantial compliance with all approved plans and requirements.

If you have any questions or need additional information regarding this matter, please call me at (608) 355-4419.

Sincerely,

Timothy R. Stieve, Administrator
Sauk County Emergency Management, Buildings & Safety

cc: Kathy Schauf, Sauk County
Dean Free, RMT

Timothy R. Stieve, Administrator
E-Mail: trstieve@co.sauk.wi.us
Direct Line (608) 355-4419
Pager: 1-800-780-2152

Coreene Ederer-Sklar, EM Director
E-Mail: cekler@co.sauk.wi.us
Direct Line (608) 355-4410
Pager: 1-800-780-2160

Carl Gruber, Safety Director
E-Mail: cgruber@co.sauk.wi.us
Direct Line (608) 355-4400
Pager: 1-800-936-5590

Dick Mielke, Facility Manager
E-Mail: dmielke@co.sauk.wi.us
Direct Line (608) 355-4417
Pager: 1-800-780-2214

Philip Raab, Communications Technician
E-Mail: praab@co.sauk.wi.us
Direct Line (608) 355-4418
Pager: 1-877-571-3739

MAIN OFFICE NUMBER (608) 355-3200 - OFFICE FAX: (608) 355-3299

Attachment 2

2008 Regulatory Correspondences

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Lloyd L. Eagan, Regional Director

South Central Regional Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-8397
Telephone 608-275-7769
FAX 608-273-5610
TTY Access via relay - 711

January 11, 2008

Mr. Tim Stieve
Sauk County Solid Waste Manager
505 Broadway Street
Baraboo, WI 53913

File Ref: FID 157049970
Sauk County
SW CORR

Subject: Updating Groundwater Monitoring Programs at the Sauk County Landfills (Lic. # 2051 and Lic. # 2978).

Dear Mr. Stieve:

Over the past several years Department of Natural Resources staff have worked individually with many owners of municipal solid waste (MSW) landfills to update their standard groundwater monitoring programs, including:

- Eliminating sampling for dissolved iron and chemical oxygen demand (COD). Analytical procedures for COD produce a laboratory waste that contains toxic substances including mercury, chromium, and silver. Both COD and dissolved iron have had only limited utility in the detection of groundwater contamination from landfills, compared to other analytes.
- Reducing the typical monitoring frequency from quarterly to semiannual for landfills not known to be contaminating groundwater.
- Adding sampling for volatile organic compounds (VOCs), as these are the most direct and effective measure of a landfill's impact on groundwater quality and its potential to impair drinking water supplies.

Making these changes generally results in a more efficient monitoring program that better identifies serious groundwater impacts, involves fewer indirect environmental effects, and is more consistent with requirements for new MSW landfills. For sites that are now monitoring quarterly, where there is no contamination of groundwater, the changes may result in similar or lower overall costs.

Recently, we determined that the "old" Sauk County landfill (Lic. #2051) and the "new" Sauk County landfill (Lic. # 2978) are still monitoring groundwater for COD. We would like to update as many landfill monitoring programs as we can. **Therefore, we are asking that you submit an expedited plan modification request to update your monitoring program,** utilizing the procedure in s. NR 514.09(10), Wis. Adm. Code. Generally an updated program for a closed MSW landfill consists of semiannual monitoring for indicator parameters, not including COD or dissolved iron, and annual monitoring for VOCs. In your case, you can submit one expedited plan modification request for both landfills.

We will waive the $1,000 plan review fee for an expedited plan modification request received by June 1, 2008 and submitted solely to update your facility's groundwater monitoring program as described above.

If you are interested in making the above changes to your monitoring program (i.e., drop COD and dissolved iron monitoring, add annual VOC monitoring [*already being done at your landfills*], and switch to a semiannual monitoring frequency [*already being done at your landfills*]) and your landfill is not

known to be adversely affecting groundwater quality, please feel free to submit a request for an expedited plan modification to my attention. After June 1, 2008, it will again be necessary to require payment of a review fee. Should you wish to make other more detailed changes to your groundwater monitoring plan, a request for a plan modification with a review fee will generally be required.

Thank you for your consideration of this request. If you have any questions about this letter, please do not hesitate to contact me at 608-275-7769 or at James.Kralick@Wisconsin.gov .

Sincerely,

James Kralick, P.G.
Hydrogeologist, SCR Waste and Materials Management Program

Cc: Tom Bennwitz – SCR WMM Program Fitchburg

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Lloyd L. Eagan, Regional Director

South Central Regional Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3466
FAX 608-273-5610
TTY Access via relay - 711

rec'd by email- 3-25-08

Mr. Tim Stieve
Sauk County Solid Waste Manager
505 Broadway Street
Baraboo, WI 53913

File Ref: FID 157049970
Sauk County
SW Correspondence

Subject: Acknowledgment & Concurrence of Expedited Plan Modification Request per NR 514.09, Wis. Adm. Code at the Sauk County Landfill-new, (Lic. #2978).

Dear Mr. Stieve:

We have reviewed your March 19, 2008 expedited plan modification request for changes in the monitoring program at your closed landfill (Lic. # 2978). Your proposal would reduce the frequency of monitoring, and update the list of substances being sampled. In general, these changes appear justified based on sampling results to date, and would bring your program more into line with current requirements for other similar facilities. Therefore, we have no objections to your request.

The revised monitoring schedule for your landfill is summarized in the attached table. Sampling your monitoring wells for chemical oxygen demand (COD, parameter #341) and dissolved iron (parameter # 1046), if applicable, has been discontinued. In general, your sampling schedule now requires that the landfill monitoring wells be sampled semi-annually for the indicator parameters temperature, conductivity, pH, dissolved chloride, dissolved fluoride, groundwater elevation, hardness, and alkalinity. In addition, wells TW-30, TW-50, TW-35R, and TW-51 shall continue to be sampled for volatile organic compounds (VOCs) on a semi-annual basis, while the remainder of the site monitoring wells (TW-30A, TW-33, TW-31, TW-36, TW-34, TW-28, TW-28A, and TW-51A) will be sampled annually for VOCs. The private water supply "Hinze well", will also continue to be sampled annually for VOCs. All other sampling schedules remain as previously approved by the Department's December 12, 1997 Plan of Operation Modification Approval.

There is no fee for this plan modification. The Department reserves the right to require the submittal of additional information and to modify this approval at any time if, in the Department's opinion, modifications are necessary.

If you have any questions about this letter, please do not hesitate to call Jim Kralick at (608) 743-4841.

Sincerely,

Gene Mitchell, P.E.
Waste & Materials Management Program Supervisor
South Central Region

Attachment

Cc: case correspondence file - SCR
Jim Kralick – Janesville
Tom Bennwitz – SCR, Fitchburg – via e-mail
Dean Free, RMT, Inc. - via e-mail

Groundwater Monitoring Schedule Sauk County Landfill (Lic. #2978)		
Monitoring Point (DNR ID)	**Frequency of Sampling**	**Parameters**
Monitoring wells for water quality testing: TW-30 (101) TW-30A (102) TW-31 (103) TW-33 (107) TW-36 (108) TW-34 (116) TW-28 (118) TW-28A (120) TW-35R (200) TW-50 (202) TW-51 (204) TW-51A (206)	**Semi-annual** (April, October)	00010 Field Temperature in °C 00094 Field Conductivity @25□C 00400 Field pH 00941 Dissolved Chloride 00950 Dissolved Fluoride 04189 Groundwater Elevation 22413 Filtered Hardness 39036 Filtered Alkalinity Note sample odor (00001), color (00002) and turbidity (00003), if present
Monitoring wells for water quality testing: TW-30 (101) TW-35R (200) TW-50 (202) TW-51 (204)	**Semi-annual** (April, October)	VOC Scan EPA SW 846 Method 8260 [NR 507 Appendix 3 list of VOCs]
Monitoring wells for water quality testing: TW-30A (102) TW-31 (103) TW-33 (107) TW-36 (108) TW-34 (116) TW-28 (118) TW-28A (120) TW-51A (206)	**Annual** (October)	VOC Scan EPA SW 846 Method 8260 [NR 507 Appendix 3 list of VOCs]
Private wells*: Hinze (111)	**Annual** (October)	VOC Scan EPA SW 846 Method 8260 or EPA Method 524.2 [NR 507 Appendix 3 list of VOCs]

Note: Report the following parameter numbers for the listed conditions:
00001 Sample has odor
00002 Sample has color
00003 Sample has turbidity
00004 Well is broken
00005 Well is frozen
00006 Well is dry

Private Well Information.
"Hinze", E8745 Evergreen Lane, WUWN BX752, DNR ID 111

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Lloyd Eagan, Regional Director

South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397
Telephone 608-275-3266
FAX 608-273-5610
TTY 608-275-3231

NOV 3 2008

Mr. Tim Stieve
Sauk County Solid Waste Manager
505 Broadway St.
Baraboo, WI 53913

File Ref: FID 157049970
Sauk County
SW

SUBJECT: Plan Modification Request
Closed Sauk County Landfill, WDNR License No. 2978

Dear Mr. Stieve:

We have received your request for a plan modification from RMT regarding the elimination of settlement survey requirements, repair of a depression in the cap over Phase I, and the abandonment of two gas monitoring probes located south of the landfill.

The Department has reviewed the data supporting elimination of the settlement survey requirements and agrees that settlement has subsided to the point where additional measurements will no longer be needed.

In addition, the plan modification requests that the depressed area in Phase 1 be filled and regraded, followed with topsoil, seed and mulch. Since there is no information available to determine if the clay beneath the membrane still meets compaction requirements we will require that the fill above the membrane in the depressed area meet NR 504.07 specifications for soil placement followed by topsoil seed and mulch. The additional fill will promote positive drainage off the landfill, thus reducing infiltration. Based on the previous settlement reports provided by RMT the geo-membrane over the cap should have enough strength to hold the additional fill without being damaged. Therefore, Department concurs with filling the depressed area. Additional monitoring of the filled in area may be required in the future if it appears that additional settlement has occurred.

The two gas probes (GP-5 and GP-6) located south of the landfill can be abandoned. Please document, and submit a report when abandonment has occurred.

If you have any question regarding this letter, or if you would like to further discuss your proposal, please contact Tom Bennwitz at (608)275-3211 or Jim Kralick at (608) 275-7769.

Sincerely,

Dennis Mack

Dennis Mack, P.E.
Waste and Materials Management Team Supervisor
South Central Region

cc: Tom Bennwitz – SCR
Jim Kralick - SCR
Curt Madsen - RMT

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
CONDITIONAL PLAN MODIFICATION
FOR THE
REMOVAL OF THE SETTLEMENT SURVEY REQUIRMENTS,
FILLING IN OF DEPRERSSED AREA IN PHASE 1,
AND ELIMINATION OF TWO GAS PROBES
FOR
THE SAUK COUNTY SANITARY LANDFILL (#2978)

FINDINGS OF FACT

The Department of Natural Resources (Department) finds that:

1. Sauk County owns and operates a non-hazardous solid waste disposal facility located in the E 1/2 of Section 15 and W 1/2 of Section 14, T12N, R5E, Town of Excelsior, Sauk County, WI.

2. A conditional plan of operation approval was issued by the Department for the facility on January 5, 1983.

3. The documentation submitted for plan modification request includes a report dated September 2, 2008.

4. Additional documents considered in connection with the review of the construction documentation include the following:

   a. Sauk County Landfill Gas System Modification, Capstone MicroTurbine Installation Construction Documentation

   b. A report on elongation capacity submitted in a report on June 13, 2003

   c. Department files for the Sauk County Landfill (#2978).

5. The review fee, and construction inspection fees totaling $1,650 were received on October 10, 2008.

CONCLUSIONS OF LAW

The Department concludes that:

1. The Department has authority under s. 289.30 Stats. to modify a plan of operation approval if the modification would not inhibit compliance with chapter NR 500-538, Wis Adm. Code.

2. The department has authority under s. 289.30, Stats to approve a plan of operation with special conditions if the conditions are needed to ensure compliance with chapters NR 500 - 538, Wis. Adm. Code.

3. In accordance with the foregoing, the Department has authority under s. 289.31, Stats., to issue the following conditional plan of operation approval modification.

CONDITIONAL PLAN MODIFICATION APPROVAL

The Department hereby approves the proposed plan modification for the Sauk County Sanitary Landfill regarding the elimination of the settlement survey requirements, filling in depressed areas in Phase 1 as presented in the proposal, and the elimination of gas probes GP-5, and GP-6 UNDER THE FOLLOWING CONDITION.

1. The fill material to be placed in the depressed area of Phase 1 over the geomembrane is to be comprised of material meeting specification contained n NR 504.07 for capping material.

NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the Department, you should know that Wisconsin statutes, administrative codes and case law establish time periods and requirements for reviewing Department decisions.

To seek judicial review of the Department's decision, sections 227.52 and 227.53, Stats., establish criteria for filing a petition for judicial review. Such a petition shall be filed with the appropriate circuit court and shall be served on the Department. The petition shall name the Department of Natural Resources as the respondent.

DEPARTMENT OF NATURAL RESOURCES
For the Secretary

Dennis Mack, P.E.,
Waste Team Supervisor
South Central Region

Thomas M. Bennwitz, P.E.
Waste Management Engineer
South Central Region

Jim Kralick
Jim Kralick, P.G.
Waste Management Hydrogeologist
South Central Region

95B

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

PO Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

December 12, 1997

Mr. John Carroll
Sauk County Solid Waste Manager
Sauk County Landfills
E8795B Evergreen Lane
Baraboo, WI 53913

FILE REF: FID# 157049970
Sauk Co.
SW
Approval

SUBJECT: Plan of Operation Approval Modification Establishing PALs, ACLs, and a Revised Monitoring Program for the Sauk County Landfill, License Number 02978, Sauk County, Wisconsin

Dear Mr. Carroll:

We have reviewed the reports titled "Ground Water Monitoring Plan Modification, Sauk County Landfill, License Number 02978", dated July 1995 and received by the Department on July 13, 1995, and "Ground Water Monitoring Plan Modification Addendum", dated March 13, 1997 and received by the Department on March 19, 1997, submitted on behalf of Sauk County by Owen Ayres & Associates, Inc. The plan modification proposed changes to the monitoring program at the landfill to comply with requirements of the RCRA Subtitle D rules and current Department requirements for monitoring the performance of municipal solid waste landfills.

As a result of our review, we are issuing the attached conditional modification to the plan of operation approval issued on July 21, 1993. We have concluded that the methods used to calculate Preventive Action Limits (PALs) and Alternative Concentration Limits (ACLs) are acceptable, and the proposed PAL and ACL values are approved, with several exceptions. We are also approving the proposed landfill monitoring plan.

We mailed a draft of this letter and the attached approval on October 31, 1997. We received comments from you by telephone on December 8, 1997. Our response to your comments is below. The remainder of this letter describes some of the more important conditions of the approval.

Response to Comments

We have received only one comment from you requesting a change from weekly to monthly recording of condensate volume collected (Condition 10.e.). This change has been made.

Department Response to Documents Submitted by Sauk County

Groundwater Standards

We have approved your calculated Preventive Action Limit (PAL) values (see Condition #1) for the indicator parameters (i.e., field conductivity, total hardness, total alkalinity, and COD) that you are currently monitoring at your facility. We have also reviewed your request for exemptions to groundwater standards and approved the associated calculated Alternative Concentration Limits (ACLs), with two exceptions (see Condition #2 and Finding of Fact #11.

After the issuance of this approval, you must evaluate your monitoring results using the approved indicator PALs and either the standards for health and welfare parameters listed in Tables 1 and 2 of ch. NR 140, or the ACLs for those standards. After evaluating the monitoring results, you must attach a notification summary of any exceedances of these standards to your electronic monitoring data diskette submittal. The notification must include a preliminary analysis of the cause and significance of the exceedance. Periodically, we will assess your facility to ensure that you are reporting ch. NR 140 PAL and enforcement standard (ES) exceedances with your monitoring results.

The PALs apply at all wells where groundwater can be monitored, while ESs apply beyond your design management zone (DMZ) of 300 feet from the waste boundary. For your facility, therefore, both the ESs and the PALs apply at TW-28 (118) and TW-28A (120); the PALs apply at all other wells. An ACL is to be treated as a PAL within the DMZ. Outside the DMZ, an ACL is to be treated as a PAL if it is less than the ES in ch. NR 140; otherwise it acts as an ES.

The groundwater monitoring program is approved as proposed. Note that, in the approved program, semi-annual volatile organic compound (VOC) monitoring is required only at the four designated Subtitle D wells. In addition, the conditional approval modification includes requirements for routine lysimeter, leachate, and landfill gas monitoring.

If you wish to discuss this letter, please contact Hank Kuehling at (608) 275-3286 or Janet Battista at (608) 267-3533.

Sincerely,

Michael C. Degen
Waste Management Team Supervisor
South Central Region

MCD:hhk

Attachments: Draft Cover Letter
Draft Conditional Approval

cc: Jack Connelly - WA/3
Janet Battista - WA/3
Ann Bekta - WA/3
Hank Kuehling - SCR
Jim Bakken - SCR, Dodgeville
Sue Vasey/Steve Bischoff - Ayres Associates

BEFORE THE
STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

CONDITIONAL APPROVAL
MODIFYING THE PLAN OF OPERATION
FOR THE SAUK COUNTY LANDFILL
(License #02978)

FINDINGS OF FACT

The Department finds that:

1. Sauk County owns the currently operating nonhazardous municipal solid waste disposal facility located in the east half of Section 15, T12N, R5E, Town of Excelsior, Sauk County, Wisconsin.

2. The Department has issued the landfill the license number 02978.

3. The Department issued a conditional plan of operation approval for the facility on January 5, 1983.

4. On July 13, 1995, the Department received a report titled "Ground Water Monitoring Plan Modification, Sauk County Landfill", dated July 1995, submitted on behalf of Sauk County by Ayres Associates.

5. On March 19, 1997, the Department received a report titled "Ground Water Monitoring Plan Modification Addendum, Sauk County Landfill", dated March 13, 1997, submitted on behalf of Sauk County by Ayres Associates.

6. Sauk County submitted the appropriate review fee of $1,500 on August 14, 1995.

7. Other documents considered as part of the review of the groundwater monitoring plan modification request include reports from the Department's electronic groundwater monitoring data management system.

8. In the vicinity of the site, groundwater flow direction is generally to the southwest, and depth to the water table is approximately 80 feet at the north end of the site to approximately 35 feet at the south end.

9. No drinking water supply wells occur within 1,200 feet of the limits of filling of the landfill, other than the one supplying water to the landfill office building.

10. A minimum of 8 values were included in computing the mean and standard deviation for each calculated PAL and ACL.

11. ACLs are proposed in the report for the parameters and wells listed below, but no verified (a minimum of two) groundwater standard exceedances have occurred for these substances at these monitoring wells; exemptions and ACLs are therefore unwarranted and not approved for the following substances and wells.

Substance	Well Name (ID #)	Well Name (ID #)
Lead, dissolved	TW-30 (101)	
Manganese, dissolved	TW-51A (206)	

12. Based on an examination of site conditions, the Department finds the following:

    a. Groundwater concentrations of iron, lead, manganese, and nitrate and nitrite in the landfill facility area found at levels exceeding the ch. NR 140, Wis. Adm. Code, groundwater standards are representative of background groundwater quality because they reflect natural groundwater conditions.

b. The current landfill design was approved to achieve the lowest possible concentration of the substance in groundwater that was technically and economically feasible at the time of approval.

13. Based on an examination of the groundwater quality data for the facility for public health substances except nitrate (as N) and the Finding of Fact #12, the Department finds the following:

a. Background concentrations above the PALs but below the enforcement standards for the following substances were observed at the monitoring wells listed below:

Substance	Well Name & ID #	Well Name & ID #
Lead, dissolved	TW-34 (116)	Lndfll (119)

b. The facility has not caused and will not cause the concentration of these substances to exceed the enforcement standard for these substances at a point of standards application.

c. The facility is designed to achieve the lowest possible concentrations for these substances in groundwater that are technically and economically feasible.

14. Based on an examination of the groundwater quality data for the facility for public welfare substances and nitrate and nitrite (as N) and the Finding of Fact #12, the Department finds the following:

a. Background concentrations above the PALs but below the enforcement standards for the following substances were observed at the monitoring wells listed below:

Substance	Well Name & ID #	Well Name & ID #
Nitrate + Nitrite, diss.	TW-28 (118)	TW-28A (120)
	TW-33 (107)	TW-34 (116)
	TW-50 (202)	TW-51 (204)
	TW-51A (206)	Hinze (111)

b. Background concentrations above the ESs for the following substances were observed at the monitoring wells listed below:

Substance	Well Name & ID #	Well Name & ID #
Iron, dissolved	TW-28 (118)	TW-28A (120)
	TW-30 (101)	TW-30A (102)
	TW-31 (103)	TW-33 (107)
	TW-36 (108)	Hinze (111)
	Lndfll (119)	
Manganese, dissolved	TW-28 (118)	TW-51 (204)
Nitrate + Nitrite, diss.	TW-35R (200)	

c. The facility is designed to achieve the lowest possible concentrations for iron and manganese in groundwater that are technically and economically feasible.

d. The anticipated increase in the concentrations of iron and manganese does not present a threat to public health or welfare because of the landfill design and construction.

15. The indicator parameter PALs, the ACLs, and the special conditions set forth below are needed to assure that an increase in the concentration of lead, iron, manganese, and nitrate and nitrite as nitrogen does not cause an increased threat to public health or welfare or inhibit compliance with chs. NR 500-520, Wis. Adm. Code.

16. The Department sent to Sauk County a draft version of the conditional approval modifying the plan of operation of the landfill on October 31.

1997. The Department received a response from Sauk County on December 8, 1997.

CONCLUSIONS OF LAW

The Department concludes that:

1. The Department has authority under s. 289.30, Stats., to modify a Plan of Operation if the modification would not inhibit compliance with the applicable standards in ch. NR 500-520, Wis. Adm. Code.

2. The Department has the authority to approve a modification to the plan of operation with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500 to 520, Wis. Adm. Code.

3. The Department has authority under s. 289.30(8), Stats., and ch. NR 508, Wis. Adm. Code, to modify a plan of operation approval for an approved facility to ensure compliance with RCRA Subtitle D.

4. The Department has the authority under s. 160.15(3), Stats., and s. NR 140.20, Wis. Adm. Code, to establish preventive action limits for indicator parameters.

5. The Department has the authority under s. 160.19(8), Stats., and s. NR 140.28, Wis. Adm. Code, to grant exemptions to groundwater standards and establish alternative concentration limits, and to specify terms and conditions under which the Department may seek remedial action to gain compliance with groundwater quality standards.

6. The "Solid Waste Disposal Facility Criteria; Final Rule" (also known as RCRA Subtitle D) was published as 40 CFR 257 & 258 in the Federal Register on October 9, 1991 and is applicable to the Sauk County Landfill.

7. As of December 29, 1992, the State of Wisconsin has the sole authority to issue and enforce solid waste landfill permits for all of its municipal solid waste landfills, except those on tribal lands.

8. RCRA Subtitle D requires that the background monitoring be completed by October 9, 1994 for wells designated to demonstrate compliance with RCRA Subtitle D.

9. The conditions of approval set forth below are needed to assure compliance with s. NR 140, Wis. Adm. Code and applicable portions of chs. NR 500-520, Wis. Adm. Code.

10. In accordance with the foregoing, the Department has authority under ch. 289 and ch. 160, Stats., and s. NR 508.10, Wis. Adm. Code, to issue the following conditional approval modifying the plan of operation.

GRANT OF EXEMPTIONS

Sauk County has demonstrated circumstances that warrant exemptions to groundwater standards in ch. NR 140 for iron, lead, manganese, and nitrate & nitrite as nitrogen as specified in s. NR 140.28, Wis. Adm. Code. Therefore, the Department grants exemptions to the groundwater standards for the following parameters and monitoring wells. The Department may modify this approval, based on additional information.

Iron, dissolved
DNR ID #01046

Well Name	Well ID #	Well Name	Well ID #
TW-30	101	TW-30A	102
TW-31	103	TW-33	107
TW-36	108	TW-28	118
TW-28A	120	Hinze Well	111
Lf. Well	119		

Lead, dissolved
DNR ID #00240

Well Name	Well ID #	Well Name	Well ID #
TW-34	116	Lf. Well	119

Manganese, dissolved
DNR ID #00316

Well Name	Well ID #	Well Name	Well ID #
TW-28	118	TW-51	204

Nitrate & Nitrite as N, dissolved
DNR ID #00631

Well Name	Well ID #	Well Name	Well ID #
TW-33	107	TW-34	116
TW-28	118	TW-28A	120
TW-35R	200	TW-50	202
TW-51	204	TW-51A	206
Hinze Well	111		

CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION

The Department hereby modifies the plan of operation approval for the Sauk County Landfill by adding the following conditions. The following conditions shall supersede previous requirements when a conflict occurs.

Calculated PALs and ACLs

1. The preventive action limits (PALs) for the indicator parameters at this facility shall be as follows:

Alkalinity, filtered (mg/L)
DNR ID #39036

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	200	TW-30A (102)	190
TW-31 (103)	200	TW-33 (107)	180
TW-36 (108)	190	TW-34 (116)	200
TW-28 (118)	200	TW-28A (120)	230
TW-35R (200)	230	TW-50 (202)	190
TW-51 (204)	370	TW-51A (206)	210
Hinze (111) Well	170	Lndfll (119) Well	230

98B

Sauk County Landfill

Chemical Oxygen Demand (COD), filtered (mg/L)
DNR ID #00341

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	37	TW-30A (102)	36
TW-31 (103)	32	TW-33 (107)	32
TW-36 (108)	32	TW-34 (116)	46
TW-28 (118)	32	TW-28A (120)	32
TW-35R (200)	32	TW-50 (202)	32
TW-51 (204)	31	TW-51A (206)	31
Hinze (111) Well	31	Lndfll (119) Well	31

Field Conductivity (mhos/cm @ 25°C)
DNR ID #00872

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	500	TW-30A (102)	400
TW-31 (103)	410	TW-33 (107)	400
TW-36 (108)	480	TW-34 (116)	500
TW-28 (118)	490	TW-28A (120)	500
TW-35R (200)	510	TW-50 (202)	450
TW-51 (204)	740	TW-51A (206)	470
Hinze (111) Well	380	Lndfll (119) Well	480

Hardness, filtered (mg/L)
DNR ID #22413

Well Name (ID #)	PAL	Well Name (ID #)	PAL
TW-30 (101)	220	TW-30A (102)	210
TW-31 (103)	220	TW-33 (107)	210
TW-36 (108)	200	TW-34 (116)	220
TW-28 (118)	250	TW-28A (120)	270
TW-35R (200)	240	TW-50 (202)	240
TW-51 (204)	400	TW-51A (206)	240
Hinze (111) Well	190	Lndfll (119) Well	260

2. The following alternative concentration limits (ACLs) apply to the exemptions granted in this approval:

Iron, dissolved (mg/L)
DNR ID #01046

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-30 (101)	0.59	TW-30A (102)	0.69
TW-31 (103)	0.92	TW-33 (107)	0.71
TW-36 (108)	0.36	TW-28 (118)	0.88
TW-28A (120)	0.28	Hinze (111) Well	0.33
Lndfll (119) Well	0.42		

Lead, dissolved (ug/L)
DNR ID #00240

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-34 (116)	2.8	Lndfll (119) Well	2.2

Manganese, dissolved (ug/L)
DNR ID #00316

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-28 (118)	0.07	TW-51 (204)	0.16

Nitrate + Nitrite, dissolved (mg/L)
DNR ID #00631

Well Name (ID #)	ACL	Well Name (ID #)	ACL
TW-33 (107)	4.8	TW-34 (116)	7.2
TW-28 (118)	6.2	TW-28A (120)	8.5
TW-35R (200)	19	TW-50 (202)	9.3
TW-51 (204)	2.5	TW-51A (206)	2.8
Hinze (111) Well	2.8		

PALs and ESs for all other substances shall be as specified in ch. 140, Wis. Adm. Code.

Groundwater Monitoring

3. The results of all of the required environmental monitoring shall be reported to the Department electronically on diskette, tape, or microdisk. All monitoring specified as occurring on a quarterly basis shall be completed during the months of March, June, September, and December of each year. All monitoring specified as occurring on a semi-annual basis shall be completed during the months of March and September of each year. Annual monitoring shall be completed in September of each year.

4. The groundwater monitoring program for inorganic parameters listed below shall be conducted semi-annually at the monitoring wells that are also listed. Sample color, odor, and turbidity shall be noted at the time of sampling.

Well Name	Well ID #	Well Name	Well ID #
TW-30	101	TW-30A	102
TW-31	103	TW-33	107
TW-36	108	TW-34	116
TW-28	118	TW-28A	120
TW-35R	200	TW-50	202
TW-51	204	TW-51A	206
Hinze Well	111	Landfill Well	119

Parameter	ID #
Groundwater temperature	00010
Chloride	00940
COD, filtered	00341
Field pH	00400
Groundwater elevation	72020
Field conductivity at 25°C	00094
Hardness, filtered	22413
Alkalinity, filtered	39036

5. The groundwater monitoring program for volatile organic compounds (VOCs) shall be conducted as follows:

a. Monitoring for VOCs at the following Subtitle D wells shall be conducted on a semi-annual basis:

Well Name	Well ID #	Well Name	Well ID #
TW-30	101	TW-35R	200
TW-50	202	TW-51	204

b. Monitoring for VOCs at the following wells shall be conducted on an annual basis:

Well Name	Well ID #	Well Name	Well ID #
TW-30A	102	TW-31	103
TW-33	107	TW-36	108
TW-34	116	TW-28	118
TW-28A	120	TW-51A	204
Hinze Well	111	Landfill Well	119

c. Analysis for VOCs shall be conducted in accordance with ch. NR 507 Appendix 1, Table 1.

6. The four Subtitle D wells shall be monitored during the semi-annual monitoring events for antimony until a total of four rounds of antimony results have been reported to the Department that have not been influenced by contaminated field filters.

Lysimeter Monitoring

7. The collection lysimeters shall be monitored in accordance with ch. NR 507 Appendix 1, Table 5 for municipal solid waste.

Leachate Monitoring Program

8. A leachate monitoring program shall be conducted during the active life of the landfill and after landfill closure. The leachate monitoring program shall consist of the following:

a. All leachate samples shall be obtained from the leachate storage tanks. Leachate samples shall not be filtered prior to analysis.

b. Leachate shall be monitored in accordance with ch. NR 507 Appendix 1, Table 4 for municipal solid waste.

9. The leachate head elevation (ID# 00023) and the depth of leachate (ID# 00031) in the leachate head monitoring devices shall be measured monthly and the results reported quarterly with the TADs.

Landfill Gas Monitoring

10. A landfill gas monitoring program shall be conducted during the active life of the landfill and during the period of long-term care. The landfill gas monitoring program shall consist of the following:

a. All gas extraction wells shall be monitored for the parameters listed below on a monthly basis and reported to the Department quarterly.

Parameters	ID #
% Methane	85547
% Oxygen	85550
Pressure - in. of Water	46385

Flow Rate - CFM	46386
Valve Opening - % Open	46387
Gas Temperature - °F	46388

b. The site conditions shall be monitored for the parameters listed below on a monthly basis at the time of gas extraction well monitoring. These results shall be reported to the Department quarterly.

Parameters	ID #
Ambient Air Temperature °F	00021
Barometric Pressure	00025
Trend in Barometric Pressure	00024
Ground Conditions	No ID

c. The gas blower shall be monitored for the parameters listed below biweekly and reported to the Department quarterly.

monthly

Parameters	ID #
% Methane	85547
% Oxygen	85550
Pressure - in. of Water	46385
Flow Rate - CFM	46386

The gas blower shall also be monitored annually for the VOC scan (ID# 84085) parameters that are listed on the Volatile Organic Compound Monitoring Report Form 4400-107A.

Yes

monthly? #5 Well Monitor #6 Near #9

d. All gas monitoring probes installed at the site shall be monitored for % Methane (#85547), % Oxygen (#85550), and Soil Gas Pressure (#46389) on a quarterly basis.

e. The gas condensate shall be monitored for the parameters listed below on a quarterly basis. Condensate volume collected (ID# 46391) shall be recorded on a monthly basis and reported to the Department quarterly.

Parameters	ID #
Field Conductivity (corrected to 25°C)	00872
Field pH	00400
COD	00340
Total Suspended Solids -	00134

f. The gas condensate shall be monitored for VOCs as listed in ch. 507 Appendix III on an annual basis.

The Department reserves the right to require either the submittal of additional information or to further modify this approval at any time if, in the Department's opinion, further modifications to this approval are necessary. Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this position, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to Sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed or otherwise served by the Department to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

This notice is provided pursuant to section 227.48(2), Stats.

DATE December 12, 1997

DEPARTMENT OF NATURAL RESOURCES
For The Secretary

Michael C. Degen
Waste Management Team Supervisor
South Central Region

Harlan Kuehling, P.G.
Hydrogeologist

Mark Harder, P.E.
Engineer, Waste Management Program

Attachment 3

2008 Final Cover Inspection and Environmental Monitoring Plan Drawing

2008 Annual Final Cover Inspection
Sauk County Landfills (WDNR License Nos. 02051 and 2978)

Date Performed: September 17, 2008

Performed By: D. R. Free, PE – RMT, Inc.

The following items were noted during the inspection:

Site License No. 02051

1. The vegetation is well-established and in very good condition. A few areas of settlement have resulted in shallow ponded areas with periodic standing surface water. These areas remain minor and have not been corrected to date. The landfill gas piping appears to have similarly settled in varying locations, however, settlement has not been significant enough to cause gas flow to be blocked by accumulating condensate. The surface areas will continue to be evaluated.
2. Site perimeter chain-link fencing and gates are in good working condition and no repairs are necessary at this time.
3. Site access road enters site from northwest corner through large vehicle gate. The road extends along the west side of the landfill and terminates at the southwest corner. A grassed roadway extends up the southwest corner of the landfill to the top of the site. The roads are in good condition and no repairs are necessary at this time.

Site License No. 02978

1. The northern third of the landfill (Phase III) received final cover late in 2006. This was the second growing season for the seed that was planted. The vegetation is improving over the Phase III area, and better over the remaining, previously covered, areas of the site. The newer vegetated areas will require 3 or more years to fully establish themselves. As vegetation improves over Phase III, intermittent erosion will be less prominent on the sideslopes and perimeter ditches.
2. The County continues to repair minor eroded areas of the site gravel access roads.
3. The primary area of past settlement exists just west of the gravel access road on top of the site in the area near the settlement plates. This area will be addressed in 2009 as approved in the WDNR's November 3, 2008, response to the Plan Modification Request.
4. Granular bentonite clay was added to the annular space between the well pipe of gas extraction well EXW-01 and the pipe sleeve to reduce the air intrusion that could be heard occurring around the well pipe. The repair, completed in April, was successful.

Attachment 4

2008 Leachate Management System Data

Leachate Removed and Hauled Annual Totals 2005 - 2008

Sauk County Landfill, WDNR Lic. No. 02978

MONTH	GALLONS
Jan-05	146,794
Feb-05	136,410
Mar-05	118,335
Apr-05	114,331
May-05	98,676
Jun-05	108,194
Jul-05	80,583
Aug-05	72,435
Sep-05	98,022
Oct-05	115,526
Nov-05	71,204
Dec-05	59,223
TOTAL	1,219,733

MONTH	GALLONS
Jan-06	137,849
Feb-06	73,444
Mar-06	96,974
Apr-06	112,081
May-06	128,649
Jun-06	111,737
Jul-06	81,699
Aug-06	70,856
Sep-06	105,464
Oct-06	109,767
Nov-06	102,593
Dec-06	96,707
TOTAL	1,227,820

MONTH	GALLONS
Jan-07	92,545
Feb-07	87,750
Mar-07	70,625
Apr-07	83,215
May-07	81,244
Jun-07	70,096
Jul-07	67,569
Aug-07	97,937
Sep-07	70,847
Oct-07	58,116
Nov-07	62,571
Dec-07	58,267
TOTAL	900,782

MONTH	GALLONS
Jan-08	61,232
Feb-08	50,958
Mar-08	81,297
Apr-08	62,260
May-08	59,774
Jun-08	83,610
Jul-08	63,500
Aug-08	39,000
Sep-08	58,500
Oct-08	44,000
Nov-08	39,000
Dec-08	42,000
TOTAL	685,131

Attachment 5

2008 LFG Management System Data

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	7/18/08, 8/14/08, 9/17/08

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

July, August, September 2008

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify) _____

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free — Facility Representative Name (Print)
Project Engineer — Title
608-662-5476 — (Area Code) Telephone No.

Dean R Free — Signature
12-16-08 — Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- ☐ **Found uploading problems on** _____ **Initials** _____
- ☐ **Notified contact of problems on** _____ **Uploaded data successfully on** _____

EDD format(s): ☐ **Diskette** ☐ **CD (initial submittal and follow-up)** ☐ **E-mail (follow-up only)** **Other** _____

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	10/21/2008, 11/25/2008, 12/30/2008

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

October, November, December 2008

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify) _____

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean Free	Project Engineer	(608) 662-5476
Facility Representative Name (Print)	Title	(Area Code) Telephone No.

Signature 1-26-09 Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

108B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 7/18/2008 TIME: 8:45 a.m. AMBIENT TEMP.: 75 °F

BAROMETRIC PRESSURE & TREND: 29.96 in. Hg. Steady

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-16.5	0.70	177	64.0	50.9	34.2	0.3	33%
NEW SKID		0.20	74	70.0				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			251	AVE. 67				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 7/18/2008 TIME: 12:45 p.m. AMBIENT TEMP.: 78 °F

BAROMETRIC PRESSURE & TREND: 29.96 in. Hg. Steady

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID	-17.5	0.85	193	68	48.9	35.6	0.5	50%
NEW SKID		0.20	74	70				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			267	AVE. 69	[46388]			

COMMENTS: Header vacuum was increased slightly to increase vacuum on both landfills due to high methane levels. No methane was detected at the probes.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	7/18/2008
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	11:15 a.m.
SERIAL NO.:	RMT 1762	END TIME:	12:45 p.m.
DATE LAST CALIBRATED:	7/18/2008		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Sunny
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	78 °F
OTHER:	-	BAROMETRIC PRESSURE (25) & TREND (46381):	29.96 in. Hg Steady
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	78	-14.0	-6.2	0.03	3	38.2	4.9	0.2	5	NC	NC
EXW-02	[732]	0.5	90	-13.5	-2.8	0.04	4	0.0	0.0	20.2	0	NC	NC
EXW-03	[733]	0.5	92	-14.0	-3.2	0.03	3	34.4	7.8	6.2	0	NC	NC
EXW-04	[734]	0.5	86	-13.5	-2.2	0.03	3	10.8	5.6	15.2	0	NC	NC
EXW-05	[735]	0.5	72	-13.0	-13.0	0.32	16	32.1	20.4	0.4	12	5	-12.0
EXW-06	[736]	0.5	88	-13.0	-13.0	0.15	7	43.1	24.9	0.4	100	75	-12.0
EXW-07	[737]	0.5	94	-13.0	-5.0	0.03	3	9.4	5.6	16.1	0	NC	NC
EXW-08	[738]	0.5	96	-13.0	-11.5	0.26	14	42.7	31.7	0.9	60	NC	NC
EXW-09	[739]	0.5	94	-13.0	-13.0	1.20	39	46.4	34.7	0.2	100	NC	NC
EXW-10	[740]	0.5	94	-13.0	-11.5	0.80	25	56.4	35.1	0.2	100	NC	NC
EXW-11	[741]	0.5	90	-13.0	-10.0	0.80	25	47.4	34.2	0.3	60	NC	NC
EXW-12	[742]	0.5	110	-13.0	-10.5	1.00	33	55.7	37.4	0.2	100	NC	NC
EXW-13	[743]	0.5	106	-13.0	-3.5	0.04	3	53.4	34.5	0.4	75	NC	NC
EXW-14	[744]	0.5	108	-12.0	-3.7	0.70	22	54.6	36.2	0.5	60	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	200						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NA" = Data Not Available.
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

10 of 18

By: S. Inman
Checked By: D. Free

P:\22725\36\2008 Gas Monitoring Data\Third Quarter 08\New Site Gas Well 07 2008.xls
9/23/2008

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	7/18/2008
		START TIME:	8:45 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:15 p.m.
SERIAL NO.:	RMT 1762		
DATE LAST CALIBRATED:	7/18/2008	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	73 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.96 in. Hg Steady
OTHER:	--	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01S	[731]	NA	74	-15.0	-0.02	(1)	0	30.1	14.7	0.4	0	NC	NC
EXW-02S	[732]	NA	80	-15.0	0.00	(1)	0	6.5	4.7	13.6	0	NC	NC
EXW-03S	[733]	NA	74	-15.0	0.00	(1)	0	20.8	16.4	0.2	0	NC	NC
EXW-04S	[734]	NA	76	-15.0	0.00	(1)	1	26.6	13.6	0.8	1	NC	NC
EXW-05S	[735]	NA	76	-15.0	-0.28	(1)	1	38.5	25.1	0.1	1	NC	NC
EXW-06S	[736]	NA	82	-15.0	0.00	(1)	0	3.5	2.9	9.0	0	NC	NC
EXW-07S	[737]	NA	72	-15.0	-0.18	(1)	1	34.4	23.6	3.0	1	NC	NC
EXW-08S	[738]	NA	70	-15.0	-1.80	(1)	10	48.1	31.4	0.1	11	NC	NC
EXW-09S	[739]	NA	62	-15.0	-2.00	(1)	12	46.2	29.4	0.3	9	NC	NC
EXW-10S	[740]	NA	82	-15.0	-0.20	(1)	2	45.1	26.4	0.2	3	NC	NC
EXW-11S	[741]	NA	74	-15.0	-0.20	(1)	2	45.4	28.5	0.1	3	NC	NC
EXW-12S	[742]	NA	64	-15.0	-0.70	(1)	6	44.7	29.2	0.2	7	NC	NC
EXW-13S	[743]	NA	68	-15.0	-0.68	(1)	2	41.8	21.3	0.4	3	NC	NC
EXW-14S	[744]	NA	82	-15.0	-1.50	(1)	4	59.5	36.4	0.4	18	NC	NC
EXW-15S	[745]	NA	68	-15.0	-0.12	(1)	2	48.1	27.2	0.9	5	NC	NC
SBSV-1(E)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-3(S)			(2)	(2)							100%	NC	NC
						TOTAL	43						

Comments: 1. No adjustments made this round; high vacuum and compressor adjustments being made.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 8/14/08 TIME: 6:30 a.m. AMBIENT TEMP.: 60 °F

BAROMETRIC PRESSURE & TREND: 29.89 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	-27.0	0.80	186
NEW SKID		0.60	126
TOTAL SYSTEM GAS FLOW [46386]			312

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	66.0	46.3	34.2	0.2
	68.0			
AVE.	67			

WELLFIELD VALVE SETTING (BEFORE)
100%
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 8/14/08 TIME: 12:00 p.m. AMBIENT TEMP.: 73 °F

BAROMETRIC PRESSURE & TREND: 29.97 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	-23.0	0.74	180
NEW SKID		0.00	0
TOTAL SYSTEM GAS FLOW [46386]			180

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
		[85547]	[85544]	[85550]
	66	46.4	33.7	0.5
	74			
AVE.	70	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
100%
(Old Skid Only)

COMMENTS: 1. New skid went down due to high vacuum.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	8/14/2008
GAS/INSTRUMENT TYPE:	Landtec GA-90	START TIME:	9:40 AM
SERIAL NO.:	RMT 1762	END TIME:	11:40 AM
DATE LAST CALIBRATED:	7/18/2008		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Cloudy
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	73 °F
OTHER:	-	BAROMETRIC PRESSURE (25) & TREND (46381):	29.97 In. Hg Steady
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85560]	[46387]		
EXW-01	[731]	0.5	64	-13.5	-7.5	0.02	2	34.8	29.1	0.2	5	NC	NC
EXW-02	[732]	0.5	66	-13.5	-4.2	0.05	4	0.0	0.0	20.1	0	NC	NC
EXW-03	[733]	0.5	66	-13.5	-4.6	0.02	2	38.4	8.7	6.2	0	NC	NC
EXW-04	[734]	0.5	64	-13.0	-3.8	0.07	3	0.0	0.0	20.1	0	NC	NC
EXW-05	[735]	0.5	62	-13.5	-13.5	0.02	2	29.4	22.7	0.3	5	NC	NC
EXW-06	[736]	0.5	72	-13.5	-13.5	0.10	6	44.6	27.1	0.3	75	NC	NC
EXW-07	[737]	0.5	70	-12.0	-6.4	0.05	3	0.3	0.2	19.4	0	NC	NC
EXW-08	[738]	0.5	84	-12.0	-10.0	0.75	21	49.4	36.1	0.6	60	NC	NC
EXW-09	[739]	0.5	88	-12.0	-10.5	1.75	40	46.4	31.7	0.1	100	NC	NC
EXW-10	[740]	0.5	92	-12.0	-11.5	0.60	20	56.3	37.4	0.3	100	NC	NC
EXW-11	[741]	0.5	94	-12.0	-8.0	0.30	12	40.2	31.7	1.2	60	NC	NC
EXW-12	[742]	0.5	112	-11.5	-10.5	1.50	36	54.6	39.2	0.3	100	NC	NC
EXW-13	[743]	0.5	106	-11.5	-5.2	0.50	17	49.7	36.9	0.6	75	NC	NC
EXW-14	[744]	0.5	108	-11.5	-5.5	0.50	17	52.4	39.1	0.2	60	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	185						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NA" = Data Not Available.
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

G211

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	8/14/2008
		START TIME:	7:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	9:30 AM
SERIAL NO.:	RMT 1762		
DATE LAST CALIBRATED:	8/14/2008	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	60 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.89 in. Hg Rising
OTHER:	–	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01S	[731]	NA	62	-24.0	-0.90	(2)	0	12.8	9.7	7.5	0	NC	NC
EXW-02S	[732]	NA	62	-24.0	-0.10	(2)	0	11.2	8.7	9.4	0	NC	NC
EXW-03S	[733]	NA	64	-15.0	-0.12	(2)	0	0.1	0.3	19.4	0	NC	NC
EXW-04S	[734]	NA	62	-15.0	-0.09	(2)	1	11.4	7.4	10.3	1	NC	NC
EXW-05S	[735]	NA	62	-15.0	-0.03	(2)	1	22.4	23.7	0.1	1	NC	NC
EXW-06S	[736]	NA	62	-24.0	-0.52	(2)	0	38.5	25.2	0.2	0	NC	NC
EXW-07S	[737]	NA	64	-15.0	-0.15	(2)	1	0.4	1.3	13.8	1	NC	NC
EXW-08S	[738]	NA	60	-24.0	-1.90	(2)	10	39.4	29.0	0.2	11	NC	NC
EXW-09S	[739]	NA	64	-23.0	-3.40	(2)	12	40.1	28.6	0.2	9	NC	NC
EXW-10S	[740]	NA	64	-15.0	-0.40	(2)	2	40.2	25.6	0.1	3	NC	NC
EXW-11S	[741]	NA	64	-24.0	-0.50	(2)	2	38.6	25.8	0.1	3	NC	NC
EXW-12S	[742]	NA	62	-23.0	-1.15	(2)	6	35.0	28.1	0.2	7	NC	NC
EXW-13S	[743]	NA	66	-23.0	-1.15	(2)	2	38.2	28.6	0.2	3	NC	NC
EXW-14S	[744]	NA	54	-23.0	-23.00	(2)	4	58.3	40.1	0.2	18	NC	NC
EXW-15S	[745]	NA	58	-23.0	-0.36	(2)	2	45.1	24.0	0.3	5	NC	NC
SBSV-1(E)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-3(S)			(3)	(3)							100%	NC	NC
						TOTAL	43						

Comments: 1. No adjustments made this round for certain wells due to compressor adjustments being made, causing changing conditions.
2. Orifice plates do not exist in wellheads at this time, therefore, differential pressure not available.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-In. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 9/17/2008 TIME: 8:35 a.m. AMBIENT TEMP.: 60 °F

BAROMETRIC PRESSURE & TREND: 30.11 in. Hg. Steady

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (In. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-23.0	1.50	257	66.0	41.8	33.7	0.6	100%
NEW SKID		0.28	87	68.0				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			344	AVE. 67				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 9/17/2008 TIME: 3:50 p.m. AMBIENT TEMP.: 76 °F

BAROMETRIC PRESSURE & TREND: 30.11 in. Hg. Steady

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (In. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]			[85547]	[85544]	[85550]	[46387]	
OLD SKID	-23.0	0.80	187	68	41.8	33.7	0.6	100%
NEW SKID		0.30	90	68				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			277	AVE. 68	[46388]			

COMMENTS: 1. Orifice plates being installed in wellheads of Older Landfill; therefore, the "Before" gas quality readings were used for the "After" readings due to air intrusion caused by wellhead modifications.

15

By: J. Roelke
Checked By: D. Free

P:\22725\36\2008 Gas Monitoring Data\Third Quarter 08\Blower 09 2008.xls
9/25/2008

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/17/2008
GAS/INSTRUMENT TYPE:	Landtec GA-90/GEM 500	START TIME:	1:50 p.m.
SERIAL NO.:	RMT 1762	END TIME:	3:50 p.m.
DATE LAST CALIBRATED:	9/17/2008		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Sunny
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	76 °F
OTHER:	–	BAROMETRIC PRESSURE (25) & TREND (46381):	30.11 in. Hg Steady
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	74	-19.5	-9.6	0.02	1	31.6	26.0	0.6	5	NC	NC
EXW-02	[732]	0.5	82	-19.5	-4.4	0.03	1	0.1	0.0	20.3	0	NC	NC
EXW-03	[733]	0.5	86	-18.0	-5.4	0.08	1	24.5	5.4	11.1	0	NC	NC
EXW-04	[734]	0.5	82	-19.0	-3.8	0.08	1	10.4	8.8	12.9	0	NC	NC
EXW-05	[735]	0.5	66	-18.0	-16.5	0.32	2	27.7	22.3	0.6	5	NC	NC
EXW-06	[736]	0.5	76	-18.0	-17.0	0.22	1	42.4	28.1	0.5	75	NC	NC
EXW-07	[737]	0.5	88	-18.0	-7.2	0.03	1	0.5	0.4	18.7	0	NC	NC
EXW-08	[738]	0.5	95	-18.0	-11.5	0.50	2	34.3	28.4	1.8	60	NC	NC
EXW-09	[739]	0.5	90	-18.0	-14.0	4.00	3	41.5	33.2	0.8	100	NC	NC
EXW-10	[740]	0.5	92	-18.0	-16.0	1.60	3	50.5	35.2	0.6	100	NC	NC
EXW-11	[741]	0.5	86	-18.0	-14.0	1.60	3	40.9	33.0	0.7	60	NC	NC
EXW-12	[742]	0.5	110	-18.0	-14.0	1.00	3	49.5	36.8	0.5	100	NC	NC
EXW-13	[743]	0.5	108	-18.0	-5.0	0.80	1	39.5	33.7	0.8	75	NC	NC
EXW-14	[744]	0.5	106	-18.0	-6.0	0.90	2	44.7	36.2	0.5	60	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)								
						TOTAL	25						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

115B

By: A. Volt
Checked By: D. Fres

P:\22725\06\2008 Gas Monitoring Data\Third Quarter 08\New Site Gas Well 09 2008.xls
9/25/2008

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/17/2008
		START TIME:	9:50 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:30 a.m.
SERIAL NO.:	RMT 1762		
DATE LAST CALIBRATED:	9/17/2008	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	65 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.11 In. Hg Steady
OTHER:	–	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[45388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01S	[731]	NA	64	-21.0	-0.05	(1)	1	3.7	10.0	6.3	1	NC	NC
EXW-02S	[732]	NA	74	-21.0	-0.05	(1)	0	0.3	1.2	18.5	0	NC	NC
EXW-03S	[733]	NA	72	-21.0	-0.08	(1)	1	3.4	5.8	13.0	1	NC	NC
EXW-04S	[734]	NA	74	-21.0	-0.05	(1)	1	16.1	11.2	6.8	1	NC	NC
EXW-05S	[735]	NA	64	-20.0	-0.30	(1)	3	17.6	22.6	0.7	9	NC	NC
EXW-06S	[736]	NA	76	-21.0	-0.06	(1)	1	0.3	0.6	15.4	1	NC	NC
EXW-07S	[737]	NA	64	-21.0	-0.30	(1)	4	37.4	26.0	0.4	5	NC	NC
EXW-08S	[738]	NA	60	-20.5	-1.20	(1)	10	37.7	30.9	0.5	14	NC	NC
EXW-09S	[739]	NA	56	-20.5	-2.70	(1)	12	39.9	29.0	0.4	11	NC	NC
EXW-10S	[740]	NA	72	-20.5	-0.20	(1)	5	40.4	25.7	0.2	7	9	-0.62
EXW-11S	[741]	NA	72	-21.0	-0.25	(1)	5	36.0	25.4	0.3	9	NC	NC
EXW-12S	[742]	NA	62	-20.5	-0.80	(1)	8	33.2	26.6	0.5	9	NC	NC
EXW-13S	[743]	NA	78	-20.5	-0.82	(1)	8	34.4	27.2	0.7	11	NC	NC
EXW-14S	[744]	NA	64	-21.0	-20.5	(1)	16	58.7	41.3	0.3	100	NC	NC
EXW-15S	[745]	NA	62	-21.0	-0.16	(1)	5	44.9	25.1	0.7	5	9	-1.2
SBSV-1(E)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-3(S)			(2)	(2)							100%	NC	NC
						TOTAL	80						

Comments: 1. No adjustments made this round; high vacuum and compressor adjustments being made.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

By: A. Voit
Checked By: D. Free

P:\22725\38\2008 Gas Monitoring Data\Third Quarter 08\Old Site Gas Well 09 2008.xls
9/25/2008

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/17/2008		
		START TIME:	11:45 AM		
		END TIME:	12:40 PM		
GAS/INSTRUMENT TYPE:	Landtec GA-90				
SERIAL NO.:	RMT 1769	WEATHER CONDITIONS:	Sunny		
DATE LAST CALIBRATED:	9/17/2008	TEMPERATURE (11):	72	°F	
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.11	in. Hg	Steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Moist		

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	-0.02	-0.02	-0.02	0.00	-0.03	-0.02	-0.03	-0.02	-0.15	-0.03
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.5	0.7	0.8	1.0	0.6	0.1	0.2	0.0	0.0	0.2
OXYGEN (%, by vol.) [85550]:	19.7	18.8	19.6	19	19.8	20.3	19.7	20.4	20.1	20.1

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 10/21/08 TIME: 8:55 am AMBIENT TEMP.: 37 °F

BAROMETRIC PRESSURE & TREND: 30.48 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	-32.0	1.70	275
NEW SKID		0.02	23
TOTAL SYSTEM GAS FLOW [46386]			298

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	60.0	33.1	28.0	3.5
	62.0			
AVE.	61			

WELLFIELD VALVE SETTING (BEFORE)
100%
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 10-21/08 TIME: 2:30 pm AMBIENT TEMP.: 53 °F

BAROMETRIC PRESSURE & TREND: 30.39 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	-12.0	0.02	30
NEW SKID		0.08	48
TOTAL SYSTEM GAS FLOW [46386]			78

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
		[85547]	[85544]	[85550]
	68	33.4	28.4	3.1
	62			
AVE.	65	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
100%
(Old Skid Only)

COMMENTS:
1. Turbines for old site and older compressor temporarily shut down to install heat trace. Applied header vacuum decreased before new site was monitored, and therefore values are less on the new site monitoring form.
2. Siloxane test was conducted in CMS2 vessel.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	10/21/2008
GAS/INSTRUMENT TYPE:	Landtec GA-90/GEM 500	START TIME:	12:20 PM
SERIAL NO.:	RMT 1762	END TIME:	2:15 AM
DATE LAST CALIBRATED:	10/21/2008		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Sunny
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	53 °F
OTHER:	–	BAROMETRIC PRESSURE (25) & TREND (46381):	30.39 in. Hg Falling
		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
(GEMS Code)			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	62	-12.0	-7.5	0.02	2	27.1	24.6	0.1	5	NC	NC
EXW-02	[732]	0.5	58	-12.0	-4.7	0.00	0	0.1	0.2	20.3	0	NC	NC
EXW-03	[733]	0.5	64	-12.0	-5.5	0.00	0	41.6	9.7	5.1	0	NC	NC
EXW-04	[734]	0.5	58	-12.0	-3.6	0.00	0	10.2	11.4	9.4	0	NC	NC
EXW-05	[735]	0.5	54	-12.0	-10.0	0.09	10	23.7	21.9	0.2	5	NC	NC
EXW-06	[736]	0.5	64	-12.0	-12.0	0.04	8	37.6	27.4	0.3	75	NC	NC
EXW-07	[737]	0.5	62	-11.0	-5.5	0.00	0	7.2	4.6	17.4	0	NC	NC
EXW-08	[738]	0.5	90	-11.0	-8.0	0.16	18	27.9	25.8	2.4	25	NC	NC
EXW-09	[739]	0.5	76	-11.0	-10.0	0.08	16	38.3	31.9	0.2	100	75	-9.5
EXW-10	[740]	0.5	84	-11.0	-11.0	0.50	30	48.5	34.8	0.3	100	NC	NC
EXW-11	[741]	0.5	76	-11.0	-9.0	0.60	32	34.6	29.1	2.4	25	NC	NC
EXW-12	[742]	0.5	104	-11.0	-11.0	1.80	50	48.7	36.3	0.3	100	NC	NC
EXW-13	[743]	0.5	94	-11.0	-4.5	0.40	26	36.9	32.8	0.4	75	NC	NC
EXW-14	[744]	0.5	98	-11.0	-4.4	0.40	26	43.3	35.7	0.3	60	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	218						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

118 B

By: J. Roelke
Checked By: D. Free

P:\22725\38\2008 Gas Monitoring Data\Fourth Quarter 08\New Site Gas Well 10 2008.xls
1/19/2009

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	10/21/2008
		START TIME:	10:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	11:30 AM
SERIAL NO.:	RMT 1762		
DATE LAST CALIBRATED:	10/21/2008	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	37 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.48 in. Hg Falling
OTHER:	--	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01S	[731]	NA	54	-14.0	-0.02	0.02	1	7.6	15.5	0.5	Trace	NC	NC
EXW-02S	[732]	NA	54	-14.0	-0.02	0.00	0	11.3	17.3	0.2	0	NC	NC
EXW-03S	[733]	NA	52	-14.0	-0.02	0.01	1	15.4	17.9	0.4	Trace	NC	NC
EXW-04S	[734]	NA	52	-14.0	-0.02	0.00	1	23.2	18.5	0.3	Trace	NC	NC
EXW-05S	[735]	NA	54	-14.0	-0.03	0.40	3	21.8	21.9	0.3	1	NC	NC
EXW-06S	[736]	NA	58	-14.0	-0.03	0.04	1	0.0	2.0	5.3	Trace	NC	NC
EXW-07S	[737]	NA	50	-14.0	-0.02	0.38	4	41.3	26.5	0.3	0.5	NC	NC
EXW-08S	[738]	NA	50	-16.0	-0.40	0.90	10	43.0	31.0	0.3	1.5	NC	NC
EXW-09S	[739]	NA	48	-5.5	-0.17	(1)	12	44.1	28.8	0.2	1	NC	NC
EXW-10S	[740]	NA	56	-14.0	-0.32	4.40	5	30.3	24.5	0.2	1	NC	NC
EXW-11S	[741]	NA	58	-14.0	-0.07	0.50	5	40.6	27.3	0.3	1	NC	NC
EXW-12S	[742]	NA	54	-17.0	-0.14	6.50	8	38.4	29.1	0.3	1	NC	NC
EXW-13S	[743]	NA	58	-17.0	-0.30	5.50	8	38.7	27.9	0.6	1.25	NC	NC
EXW-14S	[744]	NA	50	-14.0	-12.0	2.10	16	52.0	38.6	0.3	12	NC	NC
EXW-15S	[745]	NA	50	-17.0	-1.00	0.90	5	24.6	19.4	0.6	1	NC	NC
SBSV-1(E)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-3(S)			(2)	(2)							100	NC	NC
						TOTAL	80						

Comments: 1. Not measured due to damaged sample port.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: NA TIME: NA AMBIENT TEMP.: NA °F

BAROMETRIC PRESSURE & TREND: NA in. Hg. NA

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	NA	NA	NA	NA	NA	NA	NA	100%
NEW SKID		NA	NA	NA				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			NA	AVE. NA				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 11/25/08 TIME: 10:00 am AMBIENT TEMP.: 26 °F

BAROMETRIC PRESSURE & TREND: 30.06 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID	-7.0	0.02	31	48	61.1	38.3	0.0	100%
NEW SKID		0.75	151	48				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			182	AVE. 48	[46388]			

COMMENTS:
1. Turbines and compressors being turned on and off for maintenance and repairs.
therefore, wellfield balancing could not take place. Monitorinng indicated that vacuum was being applied to wellfield.
2. Significant operational changes, adjustments, maintenance, and modifications this month precluded wellfield balancing.

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 12/30/08 TIME: 9:15 am AMBIENT TEMP.: 23 °F

BAROMETRIC PRESSURE & TREND: 30.00 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-12.0	1.70	289	44.0	40.1	24.9	4.6	100%
NEW SKID		0.02	26	24.0				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			314	AVE. 34				

Were wellfield adjustments made (Yes/No)?: **YES** (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 12/30/08 TIME: 5:00 pm AMBIENT TEMP.: 25 °F

BAROMETRIC PRESSURE & TREND: 29.73 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]			[85547]	[85544]	[85550]		[46387]
OLD SKID	-9.6	1.50	272	42	41.4	35.6	4.3	100%
NEW SKID		0.02	26	24				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			297	AVE. 33	[46388]			

COMMENTS:
1. New skid is not operable, and is being repaired.
2. Carbon installed to replace the CMS2 media in the carbon vessel until further CMS2 design modifications can be made.

13

By: J. Roelke
Checked By: D. Free

P:\22725\36\2008 Gas Monitoring Data\Fourth Quarter 08\Blower 12 2008.xls
1/19/2009

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	12/30/2008
GAS/INSTRUMENT TYPE:	Landtec GA-90/GEM 500	START TIME:	2:00 PM
SERIAL NO.:	RMT 1762	END TIME:	4:45 PM
DATE LAST CALIBRATED:	12/30/2008		
METHOD:	Standard Calibration Gases	WEATHER CONDITIONS:	Light snow
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	TEMPERATURE (11):	25 °F
OTHER:	–	BAROMETRIC PRESSURE (25) & TREND (46381):	29.73 in. Hg Steady
		GROUND CONDITIONS (No DNR ID):	snow-covered

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[65547]	[65544]	[65550]	[46387]		
EXW-01	[731]	0.5	34	-8.0	-3.6	0.03	3	32.8	28.8	3.8	5	1	-1.6
EXW-02	[732]	0.5	12	-7.2	-0.8	0.00	0	17.4	12.7	1.6	0	NC	NC
EXW-03	[733]	0.5	16	-7.2	-1.5	0.00	0	35.1	9.7	9.2	0	NC	NC
EXW-04	[734]	0.5	18	-7.2	-0.3	0.00	0	38.2	30.6	0.0	0	NC	NC
EXW-05	[735]	0.5	38	-7.2	-6.2	0.08	4	40.2	30.7	0.0	5	NC	NC
EXW-06	[736]	0.5	48	-6.2	-6.2	0.03	5	52.1	30.7	0.1	45	NC	NC
EXW-07	[737]	0.5	24	-8.2	-1.5	0.00	0	4.2	3.2	19.0	0	NC	NC
EXW-08	[738]	0.5	72	-6.2	-4.0	0.03	4	45.6	37.4	1.2	25	NC	NC
EXW-09	[739]	0.5	80	-8.2	-5.0	2.20	45	51.8	39.4	0.3	75	100	-6.2
EXW-10	[740]	0.5	80	-8.2	-7.2	0.75	40	60.8	39.2	0.0	100	NC	NC
EXW-11	[741]	0.5	56	-6.2	-2.5	0.50	25	53.7	45.1	0.5	10	25	-4.5
EXW-12	[742]	0.5	94	-6.2	-5.0	1.20	65	51.4	38.1	2.2	100	NC	NC
EXW-13	[743]	0.5	92	-8.2	-0.9	0.50	20	49.8	41.6	1.9	10	25	-2.5
EXW-14	[744]	0.5	92	-8.2	-0.8	0.04	9	57.5	42.5	0.0	50	75	-2.2
NBSV-1(E)				NA	NA			NA	NA	NA	100	NC	NC
NBSV-2(W)				NA	NA			NA	NA	NA	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	220						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

123 B

By: J. Roelke
Checked By: D. Free

P:\2272\38\2008 Gas Monitoring Data\Fourth Quarter 08\New Site Gas Well 12 2008.xls
1/19/2009

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	12/30/2008
		START TIME:	9:45 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	1:00 PM
SERIAL NO.:	RMT 1762		
DATE LAST CALIBRATED:	12/30/2008	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	23 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.00 in. Hg Falling
OTHER:	–	GROUND CONDITIONS (No DNR ID):	snow coved

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
(GEMS Code)			[46388]	[46382]	[46385]		[46386]	[85547]	[85564]	[85550]	[46387]		
EXW-01S	[731]	NA	24	-10.5	+.1 (3)	0.02	1	30.9	27.4	0.3	Trace	NC	NC
EXW-02S	[732]	NA	24	-10.5	+.12 (3)	0	0	36.9	32.8	0.3	0	NC	NC
EXW-03S	[733]	NA	26	-10.5	+.4 (3)	0.03	1	34.5	30.7	0.2	Trace	NC	NC
EXW-04S	[734]	NA	22	-10.5	+.2 (3)	0.02	1	30.3	26.2	0.4	Trace	NC	NC
EXW-05S	[735]	NA	24	-10.5	+.15 (3)	0.03	3	35.8	33.7	0.0	1	NC	NC
EXW-06S	[736]	NA	22	-10.5	+.12 (3)	0.02	1	1.5	10.7	1.2	Trace	NC	NC
EXW-07S	[737]	NA	24	-10.5	+.6 (3)	0.2	4	47.5	36.9	0.0	1.5	NC	NC
EXW-08S	[738]	NA	32	-10.5	+.4 (3)	8.2	10	55.6	42.1	0.0	1.25	NC	NC
EXW-09S	[739]	NA	30	NA (3)	NA (3)	(1)	12	50.9	33.2	0.0	1	NC	NC
EXW-10S	[740]	NA	28	-10.5	+.4 (3)	0.02	5	43.4	33.9	0.0	1	NC	NC
EXW-11S	[741]	NA	28	-10.5	+.1 (3)	0.3	5	54.2	41.3	0.2	1	NC	NC
EXW-12S	[742]	NA	34	-10.5	+.4 (3)	4.4	8	53.6	40.2	0.1	1	NC	NC
EXW-13S	[743]	NA	28	-10.5	+.6 (3)	6.4	8	47.9	33.8	0.0	1.25	NC	NC
EXW-14S	[744]	NA	22	-10.5	-5.6	4.2	16	59.4	40.6	0.0	12	NC	NC
EXW-15S	[745]	NA	32	-10.5	+.2 (3)	0.02	5	31.3	23.6	0.1	1	NC	NC
SBSV-1(E)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NA	NC	NC
SBSV-3(S)			(2)	(2)							100	NC	NC
						TOTAL	80						

Comments:
1. Not measured due to damaged sample port.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; no monitoring risers available.
3. Frozen condensate causing restriction in flexible hose and ports, readings may not be reliable for well pressure.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

August 25, 2008

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Second Quarter 2008 Landfill Gas System Monitoring Report
Closed Sauk County Landfills
WDNR License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this second quarter 2008 report to the Wisconsin Department of Natural Resources (WDNR) detailing the results of the landfill gas system monitoring and related maintenance activities for the closed Sauk County Landfills. The gas monitoring requirements for landfill # 02978 are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site # 02051 is being monitored in accordance with the same requirements. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's landfill gas-to-energy system.

The monitoring results are submitted separately on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison.

Summary of Second Quarter 2008 Monitoring Results

Routine monitoring of the wellfields was accomplished during the second quarter of 2008. Wellfield monitoring rounds were performed on April 23, May 9, and June 20. Given the consistency of the overall system operation, operating personnel were confident that the system continued to effectively extract available landfill gas and control migration during the quarter. The system monitoring efforts are summarized as follows (refer to Attachment 1):

- **Blower/Flare system:** The gas-to-energy systems operated efficiently to control odors and migration during the quarter. The small utility flare combusted the excess gas that was not used by the gas-to-energy system.
- **Gas extraction wells:** The gas extraction wells on both sites were monitored and balanced three times during the quarter.

RR 50732

I:\WPMSN\PJT\09-22725\36\L002272536-009.DOC

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

- **Gas monitoring probes:** The gas monitoring probes around both landfill sites were monitored once; however, the monitoring took place in July. Methane was not detected in the probes during the monitoring event.
- **Leachate head:** The leachate head wells LH-1 and LH-2, located in the newer site (Lic. #02978), were monitored monthly during the quarter, and leachate head was not detected.

Maintenance and Repairs Summary

A summary of the maintenance and repairs performed at the site is as follows:

- Only typical routine maintenance and repairs were completed during the second quarter 2008.

Conclusion

The landfill gas system continues to successfully extract available landfill gas. Modifications are continually evaluated and implemented to improve operations and maximize economic returns. If you have any comments, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

Attachments: 1. Landfill Gas Monitoring Data

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County

Attachment 1

Landfill Gas Monitoring Data

April 23, 2008

126B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): D. Free/J. Schoephoester

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = 7.611 New Skid: 6-in. SDR-17 HDPE; ID (in.) = 5.845

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = 4.0 New Skid: DIA. (in.) = 3.5

"BEFORE" Wellfield Monitoring DATE: 4/23/08 TIME: 8:30 a.m. AMBIENT TEMP.: 50 °F

BAROMETRIC PRESSURE & TREND: 29.30 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-22	0.80	211	47.0	38.9	32.8	0.8	100%
NEW SKID		0.18	79	50.0				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			290	AVE. 48.5				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 4/23/08 TIME: 12:30 p.m. AMBIENT TEMP.: 70 °F

BAROMETRIC PRESSURE & TREND: 29.30 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID	-19.0/-17.5	0.90	231	50	41.3	33.9	0.4	50%
NEW SKID		0.15	74	52				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			305	AVE. 51	[46388]			

COMMENTS: 1. Little flare was seeing slight flow during initial monitoring.
2. Both skids operating.

By: J. Roelke
Checked By: D. Free

I:\WPMSN\PJT\00-22725\36\002272536-002.XLS
8/25/2008

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Schoephoester D. Free	DATE:	4/23/2008
		START TIME:	8:30 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	12:30 p.m.
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	4/23/2008	WEATHER CONDITIONS:	Mild
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	65 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46361):	29.30 In. Hg Steady
OTHER:	--	GROUND CONDITIONS (No DNR ID):	Good

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.) [5]	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	66	-18.5	-11.0	0.05	2	26.8	24.3	0.8	5	NC	NC
EXW-02	[732]	0.5	72	-18.0	-6.5	0.00	0	0.0	0.0	20.6	0	NC	NC
EXW-03	[733]	0.5	60	-18.5	-9.0	0.08	2	27.6	21.1	0.0	5	NC	NC
EXW-04	[734]	0.5	64	-18.5	-7.0	0.0	0	10.7	19.7	0.3	0	NC	NC
EXW-05	[735]	0.5	58	-15.0	-15.0	0.42/0.20	10	23.2	22.7	0.3	25	15	NA
EXW-06	[736]	0.5	69	-17.5	-17.5	0.15/0.08	11	36.8	18.7	5.7	100	75	NA
EXW-07	[737]	0.5	81	-16.5	-11.5	0.08	8	26.4	17.5	8.1	5	0	NC
EXW-08	[738]	0.5	90	-17.0	-16.0	NA	20	35.8	28.7	2.1	60	NC	NC
EXW-09	[739]	0.5	89	-17.0	-15.0	2.3	39	52.1	39.0	0.2	100	NC	NC
EXW-10	[740]	0.5	92	-19.5	-18.5	2.0	40	56.3	40.8	0.0	100	NC	NC
EXW-11	[741]	0.5	82	-17.0	-16.0	0.95/0.7	25	43.2	34.4	0.5	60	40	NA
EXW-12	[742]	0.5	111	-19.0	-17.0	2.50	45	54.1	41.1	0.0	100	NC	NC
EXW-13	[743]	0.5	107	-18.5	-13.5	0.7/0.55	20	31.8	33.4	0.8	75	60	NA
EXW-14	[744]	0.5	107	-17.0	-12.0	0.72/0.5	18	34.1	32.7	0.4	100	80	NA
NBSV-1(E)				-18.5	NA			39.3	31.9	0.8	100	NC	NC
NBSV-2(W)				-18.5	NA			42.1	34.1	1.1	50	NC	NC
NBSV-3(N)				[4]	[4]						100	NC	NC
						TOTAL	240						

Comments: 1. EXW-1 – needs soil fill around wellhead; bentonite granules added to pipe sleeve around well pipe.
2. Gas quality has declined.
3. Vacuum has increased to well field over time.
4. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
5. Differential pressure recorded during valve changes to adjust flow to well.

Notes:
1. "NC" = No Change made to wellhead.
2. "NA" = Indicates data is not available.
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free/J. Schoephoester	DATE:	4/23/2008
		START TIME:	8:30 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	12:30 p.m.
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	4/23/2008	WEATHER CONDITIONS:	Mild
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	65 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (48381):	29.30 in. Hg Steady
OTHER:	--	GROUND CONDITIONS (No DNR ID):	Good

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85546]	[85550]	[46387]		
EXW-01S	[731]	NA	75	-24.0	-0.10	NA(1)	0	0.0	2.6	16.1	0	NC	NC
EXW-02S	[732]	NA	74	-22.0	-0.16	NA(1)	0	0.0	4.5	15.4	0	NC	NC
EXW-03S	[733]	NA	77	-18.0	-0.18	NA(1)	0	0.0	8.7	10.7	0	NC	NC
EXW-04S	[734]	NA	76	-22.0	-0.16	NA(1)	0	20.5	16.2	0.4	0	NC	NC
EXW-05S	[735]	NA	79	-27.0	0.00	NA(1)	2	19.5	13.3	4.7	0	1	-0.2
EXW-06S	[736]	NA	74	-19.0	-0.12	NA(1)	0	0.2	2.6	8.7	0	NC	NC
EXW-07S	[737]	NA	70	-19.0	-0.50	NA(1)	3	16.1	21.5	0.0	6	5	-0.4
EXW-08S	[738]	NA	61	-25.0	-3.00	NA(1)	8	29.1	28.9	0.5	7	5	-2.5
EXW-09S	[739]	NA	60	-21.0	-5.00	NA(1)	10	31.9	26.5	0.0	11	10	-4.0
EXW-10S	[740]	NA	68	-19.0	-0.82	NA(1)	3	26.5	22.4	0.3	5	3	-0.60
EXW-11S	[741]	NA	64	-25.0	-1.50	NA(1)	4	15.6	23.0	0.3	5	3	-1.0
EXW-12S	[742]	NA	64	-24.0	-1.90	NA(1)	5	25.3	25.3	0.4	10	7	-1.5
EXW-13S	[743]	NA	72	-23.0	-1.90	NA(1)	5	26.1	22.1	1.8	4	3	-1.5
EXW-14S	[744]	NA	70	-23.0	-0.72	NA(1)	3	59.8	37.5	0.0	18	NC	NC
EXW-15S	[745]	NA	69	-23.0	-0.20	NA(1)	1	45.2	18.9	0.0	5	6	-0.35
SBSV-1(E)			NA	NA				NA	NA	NA	NR	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NR	NC	NC
SBSV-3(S)			(2)	(2)							100%	NC	NC
						TOTAL	44						

Comments:
1. No orifice plates installed in wellheads.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
3. Unison adjusting compressor operation so vacuum in header pipe fluctuated during round.
4. EXW-14S has damaged valve (2" gate).

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

28

May 9, 2008

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)

GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 5/9/2008 TIME: 8:30 a.m. AMBIENT TEMP.: 51 °F

BAROMETRIC PRESSURE & TREND: 29.87 in. Hg. Rising

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-12.5	0.80	216	48.0	44.1	32.3	0.9	100%
NEW SKID		0.04	38	54.0				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			254	AVE. 51				

Were wellfield adjustments made (Yes/No)?: **YES** (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 5/9/2008 TIME: 12:55 p.m. AMBIENT TEMP.: 57 °F

BAROMETRIC PRESSURE & TREND: 29.89 in. Hg. Steady

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]			[85547]	[85544]	[85550]		[46387]
OLD SKID	-12.5	0.80	216	50	44.8	32.6	0.8	100%
NEW SKID		0.04	38	58				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			254	AVE. 54	[46388]			

COMMENTS: 1. On arrival, started new skid.

2. Old skid: 10 of 12 turbines operating; New skid: 3 of 12 operating.

By: S. Inman
Checked By: D. Free

I:\WPMSN\PJT\00-22725\36\002272536-005.XLS
8/22/2008

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	5/9/2008
		START TIME:	8:30 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90 / GEM500	END TIME:	12:55 p.m.
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	5/9/2008	WEATHER CONDITIONS:	Sunny
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	51 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.87 in. Hg Rising
OTHER:	--	GROUND CONDITIONS (No DNR ID):	Saturated

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	60	-10.5	-5.0	0.02	3	30.2	20.5	0.2	5	NC	NC
EXW-02	[732]	0.5	58	-10.5	-20.0	0.02	0	0.0	0.1	20.4	0	NC	NC
EXW-03	[733]	0.5	56	-10.5	-2.6	0.04	3	38.6	9.5	4.7	5	NC	NC
EXW-04	[734]	0.5	54	-10.0	-1.2	0.01	0	3.1	3.0	17.8	0	NC	NC
EXW-05	[735]	0.5	58	-10.0	-10.0	0.12	8	23.4	22.9	0.2	25	12	-9.0
EXW-06	[736]	0.5	66	-10.0	-10.0	0.04	7	46.0	26.2	0.1	100	NC	NC
EXW-07	[737]	0.5	54	-9.5	-4.0	0.04	0	0.8	0.6	19.1	0	NC	NC
EXW-08	[738]	0.5	84	-9.5	-6.0	0.25	15	41.9	29.7	0.8	60	NC	NC
EXW-09	[739]	0.5	86	-9.5	-7.5	2.00	40	51.3	35.8	0.2	100	NC	NC
EXW-10	[740]	0.5	88	-9.0	-9.0	0.60	25	58.7	39.7	0.0	100	NC	NC
EXW-11	[741]	0.5	80	-9.5	-8.0	0.75	28	45.9	32.7	1.0	60	NC	NC
EXW-12	[742]	0.5	110	-9.0	-7.0	1.60	30	52.4	38.1	0.0	100	NC	NC
EXW-13	[743]	0.5	100	-9.0	-2.5	0.40	20	46.8	35.8	0.2	75	NC	NC
EXW-14	[744]	0.5	104	-9.5	-2.4	0.50	20	51.8	37.1	0.0	100	NC	NC
NBSV-1(E)				-10.5	NA			45.9	32.7	0.4	100	NC	NC
NBSV-2(W)				-10.5	NA			50.6	35.1	0.3	50	NC	NC
NBSV-3(N)				(2)	(2)						100	NC	NC
						TOTAL	197						

Comments: 1. EXW-01 – Well side sleeve is sealed with bentonite, no additional air leaking.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NA" = Data Not Available.
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

By: S. Inman
Checked By: D. Free

I:\WPMSN\PJT\00-22725\36\002272536-006.XLS
8/22/2008

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	5/9/2008
		START TIME:	8:30 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	12:55 p.m.
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	5/9/2008	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	51 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.87 in. Hg Rising
OTHER:	--	GROUND CONDITIONS (No DNR ID):	Saturated

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (Inches)	Well Temp. (°F)	Available Header Pressure (In. W.C.)	Applied Well Pressure (In. W.C.)	Orifice Plate Differential Pressure (In. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (In. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85647]	[85644]	[85650]	[46387]		
EXW-01S	[731]	NA	50	-11.0	-0.05	NA(1)	0	1.9	7.8	8.8	0	NC	NC
EXW-02S	[732]	NA	50	-10.5	-0.05	NA(1)	0	0.3	3.7	14.1	0	NC	NC
EXW-03S	[733]	NA	52	-11.5	-0.08	NA(1)	0	1.0	10.0	6.5	0	NC	NC
EXW-04S	[734]	NA	50	-11.0	-0.01	NA(1)	1	26.2	13.9	1.6	0	1	-0.03
EXW-05S	[735]	NA	52	-11.0	-0.25	NA(1)	1	19.0	18.4	0.5	1	NC	NC
EXW-06S	[736]	NA	50	-11.0	-0.08	NA(1)	0	0.1	1.2	9.6	0	NC	NC
EXW-07S	[737]	NA	50	-11.0	-0.30	NA(1)	1	24.5	23.0	0.3	1	NC	NC
EXW-08S	[738]	NA	52	-11.0	-1.25	NA(1)	6	31.8	28.1	0.0	5	NC	NC
EXW-09S	[739]	NA	50	-11.0	-1.80	NA(1)	12	33.2	26.3	0.0	9	NC	NC
EXW-10S	[740]	NA	52	-11.5	-0.30	NA(1)	3	32.2	22.7	0.0	3	NC	NC
EXW-11S	[741]	NA	54	-11.0	-0.25	NA(1)	3	25.1	24.2	0.0	3	NC	NC
EXW-12S	[742]	NA	56	-10.5	-0.70	NA(1)	7	29.5	26.9	0.0	7	NC	NC
EXW-13S	[743]	NA	58	-10.5	-0.65	NA(1)	4	32.7	26.4	0.0	3	NC	NC
EXW-14S	[744]	NA	48	-12.0	-12.00	NA(1)	6	61.5	36.8	0.1	18	NC	NC
EXW-15S	[745]	NA	50	-12.0	-0.22	NA(1)	2	37.2	19.4	0.9	5	NC	NC
SBSV-1(E)			NA	-10.0				32.4	29.1	0.6	NR	NC	NC
SBSV-2(W)			NA	NA				NA	NA	NA	NR	NC	NC
SBSV-3(S)			(3)	(3)							100%	NC	NC
						TOTAL	45						

Comments:
1. One wellhead valve adjusted this round; no orifice plates installed in wellheads.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
3. Unison onsite to change oil & air filters for compressors.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

June 20, 2008

130 B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): John Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 6/20/2008 TIME: 8:30 a.m. AMBIENT TEMP.: 80 °F

BAROMETRIC PRESSURE & TREND: 29.93 in. Hg.

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-29	0.75	182	58.0	42.4	33.6	0.4	100%
NEW SKID		0.40	104	64.0				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			286	AVE. 61				

Were wellfield adjustments made (Yes/No)?: (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 6/20/2008 TIME: 12:15 p.m. AMBIENT TEMP.: 80 °F

BAROMETRIC PRESSURE & TREND: 29.93 in. Hg.

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]			[85547]	[85544]	[85550]		[46387]
OLD SKID	-24	0.75	181	64	42.3	33.4	0.4	100%
NEW SKID		0.40	102	76				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			283	AVE. 70	[46388]			

COMMENTS: 1. Both compressors operating.

131

By: S. Inman
Checked By: D. Free

I:\WPMSN\PJT\00-22725\36\002272536-008.XLS
8/22/2008

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	6/20/2008
GAS/INSTRUMENT TYPE:		START TIME:	10:30 a.m.
SERIAL NO.:	Landtec GA-90	END TIME:	12:00 p.m.
DATE LAST CALIBRATED:	RMT 1049		
METHOD:	6/20/2008	WEATHER CONDITIONS:	Sunny
PRESSURE INSTRUMENT TYPE:	Standard Calibration Gases	TEMPERATURE (11):	80 °F
OTHER:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (48381):	29.93 in. Hg
	--	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[48388]	[48382]	[48385]		[48386]	[85547]	[85544]	[85550]	[48387]		
EXW-01	[731]	0.5	76	-15.0	-9.0	0.01	2	29.3	25.1	0.4	5	NC	NC
EXW-02	[732]	0.5	94	-15.0	-5.6	0.02	0	0.2	0.1	19.8	0	NC	NC
EXW-03	[733]	0.5	92	-15.0	-6.2	0.02	2	30.4	8.4	7.4	5	NC	NC
EXW-04	[734]	0.5	86	-15.0	-4.8	0.02	0	3.8	3.4	16.5	0	NC	NC
EXW-05	[735]	0.5	68	-15.0	-14.5	0.15	5	24.4	21.1	0.2	12	NC	NC
EXW-06	[736]	0.5	78	-15.0	-15.0	0.02	6	43.8	27.0	0.2	100	NC	NC
EXW-07	[737]	0.5	90	-14.5	-8.6	0.03	0	0.9	0.2	19.5	0	NC	NC
EXW-08	[738]	0.5	94	-14.0	-12.0	0.30	12	38.6	29.4	1.4	60	NC	NC
EXW-09	[739]	0.5	92	-14.0	-14.0	1.40	45	43.4	35.9	0.3	100	NC	NC
EXW-10	[740]	0.5	92	-14.5	-13.0	0.50	28	52.2	38.4	0.2	100	NC	NC
EXW-11	[741]	0.5	88	-14.0	-12.0	0.60	30	43.4	34.6	0.3	60	NC	NC
EXW-12	[742]	0.5	112	-14.0	-12.0	1.20	40	52.4	38.6	0.1	100	NC	NC
EXW-13	[743]	0.5	102	-14.0	-6.0	0.40	24	44.1	35.8	0.7	75	NC	NC
EXW-14	[744]	0.5	108	-14.0	-6.5	0.50	26	47.3	35.3	0.4	60	NC	NC
NBSV-1(E)				NA	-15			44.8	33.5	0.5	100	-	NC
NBSV-2(W)				NA	-15			49.7	36.4	0.2	50	-	NC
NBSV-3(N)				(a)	(a)						100	NC	NC
						TOTAL	220						

Comments: 1. Rill erosion W. side of the gravel road @ EXW-6 & extending approximately 100' N. exposing the cover.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NA" = Data Not Available.
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

1318

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	6/20/2008
		START TIME:	8:45 a.m.
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:15 p.m.
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	6/20/2008	WEATHER CONDITIONS:	clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	80 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46361):	29.93 in. Hg Steady
OTHER:	--	GROUND CONDITIONS (No DNR ID):	moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Final Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[65547]	[65544]	[65550]	[46387]		
EXW-01S	[731]	NA	68	-24.0	0.00	NA[1]	0	1.1	1.9	17.0	0	NC	NC
EXW-02S	[732]	NA	82	-24.0	0.00	NA[1]	0	4.6	5.5	12.0	0	NC	NC
EXW-03S	[733]	NA	80	-24.0	0.00	NA[1]	0	0.4	0.8	18.7	0	NC	NC
EXW-04S	[734]	NA	80	-24.0	-0.03	NA[1]	1	21.9	10.9	4.8	1	NC	NC
EXW-05S	[735]	NA	74	-24.0	-0.35	NA[1]	1	20.4	20.3	0.9	1	NC	NC
EXW-06S	[736]	NA	72	-24.0	-0.03	NA[1]	0	0.1	1.4	10.9	0	NC	NC
EXW-07S	[737]	NA	74	-24.0	-0.30	NA[1]	1	26.8	24.2	0.1	1	NC	NC
EXW-08S	[738]	NA	62	-24.0	-2.50	NA[1]	10	35.9	29.9	0.2	11	NC	NC
EXW-09S	[739]	NA	62	-24.0	-3.00	NA[1]	12	36.5	27.7	0.2	9	NC	NC
EXW-10S	[740]	NA	84	-24.0	-0.35	NA[1]	2	34.6	23.4	0.0	3	NC	NC
EXW-11S	[741]	NA	82	-24.0	-0.35	NA[1]	2	30.8	25.4	0.1	3	NC	NC
EXW-12S	[742]	NA	70	-24.0	-0.90	NA[1]	6	31.3	27.4	0.0	7	NC	NC
EXW-13S	[743]	NA	72	-24.0	-0.90	NA[1]	2	33.7	26.7	0.2	3	NC	NC
EXW-14S	[744]	NA	68	-24.0	-24.00	NA[1]	4	57.2	38.4	0.6	18	NC	NC
EXW-15S	[745]	NA	70	-24.0	-0.20	NA[1]	2	39.9	20.8	0.4	5	NC	NC
SBSV-1(E)			NA	-22.0				24.7	30.2	0.8	NR	NC	NC
SBSV-2(W)			NA	0.0				NA	NA	NA	NR	NC	NC
SBSV-3(S)			(2)	(2)							100%	NC	NC
						TOTAL	43						

Comments: 1. No adjustments made this round; high vacuum and compressor adjustments being made.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West; "S" = South.
4. "NA" = Data Not Available.

134

July 18, 2008

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	7/18/2008		
		START TIME:	8:45 AM		
		END TIME:	12:45 PM		
GAS/INSTRUMENT TYPE:	Landtec GA-90				
SERIAL NO.:	RMT 1762	WEATHER CONDITIONS:	Clear		
DATE LAST CALIBRATED:	7/18/2008	TEMPERATURE (11):	78	°F	
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.96	in. Hg	Steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	moist		

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.00	0.00	0.00	0.00	-0.04	-0.02	-0.02	-0.06	-0.08	-0.04
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	1.2	1.5	1.4	1.8	0.0	0.4	4.6	0.0	0.0	0.0
OXYGEN (%, by vol.) [85550]:	18.6	17.8	18.9	18.2	20.3	19.7	16.8	20.2	20.1	20.3

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.
2. If methane is detected in a gas probe, the probe will be monitored monthly until detections are cleared.

133

By: S. Inman
Checked By: D. Free

I:\WPMSN\PJT\00-22725\36\002272536-011.XLS
8/22/2008

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

June 25, 2008

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: First Quarter 2008 Landfill Gas System Monitoring Report and 2007 Annual Summary
Closed Sauk County Landfills
WDNR License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this first quarter 2008 report to the Wisconsin Department of Natural Resources (WDNR) detailing the results of the landfill gas system monitoring and related maintenance activities for the closed Sauk County Landfills. This letter also summarizes the 2007 annual operation and maintenance (O&M) efforts. The monitoring requirements for landfill # 02978 are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site # 02051 is being monitored in accordance with the same requirements. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's landfill gas-to-energy system.

The monitoring results have been submitted on computer diskette to the WDNR GEMS Database Coordinator at the Central Office in Madison. A copy of the environmental monitoring data certification form for both landfill sites for the first quarter of 2008 is provided in Attachment 1.

Summary of First Quarter 2008 Monitoring Results

As a result of the extreme precipitation during the winter (January through early March 2008) routine monitoring of the wellfields could not be accomplished. Basic system operational adjustments were made at the two compressor systems, and electronically using the internet-based SCADA (Supervisory Control and Data Acquisition) system, to maintain system operation during this period to the extent possible. Two wellfield monitoring rounds were performed in March (March 7 and March 28) to catch up on necessary well adjustments. On March 7, only the older landfill wellfield was monitored since a system malfunction occurred that resulted in a temporary loss of vacuum pressure.

RR 50433

Based on the consistency of the overall system operation, operating personnel were confident that the system continued to effectively extract the available landfill gas and control migration during the quarter. As the quarter progressed, fewer microturbines operated since the quality and quantity of landfill gas decreased. Operators believe that since the landfill final cover was installed, the moisture content of the waste has declined, and gas production has been negatively affected. The system monitoring efforts are summarized as follows (refer to Attachment 2):

- Blower/Flare System: The gas-to-energy systems operated efficiently to control odors and migration during the quarter. The small utility flare combusted the excess gas that was not used by the gas-to-energy system.
- Gas Extraction Wells: The gas extraction wells on the old site were monitored and balanced two times during the quarter and the wells on the other site were monitored once. Frequent snow storms, and significant snow accumulation and drifting prevented system monitoring and balancing during the early portion of the first quarter.
- Gas Monitoring Probes: The gas monitoring probes around both landfill sites were monitored once during the quarter. Methane was not detected in any probe during the monitoring event.
- Leachate Head: The leachate head wells LH-1 and LH-2, located in the newer site (Lic. #02978), were monitored monthly during the quarter and leachate head was not detected.

Maintenance and Repairs Summary

A summary of the maintenance and repairs performed at the site is as follows:

- The condensate handling systems in each skid system continued to be improved throughout the quarter.
- Efforts are underway to modify the operation of the older compressor to reduce its operating capacity (e.g., add a recirculation loop) and to improve system efficiencies.
- Site surface inspections occur throughout the year, repairs were made as necessary.

2007 Annual Summary of O&M Efforts

A summary of the 2007 annual O&M efforts completed at the site is as follows:

- Final closure approval by the WDNR of landfill # 02978 was issued on July 11, 2007. The application for the long-term care license was submitted and the license was subsequently issued by the WDNR on February 11, 2008.

- Based on a review of landfill (# 02978) lysimeter monitoring data, the WDNR issued a request for additional information in a letter dated October 4, 2007. RMT provided a lysimeter #2 evaluation report on June 11, 2008. This report is currently being reviewed by the WDNR. Following the WDNR review, RMT will be preparing a Plan Modification for additional lysimeter efforts as determined necessary, abandonment of settlement plates, backfilling settled areas of the landfill surface, abandonment of two unnecessary gas monitoring probes, and potential groundwater monitoring program changes.
- On January 11, 2008, the WDNR issued a request for the County to update specific groundwater monitoring frequencies and parameters for the site's (# 02978) groundwater monitoring program. RMT followed with an expedited plan modification request dated March 19, 2008. Subsequently, the WDNR issued concurrence with the requested groundwater monitoring program modifications in a letter provided by e-mail on March 19, 2008. The letter provided the revised groundwater monitoring schedule.
- A 2007 annual final cover inspection of both landfill covers was performed on August 31, 2007 (refer to the single page report in Attachment 3). The significant final cover issues identified during the inspection have been addressed by the County.
- The annual landfill leachate line cleaning for landfill # 02978 was performed in September 2007.

Conclusion

The landfill gas system continues to successfully extract available landfill gas. Modifications are continually evaluated and implemented to improve operations and maximize economic returns. If you have any comments, please call Dean Free at (608) 662-5476, or Curt Madsen at (608) 662-5475.

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

Attachments: Environmental Monitoring Data Certification Form
Landfill Gas Monitoring Data
2007 Annual Final Cover Inspection

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County

Attachment 1

Environmental Monitoring Data Certification

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	3/7,28/2008

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

March 2008

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free	Project Engineer	608 662-5476
Facility Representative Name (Print)	Title	(Area Code) Telephone No.
Dean R. Free	6-25-08	
Signature	Date	

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ **Found uploading problems on** _____ **Initials** _____

☐ **Notified contact of problems on** _____ **Uploaded data successfully on** _____

EDD format(s): ☐ **Diskette** ☐ **CD (initial submittal and follow-up)** ☐ **E-mail (follow-up only)** **Other** _____

136

Attachment 2

Landfill Gas Monitoring Data

March 7, 2008

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 3/7/08 TIME: 9:30 AM AMBIENT TEMP.: 10 °F

BAROMETRIC PRESSURE & TREND: 30.43 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-4.2	1.80	331	36	15.8	12.5	13.9	7.0/7
NEW SKID		0.03	34	10				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			365	AVE. 23				

Were wellfield adjustments made (Yes/No)?: **YES** (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 3/7/08 TIME: 2:30 PM AMBIENT TEMP.: 18 °F

BAROMETRIC PRESSURE & TREND: 30.34 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID	-10.5	1.30	279	38	46.9	32.2	0.7	7.0/7
NEW SKID		0.24	94	16				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			373	AVE. 27	[46388]			

COMMENTS:
1. "NR" indicates no readings taken.
2. A flex hose popped off of gas extraction well EXW-14 (north site) and as a result excessive air was drawn into system. Therefore, the majority of the turbines shutwdown, as did one of the two compressors.
3. Compressor and turbines restarted to the extent possible. Only the old landfill was balanced due to the temporary lack of vacuum.

137B

By: JR
Checked By: DF

P:\22725\36\2008 Gas Monitoring Data\Blower 03_07 2008.xls
6/24/2008

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN'S):	J. Roelke	DATE:	3/7/2008
		START TIME:	11:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90 OR GEM 500	END TIME:	2:15 PM
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	3/7/2008	WEATHER CONDITIONS:	Sunny
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	15 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.40 in. Hg Falling
OTHER:		GROUND CONDITIONS (No DNR ID):	Frozen, snow-covered

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01S	[731]	NA	28	-7	-0.62	0.08	4	10.1	12.2	9.1	Trace	NC	NC
EXW-02S	[732]	NA	32	-8	0.06	(1)	2	6.1	17.2	3.0	Trace	0.25/11	-0.20
EXW-03S	[733]	NA	30	-9.4	-0.20	(1)	3	7.4	19.0	2.0	Trace	NC	NC
EXW-04S	[734]	NA	32	-8.8	-1.40	(1)	8	3.7	18.1	0.5	1.0/11	0.75/11	-0.80
EXW-05S	[735]	NA	30	-9.0	-0.20	(1)	2	16.1	28.8	0.0	0.7/11	NC	NC
EXW-06S	[736]	NA	36	-9.0	0.08	0.04	2	0.0	6.1	6.5	0.5/11	0.65/11	-0.02
EXW-07S	[737]	NA	30	-6.8	-0.30	0.02	1	28.7	27.0	0.0	0.5/11	0.65/11	-0.60
EXW-08S	[738]	NA	32	-8.0	-0.26	0.04	2	43.8	32.7	0.0	0.5/11	0.75/11	-0.60
EXW-09S	[739]	NA	34	-8.2	-1.00	(1)	6	42.5	28.8	0.0	1.0/11	1.25/11	-1.50
EXW-10S	[740]	NA	34	-8.4	-0.13	0.03	1	35.0	25.7	0.0	0.5/11	NC	NC
EXW-11S	[741]	NA	34	-6.8	-0.05	0.05	3	30.1	27.7	0.0	0.4/11	0.5/11	-0.10
EXW-12S	[742]	NA	42	-8.2	-0.25	0.03	1	33.3	27.4	0.2	1.0/11	NC	NC
EXW-13S	[743]	NA	44	-8.6	-0.04	0.02	1	32.4	26.6	0.3	0.4/11	NC	NC
EXW-14S	[744]	NA	28	-8.6	-8.60	0.03	2	59.2	39.9	0.0	2.0/11	NC	NC
EXW-15S	[745]	NA	34	-8.4	-2.20	0.04	2	21.6	19.1	0.0	0.5/11	NC	NC
SBSV-1(E)				-7.8	0.00			19.6	15.9	9.8	100%	NC	NC
SBSV-2(W)				NA	NA			NA	NA	NA	100%	NC	NC
SBSV-3(S)				(2)	(3)						100%	NC	NC
						TOTAL	40						

Comments: 1. Head pressure measured above orifice plate (no second sample port available for diff. pressure).
2. BSV-2 buried under snow and not accessible.
3. BSV-3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellhead suffix for wells on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West.
4. "NA" = Data Not Available.

By: J. Roelke
Checked By: D. Free

P:\2272503\2008 Gas Monitoring Data\Old Site Gas Well 03_07 2008.xls 8/24/2008

March 28, 2008

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 3/28/08 TIME: 8:45 AM AMBIENT TEMP.: 28 °F

BAROMETRIC PRESSURE & TREND: 30.26 in. Hg.

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	-20.0	1.65	310
NEW SKID		0.50	134
TOTAL SYSTEM GAS FLOW [46386]			444

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	38	37.2	30.4	1.7
	40			
AVE.	39			

WELLFIELD VALVE SETTING (BEFORE)
100%
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 3/28/08 TIME: 1:30 PM AMBIENT TEMP.: 38 °F

BAROMETRIC PRESSURE & TREND: 30.32 in. Hg. Steady

	APPLIED FIELD VACUUM (In. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	-20.5	1.45	290
NEW SKID		0.40	120
TOTAL SYSTEM GAS FLOW [46386]			410

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	[85547]	[85544]	[85550]	
	40	41.1	33.2	0.7
	42			
AVE.	41	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
100%
(Old Skid Only)

COMMENTS: 1. Wellhead balancing efforts resulted in improved gas quality.
2. Leachate Headwell Quarterly Monitoring: LH-1: not detected; LH-2: not detected.

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	3/28/2008		
		START TIME:	9:00 AM		
		END TIME:	1:15 PM		
GAS/INSTRUMENT TYPE:	Landtec GA-90				
SERIAL NO.:	RMT 1049	WEATHER CONDITIONS:	clear		
DATE LAST CALIBRATED:	3/28/2008	TEMPERATURE (11):	35	°F	
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.32	in. Hg	steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	moist		

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.00	-0.08	0.00	0.00	-0.08	-0.02	-0.04	-0.20	-0.60	-0.08
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.3	0.0	0.5	0.4	0.1	0.5	2.3	0.0	0.0	0.0
OXYGEN (%, by vol.) [85550]:	20.4	20.6	19.6	19.5	20.2	19.8	18.1	20.6	20.6	20.6

NOTES:
1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed.

1948

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	3/28/2008
		START TIME:	11:45 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	1:15 PM
SERIAL NO.:	RMT 1049		
DATE LAST CALIBRATED:	3/28/2008	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	35 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.32 in. Hg Steady
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01S	[731]	NA	42	-16.0	-0.55	0.03	3	0.5	5.9	14.4	0.125/11	0.10/11	-0.10
EXW-02S	[732]	NA	58	-16.5	-0.40	(1)	2	0.1	5.7	15.6	0.25/11	0.125/11	-0.15
EXW-03S	[733]	NA	48	-16.5	-0.40	(1)	2	0.9	12.4	7.9	0.10/11	NC	NC
EXW-04S	[734]	NA	46	-16.5	-1.10	(1)	3	1.6	16.3	1.7	0.75/11	0.125/11	-0.15
EXW-05S	[735]	NA	48	-16.5	-0.55	(1)	3	5.3	11.6	2.4	0.70/11	0.125/11	-0.10
EXW-06S	[736]	NA	46	-16.0	-0.40	0.02	2	0.0	3.9	13.8	0.65/11	0.125/11	-0.14
EXW-07S	[737]	NA	42	-16.0	-2.20	0.04	4	19.5	24.7	0.7	0.65/11	0.25/11	-1.0
EXW-08S	[738]	NA	46	-16.0	-2.00	0.02	2	35.0	31.8	0.0	0.75/11	NC	NC
EXW-09S	[739]	NA	48	-16.5	-3.60	(1)	4	32.5	27.1	0.0	1.25/11	NC	NC
EXW-10S	[740]	NA	50	-16.0	-0.80	0.02	2	28.4	23.7	0.1	0.50/11	NC	NC
EXW-11S	[741]	NA	44	-16.0	-1.25	0.03	3	14.7	23.4	0.0	0.50/11	NC	NC
EXW-12S	[742]	NA	52	-15.0	-1.60	0.03	3	25.9	26.5	0.2	1.0/11	NC	NC
EXW-13S	[743]	NA	58	-15.0	-1.60	0.04	4	25.2	23.9	1.8	0.40/11	NC	NC
EXW-14S	[744]	NA	48	-16.0	-1.60	0.04	4	57.2	35.1	0.0	2.0/11	NC	NC
EXW-15S	[745]	NA	50	-16.0	-4.00	0.04	4	13.6	16.6	4.7	0.50/11	0.125/11	-0.20
SBSV-1(E)				-16.0				25.2	21.9	4.7	NA	NC	NC
SBSV-2(W)				0.0				0.0	0.0	20.6	NA	NC	NC
SBSV-3(S)				(2)							100%	NC	NC
						TOTAL	45						

Comments: 1. Seven wellhead valves adjusted this round; no orifice plates installed in wellheads to date.
2. BSV-3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellhead suffix for wells on the old landfill (south landfill).
3. "SBSV" = South Buried Service Valve (south site); "E" = East; "W" = West.
4. "NA" = Data Not Available.

140

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	3/28/2008
		START TIME:	11:45
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	13:15
SERIAL NO.:	Rmt 1049		
DATE LAST CALIBRATED:	3/28/2008	WEATHER CONDITIONS:	Clear
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	35 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.32 In. Hg Steady
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85647]	[85644]	[85650]	[46387]		
EXW-01	[731]	0.5	48	-15.0	-8.5	0.08	4	33.1	25.1	0.0	5%	NC	NC
EXW-02	[732]	0.5	46	-15.0	-6.5	0.16	8	0.0	0.0	20.5	5%	0%	-6.0
EXW-03	[733]	0.5	46	-15.0	-8.5	0.06	3	32.0	21.1	0.0	5%	NC	NC
EXW-04	[734]	0.5	46	-14.0	-7.0	0.06	3	14.7	16.1	5.2	5%	0%	-6.5
EXW-05	[735]	0.5	46	-14.0	-13.5	0.20	10	30.1	23.0	0.0	25%	NC	NC
EXW-06	[736]	0.5	50	-14.0	-13.5	0.12	6	57.7	26.1	0.0	75%	100%	-13.5
EXW-07	[737]	0.5	78	-13.0	-11.0	0.50	25	30.8	22.0	6.1	15%	5%	-10.0
EXW-08	[738]	0.5	76	-13.0	-12.5	NA	25	39.3	28.7	1.7	80%	60%	-12.0
EXW-09	[739]	0.5	78	-13.0	-11.5	1.10	55	57.4	39.5	0.0	100%	NC	NC
EXW-10	[740]	0.5	82	-12.5	-12.0	0.35	18	57.3	39.4	0.0	100%	NC	NC
EXW-11	[741]	0.5	72	-13.0	-12.5	0.60	30	40.1	31.6	2.8	75%	60%	-12.0
EXW-12	[742]	0.5	104	-12.5	-11.5	1.05	53	55.5	41.0	0.2	100%	NC	NC
EXW-13	[743]	0.5	95	-13.0	-9.5	0.96	48	38.7	35.1	0.1	100%	75%	-9.0
EXW-14	[744]	0.5	106	-13.0	-8.5	1.90	80	47.6	30.3	1.1	100%	NC	NC
NBSV-1(E)				-16.0	-0.35			45.3	34.7	1.1	100%	NC	NC
NBSV-2(W)				-16.0	NA			40.7	31.4	2.1	50%	NC	NC
NBSV-3(N)				(4)	(4)						100%	NC	NC
						TOTAL	368						

Comments: 1. Sample port found broken at EXW-08.
2. Sample port non-functioning at NBSV-2(W).
3. Air leak noted at EXW-01 around well pipe sleeve pipe; needs bentonite clay.
4. NBSV-3 is normally full open to provide looped operation; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "NA" = Indicates data is not available.
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

8 of 8

Attachment 3

2007 Annual Final Cover Inspection

2007 Annual Final Cover Inspection

Sauk County Landfills (WDNR Lic. Nos. 02051 and 2978)

Date Performed: August 31, 2007
Performed By: D. R. Free, PE – RMT, Inc.

The following items were noted during the inspection:

Site License No. 02051

1. The vegetation is well-established and in very good condition. A few areas of settlement have resulted in shallow ponded areas with standing surface water. These areas are proposed for regrading in 2008.
2. Site perimeter chain-link fencing and gates are in good working condition and no repairs are necessary at this time.
3. Site access road enters site from northwest corner through large vehicle gate. The road extends along the west side of the landfill and terminates at the southwest corner. A grassed roadway extends up the southwest corner of the landfill to the top of the site. The roads are in good condition and no repairs are necessary at this time.
4. A few smaller trees are developing on the cover area. RMT recommends that the woody vegetation be cut down to reduce detrimental effects on the landfill soil cover system. The County has initiated tree removal.

Site License No. 02978

1. The northern third of the landfill (Phase III) received final cover late in 2006. This is the first growing season for the seed that was planted. The vegetation is in good shape over the Phase III area, and better over the remaining, previously covered, areas of the site. The newer vegetated areas will require 3 or more years to fully establish themselves. Re-seeding of small areas may be necessary during that time.
2. Vegetation is light to missing over a couple of areas immediately surrounding gas wells on the phase III area. This may be due to the ground being disturbed during final wellhead modifications.
3. Small areas of erosion exist around the sideslopes and perimeter ditches of the site, primarily around the recently covered Phase III areas. These areas will be addressed in early 2008. As vegetation improves over Phase III, erosion will be less prominent on the sideslopes and perimeter ditches.
4. Some minor erosion has occurred along the gravel access road that runs up the south side of the landfill. Storm water has channelized along the road edge. This area should be repaired before winter. The County has initiated repair efforts.
5. The primary area of past settlement exists just west of the gravel access road on top of the site in the area near the settlement plates. This area has been addressed in an Expedited Plan Modification to the WDNR dated September 7, 2007. The area is proposed for regrading in 2008.

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

January 24, 2008

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Fourth Quarter 2007 Landfill Gas System Monitoring Report
Closed Sauk County Landfills
WDNR License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this fourth quarter 2007 report to the Wisconsin Department of Natural Resources (WDNR) detailing the results of the landfill gas system monitoring and related maintenance activities for the closed Sauk County Landfills. The applicable landfill gas and leachate monitoring requirements for the recently closed landfill (Lic. # 02978) are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site (Lic. # 02051) is being monitored in accordance with the same requirements. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's landfill gas-to-energy system.

The monitoring results have been submitted on computer diskette to the GEMS Database Coordinator of the WDNR Bureau of Waste Management at the Central Office in Madison. The environmental monitoring data certification forms and exceedance report for both landfill sites are provided in Attachment 1. The gas monitoring data are provided in Attachment 2.

Summary of Monitoring Results

System adjustments were aggressively made during the quarter to support full operation of the gas-to-energy system and to control migration. The summary of the monitoring results gathered (refer to Attachment 2) are as follows:

- Blower/Flare System: The gas-to-energy systems operated efficiently to control odors and migration during the quarter. A small utility flare was used to combust excess gas that was not used by the gas-to-energy system.

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

143

- Gas Extraction Wells: The gas extraction wells on both sites were monitored and balanced two times during the quarter. Frequent system shut-downs due to condensate handling issues, maintenance and repairs, and weather precluded completion of a third round of system monitoring and balancing.
- Gas Monitoring Probes: The gas monitoring probes around both sites were monitored once during the quarter. Gas probe GP-11 was monitored an additional time during the quarter due to a low level methane detection. Methane was not detected at probe GP-11 during the second monitoring event. Methane was not detected above NR 507.22(1)(c) limits at the gas monitoring probes during the fourth quarter 2007.
- Leachate Head: The leachate head wells LH-1 and LH-2, located in the newer site (Lic. #02978), were monitored monthly during the quarter and leachate head was not detected.

Maintenance and Repairs Summary

A summary of the maintenance and repairs performed at the site is as follows:

- The condensate handling systems in each skid system continued to be evaluated and improved throughout the quarter.
- Gas flow measurement devices (orifice plates) were installed on the inlet pipe of each of the two compressor systems.
- Site surface inspections occur throughout the year, repairs are made as necessary, and a summary will be included in the 2007 annual report.

Conclusion

The operation of the landfill gas extraction system continued to improve throughout 2007 as a result of balancing efforts and mechanical modifications to system components. If you have any questions or comments, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

1433

Attachments: Environmental Monitoring Data Certification Form and Exceedance Report
Landfill Gas Monitoring Data

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County

Attachment 1

Environmental Monitoring Data Certification
and Exceedance Report

1448

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	10/22,29/2007 11/21/2007

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

October and November 2007

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free	Project Engineer	608-662-5476
Facility Representative Name (Print)	Title	(Area Code) Telephone No.
Dean R. Free	1-22-08	
Signature	Date	

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

Attachment 2

Landfill Gas Monitoring Data

145B

October 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36
TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**
ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 10/29/07 TIME: 10:45 AM AMBIENT TEMP.: 50 °F

BAROMETRIC PRESSURE & TREND: 30.36 in. Hg. falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
OLD SKID	-16.0	1.70	279
NEW SKID	-16.0	0.70	142
TOTAL SYSTEM GAS FLOW [46386]			420

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	62	47.3	35.1	0.8
	60			
AVE.	61			

WELLFIELD VALVE SETTING (BEFORE)
100%
(Old Skid Only)

Were wellfield adjustments made (Yes/No)?: YES (If yes, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 10/29/07 TIME: 2:30 PM AMBIENT TEMP.: 60 °F

BAROMETRIC PRESSURE & TREND: 30.27 in. Hg. falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)
	[46382]		
OLD SKID	-15.0	1.20	233
NEW SKID	-15.0	0.60	131
TOTAL SYSTEM GAS FLOW [46386]			364

	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)
	[85547]	[85544]	[85550]	
	64	46.4	34.5	0.5
	62			
AVE.	63	[46388]		

WELLFIELD VALVE SETTING (AFTER)
[46387]
100%
(Old Skid Only)

COMMENTS: 1. Header pressure on main lines fluctuated (bounced) due to liquids by approx. 2 inches WC.

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	10/29/2007
		START TIME:	11:00 AM
		END TIME:	12:00 PM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT 1049	WEATHER CONDITIONS:	Sunny
DATE LAST CALIBRATED:	10/29/2007	TEMPERATURE (11):	50 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.36 in. Hg Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	-0.01	-0.01	-0.01	-0.01	0.00	-0.02	-0.02	0.08	0.08	-0.02
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.4	1.1	0.9	0.9	3.2	0.9	2.5	8.2	7.3	1.9
OXYGEN (%, by vol.) [85550]:	20.0	19.3	19.6	19.6	17.5	19.7	17.9	11.9	12.7	18.7

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitor monthly until cleared.
2. Slight methane detected in GP-11 this round.

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free	DATE:	10/22/2007
		START TIME:	1:00 PM
GAS/INSTRUMENT TYPE:	Landtec GEM500	END TIME:	4:00 PM
SERIAL NO.:	Sauk County		
DATE LAST CALIBRATED:	NA	WEATHER CONDITIONS:	Mild
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	50 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.12 in. Hg
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Good

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]	
EXW-01S	[731]	NA	61	-8.6	-7.80	NA	2	2.1	6.7	10.4	3.5/11	Trace
EXW-02S	[732]	NA	58	-9.6	-0.15	NA	1	0.6	13.0	3.1	1.0/11	Trace
EXW-03S	[733]	NA	53	-6.0	-0.20	NA	0	7.0	19.9	0.3	0.0/11	Trace
EXW-04S	[734]	NA	56	-5.8	-5.00	NA	2	4.4	19.4	0.0	3.5/11	1.0/11
EXW-05S	[735]	NA	54	-6.0	-0.50	NA	2	13.0	20.5	0.0	1.0/11	0.7/11
EXW-06S	[736]	NA	54	-6.0	-4.00	NA	5	3.5	7.2	9.4	4.0/11	0.5/11
EXW-07S	[737]	NA	58	-8.4	-2.65	NA	4	22.7	23.8	0.0	1.5/11	0.5/11
EXW-08S	[738]	NA	58	-9.4	-2.35	NA	4	33.5	29.4	0.0	1.5/11	0.5/11
EXW-09S	[739]	NA	54	-9.8	-4.20	NA	6	42.4	26.4	0.0	1.5/11	1.0/11
EXW-10S	[740]	NA	69	-10.4	-6.00	NA	3	23.3	22.4	0.0	2.0/11	0.5/11
EXW-11S	[741]	NA	57	-8.6	-0.95	NA	2	19.0	23.6	0.0	0.5/11	0.4/11
EXW-12S	[742]	NA	63	-7.1	-2.20	NA	3	27.1	27.0	0.1	2.0/11	1.0/11
EXW-13S	[743]	NA	68	-6.8	-1.40	NA	3	27.0	18.1	0.0	1.0/11	0.4/11
EXW-14S	[744]	NA	46	-8.2	-6.50	NA	3	56.4	37.6	0.0	1.0/11	2.0/11
EXW-15S	[745]	NA	59	-6.6	-3.70	NA	2	20.3	18.2	0.3	1.5/11	0.5/11
SBSV-1(E)				NR	NR			NR	NR	NR	NR	NR
SBSV-2(W)				NR	NR			NR	NR	NR	NR	NR
SBSV-3(S)				(4)	(4)						100%	NC
						TOTAL	42					

Comments: 1. Three wellhead valves adjusted this round; no orifice plates installed in wellheads.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data Not Available.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	10/29/2007
		START TIME:	12:00
GAS/INSTRUMENT TYPE:		END TIME:	14:15
SERIAL NO.:	Landtec GA-90		
DATE LAST CALIBRATED:	RMT 1049	WEATHER CONDITIONS:	Sunny
METHOD:	10/29/2007	TEMPERATURE (11):	60 °F
PRESSURE INSTRUMENT TYPE:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.27 in. Hg Falling
OTHER:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Good vegetation

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[86547]	[86544]	[86550]	[46387]		
EXW-01	[731]	0.5	68	-10.50	-2.20	0.03	1	40.1	28.2	0.0	4.5	5	-3.0
EXW-02	[732]	0.5	62	-10.50	-0.25	0.05	1	22.2	23.3	0.0	0	NC	NC
EXW-03	[733]	0.5	62	-10.50	-0.60	0.05	1	32.8	24.4	0.0	0	10	1.6
EXW-04	[734]	0.5	62	-10.00	-1.20	0.10	2	36.5	26.6	0.1	18	NC	NC
EXW-05	[735]	0.5	58	-9.20	-9.20	0.10	2	41.5	27.3	0.0	35	NC	NC
EXW-06	[736]	0.5	68	-9.00	-9.00	0.10	2	56.8	30.1	0.0	50	NC	NC
EXW-07	[737]	0.5	84	-7.20	-6.00	0.80	17	46.0	29.8	2.3	40	35	-5.2
EXW-08	[738]	0.5	80	-7.60	-7.60	0.80	17	49.1	34.6	0.1	75	NC	NC
EXW-09	[739]	0.5	82	-5.80	-5.80	2.20	46	58.8	40.0	0.0	100	NC	NC
EXW-10	[740]	0.5	92	-6.80	-6.80	0.60	13	59.2	40.3	0.0	100	NC	NC
EXW-11	[741]	0.5	84	-7.00	-6.80	0.80	17	55.6	38.9	0.5	90	100	-7.0
EXW-12	[742]	0.5	108	-5.40	-5.40	1.65	35	58.1	41.3	0.2	100	NC	NC
EXW-13	[743]	0.5	104	-3.80	-3.80	3.60	75	58.2	39.3	0.0	100	NC	NC
EXW-14	[744]	0.5	102	-3.40	-3.40	4.40	92	52.5	39.4	0.0	100	NC	NC
NBSV-1(E)				-11.00	-0.05			51.5	37.0	0.0	100	NC	NC
NBSV-2(W)				-11.00	NA			48.2	34.8	1.4	50	NC	NC
NBSV-3(N)				(2)	(2)						100	NC	NC
						TOTAL	320						

Comments: 1. four wellhead valves adjusted this round.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data Not Available.

November 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

Project # 22725.36

TECHNICIAN(S): J. Roelke

GAS PIPE DIA./MATERIAL: Old Skid: 8-in. SDR-17 HDPE; ID (in.) = **7.611** New Skid: 6-in. SDR-17 HDPE; ID (in.) = **5.845**

ORIFICE PLATE HOLE SIZE: Old Skid: DIA. (in.) = **4.0** New Skid: DIA. (in.) = **3.5**

"BEFORE" Wellfield Monitoring DATE: 11/21/07 TIME: 8:00 AM AMBIENT TEMP.: 33 °F

BAROMETRIC PRESSURE & TREND: 30.08 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
OLD SKID	-19	1.50	295	56	50.8	35.1	0.7	100%
NEW SKID		0.70	159	52				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			453	AVE. 54				

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 11/21/07 TIME: 12:15 PM AMBIENT TEMP.: 36 °F

BAROMETRIC PRESSURE & TREND: 30.04 in. Hg. Falling

	APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	Gas Temperature (°F)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
	[46382]				[85547]	[85544]	[85550]	[46387]
OLD SKID	-19	1.50	295	60	50.8	35.5	0.7	100%
NEW SKID		0.70	159	56				(Old Skid Only)
TOTAL SYSTEM GAS FLOW [46386]			453	AVE. 58	[46388]			

COMMENTS:

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 11_2007.xls
1/21/2008

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke -	DATE: START TIME: END TIME:	11/21/2007 8:00 AM 8:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT 1049	WEATHER CONDITIONS:	Cloudy
DATE LAST CALIBRATED:	11/21/2007	TEMPERATURE (11):	37 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.98 in. Hg Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	NM	NM	NM	NM	NM	NM	NM	NM	-0.02	NM
METHANE (%, by vol.) [85547]:	NM	NM	NM	NM	NM	NM	NM	NM	0.0	NM
CARBON DIOXIDE (%, by vol.) [85544]	NM	NM	NM	NM	NM	NM	NM	NM	0.3	NM
OXYGEN (%, by vol.) [85550]:	NM	NM	NM	NM	NM	NM	NM	NM	20.1	NM

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitor monthly until cleared.
2. No methane in GP-11 this round; this was a follow-up round to the 10-29-07 round.

1469

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	11/21/2007
		START TIME:	8:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	10:15 AM
SERIAL NO.:	RMT1049		
DATE LAST CALIBRATED:	11/21/2007	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	34 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.98 in. Hg Falling
OTHER:		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85647]	[85644]	[85650]	[46387]		
EXW-01S	[731]	NA	44	-15.0	-0.50	0.04	3	8.7	10.3	10.6	Trace	NC	NC
EXW-02S	[732]	NA	40	-15.0	-0.04	(1)	1	6.4	18.0	0.4	Trace	NC	NC
EXW-03S	[733]	NA	50	-15.0	-0.30	(1)	3	8.7	18.1	1.7	Trace	NC	NC
EXW-04S	[734]	NA	50	-15.0	-4.80	(1)	7	5.2	18.0	3.7	1.0/11	0.25/11	-1.5
EXW-05S	[735]	NA	42	-14.0	-0.16	(1)	4	14.5	21.2	0.3	0.7/11	NC	NC
EXW-06S	[736]	NA	38	-14.0	-0.06	0.02	3	0.1	3.2	13.8	0.5/11	NC	NC
EXW-07S	[737]	NA	46	-15.0	-0.80	0.04	3	30.0	26.6	0.0	0.5/11	NC	NC
EXW-08S	[738]	NA	48	-15.0	-0.70	0.02	3	44.0	31.7	0.0	0.5/11	NC	NC
EXW-09S	[739]	NA	46	-14.0	-1.70	(1)	7	45.7	29.1	0.0	1.0/11	NC	NC
EXW-10S	[740]	NA	50	-14.0	-0.30	0.02	3	35.7	25.1	0.3	0.5/11	NC	NC
EXW-11S	[741]	NA	42	-14.0	-0.30	0.04	3	33.4	26.1	0.0	0.4/11	NC	NC
EXW-12S	[742]	NA	54	-14.0	-1.00	0.03	7	33.1	27.0	0.1	1.0/11	NC	NC
EXW-13S	[743]	NA	58	-14.0	-1.00	0.03	5	35.4	27.9	0.4	0.4/11	NC	NC
EXW-14S	[744]	NA	30	-14.0	-14.00	0.02	7	60.7	39.3	0.0	2.0/11	NC	NC
EXW-15S	[745]	NA	50	-14.0	-2.50	0.03	4	22.6	18.9	0.9	0.5/11	NC	NC
SBSV-1(E)			0	-15.0				29.7	23.2	4.2	NR	NC	NC
SBSV-2(W)			0	0.0				0.3	0.7	19.7	NR	NC	NC
SBSV-3(S)			(2)	(2)							100%	NC	NC
						TOTAL	63						

Comments: 1. One wellhead valve adjusted this round; no orifice plates installed in wellheads.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data Not Available.

150

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	11/21/2007
		START TIME:	10:30 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	12:30 PM
SERIAL NO.:	RMT1049		
DATE LAST CALIBRATED:	11/21/2007	WEATHER CONDITIONS:	Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	34 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.05 In. Hg Falling
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85544]	[85550]	[46387]		
EXW-01	[731]	0.5	50	-13.5	-5.5	0.12	3	46.9	21.6	0.2	5	NC	NC
EXW-02	[732]	0.5	48	-13.0	-3.5	0.06	2	18.2	19.7	1.8	5	0	-3.0
EXW-03	[733]	0.5	52	-13.0	-5.0	0.15	4	38.6	24.9	0.0	10	NC	NC
EXW-04	[734]	0.5	52	-11.5	-11.5	0.20	6	45.2	25.4	2.1	18	NC	NC
EXW-05	[735]	0.5	50	-12.0	-3.5	0.10	3	49.6	29.4	0.4	35	NC	NC
EXW-06	[736]	0.5	58	-11.5	-11.5	0.20	6	63.4	36.6	0.0	50	NC	NC
EXW-07	[737]	0.5	78	-11.0	-7.5	0.40	11	45.1	28.6	3.5	35	25	-6.0
EXW-08	[738]	0.5	76	-10.0	-10.0	0.60	17	53.6	35.0	0.5	75	NC	NC
EXW-09	[739]	0.5	82	-10.0	-8.5	1.80	51	63.1	37.0	0.0	100	NC	NC
EXW-10	[740]	0.5	90	-10.0	-9.0	0.40	11	60.1	39.6	0.3	100	NC	NC
EXW-11	[741]	0.5	74	-10.0	-10.0	0.60	17	36.1	23.1	0.1	100	75	-9.0
EXW-12	[742]	0.5	110	-10.0	-8.0	1.30	37	61.1	38.9	0.0	100	NC	NC
EXW-13	[743]	0.5	105	-10.0	-10.0	3.60	102	60.4	39.6	0.0	100	NC	NC
EXW-14	[744]	0.5	105	-10.5	-6.0	4.30	121	58.3	39.1	0.2	100	NC	NC
NBSV-1(E)				-15.0	-14.0			NA	NA	NA	NA	NC	NC
NBSV-2(W)				NA	-14.0			NA	NA	NA	NA	NC	NC
NBSV-3(N)				(a)	(a)						100%	NA	NA
						TOTAL	390						

Comments: 1. Three wellhead valves adjusted this round.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data Not Available.

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

January 17, 2008

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Third Quarter 2007 Landfill Gas System Monitoring Report
Closed Sauk County Landfills
WDNR Licenses No. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this third quarter 2007 report to the Wisconsin Department of Natural Resources (WDNR), detailing the results of the landfill gas system monitoring and related maintenance activities for the closed Sauk County Landfills. The applicable landfill gas and leachate monitoring requirements for the recently closed landfill (Lic. # 02978) are specified in the December 12, 1997, Plan of Operation Approval Modification. The older landfill site (Lic. # 02051) is being monitored in accordance with the same requirements. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's landfill gas-to-energy system.

The monitoring results have been submitted on computer diskette to the GEMS Database Coordinator of the WDNR Bureau of Waste Management at the Central Office in Madison. The environmental monitoring data certification forms and exceedence reports for both landfill sites are provided in Attachment 1. The gas monitoring data are provided in Attachment 2.

Summary of Monitoring Results

System adjustments were aggressively made during the quarter to support full operation of the gas-to-energy system and to control migration. The summary of the monitoring results gathered (refer to Attachment 2) are as follows:

- **Blower/Flare system:** The gas-to-energy systems operated sufficiently to control odors and migration during the quarter.
- **Gas extraction wells:** The gas extraction wells at both sites were monitored and balanced three times during the quarter.

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

- **Gas monitoring probes:** The gas monitoring probes around both sites were monitored twice during the quarter. Gas probe GP-11 was monitored an additional time during the quarter. Methane was not detected at the probes during the quarter.
- **Leachate head:** Leachate head wells LH-1 and LH-2, located at the newer site (Lic. #02978), were monitored monthly during the quarter, and leachate head was not detected.

Maintenance and Repairs Summary

Troubleshooting of the high condensate levels in skid system components continued throughout the quarter. Total system gas flow measurement devices will be installed on the inlet pipe of each of the two compressor systems in the last quarter of 2007. Wellhead modifications were made to replace worn-out fittings and to improve operations. Site surface inspections will occur throughout the year, repairs will be made as necessary, and a summary will be included in the 2007 annual report.

Conclusion

The operation of the landfill gas extraction system continued to improve throughout 2007 as a result of balancing efforts and mechanical modifications to system components. If you have any questions or comments, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

Curt Madsen /aw
Curtis D. Madsen, P.E.
Project Manager

Attachments: Environmental Monitoring Data Certification Form and Exceedence Report
Landfill Gas Monitoring Data

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County

Attachment 1

Environmental Monitoring Data Certification and Exceedence Report

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	7/12/2007 8/22/2007 8/31/2007 9/18/2007

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

July, August, September 2007

Type of Data Submitted (Check all that apply)

- [ ] Groundwater monitoring data from monitoring wells
- [ ] Groundwater monitoring data from private water supply wells
- [ ] Leachate monitoring data
- [x] Gas monitoring data
- [ ] Air monitoring data
- [ ] Other (specify) _____

Notification attached?

- [x] No. No groundwater standards or explosive gas limits were exceeded.
- [ ] Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- [ ] Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free | Project Engineer | 608-662-5476

Facility Representative Name (Print) | Title | (Area Code) Telephone No.

Dean R. Free | 1-14-08

Signature | Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

- [ ] Found uploading problems on _____ Initials _____
- [ ] Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): [ ] Diskette [ ] CD (initial submittal and follow-up) [ ] E-mail (follow-up only) Other _____

152 B

Attachment 2

Landfill Gas Monitoring Data

July 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): John Roelke

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NOT INSTALLED

"BEFORE" Wellfield Monitoring DATE: 7/12/07 TIME: 8:00 AM AMBIENT TEMP.: 62 °F

BAROMETRIC PRESSURE & TREND: 29.95 in. Hg. Rising GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
-10.0	NA	NA	38.3	31.7	0.9	100	NC

Were wellfield adjustments made (Yes/No)?: Yes (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 7/12/07 TIME: 12:45 PM AMBIENT TEMP.: 72 °F

BAROMETRIC PRESSURE & TREND: 29.96 in. Hg. Falling GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
46385		46386	85547	85544	85550	46387	
-12.5	NA	NA	47.4	32.1	0.6	100	NC

COMMENTS:
1. Both skids operating.
2. "NA" = Data not available.
3. Orifice plates scheduled for installation.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90 / GEM500
SERIAL NO.: RMT 1049
DATE LAST CALIBRATED: 7/12/2007
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 7/12/2007
START TIME: 10:30 AM
END TIME: 12:30 PM

WEATHER CONDITIONS: overcast
TEMPERATURE (11): 67 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 29.93 in. Hg falling
GROUND CONDITIONS (No DNR ID): dry

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01	731	0.5	NA	-9.6	-3.6	0.10	4	39.4	28.8	0.6	4	3	-2.4
EXW-02	732	0.5	NA	-9.0	-3.0	0.15	7	17.1	21.4	0.1	4	NC	NC
EXW-03	733	0.5	NA	-8.6	-8.4	0.50	22	31.4	21.7	0.2	40	10	-6.4
EXW-04	734	0.5	NA	-7.8	-5.8	0.30	13	25.4	24.3	0.7	20	15	-4.0
EXW-05	735	0.5	NA	-7.8	-7.4	0.20	9	51.4	30.1	0.3	35	NC	NC
EXW-06	736	0.5	NA	-7.6	-7.4	0.20	9	57.3	34.7	0.4	40	NC	NC
EXW-07	737	0.5	NA	-5.8	-5.8	0.80	35	48.3	33.3	2.4	50	25	-5.0
EXW-08	738	0.5	NA	-6.4	-6.4	0.50	22	51.9	36.4	0.5	75	NC	NC
EXW-09	739	0.5	NA	-4.6	-4.6	1.60	70	58.4	47.1	0.2	100	NC	NC
EXW-10	740	0.5	NA	-5.6	-5.6	0.45	20	57.5	40.9	0.3	100	NC	NC
EXW-11	741	0.5	NA	-5.8	-5.6	0.40	18	58.4	40.4	0.5	50	NC	NC
EXW-12	742	0.5	NA	-4.6	-4.6	1.60	70	57.4	42.4	0.3	100	NC	NC
EXW-13	743	0.5	NA	-3.2	-3.2	2.80	123	56.2	41.0	0.3	100	NC	NC
EXW-14	744	0.5	NA	-3.0	-3.0	3.20	141	56.4	40.2	0.5	100	NC	NC
NBSV-1(E)				-10.0	0.0			0.1	0.1	20.2	100	NC	NC
NBSV-2(W)				-9.4	0.0			0.1	0.1	20.2	50	NC	NC
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	563						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\New Site Gas Well 07_ 2007.xls
11/9/2007

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke		DATE:	7/12/2007	
			START TIME:	8:00 AM	
GAS/INSTRUMENT TYPE:	Landtec GA-90 / GEM500		END TIME:	10:15 AM	
SERIAL NO.:	RMT 1049				
DATE LAST CALIBRATED:	7/12/2007		WEATHER CONDITIONS:	overcast	
METHOD:	Standard Calibration Gases		TEMPERATURE (11):	67	°F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics		BAROMETRIC PRESSURE (25) & TREND (46381):	29.93	in. Hg falling
OTHER:			GROUND CONDITIONS (No DNR ID):	dry	

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (in. W.C.)
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	70	-8.2	0.00	0.00	0	0.1	2.2	17.4	0.0/11	NC	NC
EXW-02S	732	NA	NA	0.00	0.00	0	0.1	15.9	13.2	0.0/11	NC	NC
EXW-03S	733	78	-4.0	-0.05	0.01	1	0.2	10.1	9.4	0.2/11	0.0/11	-0.03
EXW-04S	734	72	-3.2	-0.07	0.01	1	2.8	2.7	7.7	0.75/11	NC	NC
EXW-05S	735	78	-2.2	-0.10	0.01	1	15.9	19.1	0.3	0.5/11	NC	NC
EXW-06S	736	100	-2.2	-0.12	0.02	1	0.2	1.3	16.0	0.125/11	0.0/11	-0.05
EXW-07S	737	64	-7.6	-1.00	0.02	1	9.9	20.1	0.3	1.0/11	0.5/11	-0.60
EXW-08S	738	NA	-7.8	-2.40	0.60	30	6.9	8.4	12.1	3.0/11	2.0/11	-0.25
EXW-09S	739	64	-3.2	-1.20	0.04	2	15.3	15.5	0.2	1.25/11	1.0/11	-0.80
EXW-10S	740	84	-5.2	-3.20	0.12	6	13.4	18.1	3.1	3.0/11	1.5/11	-1.30
EXW-11S	741	62	-6.8	-2.80	0.05	2	8.1	19.2	0.8	2.0/11	1.0/11	-1.00
EXW-12S	742	62	-6.2	-4.20	0.55	28	15.1	21.0	1.5	0.75/11	2.0/11	-2.00
EXW-13S	743	64	-7.6	-5.60	0.30	15	17.8	18.1	3.4	11.0/11	1.0/11	-1.50
EXW-14S	744	72	-5.6	-5.40	0.08	4	59.3	40.0	0.2	11.0/11	NC	NC
EXW-15S	745	60	-5.0	-4.60	1.00	50	6.1	13.0	3.1	5.0/11	1.5/11	-2.40
SBSV-1(E)			-3.0	0.00			16.8	23.8	1.3	100%	NC	NC
SBSV-2(W)			0.0	0.00			14.9	20.3	2.1	100%	NC	NC
SBSV-3(S)			(1)	(1)	TOTAL	142				100%	NC	(1)

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

155

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	7/12/2007		
		START TIME:	8:00 AM		
		END TIME:	8:30 AM		
GAS/INSTRUMENT TYPE:	Landtec GA-90 or GEM500				
SERIAL NO.:	RMT 1049	WEATHER CONDITIONS:	overcast		
DATE LAST CALIBRATED:	7/12/2007	TEMPERATURE (11):	67	°F	
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.93	in. Hg	falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	dry		

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46385]:	NM	NM	NM	NM	NM	NM	NM	NM	-0.05	NM
METHANE (%, by vol.) [85547]:	NM	NM	NM	NM	NM	NM	NM	NM	0.0	NM
CARBON DIOXIDE (%, by vol.) [85544]	NM	NM	NM	NM	NM	NM	NM	NM	0.2	NM
OXYGEN (%, by vol.) [85550]:	NM	NM	NM	NM	NM	NM	NM	NM	19.9	NM

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitor monthly until cleared.
2. No methane in GP-11 this round.

1558

August 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): D.R. Free

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NOT INSTALLED

"BEFORE" Wellfield Monitoring DATE: 8-31-07 TIME: 9:30 A.M. AMBIENT TEMP.: 75 °F

BAROMETRIC PRESSURE & TREND: 29.20 in. Hg. rising GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
-13.2	NA	400	(est.)	47.9	35.4	0.0	100	NC

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 8-31-07 TIME: 3:00 P.M. AMBIENT TEMP.: 75 °F

BAROMETRIC PRESSURE & TREND: 29.25 in. Hg. rising GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
46382		46386		85547	85544	85550	46387	
-14.2	NA	400	(est.)	48.2	35.5	0.1	100	NC

COMMENTS: 1. Both skids operating. 21 TURBINES RUNNING. OLDER COMPRESSOR RESTARTED AT 7 AM; WENT DOWN LATE YESTERDAY.
2. "NA" = Data not available.
3. Total flow measurement devices scheduled for installation.

15 of 15

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 08_2007.xls
11/9/2007

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D.R. Free	DATE:	8/31/2007
		START TIME:	9:30 AM
GAS/INSTRUMENT TYPE:	Landtec GEM500	END TIME:	4:00 PM
SERIAL NO.:	Sauk County Unit		
DATE LAST CALIBRATED:	Unknown	WEATHER CONDITIONS:	Nice
METHOD:	Unknown	TEMPERATURE (11):	75 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.20 in. Hg Rising
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Excellent

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01	[731]	0.5	NA	-10.8	-2.3	0.37	15	45.0	30.0	0.0	4	NC	NC
EXW-02	[732]	0.5	NA	-10.2	-1.8	0.02	2	20.3	22.7	0.0	0	NC	NC
EXW-03	[733]	0.5	NA	-10.2	-5.6	0.13	7	30.8	25.7	0.0	0	NC	NC
EXW-04	[734]	0.5	NA	-9.2	-4.4	0.20	12	37.6	28.5	0.0	20	18	-3.2
EXW-05	[735]	0.5	NA	-8.9	-6.0	0.10	6	44.7	30.2	0.0	35	NC	NC
EXW-06	[736]	0.5	NA	-9.0	-8.9	0.03	2	60.0	34.2	0.0	40	50	NC
EXW-07	[737]	0.5	NA	-7.5	-6.6	0.55	18	45.8	31.2	2.1	50	40	-6.0
EXW-08	[738]	0.5	NA	-8.1	-7.5	0.50	18	49.6	36.0	0.0	75	NC	NC
EXW-09	[739]	0.5	NA	-7.6	-5.8	1.61	33	58.2	41.3	0.0	100	NC	NC
EXW-10	[740]	0.5	NA	-7.1	-6.6	0.43	18	58.0	41.0	0.0	100	NC	NC
EXW-11	[741]	0.5	NA	-7.3	-6.6	0.68	20	59.1	40.2	0.0	50	90	-6.7
EXW-12	[742]	0.5	NA	-7.1	-5.7	1.34	30	57.5	44.1	0.0	100	NC	NC
EXW-13	[743]	0.5	NA	-7.3	-4.2	3.10	50	55.2	41.1	0.0	100	NC	NC
EXW-14	[744]	0.5	NA	-7.7	-2.4	3.87	60	52.1	36.9	1.0	100	NC	NC
NBSV-1(E)				NA	NA			NA	NA	NA	NA	NA	NA
NBSV-2(W)				NA	NA			NA	NA	NA	NA	NA	NA
NBSV-3(N)				(1)	(1)						100	NC	NC
						TOTAL	291	(est.)					

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

LS1

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D.R. Free	DATE:	8/31/2007
		START TIME:	9:30 AM
GAS/INSTRUMENT TYPE:	Landtec GEM500	END TIME:	4:00 PM
SERIAL NO.:	Sauk County Unit		
DATE LAST CALIBRATED:	Unknown	WEATHER CONDITIONS:	Nice
METHOD:	Unknown	TEMPERATURE (11):	75 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.20 in. Hg Rising
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Excellent

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (in. W.C.)
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	95	-11.2	0.00	0.00	0	0.1	8.3	4.4	0.0/11	NC	NC
EXW-02S	732	95	-10.0	0.00	0.00	0	20.0	17.0	0.0	0.0/11	0.1/11	-0.10
EXW-03S	733	97	-7.8	0.00	0.00	0	8.7	15.6	1.5	0.0/11	0.1/11	-0.10
EXW-04S	734	85	-7.7	0.00	0.00	0	26.8	20.6	0.1	0.0/11	0.1/11	-0.10
EXW-05S	735	83	-6.5	0.00	0.01	1	22.2	22.7	0.0	TRACE	0.1/11	-0.10
EXW-06S	736	110	-6.5	-0.10	0.00	0	0.0	1.4	13.2	0.0/11	NC	NC
EXW-07S	737	75	-11.0	-0.10	0.04	4	20.2	22.5	0.0	0.5/11	NC	NC
EXW-08S	738	80	-11.1	-2.50	0.20	15	33.0	27.8	0.0	2.0/11	NC	NC
EXW-09S	739	77	-8.0	-0.40	0.16	13	41.5	26.9	0.0	1.0/11	1.2/11	-0.50
EXW-10S	740	84	-11.0	-1.60	0.14	12	22.6	21.3	0.3	1.5/11	1.3/11	-1.20
EXW-11S	741	77	-10.8	-0.60	0.11	10	23.2	23.0	0.0	1.0/11	NC	NC
EXW-12S	742	67	-10.8	-1.20	0.16	13	23.3	22.5	1.9	2.0/11	1.0/11	-0.80
EXW-13S	743	80	-10.5	-0.50	0.10	8	28.8	22.3	0.5	1.0/11	NC	NC
EXW-14S	744	90	-11.0	-10.90	0.10	8	52.1	36.6	1.2	11.0/11	NC	NC
EXW-15S	745	69	-11.0	-6.30	0.08	6	12.0	14.3	0.8	1.5/11	1.2/11	-3.70
SBSV-1(E)			NA	NA			NA	NA	NA	100%	NA	NA
SBSV-2(W)			NA	NA			NA	NA	NA	100%	NA	NA
SBSV-3(S)			(1)	(1)	TOTAL	90	(est.)			100%	NA	NA

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
2. Well 2S has slight leak at flex hose.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

8151

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	8/22/2007
		START TIME:	8:30 AM
		END TIME:	10:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	RMT	WEATHER CONDITIONS:	Cloudy
DATE LAST CALIBRATED:	8/22/2007	TEMPERATURE (11):	70 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.93 in. Hg Steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Saturated

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.01	-0.02	0.01	0	0.1	0	-0.05	-0.03	0.05	0.03
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	1.0	0.0	2.1	1.9	0.0	0.8	2.2	0.1	2.5	2.6
OXYGEN (%, by vol.) [85550]:	19.2	20.2	18.3	17.6	20.2	20.2	19.5	20.0	19.8	17.4

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitor monthly until cleared.
2. No methane in GP-11 this round.

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Probe 08_2007 .xls
11/9/2007

September 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NOT INSTALLED

"BEFORE" Wellfield Monitoring DATE: 9/18/07 TIME: 8:00 AM AMBIENT TEMP.: 67 °F

BAROMETRIC PRESSURE & TREND: 30.05 in. Hg. steady GAS TEMP.: 68 °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
-17.0	2.40	420	(est.)	51.9	34.6	0.02	100	NC

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 9/18/07 TIME: 12:30 PM AMBIENT TEMP.: 79 °F

BAROMETRIC PRESSURE & TREND: 30.00 in. Hg. Falling GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)		METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
46382		46386		85547	85544	85560	46387	
-17.0	3.20	420	(est.)	51.5	35.9	0.5	100	NC

COMMENTS:
1. Both skids operating.
2. "NA" = Data not available.
3. Total Flow Measurement devices on order.

159

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 09_2007.xls
11/9/2007

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/18/2007
		START TIME:	8:15 AM
GAS/INSTRUMENT TYPE:	Landtec GEM500	END TIME:	10:30 AM
SERIAL NO.:	RMT 1060		
DATE LAST CALIBRATED:	9/18/2007	WEATHER CONDITIONS:	Partly cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	79 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.00 in. Hg Falling
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
[GEMS Code]			[46388]	[46382]	[46385]		[46386]	[85547]	[85844]	[85550]	[46387]		
EXW-01	[731]	0.5	84	-14.0	-2.8	0.10	1	52.2	28.9	0.1	4	4.5	-3.8
EXW-02	[732]	0.5	82	-14.0	-2.6	0.05	1	24.1	22.0	0.2	0	NC	NC
EXW-03	[733]	0.5	82	-14.0	-3.0	0.10	1	35.7	23.7	0.3	0	NC	NC
EXW-04	[734]	0.5	76	-13.0	-3.8	0.05	1	45.7	26.8	0.4	18	NC	NC
EXW-05	[735]	0.5	72	-12.0	-11.5	0.30	2	45.6	27.4	0.1	35	NC	NC
EXW-06	[736]	0.5	78	-12.0	-12.0	0.20	1	61.0	31.1	0.2	50	NC	NC
EXW-07	[737]	0.5	88	-10.5	-9.6	1.00	3	46.4	30.5	3.1	40	NC	NC
EXW-08	[738]	0.5	84	-11.0	-11.0	0.80	3	52.5	35.4	0.5	75	NC	NC
EXW-09	[739]	0.5	86	-10.5	-9.0	2.20	5	57.4	40.7	0.1	100	NC	NC
EXW-10	[740]	0.5	92	-10.5	-10.5	0.50	2	56.8	40.2	0.0	100	NC	NC
EXW-11	[741]	0.5	88	-10.5	-10.5	1.00	3	57.0	38.6	0.0	90	NC	NC
EXW-12	[742]	0.5	112	-10.5	-9.0	2.00	4	56.6	40.8	0.0	100	NC	NC
EXW-13	[743]	0.5	106	-10.0	-6.0	4.40	6	56.2	40.3	0.0	100	NC	NC
EXW-14	[744]	0.5	100	-10.5	-5.5	5.20	7	56.4	39.8	0.0	100	NC	NC
NBSV-1(E)				NA	-14.5			53.9	37.1	0.5	100	NC	NC
NBSV-2(W)				NA	-14.5			53.3	36.5	0.9	50	NC	NC
NBSV-3(N)				(2)	(2)						100	NC	NC
						TOTAL	39						

Comments: 1. Thermometers were installed today.
2. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data Not Available.

15a B

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/18/2007
		START TIME:	8:15 AM
GAS/INSTRUMENT TYPE:	Landtec GEM500	END TIME:	10:00 AM
SERIAL NO.:	RMT 1080		
DATE LAST CALIBRATED:	9/18/2007	WEATHER CONDITIONS:	Partly Cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	79 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.00 in. Hg Falling
OTHER:	-	GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	est. Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (in. W.C.)
[GEMS Code]		[46388]	[46382]	[46385]		[46386]	[65547]	[65544]	[65550]	[46387]		
EXW-01S	[731]	78	-14.0	-0.05	0.10	1	17.1	15.9	0.2	0.0/11	NC	NC
EXW-02S	[732]	NM	NM	-0.02	NM	1	4.8	17.4	1.1	0.1/11	NC	NC
EXW-03S	[733]	80	-10.5	-0.03	0.00	0	10.4	17.5	0.0	0.1/11	NC	NC
EXW-04S	[734]	70	-10.0	-0.02	0.00	0	14.8	19.3	0.0	0.1/11	NC	NC
EXW-05S	[735]	72	-10.0	-0.03	0.00	0	24.1	21.4	0.0	0.1/11	0.75/11	-0.1
EXW-06S	[736]	98	-10.5	-0.05	0.02	2	0.1	1.7	7.5	0.0/11	NC	NC
EXW-07S	[737]	68	-14.5	-0.02	0.00	0	24.4	21.9	0.0	0.5/11	NC	NC
EXW-08S	[738]	60	-13.5	-2.50	0.04	3	0.0	0.1	20.1	2.0/11	0/11	-0.5
EXW-09S	[739]	60	-10.5	-0.70	0.01	1	42.5	26.4	0.0	1.2/11	1.5/11	-2.0
EXW-10S	[740]	76	-13.5	-0.30	0.01	1	0.0	21.5	27.1	1.3/11	NC	NC
EXW-11S	[741]	64	-14.5	-0.03	0.00	0	27.4	23.2	0.3	1.0/11	NC	NC
EXW-12S	[742]	64	-14.5	-0.80	0.02	2	12.7	11.6	11.0	1.0/11	0.0/11	Decreasing
EXW-13S	[743]	70	-13.5	-0.46	0.01	1	10.2	10.1	9.9	1.0/11	0.0/11	Decreasing
EXW-14S	[744]	68	-13.5	-13.50	0.18	6	50.7	38.1	2.1	11.0/11	NC	NC
EXW-15S	[745]	62	-13.5	-3.80	0.02	2	18.1	17.9	0.4	1.2/11	NC	NC
SBSV-1(E)			NA	-5			25.2	22.9	1.6	100%	NC	NC
SBSV-2(W)			NA	NA			27.7	21.7	0.7	100%	NC	NC
SBSV-3(S)			(1)	(1)						100%	NC	NC
					TOTAL	20						

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.
4. "NA" = Data Not Available.

160

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	9/18/2007
		START TIME:	8:15 AM
		END TIME:	11:00 AM
GAS/INSTRUMENT TYPE:	Landtec GEM500		
SERIAL NO.:	RMT 1080	WEATHER CONDITIONS:	Partly Cloudy
DATE LAST CALIBRATED:	9/18/2007	TEMPERATURE (11):	79 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (4638	30.00 in. Hg Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46389]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.1	0.0
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.) [85544]	1.0	0.1	1.1	1.5	0.0	0.3	0.0	3.1	0.0	1.2
OXYGEN (%, by vol.) [85550]:	19.1	20.1	19.0	17.6	20.3	19.8	20.3	16.7	20.3	19.0

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitor monthly until cleared.
2. No methane in GP-11 this round.

RMT

• ENVIRONMENT • ENERGY • ENGINEERING

November 6, 2007

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Second Quarter Landfill Gas System Monitoring Report, Closed Sauk County Landfills, License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this report to the Wisconsin Department of Natural Resources (WDNR), detailing the results of the second quarter 2007 landfill gas system monitoring and other related maintenance activities for the closed Sauk County Landfills. The applicable landfill gas and leachate monitoring requirements for the recently closed landfill (WDNR Lic. # 02978) are specified in the December 12, 1997, Plan of Operation Approval Modification. The landfill gas system of the older landfill site (WDNR Lic. # 02051) is being monitored in accordance with the same requirements specified for the recently closed landfill. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's landfill gas-to-energy system.

The second quarter monitoring results have been submitted on computer diskette to the GEMS Database Coordinator of the WDNR Bureau of Waste Management at the Central Office in Madison. The environmental monitoring data certification forms and exceedance report for the second quarter for both landfill sites are provided in Attachment 1. The gas monitoring data for the second quarter 2007 are provided in Attachment 2.

Summary of Monitoring Results

System adjustments were aggressively made during the second quarter 2007 to support full operation of the expanded gas-to-energy system and to evaluate the gas migration at GP-11. The summary of the monitoring results gathered (refer to Attachment 2) are as follows:

- Blower/Flare System: By the middle of May 2007, the ability to control and balance the well fields significantly improved. Total system methane concentrations have been maintained in the low to mid 40% range as system operation matured.

744 Heartland Trail • Madison, WI 53717 • 608.831.4444 • 608.831.3334 FAX • www.rmtinc.com

- Gas Extraction Wells: The gas extraction wells on both sites were monitored and balanced three times during the second quarter 2007.
- Gas Monitoring Probes: The gas monitoring probes around both sites were monitored once during the second quarter 2007. Gas probe GP-11 was monitored three additional times during the quarter. The migration at GP-11 was eliminated by mid May, and no methane was detected during the remainder of the second quarter 2007. The improved migration control was attributed to maintaining operation of the expanded gas-to-energy system and aggressive wellfield balancing efforts.
- Leachate Head: The leachate head wells LH-1 and LH-2, located in the newer site (WDNR Lic.
  # 02978) were monitored twice during the second quarter 2007, once the device-specific equipment was developed. Leachate head was not detected during the second quarter of 2007.

Maintenance and Repairs Summary

Total system gas flow measurement devices are planned for installation later in 2007. A device will be installed on the inlet pipe of each of the two compressor systems. Wellhead modifications are ongoing in order to replace worn out fittings and to improve operations on both landfills. The growth of vegetation on the disturbed areas resulting from the construction of the Phase III final cover system is progressing. Site surface inspections will occur throughout the year and repairs will be made as necessary. A summary of surface areas efforts, including the results of the final cover inspections, will be included in the 2007 annual report prepared in early 2008.

Conclusion

The operation of the landfill gas extraction system continued to improve throughout the first half of 2007 as a result of tuning the gas-to-energy system, wellfield balancing efforts, and mechanical modifications to system components.

If you have any questions or comments after you review the information provided, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475:

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

Curtis D. Madsen, P.E.
Project Manager

Attachments: Environmental Monitoring Data Certification Form and Exceedance Report
Landfill Gas Monitoring Data

cc: Jim Kralick, WDNR
Tim Stieve, Sauk County

Attachment 1
Environmental Monitoring Data Certification and Exceedance Report

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	4/17/2007 5/4/2007 5/23/2007 6/19/2007

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free	Project Engineer	(608)662-5476
Facility Representative Name (Print)	Title	(Area Code) Telephone No.
Dean R Free	7/31/07	
Signature	Date	

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	4/17/2007 5/4/2007 5/23/2007 6/19/2007

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☐ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☒ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free — Facility Representative Name (Print)
Project Engineer — Title
(608)662-5476 — (Area Code) Telephone No.

Dean R Free — Signature
7/31/07 — Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

163B

TABLE 1
PARAMETERS THAT EXCEED
CURRENT REGULATORY STANDARDS
SAUK COUNTY LANDFILL/WDNR LIC #02978

BEGINNING SEARCH DATE: 01-APR-2007
ENDING SEARCH DATE: 01-JUL-2007

CHEMICAL PARAMETER	UNITS	NR140 PAL	NR140 ES	SAMPLE IDENTIFIER	SAMPLE DATE	RESULT	DATA FLAGS	EXCEEDANCE	WITHIN DMZ?
METHANE, PERCENT BY VOLUME	%	5	15	GP-11	17-APR-2007	14.5		EXP	
				GP-11	04-MAY-2007	11.5		EXP	

14

Attachment 2
Landfill Gas monitoring Data

164 B

April 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): Dean Free

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NONE INSTALLED

"BEFORE" Wellfield Monitoring DATE: NA TIME: NA AMBIENT TEMP.: NA °F

BAROMETRIC PRESSURE & TREND: NA in. Hg. NA GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
NA	NA	NA	NA	NA	NA	NA

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): NA NA (Flow for Older Skid only)

GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): NA NA

Were wellfield adjustments made (Yes/No)?: No (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 4/17/07 TIME: 8:00 AM AMBIENT TEMP.: 45 °F

BAROMETRIC PRESSURE & TREND: 29.80 in. Hg. Steady GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
46385		46386	85547	85544	85550	46387
-4.6	NA	NA	56.5	33.6	0.7	30%

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): NA NA (Flow for Older Skid only)

GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): NA NA

COMMENTS: 1. Newer compressor skid continues to be adjusted; operation not consistent, including periodic down-times.
2. "NA" = Data not available.

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	4/17/2007
		START TIME:	9:00 AM
		END TIME:	11:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	1762 RMT	WEATHER CONDITIONS:	light rain
DATE LAST CALIBRATED:	4/17/2007	TEMPERATURE (11):	45 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.80 in. Hg Steady
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS:	wet

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46385]:	0.00	0.00	-0.05	-0.01	0.09	-0.03	0.00	0.04	0.15	-0.01
METHANE (%, by vol.) [85547]:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**14.5**	0.0
CARBON DIOXIDE (%, by vol.) [85544]	0.3	1.5	0.4	1.5	0.3	0.8	0.4	6.4	13.5	3.1
OXYGEN (%, by vol.) [85550]:	20.3	18.9	20.1	18.9	20.4	20.1	20.3	15.2	7.6	18.0

NOTES:
1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitor monthly until cleared.

May 2007

1608

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): Dean Free

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NONE INSTALLED

"BEFORE" Wellfield Monitoring DATE: NA TIME: NA AMBIENT TEMP.: NA °F

BAROMETRIC PRESSURE & TREND: NA in. Hg. NA GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
NA	NA	NA	NA	NA	NA	NA

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): NA NA
(Flow for Older Skid only)

GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): NA NA

Were wellfield adjustments made (Yes/No)?: Yes (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 5/4/07 TIME: 4:30 PM AMBIENT TEMP.: 68 °F

BAROMETRIC PRESSURE & TREND: 30.11 in. Hg. Steady GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
46385		46386	85547	85544	85550	46387
-9.7	NA	NA	39.2	28.9	0.8	30%

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): 226 82.6
(Flow for Older Skid only)

GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): 0 0

COMMENTS: 1. Newer compressor skid continues to be adjusted; operation becoming more consistent.
2. "NA" = Data not available.

167

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 04b_2007.xls
8/2/2007

GAS PROBE MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free	DATE:	5/4/2007
		START TIME:	9:00 AM
		END TIME:	9:30 PM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	No. 1	WEATHER CONDITIONS:	cloudy, breezy
DATE LAST CALIBRATED:	3/7/2007	TEMPERATURE (11):	57 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.00 Hg Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	Moist

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46385]:	NM	NM	NM	NM	NM	NM	NM	NM	0.18	NM
METHANE (%, by vol.) [85547]:	NM	NM	NM	NM	NM	NM	NM	NM	11.5	NM
CARBON DIOXIDE (%, by vol.) [85544]	NM	NM	NM	NM	NM	NM	NM	NM	12.8	NM
OXYGEN (%, by vol.) [85550]:	NM	NM	NM	NM	NM	NM	NM	NM	8.8	NM

NOTES:

1. Methane detected at GP-11 has decline slightly from last reading on 4/17/07; balancing continuing to decrease migration.
2. "NM" = Data not measured.

8[19]

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	Dean Free	DATE:	5/4/2007
		START TIME:	11:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	2:00 PM
SERIAL NO.:	No. 1		
DATE LAST CALIBRATED:	3/7/2007	WEATHER CONDITIONS:	cloudy, breezy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	57 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.00 Hg. Falling
OTHER:		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01	731	0.5	NA	-5.6	-5.5	0.05	2	26.5	16.2	8.6	25	5	-4.2
EXW-02	732	0.5	NA	-4.6	-4.2	0.71	31	17.6	21.1	0.0	25	15	-4.0
EXW-03	733	0.5	NA	-5.2	-5.1	0.10	4	57.6	22.0	0.0	25	NC	NC
EXW-04	734	0.5	NA	-4.4	-4.4	0.20	9	35.5	24.9	0.8	100	25	-4.0
EXW-05	735	0.5	NA	-4.4	-4.4	0.04	2	42.9	20.6	5.9	100	25	-4.2
EXW-06	736	0.5	NA	-4.3	-4.3	0.04	2	43.4	21.2	5.4	100	25	-4.2
EXW-07	737	0.5	NA	-3.2	-3.2	0.37	16	52.9	33.5	1.5	100	50	-3.1
EXW-08	738	0.5	NA	-3.6	-3.6	0.26	11	56.0	36.8	0.2	100	NC	NC
EXW-09	739	0.5	NA	-2.4	-2.4	1.05	46	59.2	38.4	0.0	100	NC	NC
EXW-10	740	0.5	NA	-3.0	-3.0	0.24	11	58.0	41.5	0.0	100	NC	NC
EXW-11	741	0.5	NA	-3.0	-3.0	0.40	18	58.4	41.0	0.2	100	NC	NC
EXW-12	742	0.5	NA	-2.1	-2.1	0.97	43	58.4	41.6	0.0	100	NC	NC
EXW-13	743	0.5	NA	-1.4	-1.4	1.20	44	56.0	42.8	0.2	100	NC	NC
EXW-14	744	0.5	NA	-1.1	-1.1	2.31	85	57.7	40.7	0.0	100	NC	NC
NBSV-1(E)				-5.9	-5.9			42.5	29.4	2.7	100	100	NC
NBSV-2(W)				-5.9	-5.9			47.2	31.4	2.5	100	100	NC
NBSV-3(N)				(1)	(1)	TOTAL	324				100	NC	NC

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
2. Applied vacuum was decreased in six wells to improve gas quality.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = readings not available.

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\New Site Gas Well 04_2007.xls
8/2/2007

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	5/4/2007
		START TIME:	10:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	1:00 PM
SERIAL NO.:	No. 1		
DATE LAST CALIBRATED:	3/7/2007	WEATHER CONDITIONS:	cloudy, breezy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	57 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.00 Hg. Falling
OTHER:		GROUND CONDITIONS (No DNR ID):	Moist

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (in. W.C.)
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	68	-5.5	-3.5	0.04	2	0.3	3.5	13.9	3/11	0/11	Less
EXW-02S	732	NA	NA	NA	NA	NA	NA	NA	NA	4/11	NC	NC
EXW-03S	733	68	-0.6	-0.4	0.03	1	0.7	11.8	7.6	4/11	0/11	Less
EXW-04S	734	62	-1.2	-1.1	0.02	1	1.0	13.5	5.5	4/11	NC	NC
EXW-05S	735	74	-0.6	-0.15	0.01	1	15.5	20.3	0.5	1/11	NC	NC
EXW-06S	736	92	-0.5	0.0	0.00	0	0.0	0.8	18.7	0/11	NC	NC
EXW-07S	737	62	-4.8	-4.6	0.05	2	6.7	17.2	3.7	5/11	NC	NC
EXW-08S	738	58	-5.5	-2.5	0.60	25	14.4	19.1	4.4	5/11	NC	NC
EXW-09S	739	62	-1.2	-1.0	0.02	1	1.6	1.2	19.2	5/11	0/11	Less
EXW-10S	740	72	-3.4	-3.0	0.03	1	14.7	17.3	2.5	5/11	NC	NC
EXW-11S	741	60	-4.0	-2.0	0.04	2	6.3	16.6	2.6	2/11	NC	NC
EXW-12S	742	62	-3.4	-2.4	0.32	15	16.1	18.3	4.5	11/11	NC	NC
EXW-13S	743	72	-3.4	-2.5	0.04	2	13.4	12.1	10.9	11/11	NC	NC
EXW-14S	744	72	-3.4	-3.3	0.02	1	58.8	37.0	0.5	11/11	NC	NC
EXW-15S	745	60	-3.4	-3.2	0.06	3	7.9	13.9	1.7	11/11	NC	NC
SBSV-1(E)			-3.2	-2.0			12.8	17.9	5.6	100%	NC	NC
SBSV-2(W)			0.0	0.0			0.0	0.2	20.3	100%	NC	NC
SBSV-3(S)			(1)	(1)	TOTAL	57				100%	NC	NC

Comments:
1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
2. Three wellhead valves were closed.
3. Wellhead 2 broken by age and weather; replacement parts ordered.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.
4. "NA" = readings not available.

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): Dean Free

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NONE INSTALLED

"BEFORE" Wellfield Monitoring DATE: 5/22/07 TIME: 8:00 AM AMBIENT TEMP.: 65 °F

BAROMETRIC PRESSURE & TREND: 30.00 in. Hg. Rising GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
-9.0	NA	NA	36.3	30.0	1.3	30%

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): 191 / 84.8 (Flow for Older Skid only)

GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): 1.65 / 44

Were wellfield adjustments made (Yes/No)?: Yes [on 5/23] (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 5/23/07 TIME: 2:00 PM AMBIENT TEMP.: 85°F

BAROMETRIC PRESSURE & TREND: 30.01 in. Hg. Falling GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
46385		46386	85547	85544	85550	46387
-3.4	NA	NA	43.2	32.5	0.4	60%

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): NA / NA (Flow for Older Skid only)

GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): NA / NA

COMMENTS:
1. Newer skid was down until approx. 9 am 5/23; only the older skid was running on 5/22.
2. Some inconsistent operations, balancing continues.
3. "NA" = Data not available.

148

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 05_2007.xls
8/2/2007

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	Dean Free	DATE:	5/23/2007		
		START TIME:	9:00 AM		
		END TIME:	9:10 AM		
GAS/INSTRUMENT TYPE:	Landtec GEM500				
SERIAL NO.:	Sauk No. 1	WEATHER CONDITIONS:	sunny, windy		
DATE LAST CALIBRATED:	5/23/2007	TEMPERATURE (11):	75	°F	
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	30.02	in. Hg	Rising
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	dry		

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46385]:	NM	NM	NM	NM	NM	NM	NM	NM	-0.05	NM
METHANE (%, by vol.) [85547]:	NM	NM	NM	NM	NM	NM	NM	NM	0.0	NM
CARBON DIOXIDE (%, by vol.) [85544]	NM	NM	NM	NM	NM	NM	NM	NM	0.4	NM
OXYGEN (%, by vol.) [85550]:	NM	NM	NM	NM	NM	NM	NM	NM	20.4	NM

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitored monthly until cleared.
2. No methane in GP-11 this round.
3. "NM" = Data not measured.

170

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Probe 05_2007.xls
8/2/2007

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke Dean Free	DATE:	5/23/2007
		START TIME:	7:30 AM
GAS/INSTRUMENT TYPE:	Landtec GEM500	END TIME:	1:00 PM
SERIAL NO.:	Sauk and RMT Instruments		
DATE LAST CALIBRATED:	5/23/2007	WEATHER CONDITIONS:	sunny, windy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	75 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	30.02 in. Hg Rising
OTHER:		GROUND CONDITIONS (No DNR ID):	dry

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01	NA	0.5	NA	-4.5	-2.5	0.01	1	36.8	28.3	0.4	5	4	-2.0
EXW-02	NA	0.5	NA	-4.0	-2.5	1.00	44	23.3	24.4	0.2	15	4	-2.0
EXW-03	NA	0.5	NA	-4.5	-4.0	0.30	13	54.7	22.4	0.3	25	40	-4.1
EXW-04	NA	0.5	NA	-4.4	-3.8	0.20	9	43.6	28.4	0.3	25	20	-3.5
EXW-05	NA	0.5	NA	-3.5	-3.0	0.40	18	58.4	28.5	0.1	25	35	-3.2
EXW-06	NA	0.5	NA	-4.0	-4.0	0.05	2	57.9	29.4	0.2	25	40	-4.0
EXW-07	NA	0.5	NA	-3.8	-3.0	0.70	31	53.5	35.1	1.1	50	NC	NC
EXW-08	NA	0.5	NA	-3.6	-3.2	0.43	19	44.5	30.1	1.1	100	75	-3.0
EXW-09	NA	0.5	NA	-1.8	-1.2	0.60	26	57.6	39.0	0.1	100	NC	NC
EXW-10	NA	0.5	NA	-3.4	-2.8	0.48	21	56.6	39.6	0.3	100	NC	NC
EXW-11	NA	0.5	NA	-3.4	-2.6	0.55	24	35.5	23.3	0.1	100	25	-2.4
EXW-12	NA	0.5	NA	-3.4	-1.8	1.25	55	57.4	40.1	0.1	100	NC	NC
EXW-13	NA	0.5	NA	-3.2	-1.05	2.10	92	56.9	39.9	0.1	100	NC	NC
EXW-14	NA	0.5	NA	-3.6	-0.6	2.80	123	57.3	39.1	0.3	100	NC	NC
NBSV-1(E)				NA	-6.0			50.6	35.9	0.0	100	NC	NC
NBSV-2(W)				NA	-6.2			43.2	29.0	3.8	100	50	-6.0
NBSV-3(N)				(4)	(4)	TOTAL	324				100	NC	(4)

Comments:
1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
2. Ports replaced at EX-1,EXW-3, EXW-5, and others as necessary.
3. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
4. EXW-9 was last well reading taken (newer skid just went down - blown fuse); note lower available header vacuum following lost skid operations.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

2007

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	John Roelke Dean Free	DATE: START TIME: END TIME:	5/23/2007 7:30 AM 1:00 PM
GAS/INSTRUMENT TYPE:	Landtec GEM500		
SERIAL NO.:	Sauk and RMT Instruments		
DATE LAST CALIBRATED:	5/23/2007	WEATHER CONDITIONS:	sunny, windy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	75 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (20) & TREND (46381):	30.02 In. Hg Rising
OTHER:		GROUND CONDITIONS (No DNR ID):	dry

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (In. W.C.)	Applied Well Pressure (In. W.C.)	Differential Pressure (In. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (In. W.C.)
GEMS Code		46388	46382	46385		46386	86547	86544	86550	46387		
EXW-01S	731	62	-1.9	-1.3	0.04	2	0.5	4.7	14.4	1.5/11	0/11	NC
EXW-02S	732	NA	NA	-0.18	NA	NA	0.5	7.7	10.5	1/11	0/11	-0.01
EXW-03S	733	86	-2.5	-0.06	0.01	1	0.1	6.4	12.1	0/11	NC	NC
EXW-04S	734	66	-1.35	-1.25	0.01	1	1.3	5.7	2.4	4/11	0/11	-0.04
EXW-05S	735	84	-0.3	-0.05	0.01	1	10.4	13.8	5.3	1/11	.5/11	NC
EXW-06S	736	102	-0.25	-0.05	0.01	1	0.0	0.3	19.2	0/11	NC	NC
EXW-07S	737	68	-1.9	-1.8	0.02	1	7.3	19.5	1.4	5/11	1/11	-1.0
EXW-08S	738	58	-3.0	-2.5	0.08	4	16.3	23.5	0.9	5/11	3/11	-2.0
EXW-09S	739	86	-1.5	-0.15	0.01	1	40.0	24.5	6.0	0/11	1/11	-0.4
EXW-10S	740	78	-2.8	-2.5	0.05	2	14.6	18.3	2.2	5/11	3/11	-2
EXW-11S	741	60	-1.85	-1.25	0.08	4	6.5	18.3	0.5	2/11	NC	NC
EXW-12S	742	62	-1.65	-1.5	0.01	1	18.1	22.7	0.3	1/11	NC	NC
EXW-13S	743	72	-2.2	-2.2	0.04	2	22.4	21.1	1.8	11/11	NC	NC
EXW-14S	744	76	-3.0	-2.5	0.01	1	55.7	37.1	0.8	11/11	NC	NC
EXW-15S	745	60	-2.5	-2.5	0.04	2	8.8	14.2	1.0	11/11	5/11	-2.0
SBSV-1(E)			-0.75	NA			12	18.4	4.6	100%	NC	NC
SBSV-2(W)			0.0*	NA			NA	NA	NA	100%	NC	NC
SBSV-3(S)			(1)	(1)	TOTAL	24				100%	NC	NC

Comments:
1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
2. * = Sample ports blocked (3 BSV locations) execpt SV-1E blower side of valve.
3. Wellhead No. 2 broken due to age and weathering; replacement parts ordered.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

June 2007

171 B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: NOT INSTALLED

"BEFORE" Wellfield Monitoring DATE: 6/19/07 TIME: 11:15 AM AMBIENT TEMP.: 75 °F

BAROMETRIC PRESSURE & TREND: 29.92 in. Hg. Rising GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)
-10.0	NA	NA	45.3	33.9	0.4	100%

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): 193.7 / 84.4 GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): 0.95 / 33
(Flow for Older Skid only)

Were wellfield adjustments made (Yes/No)?: YES (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 6/19/07 TIME: 3:45 PM AMBIENT TEMP.: 78 °F

BAROMETRIC PRESSURE & TREND: 29.94 in. Hg. Steady GAS TEMP.: NA °F

APPLIED FIELD VACUUM (in. W.C.)	Orifice Plate Differential Pressure (in. WC)	TOTAL GAS FLOW (cfm)	METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (AFTER)
46385		46386	85547	85544	85550	46387
-10.0	NA	NA	43.9	33.4	0.6	100%

GAS FLOW TO CAPSTONES (SCFM) / PRESSURE (PSIG): 198.4 / 85.3 GAS FLOW TO SMALL FLARE (SCFM)/PRESSURE (in. WC): 0.95 / 33
(Flow for Older Skid only)

COMMENTS: 1. Both skids operating.
2. "NA" = Data not available.

By: J.Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 06_2007.xls
8/2/2007

GAS PROBE MONITORING FORM (Quarterly)

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	6/19/2007		
		START TIME:	8:00 AM		
		END TIME:	8:30 AM		
GAS/INSTRUMENT TYPE:	Landtec GA-90				
SERIAL NO.:	RMT 1049	WEATHER CONDITIONS:	partly cloudy, windy		
DATE LAST CALIBRATED:	6/19/2007	TEMPERATURE (11):	78	78°F	
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE (25) & TREND (46381):	29.92	in. Hg	Rising
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS (No DNR ID):	dry		

PROBE NAME [GEMS ID]:	GP-01 [701]	GP-02 [702]	GP-03 [703]	GP-04 [704]	GP-07 [707]	GP-08 [708]	GP-09 [709]	GP-10 [710]	GP-11 [711]	GP-12 [712]
PRESSURE (in. WC) [46385]:	NM	NM	NM	NM	NM	NM	NM	NM	-0.15	NM
METHANE (%, by vol.) [85547]:	NM	NM	NM	NM	NM	NM	NM	NM	0.0	NM
CARBON DIOXIDE (%, by vol.) [85544]	NM	NM	NM	NM	NM	NM	NM	NM	0.2	NM
OXYGEN (%, by vol.) [85550]:	NM	NM	NM	NM	NM	NM	NM	NM	19.7	NM

NOTES:

1. Gas probes are monitored quarterly per Approval Letter, and more frequently if high detections observed; monitored monthly until cleared.
2. No methane in GP-11 this round.
3. "NM" = Data not measured.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: RMT 1049
DATE LAST CALIBRATED: 6/19/2007
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 6/19/2007
START TIME: 11:00 AM
END TIME: 4:00 PM

WEATHER CONDITIONS: partly cloudy
TEMPERATURE (11): 78 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 29.92 in. Hg Rising
GROUND CONDITIONS (No DNR ID): dry

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01	731	0.5	NA	-6.0	-3.2	0.08	4	42.1	32.0	0.4	4	NC	NC
EXW-02	732	0.5	NA	-6.0	-2.8	0.10	4	32.7	26.1	0.1	4	NC	NC
EXW-03	733	0.5	NA	-6.0	-5.5	0.20	9	46.4	24.1	0.1	40	NC	NC
EXW-04	734	0.5	NA	-5.5	-4.0	0.25	11	20.7	17.2	0.1	20	NC	NC
EXW-05	735	0.5	NA	-6.0	-5.5	0.05	2	36.7	18.1	0.0	35	NC	NC
EXW-06	736	0.5	NA	-5.5	-5.5	0.15	7	38.1	20.2	0.2	40	NC	NC
EXW-07	737	0.5	NA	-5.0	-4.5	0.60	26	29.3	20.6	1.5	50	NC	NC
EXW-08	738	0.5	NA	-5.0	-4.8	0.40	18	32.4	22.3	0.1	75	NC	NC
EXW-09	739	0.5	NA	-4.2	-3.8	1.10	48	58.1	49.2	0.3	100	NC	NC
EXW-10	740	0.5	NA	-4.8	-4.5	0.12	5	57.2	40.0	0.1	100	NC	NC
EXW-11	741	0.5	NA	-4.8	-4.5	0.50	22	57.8	40.1	0.0	25	50	-4.6
EXW-12	742	0.5	NA	-4.8	-3.6	1.05	46	55.8	40.4	0.0	100	NC	NC
EXW-13	743	0.5	NA	-4.8	-2.7	2.40	106	57.2	45.3	0.0	100	NC	NC
EXW-14	744	0.5	NA	-5.0	-2.5	2.60	114	32.4	23.9	0.2	100	NC	NC
NBSV-1(E)				-7.0	0.0			55.9	38.7	0.2	100	NC	NC
NBSV-2(W)				-6.5	0.0			20.4	34.7	1.4	50	NC	NC
NBSV-3(N)				(1)	(1)	TOTAL	422				100	NC	(1)

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

173

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	J. Roelke	DATE:	6/19/2007
		START TIME:	11:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	4:00 PM
SERIAL NO.:	RMT1049		
DATE LAST CALIBRATED:	6/19/2007	WEATHER CONDITIONS:	partly cloudy
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	78 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.92 in. Hg Rising
OTHER:		GROUND CONDITIONS (No DNR ID):	dry

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (in. W.C.)
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	78	-6.50	0.00	closed	0	2.9	8.5	4.3	0/11	NC	NC
EXW-02S	732	NM	NM	-0.17	closed	0	2.7	13.7	0.4	0/11	NC	NC
EXW-03S	733	70	-2.80	-0.15	closed	0	4.5	16.3	0.1	0/11	NC	NC
EXW-04S	734	76	-3.00	-0.10	0.01	1	14.6	13.7	3.9	1/11	0.75/11	-0.08
EXW-05S	735	82	-1.75	-0.02	0.01	1	21.6	17.8	0.1	0.5/11	NC	NC
EXW-06S	736	98	-1.80	0.02	closed	0	4.7	5.6	2.4	0/11	0.125/11	-0.02
EXW-07S	737	64	-6.00	-1.20	0.05	2	22.3	22.4	0.0	1/11	NC	NC
EXW-08S	738	58	-6.50	-3.50	0.90	45	28.4	26.7	0.3	3/11	NC	NC
EXW-09S	739	72	-3.00	-1.10	1.00	50	39.6	28.8	0.2	1/11	1.25/11	-1.3
EXW-10S	740	74	-4.60	-3.00	0.15	7	21.7	19.1	0.1	3/11	NC	NC
EXW-11S	741	82	-5.00	-2.50	0.03	1	21.9	22.4	0.0	2/11	NC	NC
EXW-12S	742	64	-4.00	-3.00	0.05	2	18.9	18.5	3.2	1/11	0.75/11	-2.8
EXW-13S	743	70	-4.50	-0.70	0.04	2	20.9	18.4	2.7	11/11	NC	NC
EXW-14S	744	76	-4.60	-4.50	0.15	7	42.7	28.4	0.2	11/11	NC	NC
EXW-15S	745	64	-4.50	-4.20	0.05	3	14.7	13.3	0.5	5/11	NC	NC
SBSV-1(E)			-3.40	0.00			26.0	23.8	1.0	100%	NC	NC
SBSV-2(W)			0.00	0.00			24.1	22.2	0.6	100%	NC	NC
SBSV-3(S)			(1)	(1)	TOTAL	121				100%	NC	(1)

Comments: 1. Buried Service Valve No. 3 is normally full open to provide looped operation; valve however is inoperable; no monitoring risers available.
2. Wellhead 2 replaced, sample ports to be replaced once available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.
4. "NA" = Data not available.

1736

RMT
www.rmtinc.com

744 Heartland Trail
Madison, WI 53717
Telephone: 608-831-4444
Fax: 608-831-3334

August 1, 2007

Mr. Tom Bennwitz
Wisconsin Department of Natural Resources
South Central Region Headquarters
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: First Quarter 2007 Landfill Gas System Monitoring Report, Closed Sauk County Landfills; License Nos. 02051 and 02978

Dear Mr. Bennwitz:

On behalf of Sauk County, RMT, Inc. (RMT), is submitting this report to the Wisconsin Department of Natural Resources (WDNR), detailing the results of the first quarter 2007 landfill gas system monitoring and other related maintenance activities for the closed Sauk County Landfills. The applicable landfill gas and leachate monitoring requirements for the recently closed landfill (WDNR Lic. # 02978) are specified in the December 12, 1997, Plan of Operation Approval Modification. The landfill gas system of the older landfill site (WDNR Lic. # 02051) is being monitored in accordance with the same requirements specified for the recently closed landfill. The two landfill gas extraction systems are monitored and reported together since the combined flows support the operation of the County's landfill gas-to-energy system.

The delay in reporting the first quarter results resulted from the additional time required during early 2007 to bring the expanded gas-to-energy system on-line, upgrades to the gas extraction system wellfield components, and development of the initial data management and reporting system. The second quarter monitoring results will be submitted shortly.

The first quarter monitoring results have been submitted on computer diskette to the GEMS Data Coordinator of the WDNR Bureau of Waste Management at the Central Office in Madison. The environmental monitoring data certification forms and exceedance report for the first quarter for both landfill sites are provided in Attachment 1. The gas monitoring data for the first quarter 2007 are provided in Attachment 2.

Monitoring Program

The monitoring program includes the following:

- General Observations: During each monitoring event, the technician, the instruments utilized, the date, the time, and the site conditions are recorded. The site conditions include: temperature (°F), barometric pressure (mm Hg) and trend, and ground conditions.

- Blower/Flare System: The blower/flare system functions in a back-up capacity to the gas-to-energy (electrical generation) system in operation at the site. Two compressor/gas processing skid systems extract landfill gas from both landfill sites and direct it to up to 24 micro-turbine generators. Excess gas that is not utilized by the gas-to-energy system is discharged to a small utility flare and combusted.

Initially, a single compressor/gas processing skid operated up to 12 micro-turbine generators at the site. In late 2006, and into early 2007, a second compressor/gas processing skid was installed with an additional 12 micro-turbine generators. The gas system monitoring activities in the first quarter 2007 were directed at supporting the effort of bringing the expanded gas-to-energy system on line. The following measurements are made monthly at the main gas header inlet pipe to the gas-to-energy facility:

- Gas composition (percent by volume methane, oxygen, and carbon dioxide) and applied well field vacuum in inches of water column (in. WC).
- Gas Extraction Wells: Gas wells are typically monitored and balanced monthly on both the recently closed site (14 vertical wells) and the older site (15 vertical wells). The gas wells are balanced to provide sufficient gas to the gas-to-energy system and to limit gas migration. The 29 gas extraction wells are monitored monthly for:
  - gas composition (percent by volume methane, oxygen, and carbon dioxide
  - available and applied header vacuum (in. WC) and differential pressure (in. WC)
  - gas flow in cubic feet per minute (cfm) is estimated based on the differential pressure measured and the orifice size in each wellhead
  - gas temperature (°F) is measured at each wellhead that has a dedicated thermometer
  - the initial and final valve settings (% open) are recorded for each wellhead during monitoring and balancing, together with the initial and final applied vacuum (in. WC)
- Gas Monitoring Probes: Gas probes are monitored quarterly for both the recently closed (6 probes) and the older (4 probes) landfill sites. Probes with methane detections may be monitored more frequently until the migration issue is resolved. The gas probes are monitored for:
  - gas composition (percent by volume methane, oxygen, and carbon dioxide)
  - soil gas pressure (in. WC)
- Leachate Head: Leachate head is measured monthly in 2 sideslope riser leachate head wells (LH-1 and LH-2) located on the east side of Phase III of the recently closed landfill site.

- Other Monitoring: The lysimeter and groundwater monitoring efforts are not managed by RMT, and therefore, the data is not discussed in this report.

Summary of Monitoring Results

System adjustments were aggressively made during the first quarter 2007 since the gas extraction system was being significantly upgraded. With the closing of the final areas of the newer landfill, sporadic detections of methane were observed, primarily in gas probe GP-11, just beyond the landfill's northern limits of waste. A second compressor/gas processing skid was brought on-line in early 2007 to provide the additional capacity needed to control migration and to beneficially combust the available landfill gas.

The summary of the monitoring results gathered (refer to Attachment 1) are as follows:

- Blower/Flare System: The installation and start up of the expanded gas-to-energy system resulted initially in frequent system shutdowns and balancing efforts that affected the well field operation during the first quarter 2007. As the operation of the gas-to-energy system became more consistent, the ability to control and balance the well field significantly improved. As expected, the methane concentration at the system inlet decreased throughout the first quarter, as the reservoir of gas depleted from approximately 58% to 47% methane by volume.
- Gas Extraction Wells: The gas extraction wells were monitored and balanced twice during the first quarter 2007. Additional monitoring rounds were precluded by the erratic operation of the gas-to-energy system during its start-up and trouble-shooting phase. By the latter part of the first quarter 2007, control over the available gas had improved.
- Gas Monitoring Probes: The gas monitoring probes were monitored twice during the first quarter 2007. On January 27, 2007, methane was detected at three gas probes around the perimeter of the newly closed landfill (WDNR Lic. #02978). A result of 10.2% methane by volume, which exceeded 100% of the lower explosive limit (LEL) of methane, was detected at GP-11 located immediately north of the landfill. Additional efforts were made to increase system extraction rates and to improve balancing efforts. The probes were monitored on March 7, 2007, and methane was not detected at that time. Probe GP-11 was checked a third time, in late March, and methane was again not detected.
- Leachate Head: The leachate head wells, LH-1 and LH-2, were not monitored in the first quarter 2007. Head well access and development of a measurement device was necessary. Monitoring of the two head wells was initiated in the second quarter of 2007.

Maintenance and Repairs Summary

Following the installation of the expanded gas-to-energy system and system piping changes, the ability to measure total system landfill gas flow was no longer available. Therefore, a total system gas flow measurement device will be added to the system later in 2007. In addition, the wellheads in the older landfill site will be upgraded in 2007 to improve their functionality. Wellhead modifications will be ongoing in order to replace worn out fittings and to improve operations.

Conclusion

The operation of the landfill gas extraction system improved throughout the first quarter 2007 as the operation of the expanded gas-to-energy system stabilized. During the second quarter 2007, balancing efforts will continue to improve operations. The mechanical modifications to wellheads and other system components will continue to be made to improve operations.

If you have any questions or comments after you review the information provided, please call Dean Free, at (608) 662-5476, or Curt Madsen, at (608) 662-5475.

Sincerely,

RMT, Inc.

Dean R. Free, P.E.
Project Engineer

Curtis D. Madsen, P.E.
Project Manager

Attachments: Environmental Monitoring Data Certification Form and Exceedance Report
Landfill Gas Monitoring Data

cc: Jim Kralick, WDNR
Kathy Schauf, Sauk County
GEMS Data Contact WA/3, WDNR (with data diskette)

175 B

Attachment 1

Environmental Monitoring Data Certification and Exceedance Report

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02978	157049970	1/26/2007 3/7/2007 3/23/2007

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify) _____

Notification attached?

- ☐ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☒ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free	Project Engineer	(608)662-5476
Facility Representative Name (Print)	Title	(Area Code) Telephone No.
Dean R Free	7/31/07	
Signature	Date	

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

h68

TABLE 1
PARAMETERS THAT EXCEED
CURRENT REGULATORY STANDARDS
SAUK COUNTY LANDFILL/WDNR LIC #02978

BEGINNING SEARCH DATE: 01-JAN-2007
ENDING SEARCH DATE: 01-APR-2007

CHEMICAL PARAMETER	UNITS	NR140 PAL	NR140 ES	SAMPLE IDENTIFIER	SAMPLE DATE	RESULT	DATA FLAGS	EXCEEDANCE	WITHIN DMZ?
METHANE, PERCENT BY VOLUME	%	5	15	GP-11	26-JAN-2007	10.2		EXP	

REPORT DATE:30-JUL-2007

State of Wisconsin
Department of Natural Resources

Environmental Monitoring Data Certification

Form 4400-231(R 1/04)

Notice: Personally identifiable information collected will be used for program administration and enforcement purposes. The Department may also provide this information to requesters as required under Wisconsin's Open Records law, ss. 19.31 to 19.39, Wis. Stats.
When submitting monitoring data, the owner or operator of the facility, practice or activity is required to notify the Department in writing that a groundwater standard or an explosive gas level has been attained or exceeded, as specified in ss. NR 140.24(1)(a); NR 140.26(1)(a); NR 507.30NR 635.14(9)(a); NR 635.18(20) and NR 507.30, Wis. Adm. Code. Failure to report may result in fines, forfeitures or other penalties resulting from enforcement under ss. 289.97, 291.97 or 299.95, Wis. Stats.

Instructions:

- **Prepare one form for each license or monitoring ID.**
- **Please type or print legibly.**
- Attach a notification of any values that attain or exceed groundwater standards (that is, preventive action limits, enforcement standards or alternative concentration limits). The notification must include a preliminary analysis of the cause and significance of each value.
- Attach a notification of any gas values that attain or exceed explosive gas levels.
- Send the original signed form, any notification, and Electronic Data Deliverable [EDD] to: GEMS Data Submittal Contact - WA/3
  Bureau of Waste Management
  Wisconsin Department of Natural Resources
  101 South Webster Street
  Madison WI 53707-7921

Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

RMT, Inc

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Peggy Popp Phone: (608) 662-5182

E-mail: peggy.popp@rmtinc.com

Facility name:	License # / Monitoring ID	Facility ID [FID]	Actual sampling dates (e.g., July 2-6, 2003)
Sauk County Landfill	02051	157033140	1/26/2007 3/7/2007 3/23/2007

The enclosed results are for sampling required in the month(s) of: (e.g., June 2003)

Type of Data Submitted (Check all that apply)

- ☐ Groundwater monitoring data from monitoring wells
- ☐ Groundwater monitoring data from private water supply wells
- ☐ Leachate monitoring data
- ☒ Gas monitoring data
- ☐ Air monitoring data
- ☐ Other (specify)

Notification attached?

- ☒ No. No groundwater standards or explosive gas limits were exceeded.
- ☐ Yes, a notification of values exceeding a groundwater standard is attached. It includes a list of monitoring points, dates, sample values, groundwater standard and preliminary analysis of the cause and significance of any concentration.
- ☐ Yes, a notification of values exceeding an explosive gas limit is attached. It includes the monitoring points, dates, sample values and explosive gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards.

Dean R. Free — Project Engineer — (608)662-5476

Facility Representative Name (Print) — Title — (Area Code) Telephone No.

Dean R Free — 7/31/07

Signature — Date

FOR DNR USE ONLY. Check action taken, and record date and your initials. Describe on back side if necessary.

☐ Found uploading problems on _____ Initials _____

☐ Notified contact of problems on _____ Uploaded data successfully on _____

EDD format(s): ☐ Diskette ☐ CD (initial submittal and follow-up) ☐ E-mail (follow-up only) Other _____

M B

Attachment 2

Landfill Gas Monitoring Data

January 2007

178 B

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): D. Free / J. Roelke

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: None Installed

"BEFORE" Wellfield Monitoring DATE: 1/26/2007 TIME: 8:00 AM AMBIENT TEMP.: 12 °F

BAROMETRIC PRESSURE & TREND: 30.32 in. Hg. Rising GAS TEMP.: NA °F

FLOW TO CAPSTONES (scfm) / PRESS. (psig): 194.3 | 84 **SMALL FLARE (SCFM) / @ DIFF. PRESS. (In. WC):** 25 | 0.50

APPLIED WELLFIELD "A" (in. W.C.)	BLOWER INLET "B" (in. W.C.)	BLOWER OUTLET "C" (in. W.C.)	TOTAL FLOW (Capstones + Flare)	Measured at Port "A" METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
0.55	OFF	OFF	219.3	58.1	40.2	0.4	7/18	NC

Were wellfield adjustments made (Yes/No)?: Yes (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 1/26/2007 TIME: 1:00 PM AMBIENT TEMP.: 20 °F

BAROMETRIC PRESSURE & TREND: 30.32 in. Hg. Falling GAS TEMP.: NA °F

FLOW TO CAPSTONES (scfm) / PRESS. (psig): 194.3 | 84 **SMALL FLARE (SCFM) / @ DIFF. PRESS. (In. WC):** 23.4 | 0.45

APPLIED WELLFIELD "A" (in. W.C.)	BLOWER INLET "B" (in. W.C.)	BLOWER OUTLET "C" (in. W.C.)	TOTAL FLOW Capstones + Flare	Measured at Port "A" METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
0.55	OFF	OFF	217.7	58.6	41.5	0.0	7/18	NC

COMMENTS:
1. Gas temperature gauge is not available. Gas inlet pipe flow meter is not available.
2. Wellfield valve setting (controls flow to gensets) set by genset operator and could not be adjusted during site visit (ongoing genset adjustments).
3. Only one compressor system operating at this time, second to be on line in a month or two.

SAMPLE PORT LOCATION KEY:

"A" = SAMPLE PORT AT ENTRANCE TO BLOWER BUILDING (WEST SIDE OF BLDG.)
"B" = SAMPLE PORT AT BLOWER ENTRANCE
"C" = SAMPLE PORT AT BLOWER OUTLET

GAS PROBE MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D.Free J. Roelke	DATE: START TIME: END TIME:	1/26/2007 8:00 AM 2:00 PM
GAS/INSTRUMENT TYPE:	Landtec GA-90 and GEM500		
SERIAL NO.:	1049 (GA90) E0812 (GEM500)	WEATHER CONDITIONS:	Breezy
DATE LAST CALIBRATED:	1/26/2007	TEMPERATURE:	12 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE & TREND:	30.32 Hg. Falling
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS:	Snow-covered

PROBE NAME:	GP-01	GP-02	GP-03	GP-04	GP-05	GP-06	GP-07	GP-08	GP-09	GP-10	GP-11	GP-12
PRESSURE (in. WC):	0.04	0.14	0.05	0.04	0.05	0.04	0.12	0.04	0.90	0.15	0.75	0.00
METHANE (%, by vol.):	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	10.2	0.0
CARBON DIOXIDE (%, by vol.):	0.3	1.6	1.9	2.9	1.1	0.0	3.1	1.0	2.2	6.5	10.3	0.1
OXYGEN (%, by vol.):	20.2	19.0	16.9	16.8	19.2	20.1	18.0	19.7	17.4	13.8	0.2	20.1

NOTES:
1. Gas Probes GP05 and GP06 have not typically been monitored by Sauk County but are being checked for status.

By: J. Roelke
Checked By: D. Free

P:\2272536\2007 Gas Monitoring Data\Probe 01_2007.xls
7/31/2007

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free J. Roelke	DATE:	1/26/2007
		START TIME:	8:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90 / GEM500	END TIME:	2:00 PM
SERIAL NO.:	1049 (GA90) E0812 (GEM500)		
DATE LAST CALIBRATED:	1/26/2007	WEATHER CONDITIONS:	Breezy, sunny
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	12 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	770.13 in. Hg Falling
OTHER:		GROUND CONDITIONS:	Snow covered

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (percent open)	Final Valve Setting (percent open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46386		46386	86547	86544	86560	46387		
EXW-01	731	0.5	NA	0.9	0.9	NA	NA	48.6	29.9	0.0	100	25	NC
EXW-02	732	0.5	NA	1.3	1.3	NA	NA	43.8	32.2	0.0	100	25	NC
EXW-03	733	0.5	NA	1.1	1.1	NA	NA	41.8	24.1	0.0	100	25	NC
EXW-04	734	0.5	NA	1.6	1.6	NA	NA	66.4	32.3	0.0	100	NC	NC
EXW-05	735	0.5	NA	1.6	1.6	NA	NA	69.3	33.3	0.1	100	NC	NC
EXW-06	736	0.5	NA	2.4	2.4	NA	NA	62.8	37.9	0.2	100	NC	NC
EXW-07	737	0.5	NA	1.8	1.8	NA	NA	62.5	33.8	0.0	100	NC	NC
EXW-08	738	0.5	NA	2.3	2.3	NA	NA	61.8	38.4	0.0	100	NC	NC
EXW-09	739	0.5	NA	3.6	3.6	NA	NA	62.7	37.8	0.2	100	NC	NC
EXW-10	740	0.5	NA	2.5	2.5	NA	NA	61.7	38.9	0.0	100	NC	NC
EXW-11	741	0.5	NA	2.6	2.6	NA	NA	63.2	37.2	0.0	100	NC	NC
EXW-12	742	0.5	NA	2.6	2.6	NA	NA	61.7	44.9	0.0	100	NC	NC
EXW-13	743	0.5	NA	2.6	2.6	NA	NA	61.5	37.9	0.0	100	NC	NC
EXW-14	744	0.5	NA	2.6	2.6	NA	NA	61.8	38.5	0.1	100	NC	NC
NBSV-1(E)				(3)	0.72			59.9	41.1	0.0	100	NC	NC
NBSV-2(W)				(3)	0.65			60.6	40.2	0.0	100	NC	NC
NBSV-3(N)				(4)	(4)						100	NC	NC

Comments:
1. Wellheads EXW-2 and EXW-5 have old connections to above-ground header pipe and to a cleanout riser - need to remove; Valve cracked at EXW-2.
2. Wellhead valves adjusted; due to lack of vacuum, the valve adjustments had little affect, once second compressor on-line more vacuum will be available.
3. The header side vacuum tubes appear to be disconnected or have damaged sample ports.
4. Buried Service Valve No. 3 is normally full open to provide looped operation; appears full open and no monitoring risers available.
5. Wellheads need to be labeled with designated number, and need thermometers installed.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

081

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free J. Roelke	DATE:	1/27/2007
		START TIME:	8:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90 / GEM500	END TIME:	2:00 PM
SERIAL NO.:	1049 (GA90) E0812 (GEM500)		
DATE LAST CALIBRATED:	1/26/2007	WEATHER CONDITIONS:	Breezy, Sunny
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	12 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	770.13 mm Hg Falling
OTHER:		GROUND CONDITIONS:	Snow-covered

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm) [1]	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.) [2]
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	30	0.25	0.25	NA	NA	31.5	29.5	0.0	11/11	4/11	NC
EXW-02S	732	42	0.25	0.25	NA	NA	36.2	33.8	0.5	11/11	4/11	NC
EXW-03S	733	38	0.35	0.35	NA	NA	32.6	25.9	0.4	11/11	4/11	NC
EXW-04S	734	36	0.38	0.38	NA	NA	32.5	25.9	0.2	11/11	4/11	NC
EXW-05S	735	NA	0.25	0.25	NA	NA	0.8	13.9	0.0	11/11	0/11	NC
EXW-06S	736	70	0.25	0.25	NA	NA	0.8	13.8	0.6	11/11	0/11	NC
EXW-07S	737	34	0.38	0.38	NA	NA	12.1	24.2	0.5	11/11	3/11	NC
EXW-08S	738	NA	0.28	0.28	NA	NA	36.1	33.7	0.0	11/11	5/11	NC
EXW-09S	739	38	0.44	0.44	NA	NA	32.3	25.9	0.1	11/11	4/11	NC
EXW-10S	740	NA	0.40	0.40	NA	NA	34.4	27.0	0.2	11/11	4/11	NC
EXW-11S	741	NA	0.40	0.40	NA	NA	16.0	24.7	10.8	11/11	0/11	NC
EXW-12S	742	42	0.46	0.46	NA	NA	33.8	29.9	0.0	11/11	NC	NC
EXW-13S	743	NA	0.40	0.40	NA	NA	40.6	28.7	0.0	11/11	NC	NC
EXW-14S	744	NA	0.42	0.42	NA	NA	62.9	42.8	0.0	11/11	NC	NC
EXW-15S	745	26	0.35	0.35	NA	NA	10.0	16.7	0.4	11/11	NC	NC
SBSV-1(E)			0.10	[3]			32.2	27.8	0.0	100%	NC	NC
SBSV-2(W)			0.02	[3]			31.1	28.2	0.0	100%	NC	NC
SBSV-3(S)				[4]						100%	NC	NC

Comments:
1. Wellheads are tall and leaning; require lowering; wellheads use Landtec Accu-flo 2" vertical wellheads, which can't be used to read low flows at current conditions.
2. Wellhead valves adjusted; due to lack of vacuum, the valve adjustments had little affect, once second compressor on-line more vacuum will be available.
3. Many wore out sample ports to be replaced; many thermometers inoperable or inaccessible.
4. Buried Service Valve No. 3 is normally full open to provide looped operation; valve appears open, however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

8081

February 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): D. Free / J. Roelke

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: None Installed

"BEFORE" Wellfield Monitoring DATE: 3/07/07 TIME: 9:00 AM AMBIENT TEMP.: 16 °F

BAROMETRIC PRESSURE & TREND: 29.69 in. Hg. Rising GAS TEMP.: NA °F

FLOW TO CAPSTONES (scfm) / PRESS. (psig): 180 | 85.3 SMALL FLARE (SCFM) / @ DIFF. PRESS. (in. WC): 62 | 3.10

APPLIED WELLFIELD "A" (in. W.C.)	BLOWER INLET "B" (in. W.C.)	BLOWER OUTLET "C" (in. W.C.)	TOTAL FLOW (Capstones + Flare)	Measured at Port "A" METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
-1.90	OFF	OFF	242	58.3	31.9	1.0	18/18	NC

Were wellfield adjustments made (Yes/No)?: Yes (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: 3/07/07 TIME: 2:30 PM AMBIENT TEMP.: 25 °F

BAROMETRIC PRESSURE & TREND: 29.87 in. Hg. Falling GAS TEMP.: NA °F

FLOW TO CAPSTONES (scfm) / PRESS. (psig): 194.3 | 84 SMALL FLARE (SCFM) / @ DIFF. PRESS. (in. WC): 87 | 6

APPLIED WELLFIELD "A" (in. W.C.)	BLOWER INLET "B" (in. W.C.)	BLOWER OUTLET "C" (in. W.C.)	TOTAL FLOW Capstones + Flare	Measured at Port "A" METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
-2.00	OFF	OFF	281.3	55.8	30.8	0.4	18/18	NC

COMMENTS: 1. Gas temperature gauge is not available. Gas inlet pipe flow meter is not available.
2. Wellfield valve setting (controls flow to gensets) set by genset operator and could not be adjusted during site visit (ongoing genset adjustments).
3. Second compressor system came on line within last week or so, many adjustments being made / working out "kinks".

SAMPLE PORT LOCATION KEY:
"A" = SAMPLE PORT AT ENTRANCE TO BLOWER BUILDING (WEST SIDE OF BLDG.)
"B" = SAMPLE PORT AT BLOWER ENTRANCE
"C" = SAMPLE PORT AT BLOWER OUTLET

19 13

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 02_2007.xls
7/31/2007

GAS PROBE MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free J. Roelke	DATE: START TIME: END TIME:	3/7/2007 7:30 AM 12:00 PM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	No. 1	WEATHER CONDITIONS:	Overcast, clearing
DATE LAST CALIBRATED:	3/7/2007	TEMPERATURE:	16 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE & TREND:	29.76 Hg. Rising
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS:	Snow-covered

PROBE NAME:	GP-01	GP-02	GP-03	GP-04	GP-05	GP-06	GP-07	GP-08	GP-09	GP-10	GP-11	GP-12
PRESSURE (in. WC):	0.0	-0.1	0.0	0.0	NA	NA	-0.2	0.0	-0.2	-0.2	-0.2	-0.1
METHANE (%, by vol.):	0.0	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE (%, by vol.):	0.3	0.9	0.1	0.5	NA	NA	0.1	0.2	0.1	0.1	0.1	0.1
OXYGEN (%, by vol.):	20.5	19.2	20.4	19.9	NA	NA	20.6	20.5	20.6	20.7	20.6	20.5

NOTES:
1. Gas Probes GP05 and GP06 have not typically been monitored by Sauk County, buried under plowed snow this month.
2. No methane detected this round.

NEW SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free	DATE:	3/7/2007
		START TIME:	8:00 AM
GAS/INSTRUMENT TYPE:	Landtec GA-90	END TIME:	3:00 PM
SERIAL NO.:	1049 (GA90)		
DATE LAST CALIBRATED:	3/7/2007	WEATHER CONDITIONS:	sunny/clearing
METHOD:	Standard Calibration Gases	TEMPERATURE (11):	23 °F
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	BAROMETRIC PRESSURE (25) & TREND (46381):	29.76 in. Hg Rising
OTHER:		GROUND CONDITIONS:	snow-covered

Well No.	WDNR GEMS ID No.	Orifice Hole Dia. (inches)	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (% amt. open)	Final Valve Setting (amt. open)	Final Well Pressure (in. W.C.)
GEMS Code			46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01	731	0.5	NA	-0.55	-0.49	0.05	NA	60.6	28.3	0.0	25	NC	NC
EXW-02	732	0.5	NA	-0.34	-0.29	0.08	NA	55.6	29.0	0.0	25	NC	NC
EXW-03	733	0.5	NA	-0.54	-0.41	Broken	NA	63.6	22.6	0.0	25	NC	NC
EXW-04	734	0.5	NA	-0.45	-0.93	0.2	NA	61.6	30.0	0.0	100	NC	NC
EXW-05	735	0.5	NA	-0.12	-0.10	0.05	NA	65.5	25.9	0.0	100	NC	NC
EXW-06	736	0.5	NA	-0.20	-0.20	0.02	NA	64.6	26.6	0.0	100	NC	NC
EXW-07	737	0.5	NA	-0.20	0.12	Under snow/ice	NA	61.4	31.7	0.0	100	NC	NC
EXW-08	738	0.5	NA	0.15	0.16	Under snow/ice	NA	61.0	31.6	0.0	100	NC	NC
EXW-09	739	0.5	NA	0.82	0.72	Under snow/ice	NA	59.5	33.6	0.0	100	NC	NC
EXW-10	740	0.5	NA	0.32	0.19	NA	NA	64.6	34.2	0.0	100	NC	NC
EXW-11	741	0.5	NA	0.39	0.40	0.18	NA	60.4	32.5	0.0	100	NC	NC
EXW-12	742	0.5	NA	0.80	1.00	Under snow/ice	NA	60.9	35.2	0.0	100	NC	NC
EXW-13	743	0.5	NA	0.80	0.90	Under snow/ice	NA	61.2	34.9	0.0	100	NC	NC
EXW-14	744	0.5	NA	-0.02	0.80	0.05	NA	60.7	33.7	0.0	100	NC	NC
NBSV-1(E)				-0.73	-0.73			60.0	32.4	0.0	100	NC	NC
NBSV-2(W)				-0.66	-0.66			60.3	32.4	0.0	100	NC	NC
NBSV-3(N)				(4)	(4)						100	NC	NC
						TOTAL	NA						

Comments:
1. Flow could not be measured due to low flow conditions and thermometers not installed at this time.
2. Well numbers made on each wellhead using a paint pen.
3. New sampling ports needed to be tapped at wells 1, 3, and 5.
4. Buried Service Valve No. 3 is normally full open to provide looped operation; valve is open however is inoperable; no monitoring risers available.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "NBSV" = North Buried Service Valve (north site); "E" = East; "W" = West; "N" = North.

OLD SITE GAS EXTRACTION WELL MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): J. Roelke

GAS/INSTRUMENT TYPE: Landtec GA-90
SERIAL NO.: No. 2
DATE LAST CALIBRATED: 3/7/2007
METHOD: Standard Calibration Gases
PRESSURE INSTRUMENT TYPE: Dwyer Magnehelics
OTHER:

DATE: 3/7/2007
START TIME: 8:00 AM
END TIME: 3:00 PM

WEATHER CONDITIONS: sunny/clearing
TEMPERATURE: 23 °F
BAROMETRIC PRESSURE (25) & TREND (46381): 755.90 in. Hg Rising
GROUND CONDITIONS: snow-covered

Well No.	WDNR GEMS ID No.	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Orifice Plate Differential Pressure (in. W.C.)	Gas Flow (scfm)	Methane (%, by vol.)	Carbon Dioxide (%, by vol.)	Oxygen (%, by vol.)	Initial Valve Setting (fraction open)	Final Valve Setting (fraction open)	Final Well Pressure (in. W.C.)
GEMS Code		46388	46382	46385		46386	85547	85544	85550	46387		
EXW-01S	731	52	-0.90	-0.70	0.02	NA	34.6	24.2	5.8	4/11	3/11	-0.7
EXW-02S	732	NA	-0.85	-0.35	0.02	NA	47.8	31.7	0.0	4/11	NC	NC
EXW-03S	733	50	-0.55	-0.40	0.01	NA	46.7	33.4	0.8	4/11	NC	NC
EXW-04S	734	42	-0.50	-0.40	0.01	NA	46.1	34.2	0.0	4/11	NC	-0.5
EXW-05S	735	76	-0.35	0.00	0.00	NA	40.1	26.7	0.9	0/11	1/11	NC
EXW-06S	736	92	0.05	0.00	0.00	NA	0.1	8.5	0.0	0/11	NC	NC
EXW-07S	737	46	-0.90	-0.65	0.04	NA	58.4	36.1	0.1	3/11	5/11	-0.7
EXW-08S	738	NA	-0.70	-0.30	0.02	NA	51.7	31.7	0.0	5/11	NC	NC
EXW-09S	739	48	-0.65	-0.45	0.02	NA	66.1	36.2	0.2	4/11	5/11	-0.50
EXW-10S	740	58	-0.60	-0.55	0.04	NA	61.2	37.1	0.0	4/11	5/11	-0.55
EXW-11S	741	NA	-0.80	0.00	0.00	NA	53.7	34.2	0.0	0/11	2/11	-0.25
EXW-12S	742	48	-0.60	-0.50	0.02	NA	58.2	36.4	0.0	11/11	NC	NC
EXW-13S	743	NA	-0.65	-0.50	0.02	NA	60.9	38.2	0.0	11/11	NC	NC
EXW-14S	744	42	-0.80	-0.65	0.03	NA	59.7	36.4	0.1	11/11	NC	NC
EXW-15S	745	64	-0.90	-0.75	0.03	NA	68.3	4.1	0.0	11/11	NC	NC
SBSV-1(E)			-0.03	-0.03			50.9	32.1	0.9	100 %	NC	NC
SBSV-2(W)			-0.01	-0.01			48.1	30.9	2.1	100 %	NC	NC
					TOTAL	NA						

Comments:
1. Wellheads are tall and leaning; require lowering; wellheads use Landtec Accu-flo 2" vertical wellheads, which can't be used to read low flows.
2. Thermometers broken or inaccessible on some wellheads and not recorded.
3. Sample ports on wellfield side risers of buried service valves are damaged and pressures are assumed with fully open valve.

Notes:
1. "NC" = No Change made to wellhead.
2. "S" = Wellheads on the old landfill (south landfill).
3. "SBSV" = South Landfill Buried Service Valve; "E" = East; "W" = West; "N" = North.

183

March 2007

BLOWER STATION MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S): D. Free

GAS PIPE DIAMETER AND MATERIAL: 6-in. SDR-17 HDPE; ID = 5.845 in. ORIFICE PLATE HOLE DIA.: None Installed

"BEFORE" Wellfield Monitoring DATE: 3/23/07 TIME: 9:00 AM AMBIENT TEMP.: 50 °F

BAROMETRIC PRESSURE & TREND: 30.00 in. Hg. Rising GAS TEMP.: NA °F

FLOW TO CAPSTONES (scfm) / PRESS. (psig): 180 | 85.3 **SMALL FLARE (SCFM) / @ DIFF. PRESS. (in. WC):** 62 | 3.10

APPLIED WELLFIELD "A" (in. W.C.)	BLOWER INLET "B" (in. W.C.)	BLOWER OUTLET "C" (in. W.C.)	TOTAL FLOW (Capstones + Flare)	Measured at Port "A" METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
-5.00	OFF	OFF	NA	46.8	65.6	0.6	18/18	NC

Were wellfield adjustments made (Yes/No)?: No (If so, complete "After" Wellfield Monitoring section.)

"AFTER" Wellfield Monitoring DATE: NA TIME: NA AMBIENT TEMP.: NA °F

BAROMETRIC PRESSURE & TREND: in. Hg. Falling GAS TEMP.: NA °F

FLOW TO CAPSTONES (scfm) / PRESS. (psig): NA | NA **SMALL FLARE (SCFM) / @ DIFF. PRESS. (in. WC):** NA | NA

APPLIED WELLFIELD "A" (in. W.C.)	BLOWER INLET "B" (in. W.C.)	BLOWER OUTLET "C" (in. W.C.)	TOTAL FLOW (Capstones + Flare)	Measured at Port "A" METHANE (%, by vol.)	CARBON DIOXIDE (%, by vol.)	OXYGEN (%, by vol.)	WELLFIELD VALVE SETTING (BEFORE)	WELLFIELD VALVE SETTING (AFTER)
NA	NA	NA	NA	NA	NA	NA	NA	NA

COMMENTS:
1. Gas temperature gauge is not available. Gas inlet pipe flow meter is not available.
2. Wellfield valve setting (controls flow to gensets) set by genset operator and could not be adjusted during site visit (ongoing genset adjustments).
3. Second compressor system on line, many adjustments continue to be made.

SAMPLE PORT LOCATION KEY:
"A" = SAMPLE PORT AT ENTRANCE TO BLOWER BUILDING (WEST SIDE OF BLDG.)
"B" = SAMPLE PORT AT BLOWER ENTRANCE
"C" = SAMPLE PORT AT BLOWER OUTLET

By: J. Roelke
Checked By: D. Free

P:\22725\36\2007 Gas Monitoring Data\Blower 03_2007.xls
7/31/2007

GAS PROBE MONITORING FORM

SAUK COUNTY LANDFILL (WDNR Lic. # 02978 / # 02051)
GAS MONITORING PROGRAM

TECHNICIAN(S):	D. Free	DATE:	3/23/2007
		START TIME:	9:00 AM
		END TIME:	9:30 PM
GAS/INSTRUMENT TYPE:	Landtec GA-90		
SERIAL NO.:	No. 1	WEATHER CONDITIONS:	Clear
DATE LAST CALIBRATED:	3/7/2007	TEMPERATURE:	50 °F
METHOD:	Standard Calibration Gases	BAROMETRIC PRESSURE & TREND:	30.00 Hg. Rising
PRESSURE INSTRUMENT TYPE:	Dwyer Magnehelics	GROUND CONDITIONS:	Dry

PROBE NAME:	GP-01	GP-02	GP-03	GP-04	GP-05	GP-06	GP-07	GP-08	GP-09	GP-10	GP-11	GP-12
PRESSURE (In. WC):	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-0.3	NA
METHANE (%, by vol.):	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	NA
CARBON DIOXIDE (%, by vol.):	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2	NA
OXYGEN (%, by vol.):	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20.5	NA

NOTES:
1. No methane detected this check at GP-11.

1813

Appendix C
Groundwater Monitoring

Table 1
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	1979				1980				1981				1982				1983				1984				1985				1986			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HINZE WELL (LIPKE)												FIM						FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
PW-3404 PAGEL	FIM	FIM	FIM							FIM	FIM	FIM																				
PW 8709 MILLER																																
PW-3613																																
PW-3652 KLEMM (MILLER)																																
PW-3688																																
PW-8581																																
PW-8757 WEINKE																																
PW-8763 CHRISTIAN (BRITZ)																																
PW-9051 KILBY																																
PW-9097																																
TW-E	FIM	FIM			F	FIM	FIM	FIM	FIM	FIM	FIM	FIM					FI		I		FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI
TW-F	FIM	FIM			F	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-J		FIM				FIM			FIM	FIM	FIM	FIM	FIM	F	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
TW-K		FIM				FIM			FIM	FIM	FIM	FIM	FIM	F	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-25													FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
TW-25A																																
TW-26													FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
TW-26A													FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIMV	FIM	FIM	FIM	FIM
TW-26B																								FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-27													FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-28													FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-28A																								FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29													FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIM	FIM	FIM	FIM
TW-29A																								FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29B																								FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29C																								FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-37																																
TW-37A																																
TW-38A																																
TW-39																																
TW-39A																																
TW-40																																
TW-40A																																
TW-41																																
TW-41A																																

Note:
Wells TW-E and TW-F were sampled 2 rounds in 1975 and 1 round in 1978 (FIM)
F = Field Measurements
I = Indicator parameters, wet chemistry analysis
M = Metals analysis
V = Volatile organic compound analysis

1/20

Table 1 (continued)
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	1987				1988				1989				1990				1991				1992				1993				1994			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HINZE WELL (LIPKE)	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FI	FIM
PW-3404 PAGEL																																
PW 8709 MILLER																																
PW-3613																																
PW-3652 KLEMM (MILLER)																																
PW-3688																																
PW-8581																																
PW-8757 WEINKE																																
PW-8763 CHRISTIAN (BRITZ)																																
PW-9051 KILBY																																
PW-9097																																
TW-E	FI	FI	FI	FI	FI	FI					FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI	FI
TW-F	FIM	FIM	FIM	FIM	FIM	FIM					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-J	FIM	FIM	FIM	FIM	FIM	FIM					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-K	FIM	FIM	FIM	FIM	FIM	FIM					FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
TW-25	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
TW-25A																																
TW-26	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-26A	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
TW-26B	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-27	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-28	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-28A	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29A	FIM	FIM	FIM	FIM	FIM	FIM				FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM
TW-29B	FIM	FIM	FIM	FIM							FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
TW-29C	FIM	FIM	FIM	FIM							FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	
TW-37																																
TW-37A																																
TW-38A																																
TW-39																																
TW-39A																																
TW-40																																
TW-40A																																
TW-41																																
TW-41A																																

Note:
F = Field Measurements
I = Indicator parameters, wet chemistry analysis
M = Metals analysis
V = Volatile organic compound analysis

Table 1 (continued)
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	1995				1996				1997				1998				1999				2000				2001				2002			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HINZE WELL (LIPKE)	FIMV	FIM	FIM	FIM	FIM	FIMV	FIM	FIMV	FIMV	IMV	IV			IV		IV		IMV		IMV		FIMV		IMV		FIV		FIMV		FIV		FIMV
PW-3404 PAGEL										V		V		V		V		V		V		FV		V		FV		FV		FV		FV
PW 8709 MILLER																										FV		FV		FV		FV
PW-3613						V				V				V				V				FV								FV		
PW-3652 KLEMM (MILLER)								V				V				V				V		FV		FV				FV				FV
PW-3688						V				V				V				V				FV				FV				FV		
PW-8581						V		V		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
PW-8757 WEINKE																		V		V		FV		V		FV		FV		FV		FV
PW-8763 CHRISTIAN (BRITZ)						V		V		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
PW-9051 KILBY								V				V				V												FV				FV
PW-9097								V				V				V				V				V				FV				FV
TW-E		FI		FI	FI	FI	FI	FI	FI	I		I																				
TW-F		FI		FI	FI	FI	FI	FI	FI	I		I																				
TW-J		F		F	F	F	F	FI	FI																							
TW-K				F		FV		FV		V		V				V		V		V		FV		V		FV		FV		FV		FV
TW-25				F		FV		FV		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
TW-25A				F		FV		FV		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
TW-26																																
TW-26A				F		FV		FV		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
TW-26B				F		F		F																								
TW-27				F		F		F																								
TW-28	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIM	FIMV	IMV		IV		I		IV		IM		IMV		FIM		IMV		FI		FIMV		FI		FIMV
TW-28A				F		F		FIM	FIMV	IMV		IV		I		IV		IM		IMV		FIM		IMV		FI		FIMV		FI		FIMV
TW-29				F		F		F																								
TW-29A				F		F		F																								
TW-29B				F		FV		FV																								
TW-29C				F		FV		FV																								
TW-37				F		FV		FV		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
TW-37A				F		FV		FV		V		V		V																		
TW-38A				F		FV		FV		V		V		V																		
TW-39				F		F		F																								
TW-39A				F		FV		FV		V		V		V						V												
TW-40				F		F		F																								
TW-40A				F		FV		FV		V		V		V		V		V		V		FV		V		FV		FV		FV		FV
TW-41				F		F		F																								
TW-41A				F		F		F																								

Note:
F = Field Measurements
I = Indicator parameters, wet chemistry analysis
M = Metals analysis
V = Volatile organic compound analysis

Table 1 (continued)
Groundwater Sampling Program Summary
Sauk County Closed Landfill - License #2051

SAMPLE ID	2003				2004				2005				2006				2007				2008				2009			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HINZE WELL (LIPKE)		FIM	FV	FIV		FIMV		FIV				IV		IV		FV				V				FV				FV
PW-3404 PAGEL		FV		FV		FV		FV				FV		FV		FV				FV								
PW 8709 MILLER		FV	FV	FV	FV	FV		FV	V			FV				FV		FV		FV		FV		FV		FV		FV
PW-3613		FV				V								FV														
PW-3652 KLEMM (MILLER)				FV				FV				FV		FV														
PW-3688		FV				V								FV														
PW-8581		FV		FV		V		FV				FV		FV														
PW-8757 WEINKE		FV		FV		V		FV				FV		FV		FV		FV		FV		FV		FV		FV		FV
PW-8763 CHRISTIAN (BRITZ)		FV		FV		V		FV				FV		FV		FV				FV				FV				FV
PW-9051 KILBY				FV				FV				FV				FV				FV				FV				FV
PW-9097				FV				FV				FV																
TW-E																						F				F		
TW-F																						F				F		
TW-J																						F				F		
TW-K		FV		FV		FV		FV				FV		FV		FV				FV		F		FV		F		FV
TW-25		FV		FV		FV		FV				FV		FV		FV				FV		F		FV		F		FV
TW-25A		FV		FV		FV						FV		FV		FV				FV		FV		FV		FV		FV
TW-26																						F				F		
TW-26A		FV		FV		FV		FV				FV		FV		FV				FV		F		FV		F		FV
TW-26B																						F				F		
TW-27																						F				F		
TW-28		FIM		FIV		FIM		FIV				FIV		FI		FIV		FI		FIV		FI		FIV		FI		FIV
TW-28A		FIM		FIV		FIM		FIV				FIV		FI		FIV		FI		FIV		FI		FIV		FI		FIV
TW-29																						F				F		
TW-29A																						F				F		
TW-29B																								FV				FV
TW-29C																						F		FV		F		FV
TW-37		FV		FV		FV		FV				FV		FV		FV				FV				FV		F		FV
TW-37A																						F				F		
TW-38A								FV														F				F		
TW-39																						F				F		
TW-39A																						F				F		
TW-40																						F				F		
TW-40A		FV		FV		FV		FV				FV		FV		FV				FV		F		FV		F		FV
TW-41																						F				F		
TW-41A																												

Note:
F = Field Measurements
I = Indicator parameters, wet chemistry analysis
M = Metals analysis
V = Volatile organic compound analysis

TABLE 2
PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
SAUK COUNTY LANDFILL, LICENSE 02051
2005 - 2009

CHEMICAL PARAMETER	UNITS	NR140 PAL	NR140 ES	WELL ID	DATE	RESULT	DATA FLAGS	EXCEEDENCE	IN DMZ
BENZENE	UG/L	0.5	5	TW-25	10/19/2005	1.6		PAL	
				TW-25	4/24/2006	1.2		PAL	
				TW-25	10/10/2006	1.1		PAL	
				TW-25	10/16/2007	1.2		PAL	
				TW-25	10/29/2008	1.9		PAL	
				TW-K	10/15/2009	4.5		PAL	
CHLOROMETHANE	UG/L	0.3	3	HINZE WELL	11/3/2008	1.4		PAL	
				PW 8709 MILLER	10/30/2008	0.46	J	PAL	
				PW-8757 WEINKE	10/30/2008	0.45	J	PAL	
				PW-8763 BRITZ	10/30/2008	0.45	J	PAL	
				PW-9051 KILBY	10/30/2008	0.34	J	PAL	
				TW-25	10/29/2008	0.34	J	PAL	
				TW-25	10/14/2009	0.69	J	PAL	
				TW-25A	10/29/2008	0.46	J	PAL	
				TW-25A	10/15/2009	0.31	J	PAL	
				TW-26A	10/14/2009	0.58	J	PAL	
				TW-26A DUP	10/14/2009	0.5	J	PAL	
				TW-28	10/30/2008	0.82	J	PAL	
				TW-28A	10/30/2008	0.62	J	PAL	
				TW-29C	10/29/2008	0.56	J	PAL	
				TW-37	10/30/2008	1.6		PAL	
				TW-37	10/15/2009	0.38	J	PAL	
				TW-40A	10/14/2009	1.1		PAL	
				TW-K	10/30/2008	0.41	J	PAL	
METHYLENE CHLORIDE	UG/L	0.5	5	PW-3652	4/25/2006	1.2	J	PAL	

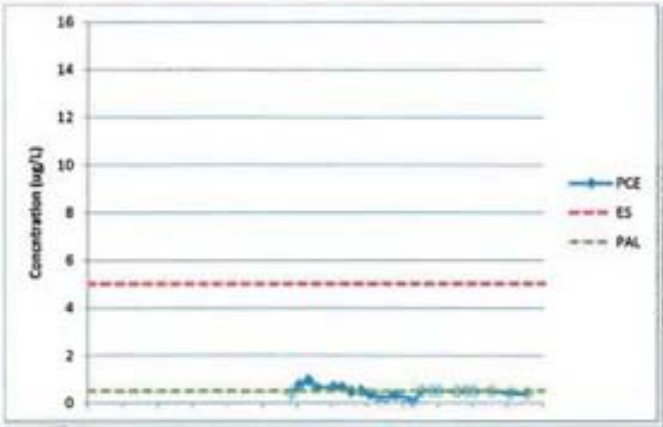
5

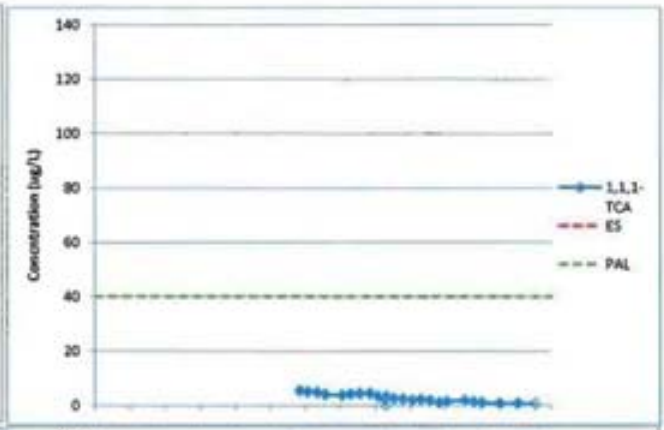
TABLE 2
PARAMETERS THAT EXCEED CURRENT NR140 STANDARDS
SAUK COUNTY LANDFILL, LICENSE 02051
2005 - 2009

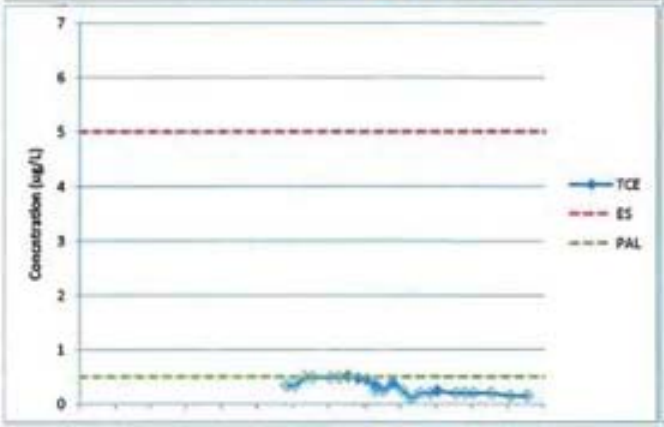
CHEMICAL PARAMETER	UNITS	NR140 PAL	NR140 ES	WELL ID	DATE	RESULT	DATA FLAGS	EXCEEDENCE	IN DMZ
TETRACHLOROETHENE	UG/L	0.5	5	PW 8709 MILLER	1/28/2005	0.55	J	PAL	
				PW 8709 MILLER	10/19/2005	0.61	J	PAL	
				PW 8709 MILLER	10/15/2009	0.65	J	PAL	
				TW-25A	10/18/2005	2.6		PAL	
				TW-25A	4/24/2006	1.8		PAL	
				TW-25A	10/9/2006	1.9		PAL	
				TW-25A	10/15/2007	0.67	J	PAL	
				TW-25A	10/29/2008	1.3		PAL	
				TW-25A	10/15/2009	1.2	J	PAL	
TETRAHYDROFURAN	UG/L	10	50	TW-25	10/29/2008	28		PAL	
				TW-25	10/14/2009	22		PAL	
TRICHLOROETHENE	UG/L	0.5	5	TW-25A	10/18/2005	0.84		PAL	
				TW-25A	4/24/2006	0.67		PAL	
				TW-25A	10/9/2006	0.87		PAL	
				TW-25A	10/29/2008	0.66		PAL	
				TW-25A	10/15/2009	0.7		PAL	

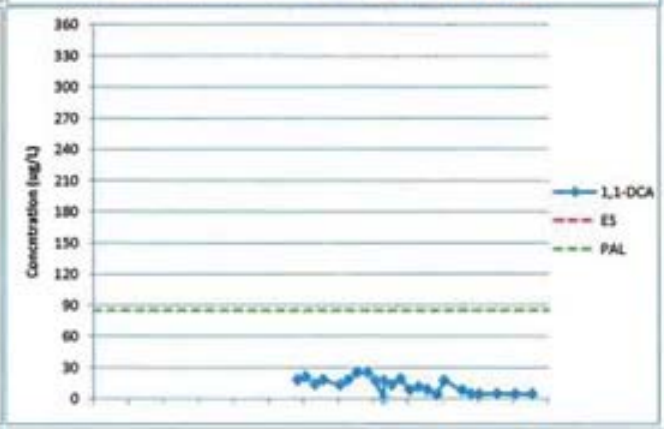
DATA QUALIFIERS
J = REPORTED CONCENTRATION IS BETWEEN THE LIMIT OF DETECTION (LOD) AND LIMIT OF QUANTITATION (LOQ).

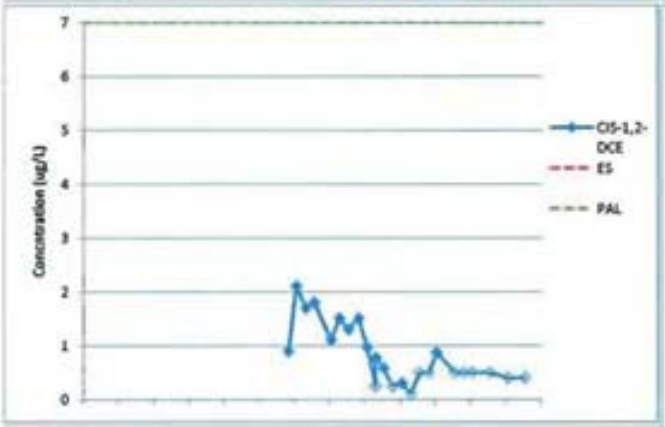
VOC Concentrations Over Time
TW-K

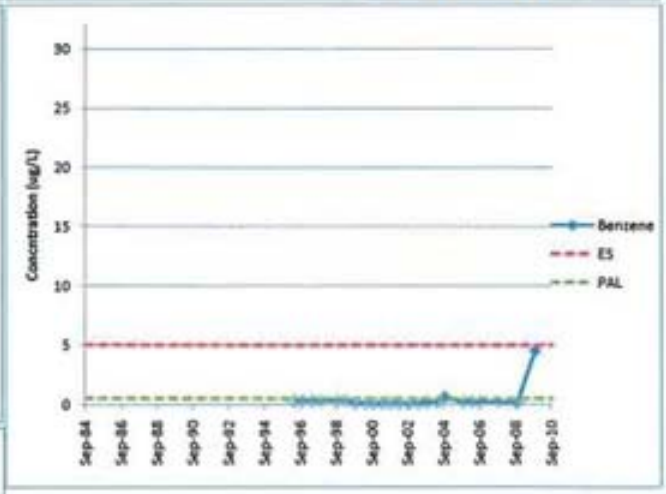


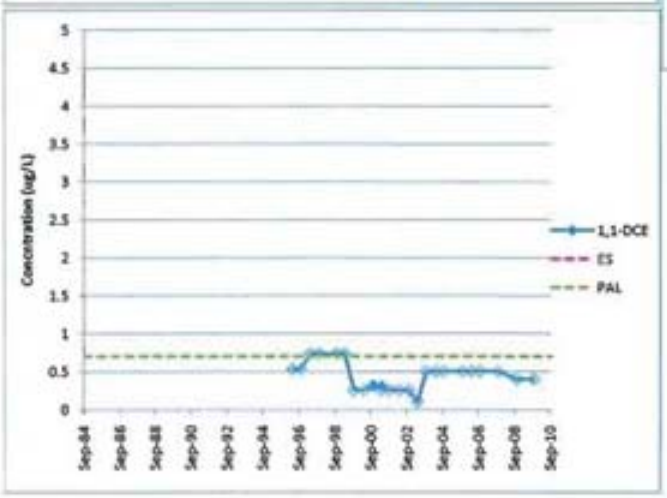






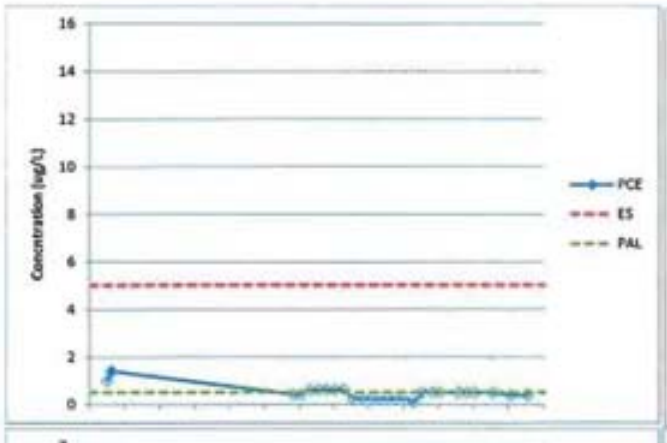


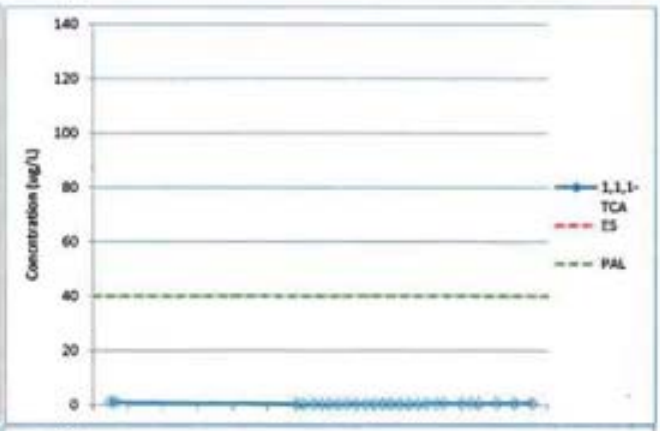


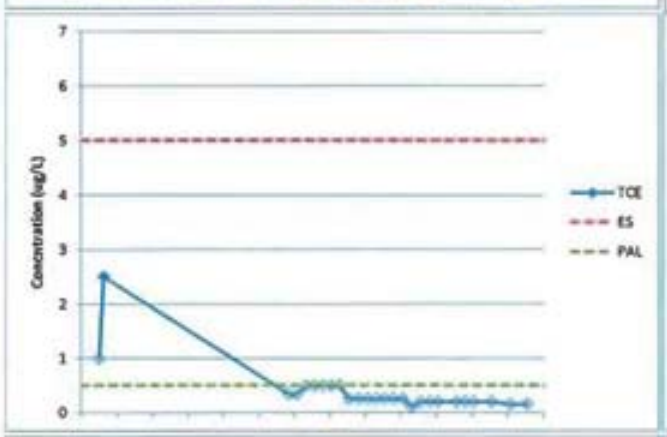


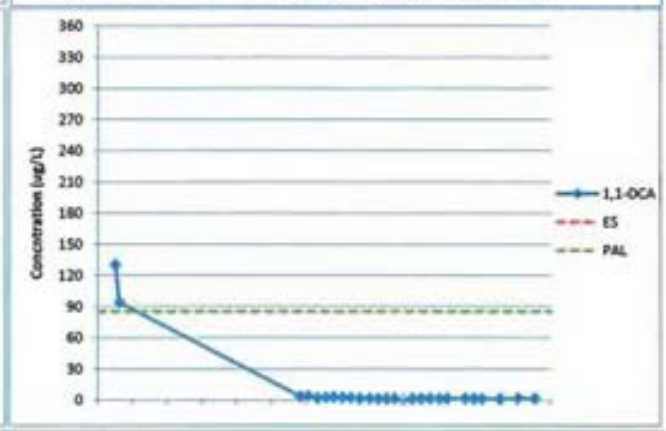
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

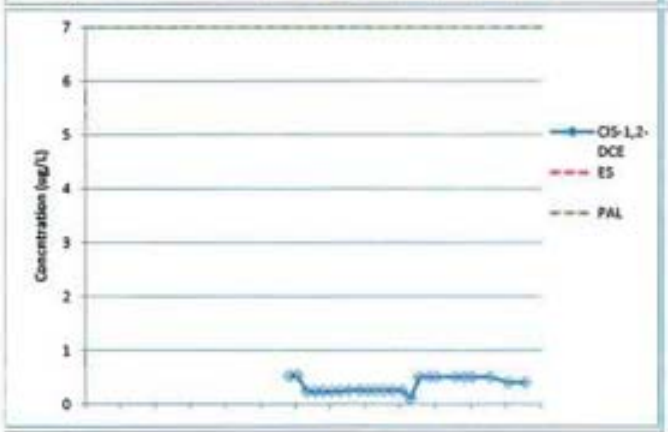
VOC Concentrations Over Time
TW-25

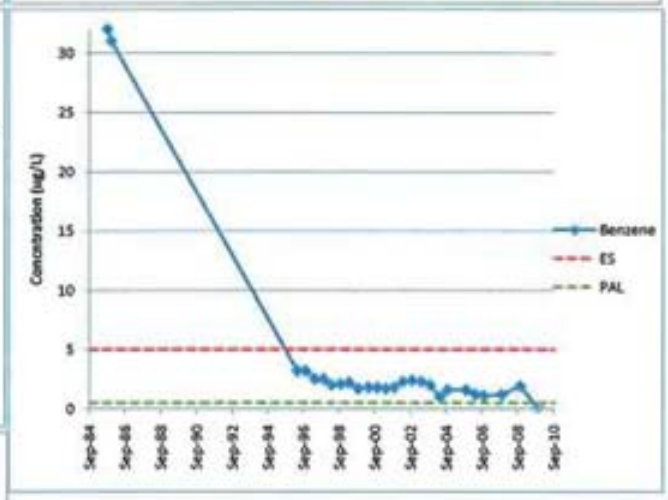


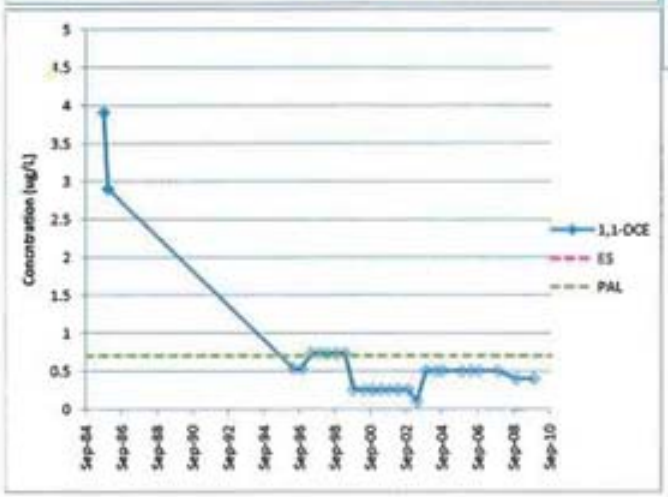






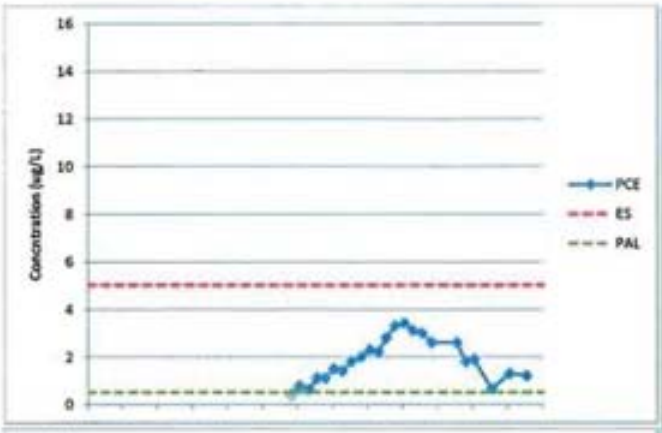


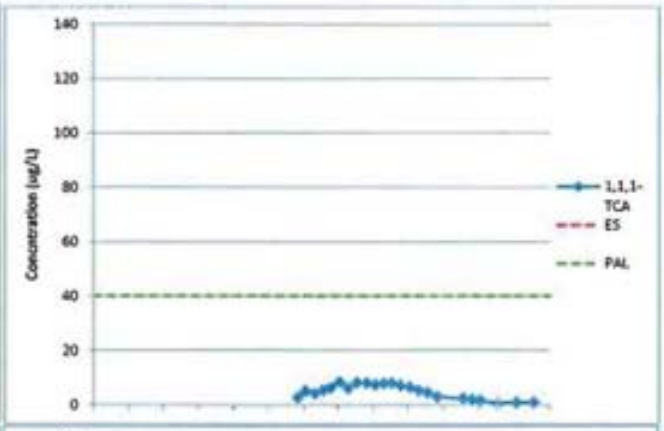


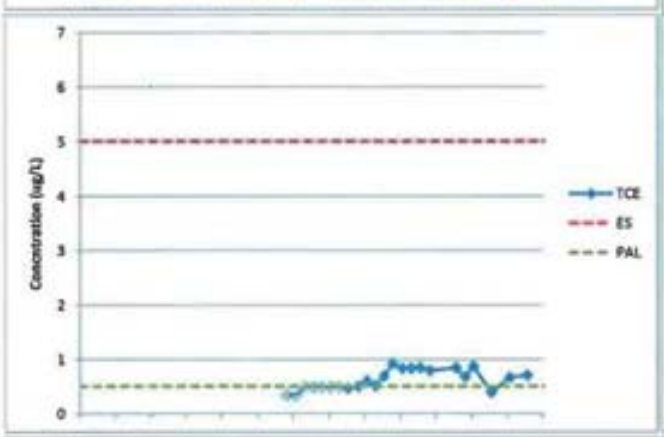


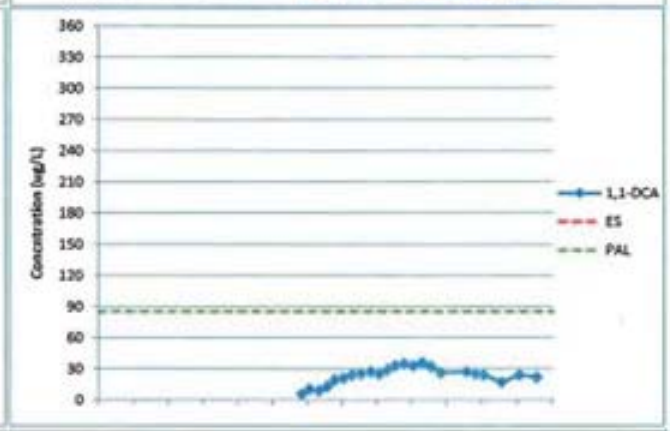
Notes:
1. Open symbol designates the detection limit; closed symbol is a detected concentration.

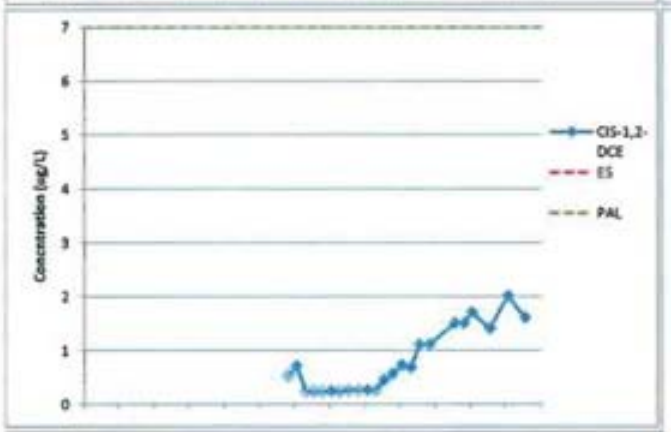
VOC Concentrations Over Time
TW-25A

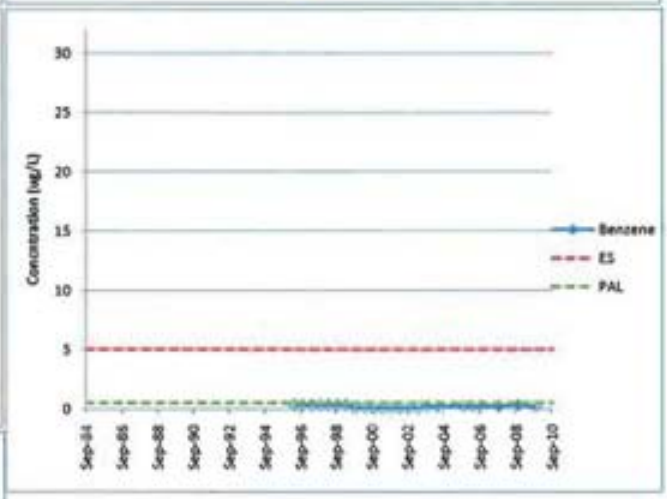


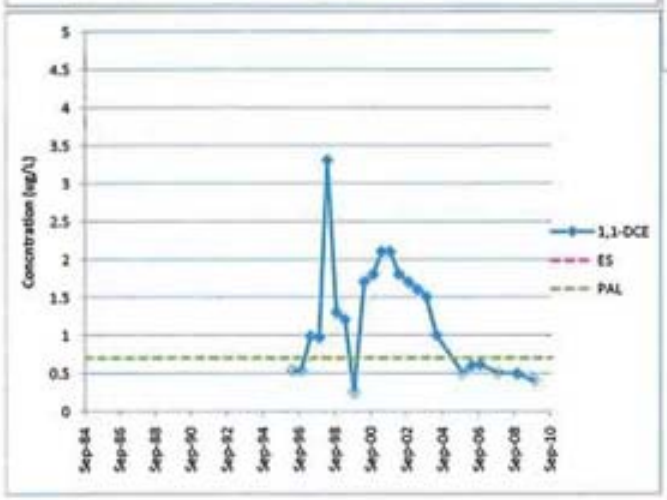






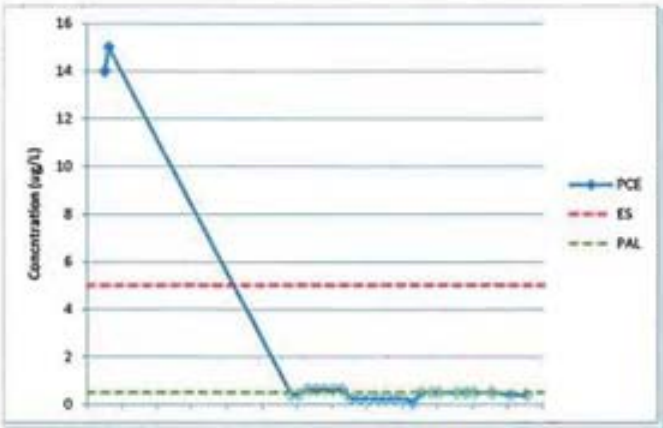


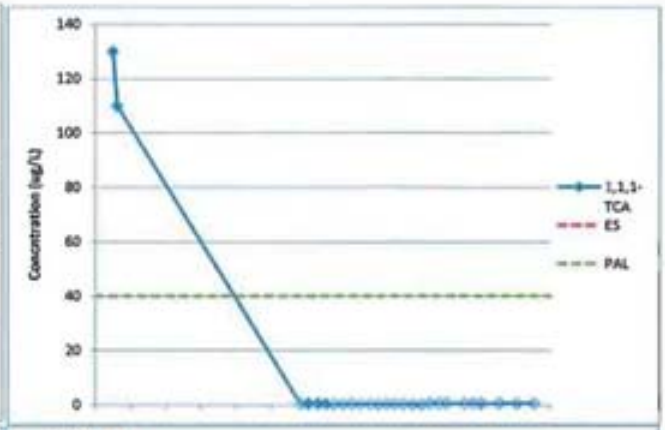


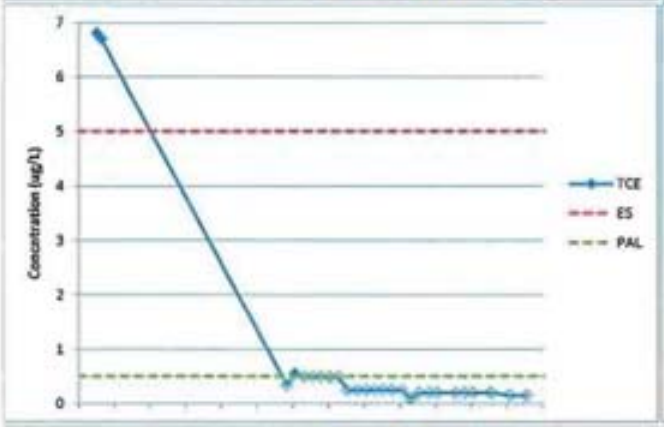


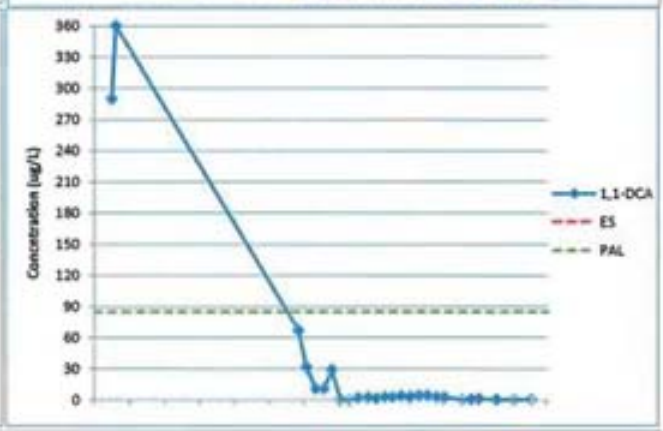
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

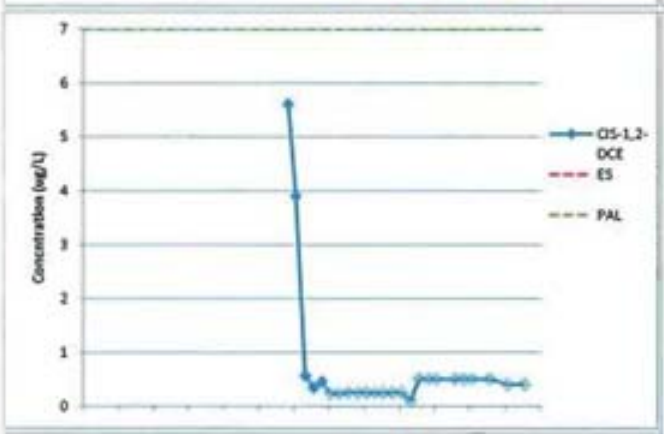
VOC Concentrations Over Time
TW-26A

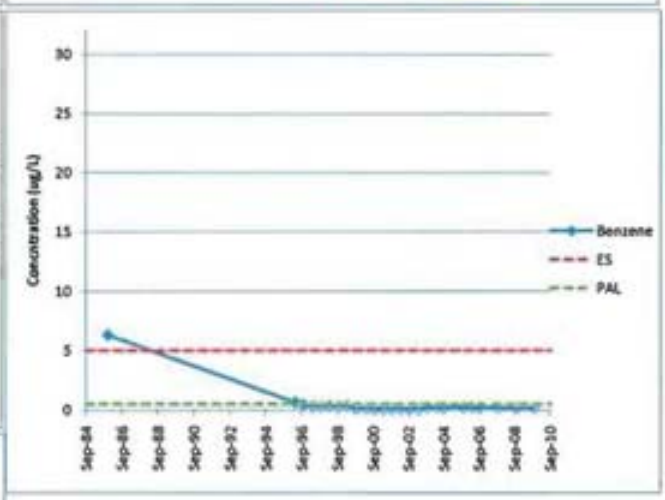


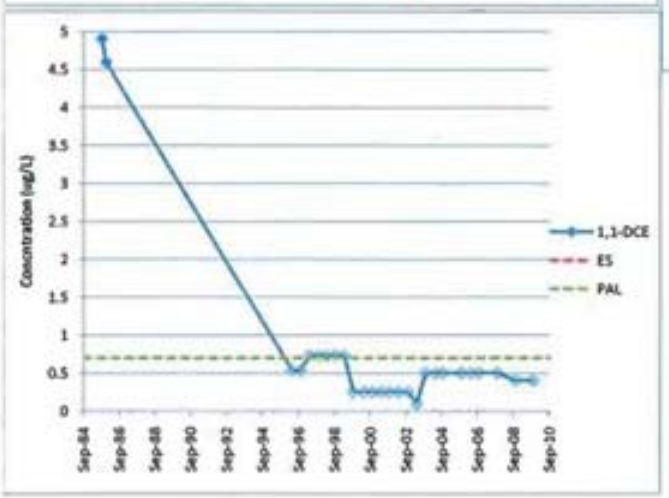






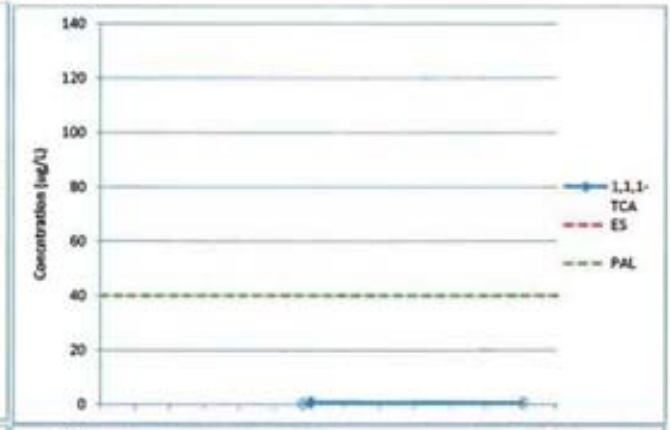


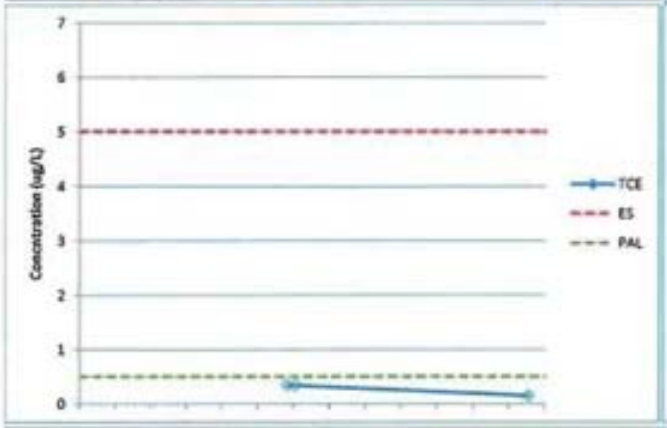


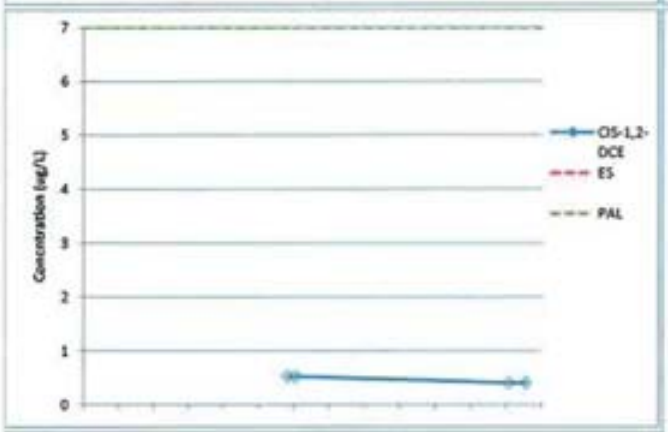


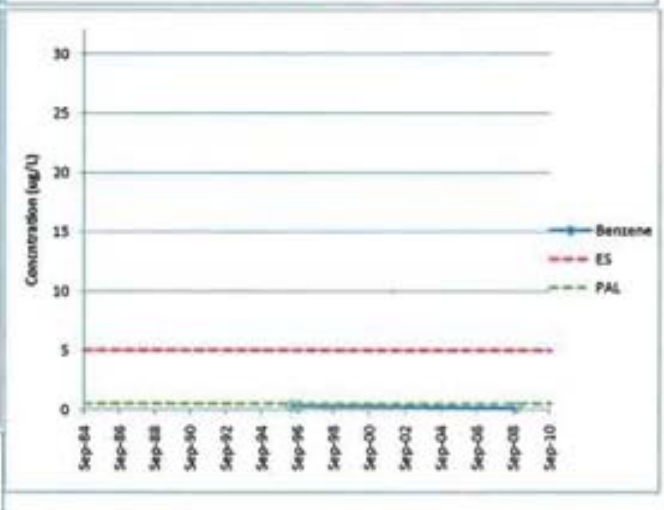
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

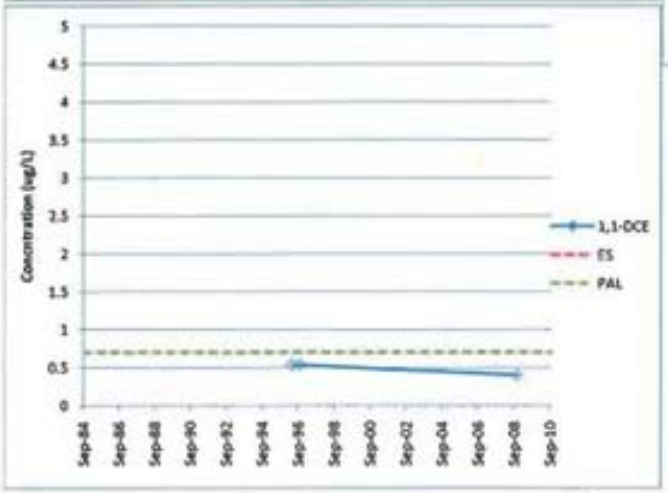
VOC Concentrations Over Time
TW-29B





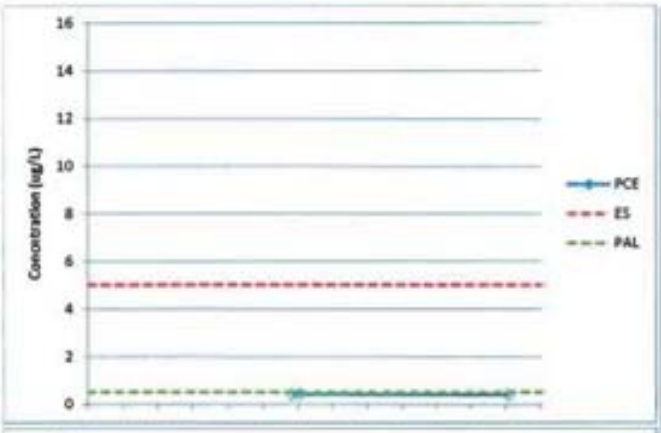


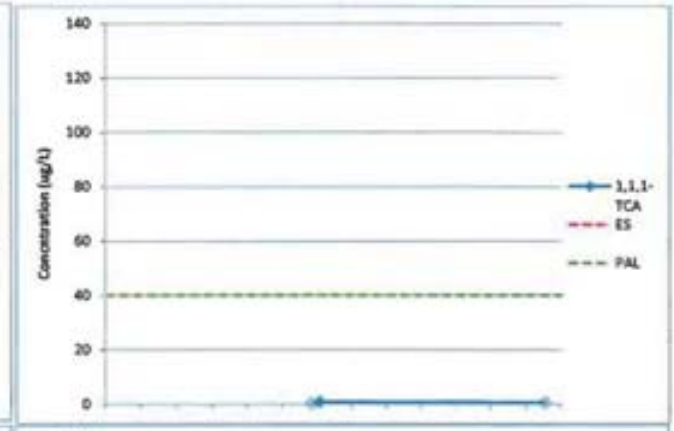


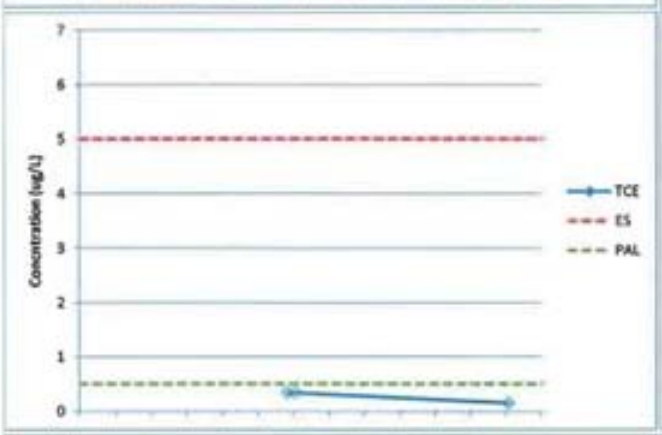


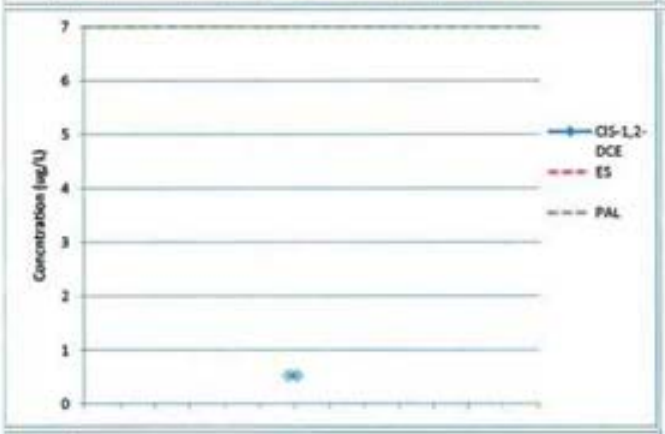
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

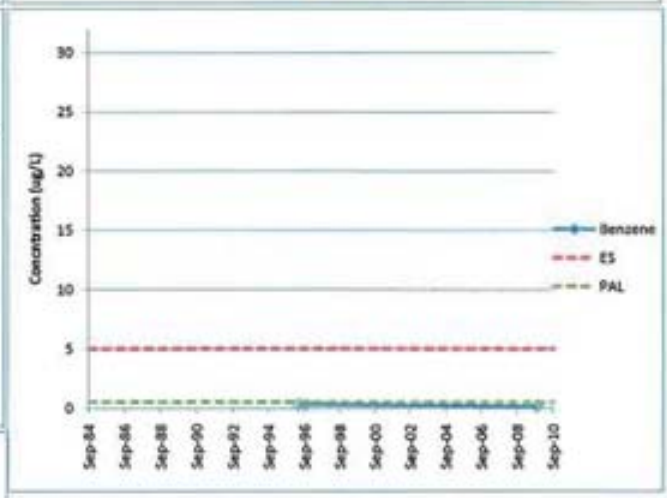
VOC Concentrations Over Time
TW-29C

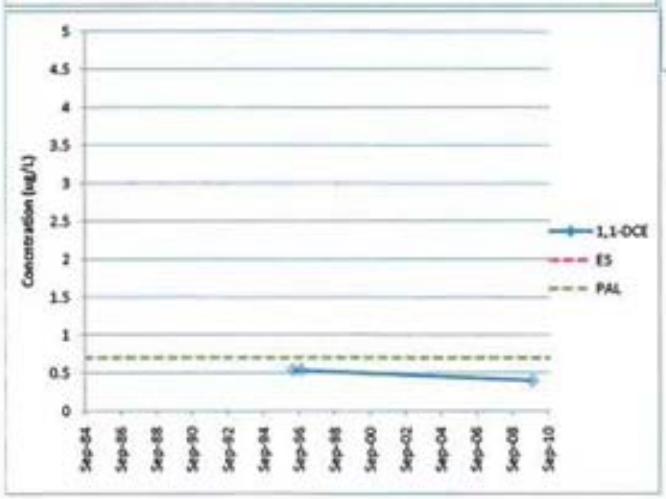






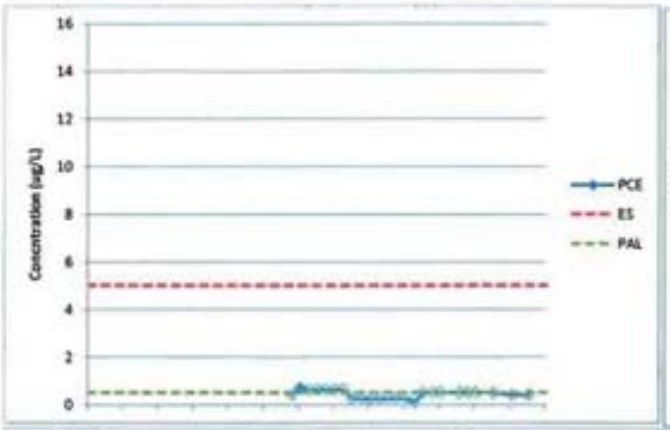


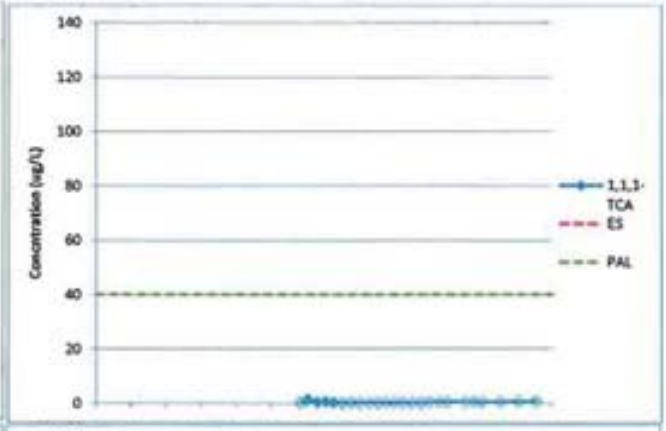


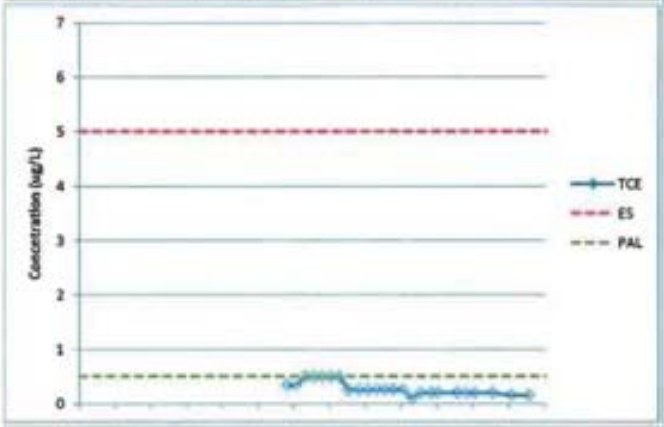


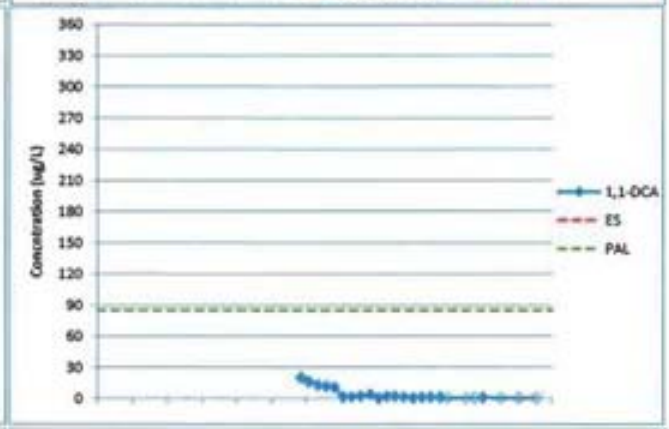
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

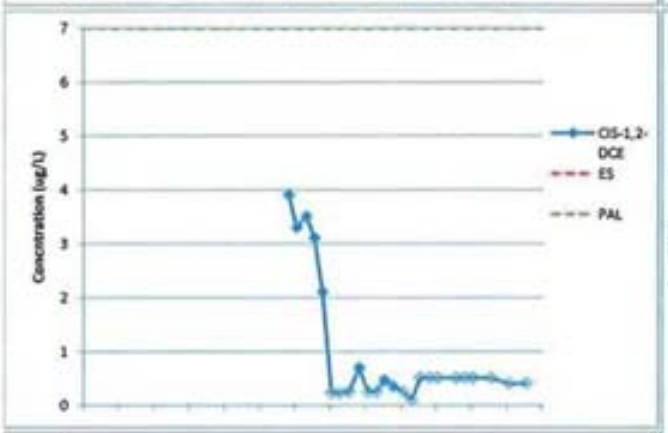
VOC Concentrations Over Time
TW-37

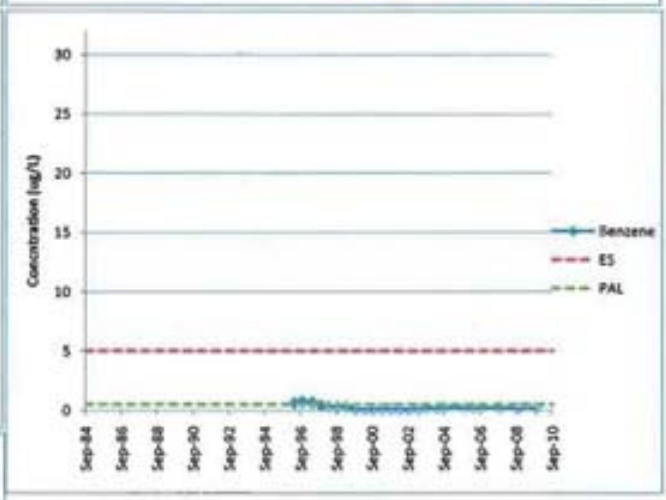


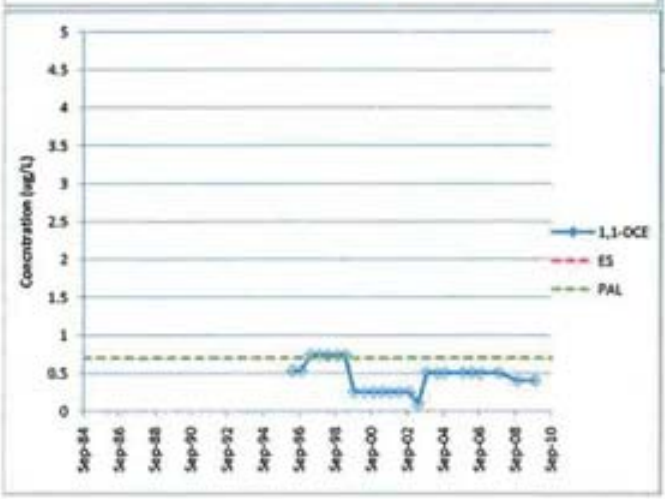






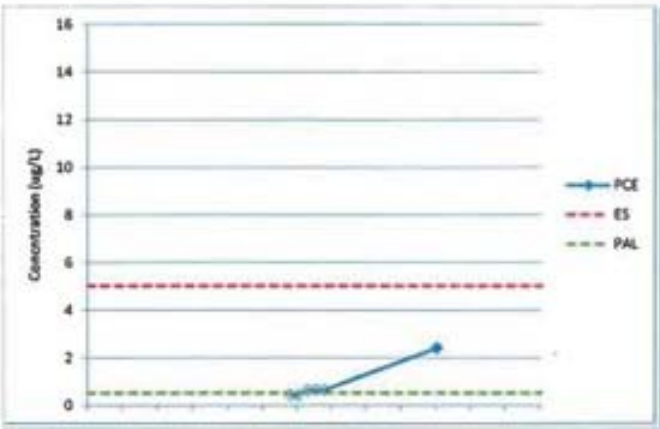


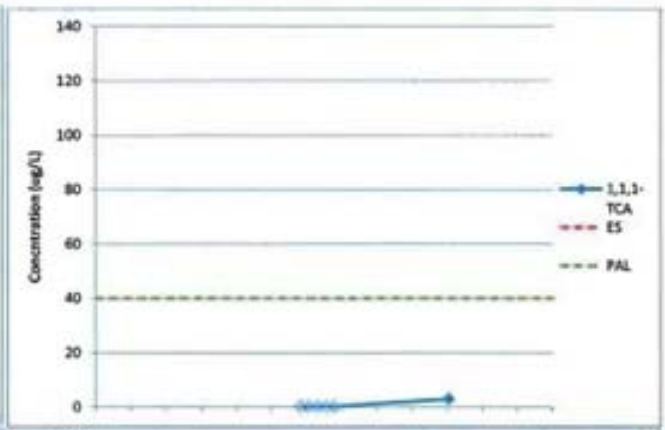


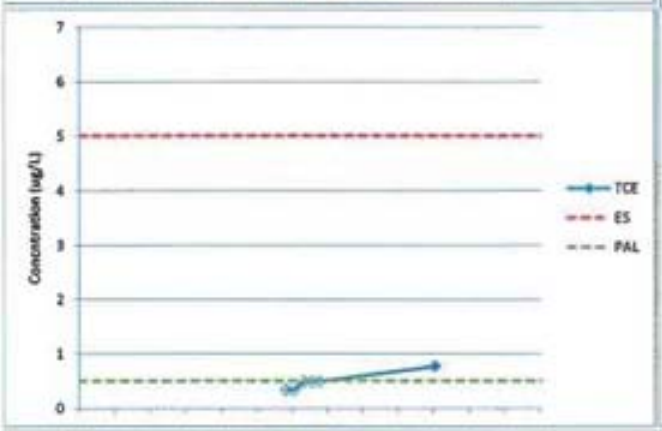


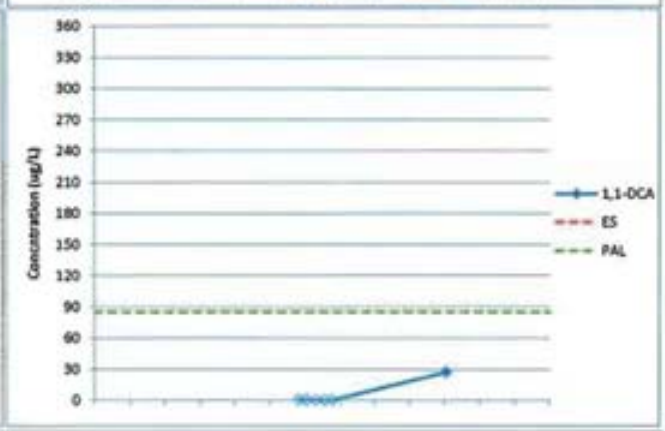
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

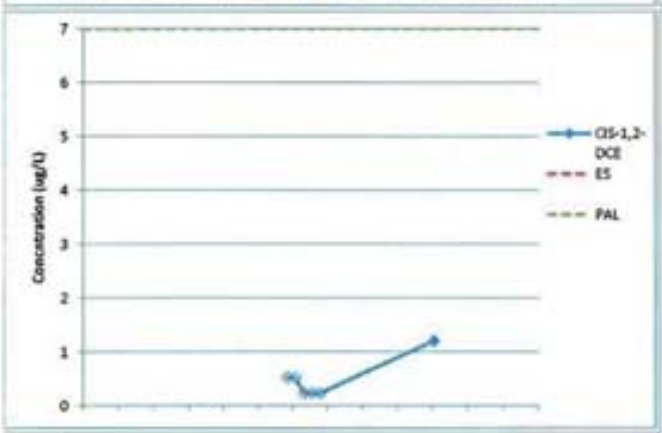
VOC Concentrations Over Time
TW-38A

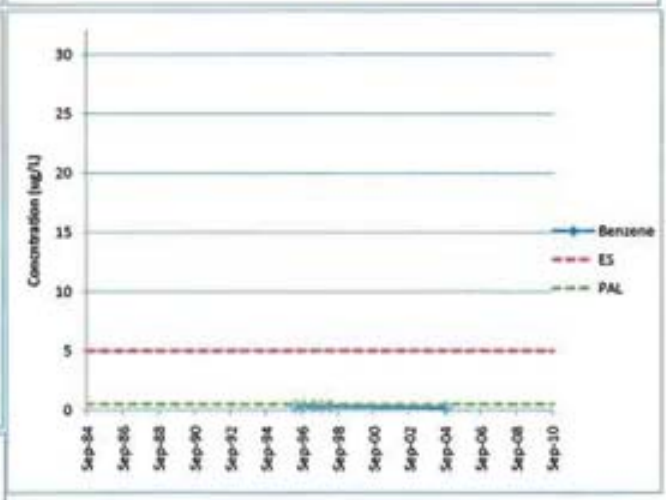


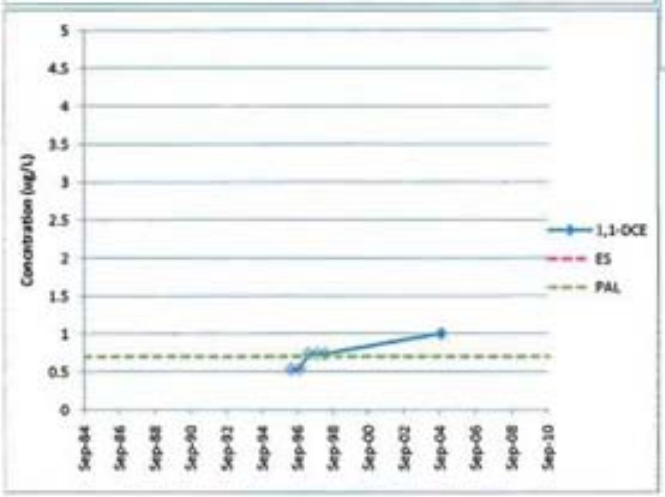






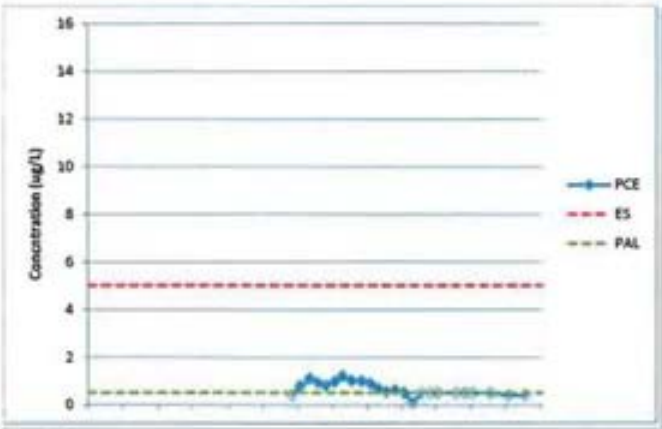


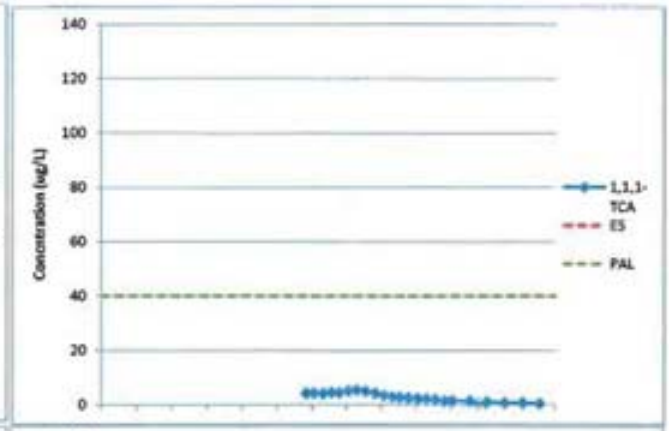


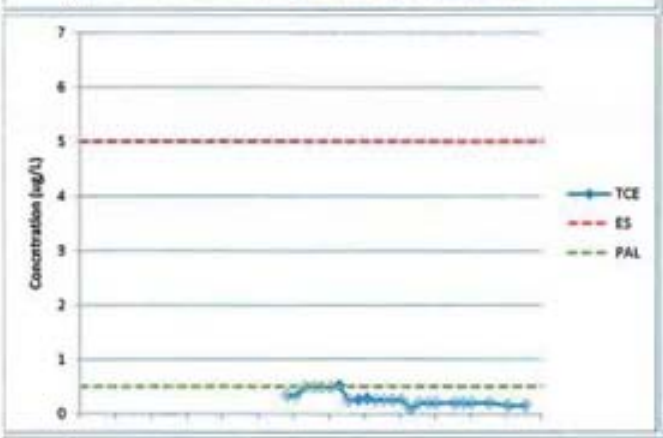


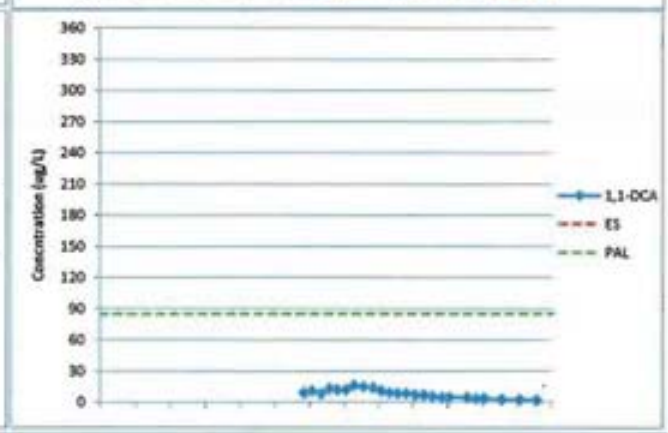
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

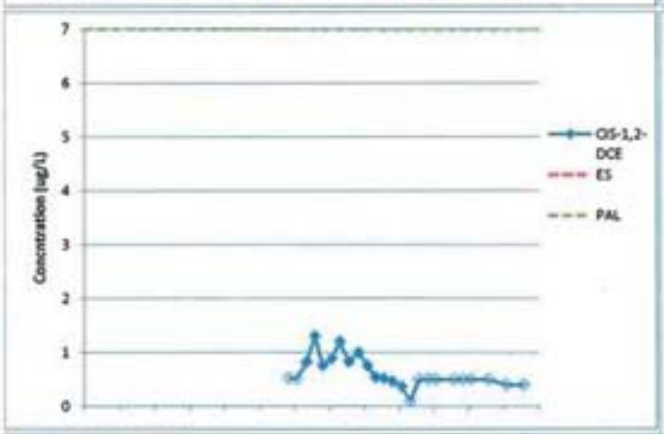
VOC Concentrations Over Time
TW-40A

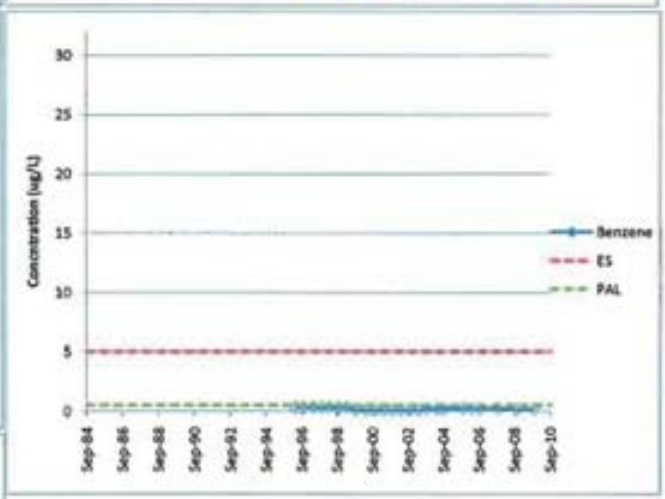


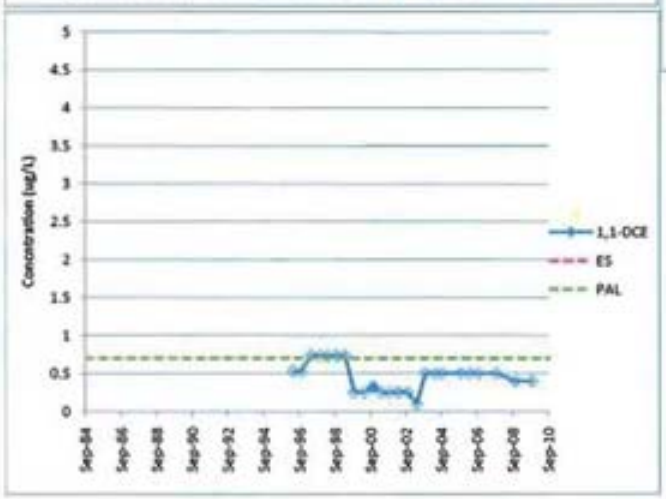






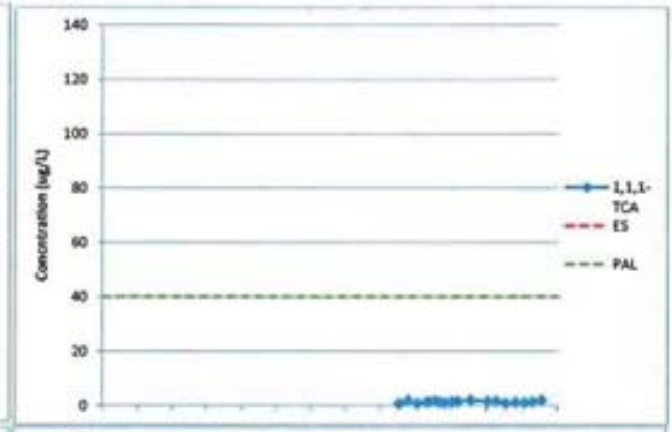


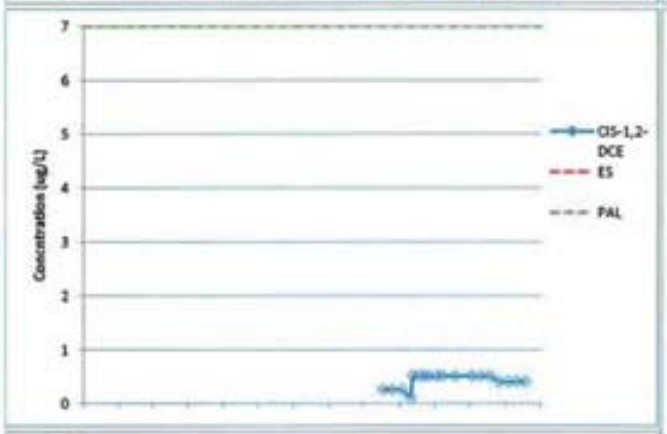


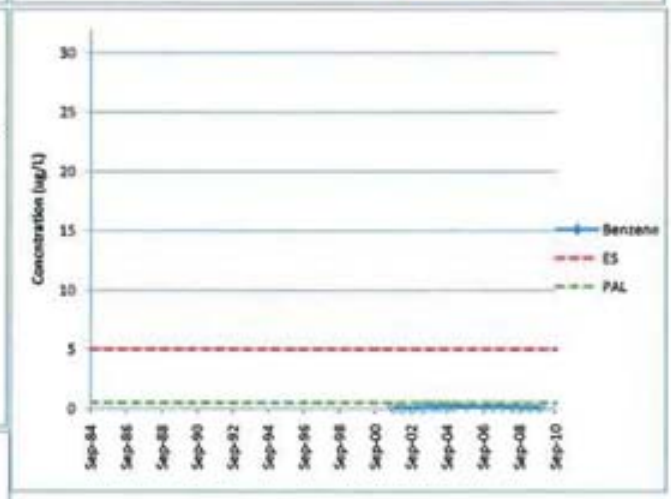


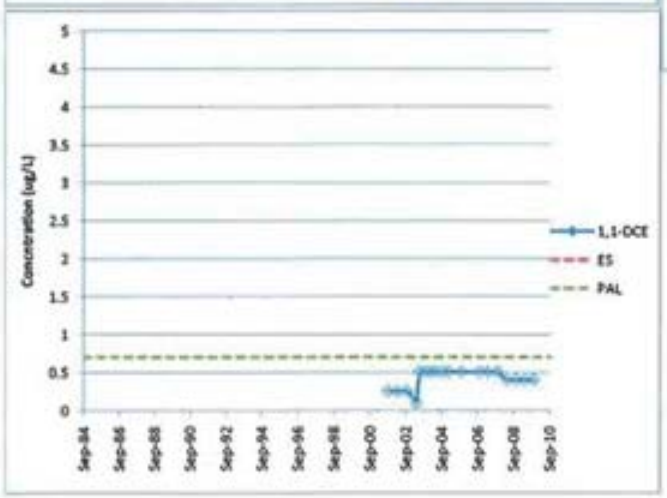
Note: Open symbol designates the detection limit; closed symbol is a detected concentration.

VOC Concentrations Over Time
Private Well - 8709 Miller



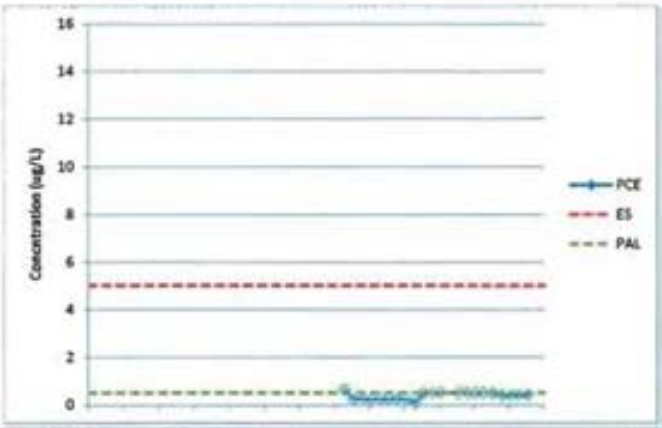


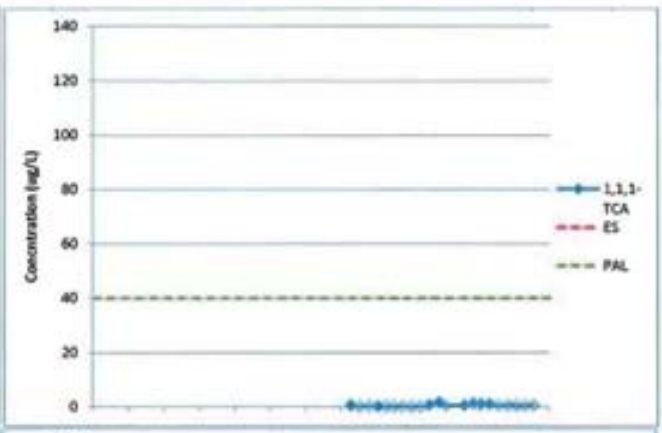


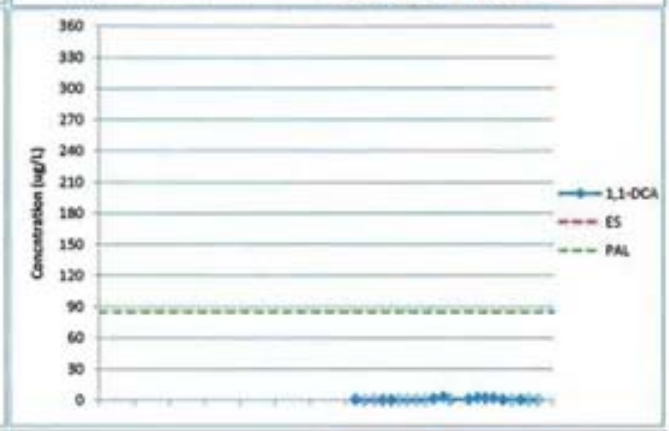


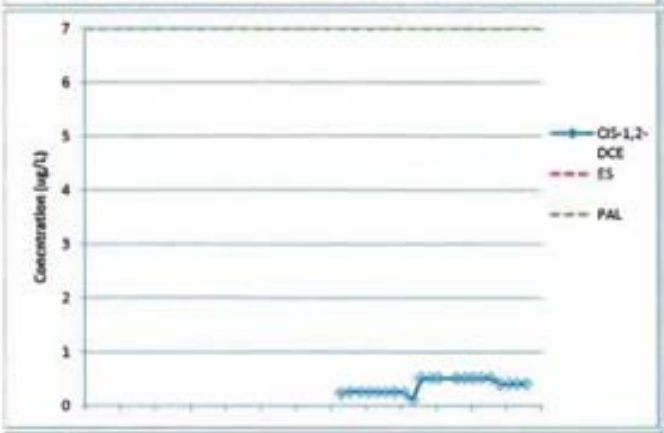
Notes:
1. Open symbol designates the detection limit; closed symbol is a detected concentration.

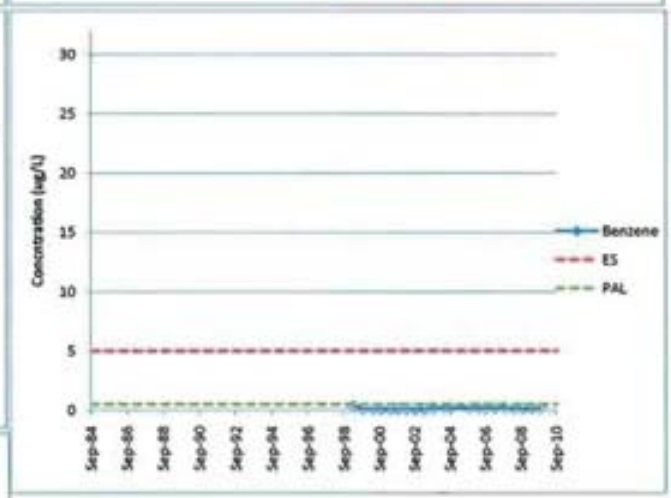
VOC Concentrations Over Time
Private Well - 8757 Weinke

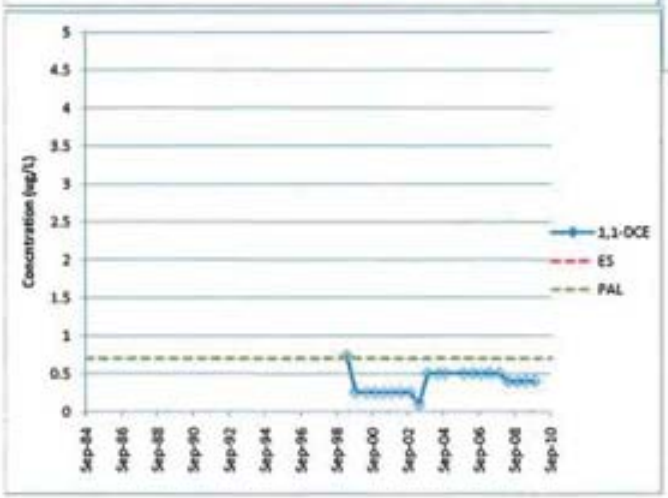






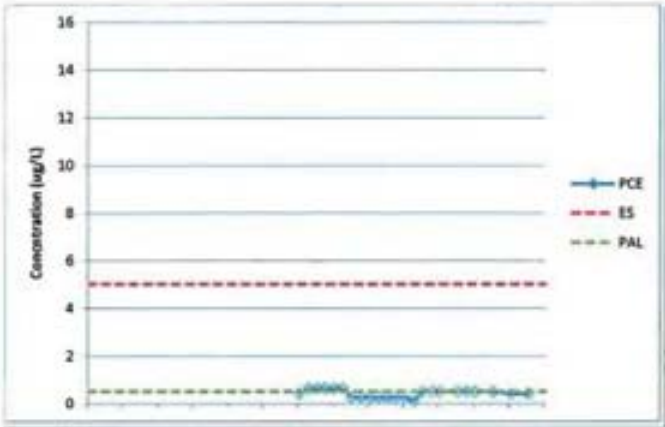


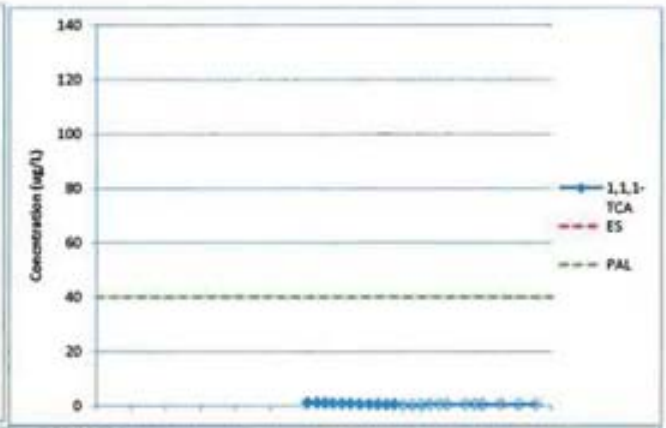


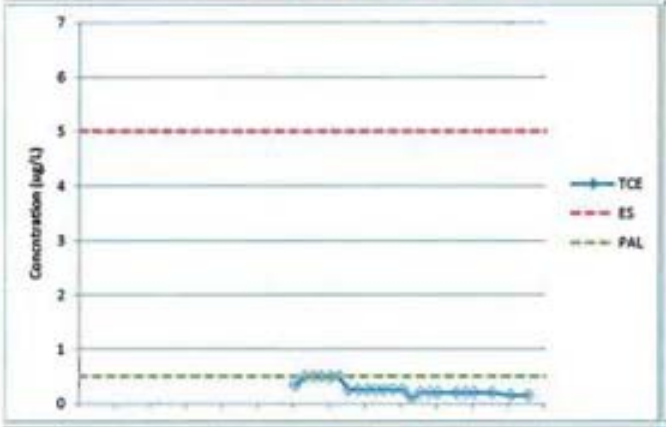


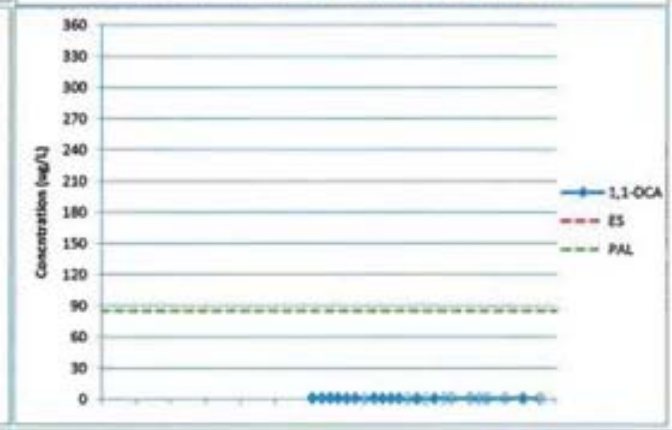
Notes:
1. Open symbol designates the detection limit; closed symbol is a detected concentration.

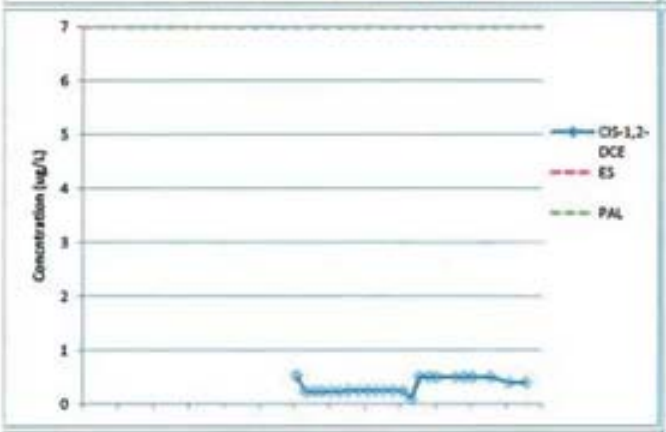
VOC Concentrations Over Time
Private Well - 8763 Britz

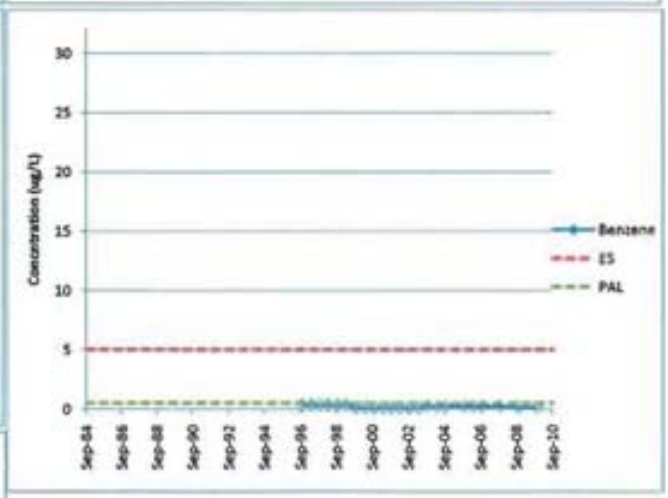


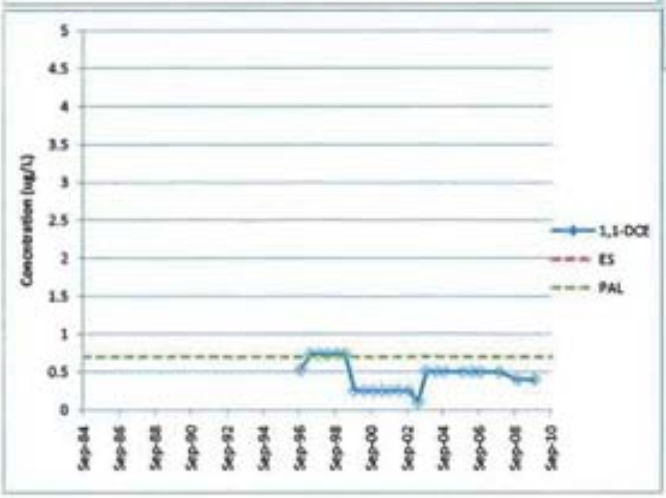






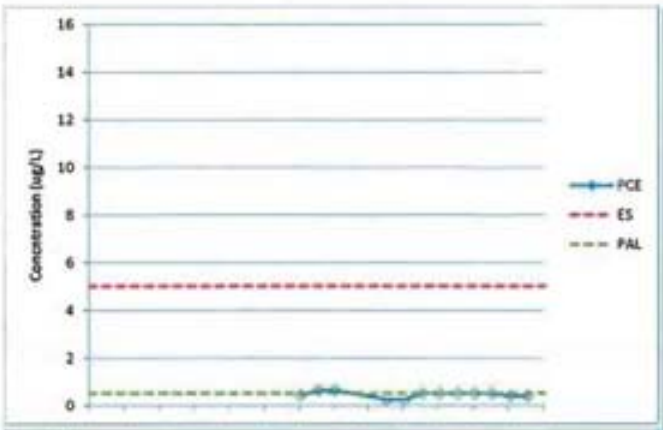


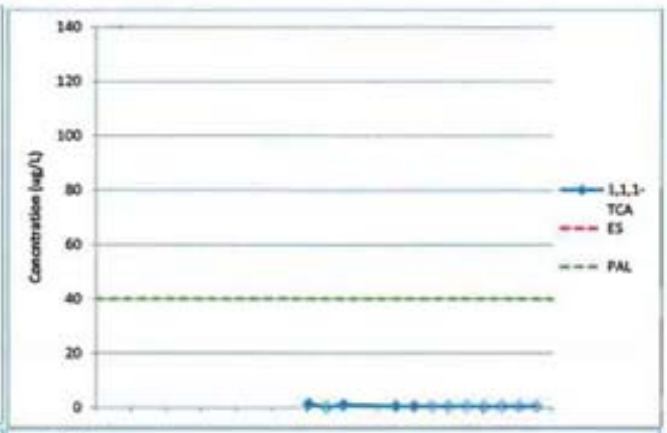


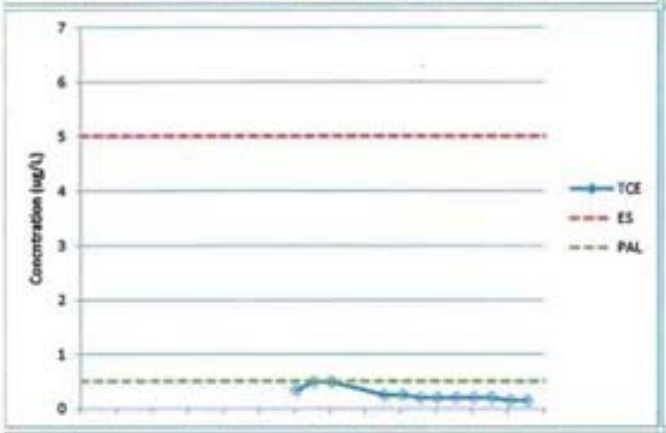


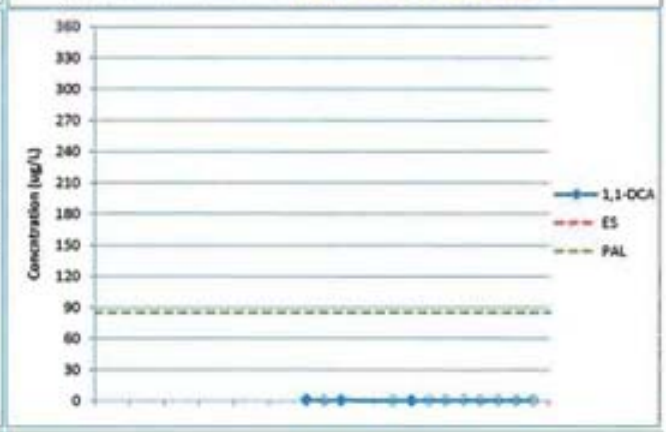
Notes:
1. Open symbol designates the detection limit; closed symbol is a detected concentration.

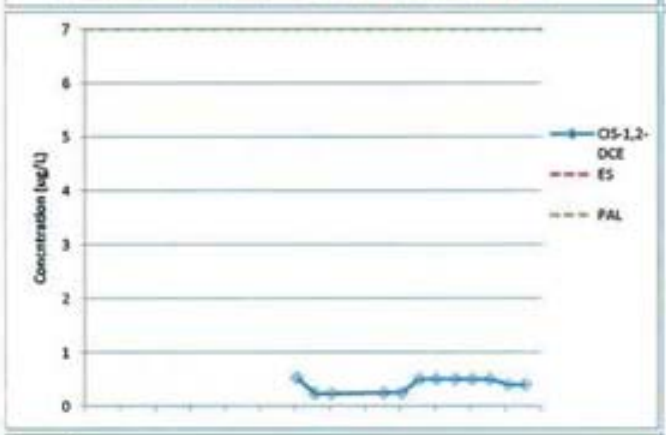
VOC Concentrations Over Time
Private Well - 9051 Kilby

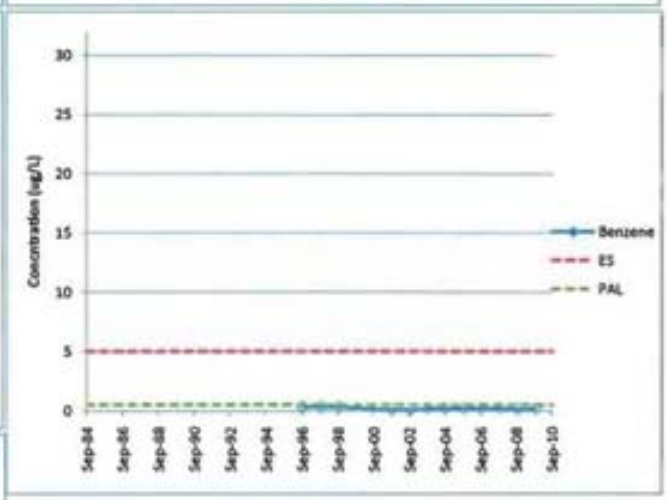


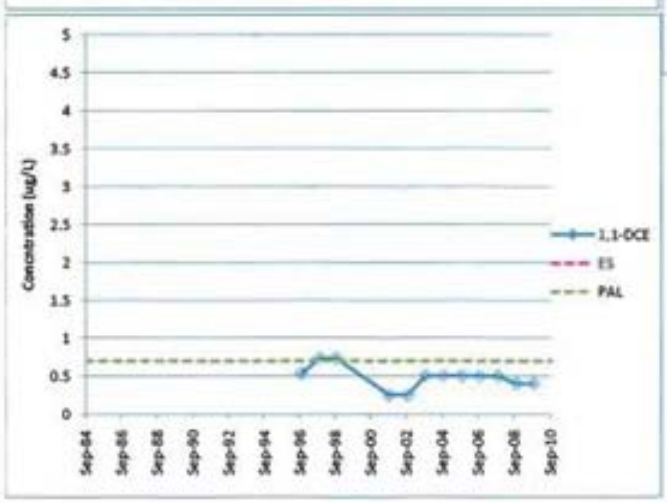






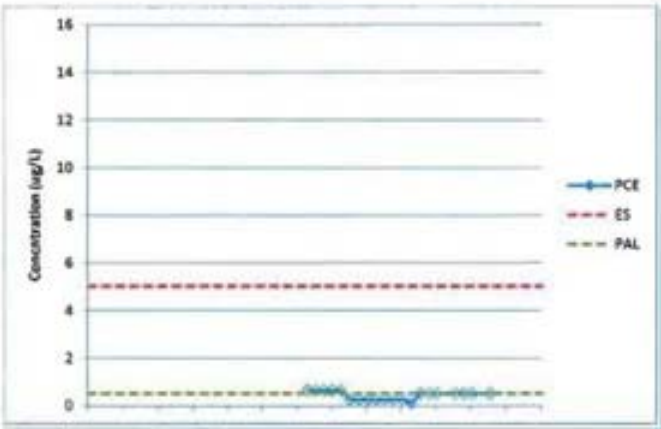


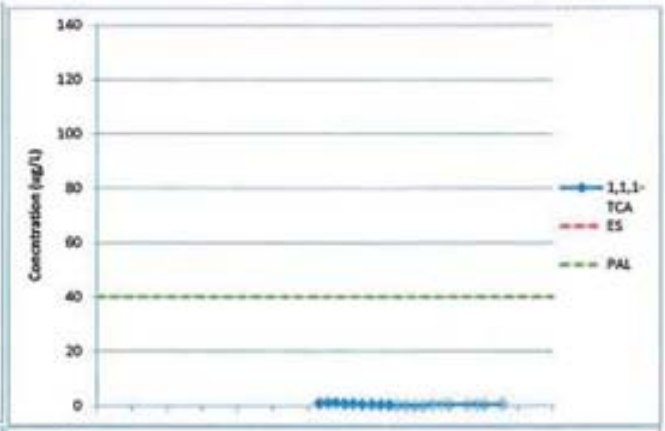


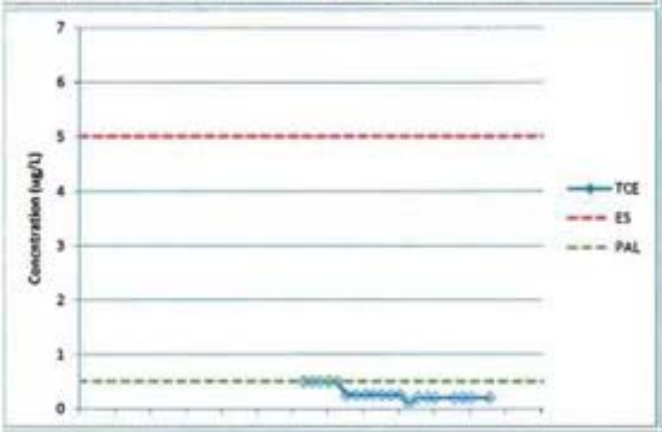


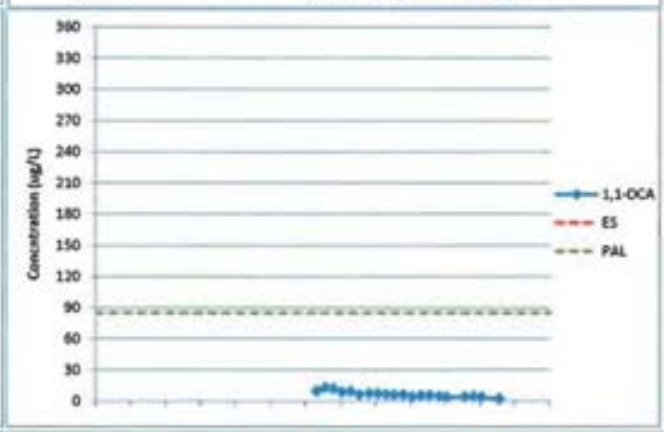
Notes:
1. Open symbol designates the detection limit; closed symbol is a detected concentration.

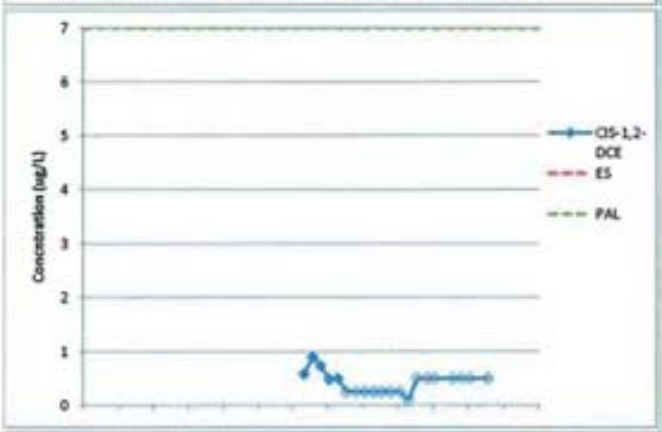
VOC Concentrations Over Time
Private Well - Pagel

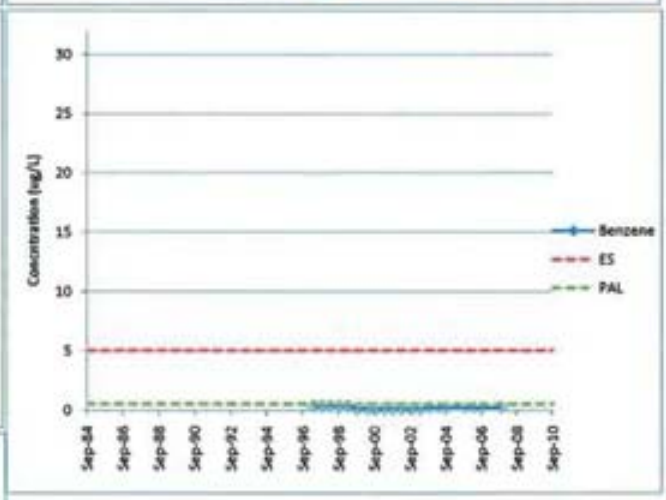


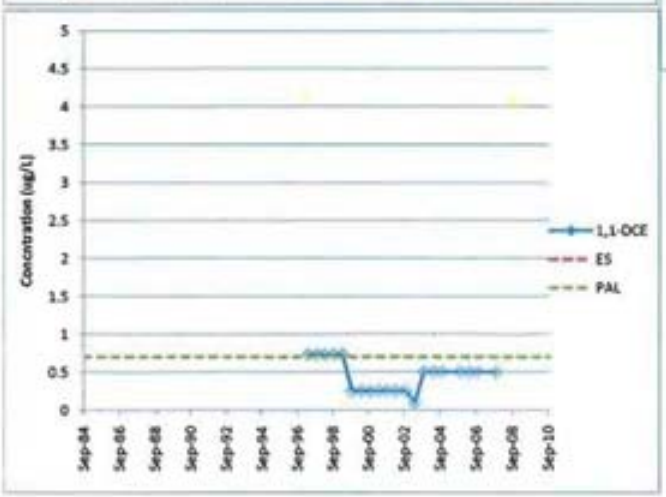












Notes:
1. Open symbol designates the detection limit; closed symbol is a detected concentration.

Attachment C – Restrictive Covenant

ADDENDUM

DEED RESTRICTION BOUNDARY DESCRIPTION
SAUK COUNTY LANDFILL

A parcel located in the Northeast Quarter of the Southeast Quarter and the Southeast Quarter of the Southeast Quarter of Section 15, Town 12 North, Range 5 East, Town of Excelsior, Sauk County, Wisconsin, bound by the following described line;

Commencing at the Southeast corner of Section 15, T12N, R5E; Thence N00°36'14"W, 368.29 Feet along the east line of the Southeast Quarter of the Southeast Quarter of Section 15; Thence S 89°59'30"W, 22.82 Feet to the Point of Beginning; Thence S89°59'30"W, 599.96 Feet; Thence N00°00'30"W, 1099.93 Feet; Thence N89°59'30"E, 599.96 Feet; Thence S00°00'30"E, 1099.93 Feet to the Point of Beginning.

Containing 15.15 acres more or less.

DECLARATION OF RESTRICTION AND COVENANT

In Re: The East one-half of the Southeast Quarter (E 1/2 SE 1/4); in Section Fifteen (15), Township Twelve (12) North, of Range Five (5) East; Sauk County, Wisconsin

STATE OF WISCONSIN)
) ss
COUNTY OF SAUK)

WHEREAS, it is the desire and intention of the property owner to impose on the property restrictions which will make it unnecessary to conduct further remediation activities on the property at the present time;

NOW THEREFORE, the owner hereby declares that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

> The following activities are prohibited on that portion of the property described in the attached addendum where a cap or cover has been placed unless prior written approval has been obtained from the Wisconsin Department of Natural Resources or its successor or assign: (1) Excavating or grading of the land surface; (2) Filling on the capped area; (3) Plowing for agricultural cultivation; and (4) Construction or installation of a building or other structure with a foundation that would sit on or placed with the cap or cover

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successor or assign. The Department, its successor or assign, may initiate proceeding at law or in equity against any person or persons violating or proposing to violate this covenant to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restriction contained herein can be extinguished.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restriction and Covenant, this 24 day of January, 1996.

By: _____
Roger Shanks, Chairperson
Sauk County Board of Supervisors

Signed under the authority granted in Resolution No: 53 - 94

Attest: _____
Beverly J. Mielke, Clerk
Sauk County

630482
REGISTRAR'S OFFICE
SAUK COUNTY WI
RECEIVED FOR RECORD
AT 12:50 O'CLOCK P M
ON Jan 26 1996
Mary Klingenmeyer
REGISTRAR
Ret: 12.00 Chg.

Drafted by Attorney Todd J. Liebman, Sauk County Corporation Counsel, State Bar #01011733

000345

DOC# 930874

Recorded
MAR. 22, 2007 AT 11:00AM

REGISTRAR'S OFFICE
SAUK COUNTY WI
RECEIVED FOR RECORD
Fee Amount: $11.00

Document Number | AFFIDAVIT

State of Wisconsin
Department of Natural Resources
PO Box 7921
Madison, Wisconsin 53707-7921

Solid Waste Land Disposal Site Affidavit
Form 4400-067 (R 6/03)

Recording Area

Name and Return Address:
Sauk County Landfill
West Square Building
505 Broadway
Baraboo, WI 53913

PIN

REGISTER OF DEEDS:
Please return original order(s) to DNR promptly after recording.

Solid Waste Land Disposal Site location in

E ½ of Section 15 and W ½ of Section, 14, T12N, R5E

Town of Excelsior
(Legal Description)

STATE OF WISCONSIN)
) ss.
COUNTY **Sauk**)

Kathryn Schauf,

being first duly sworn, on oath deposes and says that he/she is a

resident of **Sauk County**

and is the **Administrative Coordinator** (Title) of **Sauk County** (Company or Agency)

located at **West Square Building, 505 Broadway, Baraboo, Wisconsin 53913** (Address); that

Sauk County is the owner of the above-described land.

That application has been made to the State of Wisconsin Department of Natural Resources pursuant to subchapter III of chapter 289, Wis. Stats., for authorization to construct and operate a solid waste land disposal facility on the above-described land; that section 289.31(3), Wis. Stats., and section NR 500.06(4), Wis. Adm. Code, require that, prior to licensing, a notation of the existence of a solid waste land disposal site be recorded in the office of the register of deeds in each county in which a portion of the site is located.

That this affidavit is given for the purpose of indicating the existence of a solid waste land disposal facility on the above-described property.

(Signature)

Kathryn Schauf
(Printed or Typed Name)

Subscribed and sworn to before me this 21st day of March, 2007

(Signature)

BEVERLY J. MIELKE
(Printed or Typed Name)

Notary Public, State of WISCONSIN My Commission expires / is 1-5-09

This document was drafted by the Wisconsin Department of Natural Resources.

OFFICE OF THE CORPORATION COUNSEL

SAUK COUNTY WEST SQUARE BUILDING
505 BROADWAY STREET
BARABOO, WISCONSIN 53913
TELEPHONE: (608) 355-3267
FAX: (608) 355-3469
E-MAIL: tliebman@co.sauk.wi.us

TODD J. LIEBMAN
CORPORATION COUNSEL

ASSISTANT CORPORATION COUNSEL
WENDY J.N. BROMLEY
CHAD A. HENDEE
TORI A. VESELY

Support Enforcement Ext 3238

January 19, 2006

COPY

Mr. Stephen M. Ales, Hydrogeologist
Remediation and Redevelopment
South Central Region
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Mr. Jerry DeMers
Geotrans, Inc.
175 N. Corporate Drive, Suite 100
Brookfield, WI 53045

RE: Closed Sauk County Landfill

Dear Messrs. Ales and DeMers:

I write to advise you in connection with the closed Sauk County Landfill. Please be advised that I have had a title search conducted, and Mr. John Carroll, Sauk County Solid Waste Manager, contacted Alliant Energy, the power utility in this area. After all legal due diligence, I can state with reasonable certainty that their are no easements that would impact the closed Sauk County Landfill site and impact any aspect of the remediation of the site.

Questions regarding this letter may be addressed to the undersigned.

Sincerely,

Todd J. Liebman
Corporation Counsel

TJL:kk

C: John Carroll, Sauk County Solid Waste Manager

DECLARATION OF RESTRICTION AND COVENANT

In Re: The East one-half of the Southeast Quarter (E 1/2 SE 1/4); in Section Fifteen (15), Township Twelve (12) North, of Range Five (5) East; Sauk County, Wisconsin

STATE OF WISCONSIN)
) ss
COUNTY OF SAUK)

WHEREAS, it is the desire and intention of the property owner to impose on the property restrictions which will make it unnecessary to conduct further remediation activities on the property at the present time;

NOW THEREFORE, the owner hereby declares that all of the property described above is held and shall be held, conveyed or encumbered, leased, rented, used, occupied and improved subject to the following limitation and restrictions:

The following activities are prohibited on that portion of the property described in the attached addendum where a cap or cover has been placed unless prior written approval has been obtained from the Wisconsin Department of Natural Resources or its successor or assign: (1) Excavating or grading of the land surface; (2) Filling on the capped area; (3) Plowing for agricultural cultivation; and (4) Construction or installation of a building or other structure with a foundation that would sit on or placed with the cap or cover

This restriction is hereby declared to be a covenant running with the land and shall be fully binding upon all persons acquiring the above-described property whether by descent, devise, purchase or otherwise. This restriction inures to the benefit of and is enforceable by the Wisconsin Department of Natural Resources, its successor or assign. The Department, its successor or assign, may initiate proceeding at law or in equity against any person or persons violating or proposing to violate this covenant to prevent the proposed violation or to recover damages for such violation.

Any person who is or becomes owner of the property described above may request that the Wisconsin Department of Natural Resources or its successor issue a determination that one or more of the restrictions set forth in this covenant is no longer required. Upon the receipt of such a request, the Wisconsin Department of Natural Resources shall determine whether or not the restriction contained herein can be extinguished.

IN WITNESS WHEREOF, the owner of the property has executed this Declaration of Restriction and Covenant, this 24 day of January, 1996.

By: _____
Roger Shanks, Chairperson
Sauk County Board of Supervisors

Signed under the authority granted in Resolution No: 53 - 94

Attest: _____
Beverly J. Muelke, Clerk
Sauk County

630182
REGISTRAR'S OFFICE
SAUK COUNTY WI
RECEIVED FOR RECORD
AT 10:50 O'CLOCK A M
ON Jan 26 1996
Mary Klingenmeyer
REGISTRAR
Ret: 12.00 Chg.

Drafted by Attorney Todd J. Liebman, Sauk County Corporation Counsel, State Bar #01011733

ADDENDUM

DEED RESTRICTION BOUNDARY DESCRIPTION
SAUK COUNTY LANDFILL

A parcel located in the Northeast Quarter of the Southeast Quarter and the Southeast Quarter of the Southeast Quarter of Section 15, Town 12 North, Range 5 East, Town of Excelsior, Sauk County, Wisconsin, bound by the following described line;

Commencing at the Southeast corner of Section 15, T12N, R5E; Thence N00°36'14"W, 368.29 Feet along the east line of the Southeast Quarter of the Southeast Quarter of Section 15; Thence S 89°59'30"W, 22.82 Feet to the Point of Beginning; Thence S89°59'30"W, 599.96 Feet; Thence N00°00'30"W, 1099.93 Feet; Thence N89°59'30"E, 599.96 Feet; Thence S00°00'30"E, 1099.93 Feet to the Point of Beginning.

Containing 15.15 acres more or less.

Attachment D – Wisconsin Administrative Code Provision Regulating Groundwater Wells

(120) "Well cap or seal" means an approved apparatus or device used to cover the top of a well casing pipe.

(121) "Well casing pipe" means pipe meeting standards specified in s. NR 812.17 which is driven or set to seal off the vertical zone of contamination.

(122) "Well constructor" means any person, firm or corporation that constructs a well which is not required to be constructed by a licensed well driller.

(123) "Well driller" has the meaning as designated in ch. 280, Stats.

(124) "Well drilling" has the meaning designated in ch. 280, Stats., and includes any activity which requires the use of a well drilling rig or similar equipment, any activity which changes the character of a drilled well or which is conducted using a well drilling rig or similar equipment with the exception of the driving of points. Well drilling includes constructing, reconstructing or deepening a well, installation of a liner, installing or replacing a screen, well rehabilitation, hydrofracturing, blasting and chemical conditioning.

(125) "Well-point driving" means constructing a well by joining a drive point screen with lengths of pipe and driving the assembly into the ground with percussion equipment or by hand, but without removing material from a drillhole more than 10 feet below the ground surface.

(126) "Well vent" means a screened opening in a well seal to allow atmospheric pressure to be maintained in the well.

(127) "Well yield" means the quantity of water which may flow or be pumped from the well per unit of time.

(128) "Zone of saturation" means that part of the earth's crust beneath the shallowest water table in which all voids are filled with water under pressure greater than atmospheric.

History: Cr. Register, January, 1991, No. 421, eff. 2–1–91; am. (3), (4), (48), (61m), (74) (b), (79), (81), (82), (107) and (119), cr. (27m) (30f), (30m), (30t), (30x), (72m), (79m), (97m) and (110m), renum. (36) and (39) to be (61q) and (61u) and am. Register, September, 1994, No. 465, eff. 10–1–94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; correction in (29), (30) and (79m) made under s. 13.93 (2m) (b) 6. and 7., Stats., Register, September, 1996, No. 489; corrections in (50), (81), (97), (123) and (124) made under s. 13.93 (2m) (b) 7., Stats., Register, December, 1998, No. 516; correction in (71) made under s. 13.93 (2m) (b) 7., Stats., Register July 2002 No. 559; **CR 05–020: cr. (24m) and (57w) Register January 2006 No. 601, eff. 2–1–06; corrections in (28) and (56) made under s. 13.92 (2m) (b) 6. and 7., Stats.**

NR 812.08 Well, reservoir and spring location. **(1)** GENERAL. Any potable or nonpotable well or reservoir shall be located:

(a) So the well and its surroundings can be kept in a sanitary condition.

(b) At the highest point on the property consistent with the general layout and surroundings if reasonably possible, but in any case protected against surface water flow and flooding and not downslope from a contamination source on the property or on an adjacent property regardless of what was installed first, the well or the contamination source. When a contamination source is installed upslope from a well in violation of this section after the well construction has been completed, the violation is not the responsibility of the well driller, except if the well driller knew or should have known of the proposed upslope installation of the contamination source. When there is no location on the property where this requirement can be met, a well may be constructed without a variance if it is constructed with a minimum of 20 or more feet of well casing pipe than is required by ss. NR 812.12 and 812.13 and Tables I and II or with a minimum of 60 feet of well casing pipe provided that the minimum well casing pipe depth requirements of s. NR 812.12 or 812.13 and Table I or II are met. This exception does not apply to high capacity, school or wastewater treatment plant wells. A well or reservoir is located downslope from a contamination source, regardless of the presence or absence of a structure between the well and the contamination source, if:

1. The ground surface elevation at the well or reservoir is lower than the elevation at the contamination source, and

2. Surface water that washes over the contamination source would travel within eight feet of the well or reservoir, or over the well or reservoir.

(c) As far away from any known or possible source of contamination as the general layout of the premises and the surroundings allow.

Note: Section PSC 114.234 C8 requires that a horizontal clearance of at least 3/4 of the vertical clearance of the conductors, including overhead power lines to the ground required by Rule 232 shall be maintained between open conductors and wells. Persons installing wells must comply with this requirement.

(d) Such that any potential contaminant source, not identified in this section or in Table A, is a minimum of 8 feet from the well or reservoir.

(e) Every well shall be located so that it is reasonably accessible with proper equipment for cleaning, treatment, repair, testing, inspection and any other maintenance that may be necessary.

(2) RELATION TO BUILDINGS. In relation to buildings, the location of any potable or nonpotable well shall be as follows:

(a) When a well is located outside and adjacent to a building, it shall be located so that the center line of the well extended vertically will clear any projection from the building by not less than 2 feet and so that the top of the well casing pipe extends at least 12 inches above the final established ground grade.

(b) When a structure is built over a drilled well, it shall have an access hatch or removable hatch, or provide other access to allow for pulling of the pump. The well casing pipe shall extend at least 12 inches above the floor and be sealed watertight at the point where it extends through the floor.

(c) No well may be located, nor a building constructed, such that the well casing pipe will terminate in or extend through the basement of any building or terminate under the floor of a building having no basement. The top of a well casing pipe may terminate in a walkout basement meeting the criteria of s. NR 812.42 (9) (b) 1. to 4. A well may not terminate in or extend through a crawl space having a below ground grade depression or excavation.

(3) RELATION TO FLOODPLAINS. (a) A potable or nonpotable well may be constructed, reconstructed or replaced in a floodfringe provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site.

(b) A well may be reconstructed or replaced in a floodway provided that the top of the well is terminated at least 2 feet above the regional flood elevation for the well site.

(c) A well may not be constructed on a floodway property that is either undeveloped or has building structures but no existing well.

(d) The regional flood elevation may be obtained from the department.

(4) RELATION TO CONTAMINATION SOURCES. Minimum separating distances between any new potable or nonpotable well, reservoir or spring and existing sources of contamination; or between new sources of contamination and existing potable or nonpotable wells, reservoirs or springs shall be maintained as described in this subsection. The minimum separating distances of this subsection do not apply to dewatering wells approved under s. NR 812.09 (4) (a). Greater separation distances may be required for wells requiring plan approval under s. NR 812.09. Separation distance requirements to possible sources of contamination will not be waived because of property lines. Minimum separating distances are listed in Table A and are as follows:

(a) Eight feet between a well or reservoir and a:

1. Buried gravity flow sanitary or storm building drain having pipe conforming to ch. Comm 84;

2. Buried gravity flow sanitary or storm building sewer having pipe conforming to ch. Comm 84;

3. Watertight clear water waste sump;

4. Buried clear water waste drain having pipe conforming to ch. Comm 84;

5. Buried gravity flow foundation drain;

6. Rainwater downspout outlet;

7. Cistern;

8. Buried building foundation drain connected to a clear water waste drain or other subsoil drain;

9. Noncomplying pit, subsurface pumproom, alcove, or reservoir;

10. Nonpotable well;

11. Fertilizer or pesticide storage tank with a capacity of less than 1,500 gallons, but only when the well is nonpotable;

Note: For potable wells see par. (d) 1.

12. Plastic silage storage and transfer tube;

13. Yard hydrant;

14. Swimming pool, measured to the nearest edge of the water; or

15. Dog or other small pet house, animal shelter or kennel housing not more than 3 adult pets on a residential lot.

(b) Twenty–five feet between a well or reservoir and a:

1. Buried grease interceptor or trap;

2. Septic tank;

3. Holding tank;

4. Buried building drain or building sewer having pipe not conforming to ch. Comm 84, wastewater sump, or non–watertight clear water waste sumps,

5. Buried pressurized sanitary building sewer having pipe conforming to ch. Comm 84;

6. Buried gravity manure sewer;

7. Lake, river, stream, ditch or stormwater detention pond or basin measured to the regional high water elevation in the case of a lake or stormwater detention pond, to the edge of the floodway in the case of a river or stream or to the edge in the case of a ditch or stormwater detention basin;

9. Liquid–tight barn gutter;

10. Animal barn pen with concrete floor;

11. Buried pressurized sewer pipe conveying manure provided that the pipe meets ASTM specification D–2241, with standard dimension ratio of 21 or less or pressure pipe meeting the requirements of s. NR 110.13 (6) (f) or 811.62.

Note: There is no NR 110.13 (6) (f).

12. Buried fuel oil tanks serving single family residences, including any associated buried piping;

13. Discharge to ground from a water treatment device;

14. Vertical shaft installed below grade used for intake of air for a heating or air conditioning system; or

15. Buried sanitary or storm collector sewer serving 4 or fewer living units or having a diameter of 6 inches or less.

(c) Fifty feet between a well or reservoir and a:

1. Soil absorption unit receiving less than 8,000 gallons/day, existing, abandoned or alternate, but not including a school soil absorption unit;

Note: For school soil absorption units see par. (ee); for soil absorption units receiving more than 8,000 gallons/day see par. (f) 3.

2. Privy;

3. Pet waste pit disposal unit;

4. Animal shelter;

5. Animal yard;

6. Silo;

7. Buried sewer used to convey manure having pipe conforming to ch. Comm 84 that does not meet the specifications in par. (b);

8. Liquid tight manure hopper or reception tank;

9. Filter strip;

10. Buried sanitary or storm collector sewer serving more than 4 living units or larger than 6 inches in diameter except that wells may be located or sewers installed such that a well is less than 50 feet, but at least 25 feet, from gravity collector sewers smaller than 16 inches in diameter or from force main collector sewers 4 inches or smaller in diameter provided that within a 50–foot radius of the well the installed sewer pipe meets the allowable leakage requirements of AWWA C600 and the requirements for water main equivalent type pipe as follows:

a. For sewers $\geq 4''$ diameter, but $< 16''$ diameter: PVC pipe $> 4''$ diameter, but $< 12''$ diameter shall meet AWWA C900 with elastomeric joints having a standard dimension ratio of 18 or less; PVC pipe $> 12''$ diameter, but $< 16''$ diameter shall meet AWWA C905 with elastomeric joints having a standard dimension ratio of 18 or less; Ductile iron pipe shall meet AWWA C115 or AWWA C151 having a thickness class 50 or more.

b. For sewers $< 3''$ diameter, the pipe shall be any rigid pipe in the ch. Comm 84 "Table for Pipe and Tubing for Water Services and Private Water Mains," including approved ABS, brass, cast iron, CPVC, copper (not including type M copper) ductile iron, galvanized steel, polybutylene (PB), polyethylene (PE), PVC, or stainless steel pipe.

11. An influent sewer to a wastewater treatment plant;

12. The nearest existing or future grave site in cemeteries;

13. Wastewater treatment plant effluent pipe;

14. Buried pressurized sewer having pipe not conforming to ch. Comm 84; or

15. Manure loading area.

Note: The minimum separating distance between a well or reservoir and a lift station is based on the presence of a sewer force main at the lift station.

(d) One hundred feet between a well or reservoir and a:

1. Bulk surface storage tank with a capacity greater than 1,500 gallons or any bulk buried storage tank regardless of capacity, including, for both surface or buried tanks, associated buried piping for any solid, semi–solid or liquid product but not including those regulated under par. (b) 12. This subdivision includes, but is not limited to petroleum product tanks, waste oil tanks and pesticide or fertilizer storage tanks not regulated under par. (a) 11. This subdivision does not include septic, holding and manure reception tanks, or liquified petroleum gas tanks as specified in ch. Comm 11.

Note: Chapters Comm 11, 12 and as they existed on October 31, 1999 were repealed and a new chapter Comm 40 was created effective November 1, 1999.

2. Liquid–tight, fabricated manure or silage storage structure, in ground or at ground surface;

3. Wastewater treatment plant structure, conveyance or treatment unit; or

4. Dry fertilizer or pesticide storage building or area when more than 100 pounds of either or both materials are stored;

5. Well, drillhole or water system used for the underground placement of any waste, surface or subsurface water or any substance as defined in s. 160.01 (8), Stats.;

6. Stormwater infiltration basin;

7. Uncovered storage of silage on the ground surface;

8. Water–tight silage storage trench or pit; or

9. Lift station.

(e) Two hundred feet between a school well and a soil absorption unit receiving less than 8,000 gallons per day, existing or abandoned.

(ee) One hundred fifty feet between a well or reservoir and a temporary manure stack.

(f) Two hundred fifty feet between a well or reservoir and a:

1. Manure stack.

2. Earthen or excavated manure storage structure.

Note: Variances from the separating distances may be granted as specified in s. NR 812.43 for earthen storage and manure stacks constructed and maintained to the specifications of Soil Conservation Standards No. 425 or 312, respectively.

3. Soil absorption unit receiving 8,000 or more gallons per day, existing, abandoned, or alternate.

4. Sludge landspreading or drying area.

5. An earthen silage storage trench or pit.

6. Liquid waste disposal system including, but not limited to a treatment pond or lagoon, ridge and furrow system and spray irrigation system.

Note: Variance from this separating distance may be granted for treatment ponds or lagoons constructed and maintained to an approval granted under ch. NR 213.

7. Salvage yard.

8. A salt or deicing material storage area including the building structure and the surrounding area where the material is transferred to vehicles. This subdivision does not include bagged deicing material.

9. Solid waste processing facility.

10. Solid waste transfer facility.

11. The boundaries of a landspreading facility for spreading of petroleum-contaminated soil regulated under ch. NR 718 while that facility is in operation.

(g) Twelve hundred feet between a well or reservoir and:

1. The nearest edge of the limits of filling of an existing, proposed or abandoned landfill, measured to the nearest fill area of abandoned landfills, if known. Otherwise measured to the nearest property line where the landfill is located. The department may require, as part of a variance request, a land survey map, a scaled diagram of the landfill and the well location, or another accurate measurement method to determine and demonstrate the distance between the landfill and the well;

2. The nearest edge of a coal storage area in excess of 500 tons; or

3. A hazardous waste treatment facility regulated by the department.

TABLE A

MINIMUM SEPARATION DISTANCE REQUIREMENTS BETWEEN POTABLE OR NONPOTABLE WELLS, RESERVOIRS, SPRINGS AND POSSIBLE SOURCES OF CONTAMINATION

New installations shall meet the separation requirements in the far-right column. Existing installations shall meet the separation requirements in effect at the time of construction, those in effect at the time of installation of the possible source of contamination, if later, or to the requirements adopted on October 1, 1994.

Source	Prior to[a] Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1991	Feb. 1991 to Oct. 1994	After Oct. 1994
Absorption Unit (field), soil	50′	50′	50′	50′	50′
Air shaft–heating/air conditioning (Vertical, Below grade)	None	None	None	None	25′
Animal Barn Pen with Concrete	None**	25′	25′	25′	25′
Floor	(25/20)**				
Animal Shelter (not including small	None**	50′	50′	50′	50′
pet shelter housing 3 or fewer	(50/25)**				
adult pets)					
Animal Yard—Includes Calf Hutch (but not residential lot dog kennel enclosing 3 or fewer adult pets)	None**	50′	50′	50′	50′
Barn Gutter—Liquid-Tight	None**	25′	25′	25′	25′
	(25/18)**				
Building Overhang (from centerline of well)	2′	2′	2′	2′	2′
Cemetery Grave Sites	None*	100′	100′	50′	50′
Cistern	10′	10′	10′	8′	8′
Coal Storage (greater than 500 tons)	None*	None*	None*	1,200′	1,200′
Composting Site (See Solid Waste Processing Facility)	None	None	None	None	250′
Discharge to ground from a Water Treatment Device	None	None	None	25′	25′
Ditch–Edge of	None	None	None	None	25′
Doghouse or kennel housing 3 or fewer adult pets on residential lot	None	None	None	50′	8′
Downspout Outlet	10′	10′	10′	8′	8′
Drain–Sewerage (having pipe conforming to ch. Comm 84) (Buried)	10′	8′	8′	8′	8′
Drain–Sewerage (not having pipe conforming to ch Comm 84) (Buried)	10′	25′	25′	25′	25′
Drain (any material) (Buried)					
Clear Water Waste	10′	10′	10′	8′	8′
Building–Foundation	10′	10′	10′	8′	8′
Building–Foundation—Sewer Connected	15′	15′	15′	8′	8′
Drillhole used for the underground placement of any waste, surface water or any substance as defined in s 160.01 (8), Stats.	None	None	None	None	100′
Fertilizer or Pesticide, any size Storage Tank (Buried tank or surface tank > 1,500 gal.)	None	None	None	100′	100′
Filter Strip	None	None	None	50′	50′
Fuel Oil Tank—Buried	None*	100′ (25′ Allowed for Private Res. Lots Only)	100′ (25′ Allowed for Private Res. Lots Only)	100′ (Including any associated buried piping) (25′ allowed for those serving single family residences)	100′ (Including any associated buried piping) (25′ allowed for those serving single family residences)
Fuel Oil Tank—Surface	None*	None*	None*	100′	100′
(>1,500 gallons) (including any associated buried piping)					
Fertilizer or Pesticide (Dry) Storage Area or Building (more than100 pounds)	None	None	None	None	100′
Gasoline or Other Petroleum or Liquid Product Tank — Buried (not including L.P. tanks)	None*	100′	100′	100′ (Including any associated buried piping)	100′ (Including any associated buried piping)
Gasoline or Other Petroleum or Liquid Product Tank—Surface (>1,500 gallons including any associated buried piping)	None*	None*	None*	100′	100′
Glass Lined Feed Storage Facility (Harvestor-Type Silos)	None**	25′	25′	50′	50′

Source	Prior to[a] Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1991	Feb. 1991 to Oct. 1994	After Oct. 1994
Grease Interceptor Trap) (Buried)	25′	25′	25′	25′	25′
Hazardous Waste Treatment Facility Regulated by DNR	None*	None*	None*	1,200′	1,200′
Holding Tank (Sewage)	None	25′	25′	25′	25′
Infiltration basin, Stormwater	None	None	None	None	100′
Kennel on residential lot enclosing 3 or fewer adult pets	None	None	None	50′	8′
Kennel, other than above	None	None	None	50′	50′
Lagoon, Treatment (See liquid waste disposal system)	—	—	—	—	—
Lake Shoreline (Measured to the edge of the floodway	None*	25′	25′ (60′ For Schools and High Cap. Wells)	25′	25′
Landfills (existing, proposed or abandoned) (Distance to Nearest Fill Area of abandoned landfills if Known; *Otherwise to the Property Line*)	None*	400 yards	400 yards	1,200′	1,200′
Lift Station##				##	100′
Liquid Waste Disposal System	None	250′	250′–300′	250′#	250′#
Manure Hopper or Reception Tank—Liquid-Tight	None*	75′	75′–150′	50′	50′
Manure Loading Area	None	None	None	None	50′
Manure Stack	None*	100′	100′–175′	250′***	250′***
Manure Stack—Temporary	None	100′	100′	250′	150′
Manure—Storage Structure (Earthen, Excavated or Non-liquid tight)	None*	250′	250′–300′	250′***	250′***
Manure Storage Structure (Fabricated, Liquid-Tight)	None*	100′	100′–175′	100′	100′
Manure—Storage Basin—Liquid-Tight Concrete Floor with an Acceptable Drainage Facility	None*	100′	150′–300′	Now in category of Manure Storage Structure	Now in category of Manure Storage Structure
Mound System (Measured to the toe of the mound)	50′	50′	50′	50′	50′
Nonpotable Well	None*	None*	None*	8′	8′
Pesticide or Fertilizer (Dry) Storage Area or Building (*More than 100 Pounds*)	None	None	None	None	100′
Pesticide or Fertilizer Storage Tank (not buried)—less than 1,500 gallons (distance only for nonpotable wells)	None	None	None	8′	8′
Pesticide or Fertilizer Storage Tank—Buried tank, any size, or surface tank >1,500 gal.)	None	None	None	100′	100′
Pet Waste Pit Disposal Unit	None*	50′	50′	50′	50′
Pits—Noncomplying	None	10′	10′ (20′ For Schools, WWTP's, and High Capacity–Including Approved Pits)	8′	8′
Plastic Silage Storage and Transfer Tube	None	None	None	8′	8′
Pond, Stormwater detention (Edge of)	None	None	None	None	25′
Pond, treatment (See liquid waste, disposal system)					
Privy	50′ (Sewage Disposal Units)	50′	50′	50′	50′
Quarry (See s. NR 812.12 (16) for well casing depth requirements for wells within 1,200 feet of a quarry.)					
Reservoir—Noncomplying	10′ (Cistern)	10′	10′	8′	8′
Ridge and Furrow System (See liquid waste disposal system)					
River or Stream Edge (Measured to the edge of the floodway)	None*	25′	25′ (*60′ For Schools and* High Cap. Wells)	25′	25′
Salt or Deicing Material Storage Area (Including structure and area surrounding where material is transferred to vehicles)	None*	None*	None*	250′	250′
Salvage Yard	None*	None*	None*	250′	250′
Septic Tank	25′	25′	25′	25′	25′
Sewer (ch. Comm 84 Materials) (Buried)					
– Manure Gravity	8′	8′	8′	25′	25′
– Manure Pressurized	8′	8′	25′	25′	25′
– Sanitary or Storm Building/Gravity	8′	8′	8′	8′	8′

Source	Prior to Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1994	Feb. 1991 to Oct. 1994	After Oct. 1994
—Sanitary Building/Pressurized	8′	25′	25′	25′	25′
—Sanitary Collector (Serving ≤ 4 living units or ≤ 6″ diameter)	8′	50′	50′·	50′·	25′
—Sanitary Collector (Serving > 4 living units or > 6″ diameter)	8′	50′	50′·	50′·	50′·
—Influent	50′	50′	50′	50′	50′
—Storm Collector (≤ 6″ diameter)	8′	50′	50′	50′	25′
—Storm Collector (> 6″ diameter)	8′	50′	50′	50′	50′·
Sewer (not ch. ILHR 84 Materials) (Buried)					
—Manure/Gravity	25′	25′	25′	25′	25′
—Manure/Pressurized	25′	50′	50′	50′	50′
—Sanitary Building/gravity	25′	25′	25′	25′	25′
—Sanitary Building/Pressurized	25′	25′	25′	25′	50′
—Storm Building	25′	25′	25′	25′	8′
—Sanitary Collector	50′	50′	50′	50′	50′
—Storm Collector	25′	50′	50′	50′	50′
—Influent	50′	50′	50′	50′	50′
Shoreline—Lake, River or Stream (Measured as indicated in sub. (4) (b) 7.)	None*	25′	25′ (60′ For Schools and High Capacity Wells)	25′	25′
Silage Storage, Earthen Trench or Pit	None*	100′	100′- 175′	250′	250′
Silage Storage Structure (Fabricated liquid-tight) (In-ground or surface)	None	None	None	None	100′
Silage Storage—Surface, Uncovered	None	None	None	None	100′
Silage Storage Tube (Plastic)	None	None	None	8′	8′
Silo With Pit	None**	50′	50′	50′	50′
Silo Without Pit But With Concrete Floor and Drain	None**	25′	25′	50′	50′
Single application landspreading of petroleum-contaminated soil					250′
Sludge Landspreading or Drying	None*	200′	200′	250′	250′
Soil Absorption Unit (< 8,000 gal/day, includes alternate unit)	50′	50′	50′ (200′ for schools as of 1978)	50′ (200′ for schools)	50′ (200′ for schools)
Soil Absorption Unit (≥ 8,000 gal/day, existing or abandoned)	50′	50′	50′ (200′ for schools as of 1978)	250′	250′
Solid Waste Processing Facility (Including composting facilities)	None	None	None	None	250′
Solid Waste Site (Distance to Nearest Fill Area or Proposed Fill Area If Known; Otherwise to the Property Line)	None	400 yards	400 yards	1,200′	1,200′
Solid Waste Transfer Facility	None	None	None	None	250′
Spray Irrigation Waste Disposal Site (See liquid waste disposal system)					
Stormwater detention pond or basin	None	None	None	None	25′
Stormwater infiltration basin	None	None	None	None	100′
Sump—Watertight clear water	None	None	None	8′	8′
Sump—Wastewater (Watertight) (form. cast-iron equiv.)	None*	8′	8′	25′	25′
Sump—Wastewater (not watertight or equiv. to cast iron)	None*	25′	25′	25′	25′
Swimming Pool (from edge of water)	None*	25′ (Below ground)	25′ (Below ground)	25′ (Below ground)	8′ (above or below ground)
Temporary Manure Stack	None	100′	100′	250′	150′
Wastewater Treatment Plant Effluent Pipe	None	None	None	50′	50′
Wastewater Treatment Plant Structure, Conveyance or Treatment Unit	None*	None	150′	100′	100′

Source	Prior to[a] Oct. 1975	Oct. 1975 to Oct. 1981	Oct. 1981 to Jan. 1991	Feb. 1991 to Oct. 1994	After Oct. 1994
Well approved for underground placement of any waste, surface water or any substance as defined in s. 160.01, Stats.	None	None	None	None	100′
Yard hydrant	None	10′	10′	8′	8′

The minimum separating distance between a well and a collector sewer serving more than 4 living units or larger than 6 inch diameter is 50 feet regardless of whether the well or the sewer was installed first. However for such sewers less than 16–inch diameter, wells may be located or sewers installed such that a well is less than 50 feet, but at least 25 feet from gravity collector sewers smaller than 16 inches in diameter or from force main collector sewers 4 inches or smaller in diameter provided that within a 50–foot radius of the well the installed sewer pipe meets the allowable leakage requirements of AWWA C600 and the requirements for water–main equivalent type pipe as follows:

—For sewers ≥ 4″ diameter, but < 16″ diameter:

PVC pipe 4″ diameter, but ≤ 12″ diameter shall meet AWWA C900 with elastomeric joints having a standard dimension ratio of 18 or less;

PVC pipe > 12″ diameter, but < 16″ diameter shall meet AWWA C905 with elastomeric joints having a standard dimension ratio of 18 or less.

Ductile iron pipe shall meet AWWA C115 or AWWA C151 having a thickness class 50 or more.

—For sewers < 4″ diameter, the pipe shall be any rigid pipe in the ch. Comm 84 "Table for Pipe and Tubing for Water Services and Private Water Mains," including approved ABS, brass, cast iron, CPVC, copper, (not including type M copper), ductile iron, galvanized steel, polybutylene (PB), polyethylene (PE), PVC, or stainless steel pipe.

*"None" Although there were no minimum separation distances required by the code between these possible sources of contamination and a well or reservoir prior to 1978, and in some cases, prior to 1981, it is strongly recommended that the present standard minimum separation distance requirements be met whenever possible.

** Distances were developed under the Public Health Service Grade A Milk Ordinance and have been used by the department of agriculture, trade and consumer protection field inspectors.

** Variances from these separating distances may be granted for earthen manure storage and temporary manure stacks meeting specifications of Soil Conservation Service Standards No. 425 and 312, respectively.

#Variances from this minimum separating distance may be granted for treatment ponds or for storage or treatment lagoons constructed and maintained to the requirements of an approval granted under ch. NR 213.

After Feb. 1, 1991 and prior to October 1, 1994 the minimum separating distance between a well or reservoir and a lift station is based on the presence of a sewer force main at the lift station.

[a] There are several code revisions prior to 1975. The dates of these revisions and the minimum separating distances were as follows:

Source	April 24, 1936	March 1939	July 1951	April 10, 1953	May 1, 1971
Building Overhang	2′	2′	2′	2′	2′
Cistern	None	None	10′	10′	10′
Downspout	None	None	10′	10′	10′
Drain					
— Building Foundation	10′	10′	10′	10′	10′
— Sewer Connected Building Foundation	10′	10′	15′	15′	15′
— Clear Water	None	None	10′	10′	10′
— Cast Iron (With Lead Joints)	10′	10′	10′	10′	10′
Grease Trap (Watertight)	None	None	25′	25′	25′
Septic Tank	None	None	25′	25′	25′
Sewage Disposal Unit (Absorption Field)	None	None	50′	50′	50′
Sewer					
— Cast Iron (With Lead Joints)	10′	10′	8′	8′	8′
— Not Cast Iron or equivalent	25′	25′	25′	25′	25′

History: Cr. Register, January, 1991, No. 421, eff. 2–1–91; am. (1) (b) 1., (2) (a) to (c), (4) (a) 5., 9., 12. and 13., (b) 1., 5., 7., 11. and 13., (c) 10. to 13., (d) 1. to 3., (f) 6. to 8., (g) 1. and Table A, cr. (1) (c), (4) (a) 14. and 15., (b) 14. and 15., (c) 14. and 15., (d) 4. to 9. and (ee), r. (4) (b) 8., Register, September, 1994, No. 465, eff. 10–1–94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; correction in (4) (d) 1. made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1996, No. 489; cr. (4) (f) 11., am. Table A, Register, December, 1998, No. 516, eff. 1–1–99; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, December, 1998, No. 516; **CR 05–020: am. (4) (g) 1. Register January 2006 No. 601, eff. 2–1–06.**

NR 812.09 Department approvals. (1) REVIEW PERIOD. Unless another time period is specified by law, the department shall complete its review and make a determination on all applications for licenses or approvals within 65 business days after receipt of a complete application. Incomplete applications will be returned. The start of the 65 day review period will not begin until a complete application is received by the department. All requests for approval shall be in writing, except that for situations that require immediate response, an approval may be requested verbally and an advanced verbal approval may be granted by the department and followed up with a written confirmation.

(2) APPROVAL APPLICATION AND SUBMISSION. The property owner or lessee shall obtain a written approval from the department. When an application is submitted by someone other than the owner of the subject property, the owner or authorized agent shall sign the application. Application information, outlines or forms may be obtained from the department. Applications shall provide information regarding the owner's and operator's name, address and firm name, if applicable, and any other information requested by the department. The department may request, but is not limited to descriptions or sketches of well construction, geology, pump installation, plumbing, possible contamination sources, property boundary, water use and, water sample results, depending on the type of application.

(3) PLANS AND SPECIFICATION PREPARATION. Plans and specifications for a school water system shall be submitted by a registered professional engineer or well driller for wells, and by a registered professional engineer or pump installer for pumps,

discharge piping, storage tanks and controls. Plans and specifications for a wastewater treatment plant water system shall be submitted by a registered professional engineer, by a well driller for the well or a pump installer for the pump. If construction or installation of a water system described in this subsection has not commenced within 2 years of approval date, the approval is void.

(4) APPROVALS REQUIRED. Prior department approval is required for the activities described in this subsection. When deemed necessary and appropriate for the protection of public safety, safe drinking water and the groundwater resource, the department may specify more stringent well location, well construction or pump installation specifications for existing and proposed high capacity, school or wastewater treatment plant water systems requiring approval by this subsection or water systems approved by variance. Approval by the department does not relieve any person of any liability which may result from injury or damage suffered by any other person. In addition, failure to comply with any condition of an approval or the construction, reconstruction or operation of any well or water system in violation of any statute, rule or department order shall void the approval. Approval is required for:

(a) The construction, reconstruction, or operation of a high capacity well or well system, including dewatering wells. An application for a high capacity well or well system approval shall include, for every well, the location, construction or reconstruction features, pump installation features, the proposed rate of operation and the distance to nearby public utility wells, as defined in s. 196.01, Stats.

1. The department may deny approval, grant a limited approval or modify an approval under which the location, depth, pumping capacity or rate of flow and ultimate use is restricted so that the supply of water for any public utility, as defined by s. 196.01, Stats., will not be impaired. Reduced availability of groundwater to a public utility well may be indicated when calculations using estimated values for aquifer characteristics result in 10 or more feet of water level drawdown in the public utility well based on 30 days of continuous pumping from the proposed high capacity well or well system. The department may also deny approval or condition an approval if the proposed or actual well location, well construction or pump installation features or the use of the well does not meet, at the time of application, the specifications of this chapter for new well construction and pump installation or water use.

2. When an owner or operator relinquishes control of the operation of a high capacity well or well system, a new approval shall be obtained by the new operator, owner or lessee before operation of the high capacity well or well system is continued.

3. The owner or operator of a high capacity well or well system shall submit pumpage and well water level reports to the department on department forms at the time periods indicated by the department.

4. Emergency approval for a high capacity well or well system may be granted when fire hazard, imminent crop damage or other similar emergency requires if the department determines that the high capacity well or well system proposed will not adversely affect or reduce the availability of water to a public utility, as defined in s. 196.01, Stats.

5. High capacity test drillholes may be constructed without approval to test for aquifer yield to determine if a high capacity well or well system is feasible. The well casing pipe for such test drillholes shall not exceed 6-inch diameter unless the well driller notifies the department. High capacity test drillholes may be test pumped at a rate of 70 gallons per minute or more if the test does not last more than a total of 72 hours. After testing, the drillhole shall be abandoned according to the requirements of s. NR 812.26 or shall be converted, with approval, to a high capacity well or well system which meets the requirements of this chapter or ch. NR 811 and of any approved plans and specifications.

Note: *State v. Michels Pipeline Construction, Inc.*, 63 Wis.2d 278, 217 N.W.2d 339 (1974) established that the doctrine of reasonable use applies to property rights in groundwater. Persons adversely affected by the operation of a high capacity well or well system may take action against the operator or owner of the high capacity well or well system.

(b) The construction, reconstruction or operation of a school or wastewater treatment plant well or water system.

(c) Installation of water treatment devices or chemical addition to a well or water system as specified in s. NR 812.37.

(d) A variance from any provision of this chapter.

(e) The construction of a granite or other crystalline bedrock well with less than 40 feet of well casing pipe.

(f) The construction or reconstruction of a well located in designated special well casing pipe depth areas.

Note: A list of these special well casing pipe depth areas is available from the department.

(g) The construction of a well open to both an unconsolidated formation and a bedrock formation.

(h) The use of the Halliburton grouting methods or the grout displacement grouting method as described in s. NR 812.20 (3) (e), (f) and (g) for wells when the upper enlarged drillhole is more than 200 feet deep or when drilling mud or bentonite slurry has not been circulated up to the ground surface in the annular space prior to grouting.

(i) The development of a spring for use as a potable water supply as provided in s. NR 812.25.

(j) The construction or reconstruction of a pit as provided in s. NR 812.36 or in s. NR 812.42 (2).

(k) The installation of a hung well casing pipe or a hung liner.

(L) The use of well drilling aids and additives, grout, sealing or or well abandonment materials and additives and well rehabilitation materials.

(m) The construction or reconstruction of a dug well as provided in s. NR 812.24.

(n) Well casing pipe testing procedures.

(o) The use of pitless adapters, pitless units, above ground discharge units, vermin-proof caps and seals and any treatment equipment to be installed directly in a well. The department may prohibit the use of any water supply equipment if the department finds there is substantial evidence that the equipment poses a significant hazard to safe drinking water or the groundwater. The department shall state its findings and conclusions in writing to the manufacturer, the licensed well drillers or pump installers, or both, and the industry representatives including the Wisconsin Water Well Association and the Wisconsin Pump and Well Suppliers Association. The effective date of the prohibition will have a 6 month delay for any well casing pipe product or a 12 month delay for other water supply equipment.

(p) The installation of a pressure tank with a volume greater than 1,000 gallons.

(q) The installation of a heat exchange or cathodic protection drillhole.

(r) The continued operation of a well or drillhole that meets the criteria in s. NR 812.26 (2) that requires permanent abandonment of the well or drillhole.

(s) The development of surface water for use as a potable water supply.

(t) Noncontinuous-slot well screens as specified in s. NR 812.13 (1) (e).

(v) The use of a nonpressure storage vessel other than a surge tank.

(w) The construction or reconstruction of a well on a property that is listed on the department's geographic information system registry of closed remediation sites.

Note: The Department of Natural Resource's GIS Registry of Closed Remediation Sites can be found at http://www.dnr.state.wi.us/org/aw/rr on the DNR's internet site. Information that appears on the GIS Registry of Closed Remediation Sites can also be accessed by calling the nearest regional DNR office.

(5) APPROVAL VERIFICATION. A well driller, well constructor, pump installer or contractor shall obtain a copy of the approval for any activity identified in sub. (4) prior to the initiation of any work on a well, pump installation or water system. When necessary and appropriate the department may grant a verbal approval to a well driller, pump installer or contractor to initiate an activity before obtaining a written copy of the approval provided the conditions of the approval are complied with.

(6) PERMIT VERIFICATION. A well driller, well constructor, pump installer or contractor shall obtain required permits from counties authorized to administer this chapter under ch. NR 845.

History: Cr. Register, January, 1991, No. 421, eff. 2–1–91; am. (4) (intro.), (a) 1., (4) (d), (5) and (6); cr. (4) (u) and (v), Register, September, 1994, No. 465, eff. 10–1–94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; r. (4) (u), Register, September, 1996, No. 489, eff. 10–1–96; CR 00–111: cr. (4) (w), Register October 2001 No. 550, eff. 11–1–01; correction to (6) made under s. 13.93 (2m) (b) 7., Stats., July 2002 No. 559.

Subchapter II — New Well Construction and Reconstruction

NR 812.10 Well driller and well constructor requirements. (1) LICENSE. Well drillers shall hold a valid Wisconsin well drilling license. The name of the well driller and the well drilling license number shall be displayed on all well drilling rigs used in the construction of wells. The letters and numbers shall be at least 2 inches in height with at least 1/4 inch wide brush stroke. The identification shall have a sharp color contrast with the background on which it is applied. The identification shall remain legible.

(2) LOCATION. Well drillers and well constructors shall be responsible for proper location of a well. Wells shall be located in sanitary locations and meet the separation requirements specified in s. NR 812.08. Separation distance requirements to possible sources of contamination will not be waived because of property lines. Wells may not be constructed within 1,200 feet of a landfill site without a variance. Variances from location requirements require approval. Well drillers and well constructors shall contact the diggers hotline not less than 3 business days prior to constructing or reconstructing a well on a property. If the property is located within the service area of a municipally owned water system, the well driller or well constructor shall contact the department before constructing or reconstructing a well, to determine if the property on which the well is or will be located is listed on the department's geographic information system registry of closed remediation sites.

Note: The Department of Natural Resource's GIS Registry of Closed Remediation Sites can be found at: http://www.dnr.state.wi.us/org/aw/rr on the DNR's internet site. Information that appears on the GIS Registry of Closed Remediation Sites can also be accessed by calling the nearest regional DNR office.

(3) EQUIPMENT AND MATERIALS. Well drillers and well constructors shall be adequately equipped to comply with the well construction requirements of ss. NR 812.11 to 812.16 and Tables I–IV. All materials installed in a well shall be new, unused and approved for use, except as specified in s. NR 812.26 (5). The department may prohibit the use of any material or equipment that poses a significant hazard to public health, safe drinking water or groundwater.

(4) CONSTRUCTION METHODS. Well drillers and well constructors shall comply with this chapter in the construction and reconstruction of all wells. Adequate protection shall be provided for the top of the drillhole and the top of the well casing pipe to prevent surface contamination from entering the well during the drilling operation and when the driller is not at the drilling site. Well construction methods are depicted in figures 51 to 75.

(5) SPECIAL CASING AREAS. Well drillers and well constructors shall comply with the well casing pipe depth requirements in special well casing pipe depth areas established by the department where aquifers have been contaminated or in other special areas. A list of the special well casing pipe depth areas and the special casing pipe depth requirements may be obtained from the department.

Note: In some of these special casing areas, wells are approved by the department on a case by case basis. There are other areas where special well construction requirements are necessary. These areas include sites on the department's geographic information system registry of closed remediation sites, as identified in s. NR 812.12 (15).

(6) GROUTING AND SEALING. Well drillers and well constructors shall be responsible for completing all grouting and sealing requirements using the mixtures and methods of s. NR 812.20. Grouting methods are depicted in figures 11 to 18.

(7) DEVELOPMENT AND TEST PUMP. Well drillers and well constructors shall, upon completion of the well, develop and test pump the well according to s. NR 812.22. The well shall be pumped and developed until the water is practicably clear and free of sand, and until a stable pumping water level is established.

(8) NONCOMPLYING WELLS. When a well driller or well constructor has constructed a well not initially located or constructed in compliance with this chapter, the well driller or well constructor shall pay all costs for bringing the well into compliance with this chapter,including abandonment costs, other than those costs that would have been charged for an initial complying construction.

(9) PROBLEM WELLS. The well driller or well constructor shall return to the well site to attempt to correct problems when a potable well produces bacteriologically unsafe water; when a well produces sandy or turbid water; or when failure of the well occurs due to a caving or sloughing formation. The well driller or well constructor shall return within 90 days after the well is completed or 30 days after the well is placed in service, whichever is longer. If noncomplying construction was not the cause of the problem, a fee may be charged by the well driller or well constructor for corrective work.

(10) NOTIFICATION OF CONTAMINATED WELLS. Well drillers and well constructors shall notify the well owner if the well driller or well constructor becomes aware that the water from the well contains contaminates in excess for the primary drinking water standards in ch. NR 809.

(11) COMPLETION OF THE WELL. The well driller or his or her agent shall collect a water sample, using his or her test pump, the well owner's pump, air–lift equipment or a bailer, from any new or newly reconstructed potable well within 30 days of completion and have the sample analyzed for coliform bacteria at a laboratory certified by DATCP for bacteriological analysis of potable water and having an agreement with the department for submission of copies of lab result forms. The department recommends that the sample also be analyzed for nitrate. The well driller or well constructor shall disinfect, flush and seal the well. The well driller shall furnish a water sample result to the well owner within 10 days of the well driller's receipt of the result. The well driller or well constructor shall submit a well construction report to the well owner and to the department within 30 days following the date of well completion.

Note: The well driller or agent is required to have the water sample analyzed for bacteria. However, in some areas of Wisconsin the useable aquifer is contaminated throughout its entire vertical extent, so it may not be possible to obtain a bacteriologically safe water sample.

History: Cr. Register, January, 1991, No. 421, eff. 2–1–91; am. (5), (9) and (11), Register, September, 1994, No. 465, eff. 10–1–94; corrections made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1994, No. 465; CR 00–111: am. (2), Register October 2001 No. 550, eff. 11–1–01.

NR 812.11 Well construction equipment & materials. (1) ADEQUACY OF EQUIPMENT. Well drillers and well constructors shall be adequately equipped to enable him or her to fully comply with all legal requirements applicable to any well construction, reconstruction or well abandonment undertaken by him or her.

(a) *Drill bits.* The diameter of drill bits shall be within 1/4″ of the diameter of any drillhole to be constructed. A drill bit more than 1/4″ smaller in diameter than the diameter of an upper enlarged drillhole to be constructed, may not be worked around