Third Five-Year Review Report
For
Hechimovich Landfill
Town of Williamstown
Dodge County, Wisconsin

June 2009

PREPARED BY:

Wisconsin Department of Natural Resources
South Central Region
Fitchburg, Wisconsin

Approved by: [signature] **Date:** 6/17/09

fc **Richard C. Karl**
U.S. EPA, Region V
Division Director
Superfund Division

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
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 Hechimovich Landfill began as the City of Mayville dump in 1959. The City of Mayville operated a licensed landfill that from 1959 to 1970 accepted wastes including battery cracking wastes, spent solvents and waste paints. In the early 1970's site operations were continued by George Hechimovich and the site became known as the Hechimovich Sanitary Landfill. During much of the 1970s the site was licensed to accept toxic and hazardous wastes. In 1980 the site was no longer permitted to accept hazardous wastes. In July 1985 the site name was changed to Land and Gas Reclamation Landfill and in October 1986 the site was closed to all waste disposal.

The site was nominated for the National Priorities List (NPL) in 1983. Environmental problems at the site, particularly groundwater contamination, led to state enforcement actions and a landfill cap and gas extraction system were installed as part of a court ordered settlement in July 1987. The landfill was added to the National Priorities List in March 1989.

Following completion of the Remedial Investigation and Feasibility Study the Wisconsin Department of Natural Resources (WDNR) wrote a January 1994 Source Control Record of Decision (ROD). This ROD documented the installation of a new clay cap and an active landfill gas extraction system. This ROD was concurred to by the United States Environmental Protection Agency (EPA).

In July 1993 a baseline risk assessment was conducted for the existing conditions at the site. This assessment showed under known conditions there were no human health risks in excess of levels identified by EPA as warranting remedial actions. The results of this assessment together with the Remedial Investigation data were used to evaluate final groundwater and source control remedies for the site. The final chosen remedy included the existing clay cap and gas extraction system, operational changes to the gas system to emphasize gas removal from those areas of the waste fill believed to be major contributors of contaminants to the groundwater, restrictions on new water supply well constructions and deed restrictions, as appropriate. These decisions were set in a final ROD for the site signed in September 1995.

Since 1995 the site remedial actions have been operated satisfactorily. Since June 2004, the end of the second five-year review period, the gas extraction system has removed in excess of 10,000 pounds of volatile organic chemicals from the waste mass. During this time the clay cap has also been maintained and several leachate seeps were addressed. Long term and recent groundwater monitoring down-gradient of the site has shown some improvement in shallow groundwater quality in impacted monitoring wells. Operation of the remedial actions selected in the ROD seems to be improving the groundwater quality in the shallow unconsolidated aquifer directly north of the landfill.

However, starting in the spring of 2009 the understanding of site conditions has dramatically changed. It now appears possible that the landfill is the source of drinking water contamination in four private drinking water wells about 1800 - 4000 feet northeast of the waste boundary. Two of these wells have vinyl chloride concentrations exceeding state and federal drinking water maximum contaminant levels. In addition, one of these drinking water wells has a vinyl chloride concentration high enough to make the water unusable for any domestic purposes. This drinking water contamination lies deep within the bedrock aquifers downgradient, northeast, of the site. It now appears possible that there is a deeper, previously unknown, groundwater contaminant plume leaving the landfill to the northeast, moving through various bedrock units and impacting private drinking water wells cased 180-190 feet below the

ground surface. New investigations are now ongoing to determine if the landfill is the source of this drinking water contamination and if so, what is the migration pathway and what remedial options are available to address these environmental and public health concerns. Additional investigation work is necessary because it seems possible that the remedial decisions made in the 1994 and 1995 RODs may need to be modified and enhanced to remain protective of human health and the environment.

As an interim public health protection measure, bottled drinking water has been provided to the two homes with contaminant levels exceeding drinking water standards. In addition, the family living in the home with the highest vinyl chloride concentrations has been relocated. Relocating this family has addressed all immediate health risks associated with the drinking water well contamination.

Concurrent with these new investigations and interim actions, continued operation of the existing remedial measures are planned for the site. These existing remedial measures only address the shallow groundwater contamination found within unconsolidated material near the north end of the landfill. These ongoing measures would probably not address any deep bedrock contamination found northeast of the landfill.

Lastly, there is a possibility of some future changes to the landfill. This site sits adjacent to an operating licensed landfill and a number of acres of open land. There are preliminary plans to expand the current licensed fill operation. One possible route of expansion would call for excavating the entire NPL site and placing it about 600 feet to the west in a new clay lined area. If this were to occur the entire waste mass would be contained in an engineered facility complete with gas and leachate collection. This would be advantageous from an environmental perspective. The possibility of this occurring is unknown. A complex mix of economic and state regulatory decision-making needs to be completed before the feasibility of such a project can be determined. This decision-making process has been ongoing for about five years. It is not certain when this waste movement may occur.

Based on the 2009 site inspection, as it exists today, with the provision of bottled water and the relocation of some of those residents with vinyl chloride contaminated water, the remedy selected in the ROD is protective of human health and the environment in the short-term. The bottled water and relocation activities are mitigating the groundwater/drinking water exposure pathway. If the landfill is found to be the source of these known threats, the exposure pathways will need to be addressed through one or more response actions to be taken by the potential responsible party group.

However, long-term protectiveness will require further investigation of the deep aquifer contamination, implementation of possible further remedial measures, and compliance with effective ICs. Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.

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Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Hechimovich Sanitary Landfill Superfund Site		
EPA ID *(from WasteLAN)*: WID052906088		
Region: 5	**State:** WI	**City/County:** Town of Williamstown/Dodge County
SITE STATUS		
NPL status: x Final Deleted Other (specify)		
Remediation status (choose all that apply): Under Construction x Operating Complete		
Multiple OUs?* xYES NO	**Construction completion date:** 09/16/1997	
Has site been put into reuse? YES x NO		
REVIEW STATUS		
Lead agency: ☐ EPA x State Tribe Other Federal Agency		
Author name: Michael Schmoller		
Author title: Remedial Project Manager	**Author affiliation:** WDNR, South Central Region	
Review period:** 3 /23 /2009 to 5 /10 /2009		
Date(s) of site inspection: 4/10/2009		
Type of review: Post-SARA Pre-SARA NPL-Removal only Non-NPL Remedial Action Site X NPL State/Tribe-lead Regional Discretion)		
Review number: 3 (third)		
Triggering action: Actual RA On-site Construction at OU # Actual RA Start at OU# Construction Completion x Previous Five-Year Review Report Other (specify)		
Triggering action date *(from WasteLAN)*: 6/21/2004		
Due date *(five years after triggering action date)*: 6/21/2009		

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

Issues:

At present the site conditions are protective of human health and the environment through the provision of bottled water to and/or relocating those residents with vinyl chloride contaminated water. There are new additional site investigation tasks now being implemented. These tasks include on and off site groundwater sampling to determine the possible source and migration pathway of the chlorinated chemical contamination impacting the offsite drinking water wells. This work needs to be accomplished to determine if the landfill is the source of the deep bedrock aquifer contamination and if so, what remedial steps may be required. It is anticipated this field work and data analysis will be accomplished in the summer of 2009. Dependent on the results of this study an addendum to this review may be needed.

The required ICs have not been fully evaluated. A review of the institutional controls 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.

Recommendations and Follow-up Actions:

If the landfill is found to be the source of the deep aquifer contamination, provide a permanent solution to drinking water problems either through new more aggressive remedial actions to address possible deep groundwater contamination within the bedrock aquifers or new drinking water treatment technologies.

Since effective ICs must be implemented, monitored, maintained and enforced, an IC Plan will be prepared to identify the required IC activities including a schedule to ensure ICs are in place and effective, and subject to long-term stewardship.

Protectiveness Statement(s):

Based on the 2009 site inspection, as it exists today, with the provision of bottled water and the relocation of some of those residents with vinyl chloride contaminated water, the remedy in the ROD is protective of human health and the environment in the short-term. The bottled water and relocation activities are mitigating the groundwater/drinking water exposure pathway. If the landfill is found to be the source of these known threats, the exposure pathways will need to be addressed through one or more response actions to be taken by the potential responsible party group.

However, long-term protectiveness will require further investigation of the deep aquifer contamination, implementation of possible further remedial measures, and compliance with effective ICs. Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.

Other Comments:

This site was listed on the NPL as the Hechimovich Sanitary Landfill. During it operational life the name of the site changed to the Land and Gas Reclamation Landfill. In state files, the site is referred to as the Land and Gas Reclamation Landfill.

The ongoing new site investigation tasks are the most significant development at the site since completion of the final ROD in 1995. The possible existence of deep bedrock contamination migrating from the site and impacting nearby water supplies is a serious development. If the landfill is identified as the source of these contaminants, additional remedial measures may be necessary for the site to remain protective of human health and the environment.

Hechimovich Landfill
Town of Williamstown, Wisconsin
Third Five-Year Review Report

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 reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identifies 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 EPA 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 conducted this five-year review of the remedy implemented at the Hechimovich Landfill in Town of Williamstown, Wisconsin. This review was conducted by the State Remedial Project Manager (RPM) for the entire site from June, 2004 through June 2009. This report documents the results of the review.

This is the third five-year review for the Hechimovich Landfill. The triggering action for this statutory review is the completion of the second review in June, 2004. The 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

Table 1 - Chronology of Site Events

Event	Date
City of Mayville begins dump operation	1959
Mayville Dump operated on site	1959-70
Site operated by George Hechimovich	1970
WDNR issues conditional license to Hechimovich Sanitary Landfill	September 1970
WDNR issues license renewal includes toxic and hazardous waste disposal	December 1972
WDNR notifies Hechimovich Landfill that hazardous wastes no longer allowed	1979
Hechimovich requests and receives hazardous waste extension until 1980	November 1979
Site accepts liquid hazardous wastes	1970-80
Site name changed to Land and Gas Reclamation Landfill, Inc	July 1985
Land and Gas Reclamation Landfill ceases accepting all wastes	October 1986
State enforcement action requires a landfill cap and gas collection system	July 1987
Hechimovich Landfill nominated to National Priorities List (NPL)	June 1988
Hechimovich Landfill added to the NPL	March 1989
State required remedial actions completed	March 1992
Interim source control ROD available for public comment	December 1992
Remedial Investigation completed	April 1993
Interim Source Control ROD signed	January 1994
Landfill capping, gas control and long term monitoring selected as final remedy	February 1994
Proposed Plan for final remedy available for public comment	February 1994
Final ROD signed	September 1995
Preliminary Close Out Report written	September 1997
First 5 year review completed	February 1999

Repairs done to site cap and leachate seeps	Summer 2002

Table 1 (continued)

Event	Date
2003 Annual Report received	April 2004
Second 5 year review completed	June 2004
WDNR and Veolia sign landfill relocation agreement	July 2004
Remedial Project Investigation Study report completed	March 2006
Movement of potentially hazardous waste issues resolved	December 2007
Private water supply well contamination discovered	March 2009
One residence provided bottled water and another relocated	April 2009
Additional site investigation started	May 2009

III. Background

Physical Characteristics

The Hechimovich Landfill site is located in a rural area in the Town of Williamstown, approximately 2 miles south of the City of Mayville, and approximately 3.5 miles east of the City of Horicon, Wisconsin. This 24.3 acre closed landfill is located in the east one-half of the southwest quarter of Section 35, Township 12 North, Range 16 East, Town of Williamstown, Dodge County, Wisconsin. This site is unfenced and access is partially controlled. The site contains an estimated 1 million cubic yards of waste. The waste is a mix of hazardous and non-hazardous waste. (See Attachment 1)

Land and Resource Use

The historic land use of the site prior to waste operations is agriculture. From the 1950's until 1986, hazardous waste activities conducted at the site included, at differing time intervals, battery cracking, paint disposal and waste solvent disposal. For an undetermined period of time solvent disposal involved dumping the liquid wastes into evaporation pits either placed on the land surface or dug into the top of the waste. Attachments 2 and 3 show the location and nature of one of these historic pits. Attachment 2 is a 1975 air photo, taken from the south, of the Hechimovich Landfill showing the landfill operation at that time. The pit in the center of the photo is a waste solvent disposal pit. Attachment 3 is a close up photo of the same 1975 pit. The majority of the waste is residential, commercial and industrial solid waste. The closed licensed New Hechimovich Sanitary Landfill, now called Veolia Glacier Ridge Landfill, is northwest and adjacent to this NPL site. An expansion of the Veolia Glacier Ridge Landfill called the Veolia Glacier Ridge South Expansion is currently operating on the property and accepts non hazardous

waste only and is an engineered facility incorporating leachate and gas control systems. (See Attachment 4)

Most of the land adjacent to the site is privately owned. Single family homes in a rural setting surround the site. Wetlands lie to the east, north and west of the site. Horicon National Wildlife Refugee lies about 3.5 miles west of the landfill. The City of Mayville is 2 miles to the north. Mayville draws its drinking water from underlying sandstone units from below a depth of 227 feet.

The fractured dolomite and shale bedrock underlying the site starting at about 60 feet is used as a drinking water source for nearby private wells. The dominant ground water flow direction in the shallow aquifer is north towards the wetlands north of the site. The groundwater flow direction in the deep bedrock aquifers is unknown.

History of Contamination

The Hechimovich NPL site was a licensed landfill. The site was first operated as the Mayville Dump by the City of Mayville from 1959 to 1970. The Mayville landfill was a small open dump that now is part of the northern end of the closed landfill. A variety of waste disposal activities occurred at the Mayville site including open burning, battery recycling operations and solvent disposal. It appears these past activities may be a significant contributor to the current shallow groundwater problems as the highest shallow groundwater contamination levels are directly down gradient and adjacent to the old dumpsite.

Beginning in 1970 the site was operated by George Hechimovich and the site was then called the Hechimovich Sanitary Landfill. The Mayville site was sold to and became part of the Hechimovich Sanitary Landfill in 1971. In March 1984 site ownership and operations were transferred to Land and Gas Reclamation, Inc. and the site name was subsequently changed to LGRL in July 1985. The site was closed in October 1986.

Between 1970 and 1980, the site was licensed to accept hazardous waste. Paint sludges and cutting oils from local industries, possibly containing lead, chromium and solvents, were disposed of in several lagoons on-site. It is estimated by EPA that 53,000 gallons of liquid hazardous waste were disposed of at this site. In addition, the site accepted approximately one million cubic yards of nonhazardous household and commercial wastes. The landfill does not have a liner. An initial cover, consisting of 2 to 4 feet of local till soils and 6 inches of topsoil, was placed in 1987. A system of groundwater and surface water monitoring locations were included in a monitoring program required by the WDNR at site closure.

In spring 2009 routine sampling identified private water supply well contamination in four wells northeast of the fill. These wells lie about 1800-4000 feet from the site and are cased through the Maquoketa Formation. The identification of contamination in the deep aquifers downgradient of the landfill is a serious concern. The current landfill owners are beginning site investigation tasks to determine if the landfill is the source of the deep bedrock impacts and if so, what are the necessary remedial steps to address groundwater and drinking water impacts.

Initial Response

In July 1987, the Land and Gas Reclamation Landfill site was the subject of a WDNR state enforcement action, resulting in a Stipulation and Order signed by the Dodge County Circuit Court, which directed George Hechimovich, Hechimovich Sanitary Landfill, Inc., and Land and Gas Reclamation, Inc., to undertake certain actions at the landfill, including the installation of a clay cap and a gas collection system. The court ordered clay cap was installed, under WDNR supervision and approval, in 1991 and 1992. To date the cap has been satisfactorily installed and maintained. In addition, since March 1992 the active gas extraction system has been operating according to design specifications. The installation and operation of these measures were documented and approved as a source control interim action in a January 1994 Record of Decision signed by WDNR and concurred with by EPA. The modification of this gas extraction system was the main activity in the final remedy for the site.

The WDNR nominated the Hechimovich site for listing on the NPL in 1983. The site was listed on the NPL, as the Hechimovich Sanitary Landfill, in March 1989. Based on the information obtained from landfill records in the possession of Daniel and George Hechimovich, the WDNR issued special notice letters to fourteen potentially responsible parties ("PRPs") on August 15, 1990 and special notice letters to two additional PRPs on September 20, 1990.

The potentially responsible parties entered into an environmental repair contract with the WDNR, which became effective on September 28, 1990, to perform a remedial investigation/feasibility study ("RI/FS") pursuant to s. 144.442, Wisconsin Statutes. After the environmental repair contract was signed, the WDNR decided that, due to the timing of the remedial actions, remediation at the site should be divided into two operable units; a source control (landfill closure) operable unit and a groundwater operable unit. The January 1994 Record of Decision documented successful completion of the source control operable unit. The final Record of Decision, signed by the state in September 6, 1995, established the final remedy for the site.

Subsequent to the signing of the final ROD site monitoring activities appear to show the site shallow groundwater impacts to be stable. The known groundwater plume extending north from the north end of the waste fill appears to be unchanging. However, in spring 2009 routine sampling identified potential new site impacts. Two private drinking water wells were discovered contaminated with vinyl chloride concentrations exceeding maximum contaminant levels. In one of wells the vinyl chloride was of such a concentration that the well water could not be used for any domestic purposes. Follow up sampling in April 2009 eventually identified four drinking water wells with various levels of contamination.

Basis for Taking Action

Contaminants

Hazardous substances that have been released at the site in each media include:

Table 2 – Hazardous Substances Released on Site

Groundwater/Drinking Water
Tetrachloroethene
Trichloroethene
cis 1,2 Dichloroethene
trans 1,2 Dichloroethene
Vinyl Chloride

The July 1993 Baseline Risk Assessment conducted for the site found no human health risks in excess of levels identified by EPA as warranting remedial action. The primary pathway reviewed was groundwater ingestion. A screening level ecological risk assessment was also conducted. The assessment found the potential for exposure to contaminants in the ditches that drain the wetlands north of the landfill. No adverse ecological effects were observed however. The ditches do not appear to be able to support a sustainable population due to frequent drying out.

Subsequent to the July 1993 risk assessment, water supply sampling in the spring of 2009 has shown there to be a potential for unacceptable human health risk from the site. Two private drinking water wells, lying downgradient of the landfill, produce water with vinyl chloride concentrations exceeding state drinking water criteria. Much of the current regulatory attention at the site is aimed at investigating a possible link between the landfill and these new water supply impacts.

IV. Remedial Actions

Remedy Selection

The ROD for the source control interim remedy at the Hechimovich Landfill was signed in January 1994 and the final ROD was signed on September 6, 1995. Remedial Action Objectives (RAOs) were developed as a result of data collected during the Remedial Investigations to aid in the development and screening of remedial alternatives. The RAOs for the Hechimovich Landfill were intended to protect human health and the environment and to meet ARARs.

Remedial Action Objectives

- Reduce groundwater contaminant concentrations to levels below the Preventive Action Levels established in NR 140 Wis. Adm. Code at the landfill waste edge;

- Maintain human exposure levels to contaminants below state and federal guidelines. These are primarily the state and federal groundwater and drinking water standards. The federal standards are Maximum Contaminant Levels set in the Safe Drinking Water Act and the state drinking water standards are set in NR 809 Wis. Adm. Code;

- *Maintain ecological exposure levels to contaminants below potential levels of concern* based on state and federal criteria such as the federal surface water quality criteria.

The major components of the current site remedy selected in the ROD include the following:

- Closure of the landfill;

- Construction of a clay cap over the waste mass in accordance with state solid waste regulations;

- Collection, treatment and discharge of landfill gas and condensate via a collection system;

- Access and use restrictions on the property as provided in state solid waste management codes restricting future uses of licensed landfills and state drinking water codes restricting placement of wells within 1200 feet of landfills.

The site access restrictions are implemented by the site owner under the state trespass laws. There is a gate restricting vehicle access to the site. The private well restrictions are implemented by the state through its regulation of well drillers. Deed Restrictions as appropriate and restrictions on new water supply well construction.

Remedy Implementation

The remedial design and remedial action phase of the project was conducted through state solid waste management authority granted through ch. NR 500-526 of the Wisconsin Administrative Code. WDNR reviewed and approved the report "Construction Observation Report Site Closure/Final Cover System and Gas Collection System Land and Gas Reclamation Landfill dated August 6, 1992. The WDNR approval came November 19, 1992. The Remedial Design (RD) and Remedial Action (RA) were conducted in conformance with the RODs.

The Remedial Action (RA) consisted of installing a clay cap and active gas extraction system on the waste mass. The activities for this phase were initiated in 1991 and were completed in 1992. The Source Control ROD was written and signed in January 1994. The final site ROD was written in September 1995. The major components of this phase of the RA were the following:

- Placement and compaction of at least 2 feet of clay overlain by 24 inches of rooting zone material and 6 inches topsoil;

- Seeding and mulching the finished slopes;

- Installation of active gas extraction system;

- Establishment of a ground water monitoring system.

The contractors for the potentially responsible parties conducted remedial activities as planned.

The WDNR has conducted several inspections since completion of the site work. During this period several leachate seeps and areas of excess settlement were identified and repaired. The series of inspections have concluded that construction had been completed in accordance with the remedial design plans and specifications.

The site achieved construction completion status when the Preliminary Close Out Report was signed on September 1997.

The WDNR and EPA have determined that all RA construction activities were performed according to specifications. It is expected that cleanup levels for the shallow groundwater contaminants will have been reached within approximately thirty years. It is uncertain if the landfill is associated with the recently detected deep groundwater contamination. If the landfill is the source it may be many years more than 30 to achieve compliance with groundwater cleanup standards. After groundwater cleanup levels have been met the WDNR and EPA will issue a Final Close Out Report.

Institutional Controls

Institutional controls (ICs) are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential to exposure to contamination and that protect the integrity of the remedy. ICs are required to assure long term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure. (UU/UE)

Based upon the current remedy and based on the current review, ICs must be used at the Site to ensure that land and groundwater uses are limited so that the remedy functions as intended. The table below summarizes institutional controls for these restricted areas at the Site.

IC Summary Table

Media, remedy components & areas that do not support UU/UE based on current conditions*	***Objectives of IC***	***Title of Institutional Control Instrument Implemented***
Landfill Property –	Prohibit residential use, Prohibit interference with remedy components	Under review. State of Wisconsin prohibition to building on a closed landfill.
Groundwater monitoring systems and other remedy components	Prohibit interference with remedy components.	Under Review
Groundwater – on-site - current area that exceeds groundwater cleanup standards	Prohibit groundwater use until cleanup standards are achieved.	Under Review State prohibition on drilling a water supply well within 1200 feet of the landfill boundary without permission from WDNR.
Groundwater – off-site-	Ensure no exposure to	Under Review

current area that exceeds groundwater cleanup standards .	contaminated groundwater until cleanup standards are achieved.	State prohibition on drilling a water supply well within 1200 feet of the landfill boundary without permission from WDNR.

Maps which depict the current conditions of the site and areas which do not allow for UU/UE will be developed as par*t of the IC plan discussed below.

Status of Current Access Restrictions and ICs and Planned Follow-up Actions

Specific to this site the applicable ICs are the state prohibition to building on a closed landfill and the state prohibition of drilling a water supply well within 1200 feet of the landfill boundary without permission from the Department. Both of these prohibitions are set in state administrative code and are enforced by the Department. To date there have been no problems with the enforcement of these controls.

At this time, initial IC evaluation activities have determined that while regulations are in place to limit land and groundwater use at and near the Site, it appears that no proprietary controls have been implemented nor are there any groundwater use regulations off-site. (beyond 1200 feet of the landfill boundary). Also, the existing ICs have not been fully evaluated. To ensure IC effectiveness and long-term protectiveness, additional IC activities are required. An IC Plan will be developed by EPA in conjunction with the WDNR and the PRPs to determine the types and scope of additional IC evaluation activities. This includes planning to further evaluate existing ICs, planning for additional ICs if needed, and planning for long-term stewardship to ensure long-term protectiveness of the remedy. Anticipated IC evaluation activities include reviewing the IC objectives, ensuring that appropriate ICs restrict land and groundwater uses in compliance with the objectives to ensure that the remedy is protective, mapping the areas which do not allow for UU/UE (in both paper and GIS format) and comparing that to the legal description of the Site and contained in the ICs to the areas requiring restrictions, conducting title work to determine whether any other encumbrances could interfere with the ICs, and ensuring the title work shows that the proper signatory (i.e., owner) on the instrument and that the recorded encumbrances will not interfere with restrictions. Additionally, the IC plan shall explore whether additional ICs are needed to restrict the land and groundwater use on the Site. As part of this work, the PRPs may be asked to conduct IC evaluation activities or submit an IC Workplan.

Current Compliance

Access to the Site is partially restricted by a fence. Also, to the best of our knowledge, contaminated groundwater is not being used for any purpose. Those residents who had contaminated drinking water were provided with bottled water and/or were relocated. Neither U.S. EPA nor the WDNR is aware of site or media uses which are inconsistent with the stated objectives of the ICs. The remedy appears to be functioning as intended.

Long-Term Stewardship

Long-term protectiveness at the site requires compliance with use restrictions to assure the remedy continues to function as intended. To assure proper maintenance and monitoring of effective ICs, long-term stewardship procedures will be reviewed and a plan developed. The plan would include regular inspection of ICs at the site and annual certification to EPA that ICs are in place and effective. Additionally, use of a communications plan and use of a one-call system should be explored for long-term stewardship.

System Operation/Operation and Maintenance

Veolia Glacier Ridge Landfill LLC, a successor corporation that now owns the Hechimovich Landfill, is conducting long-term monitoring and maintenance activities according to state approvals. The primary activities associated with operations and maintenance (O&M) includes the following:

- Visual inspection of the cap with regard to vegetative cover, settlement, stability, and any need for corrective action;
- Inspection of the drainage swales and ditches for blockage, erosion and instability, and any need for corrective action;
- Inspection of the condition of groundwater monitoring wells;
- Environmental monitoring: Monitoring of groundwater quality, leachate headwells and gas probes;
- Annual reports to the WDNR documenting the operation of the remedy.

The other remaining component of cleanup is the natural attenuation of ground water beyond the waste fill edge. By capping the landfill and intercepting contaminated liquids before they can leave the waste fill limits, the source of the shallow ground water contamination is being contained. Therefore, the primary O&M activities have been geared towards maintaining the gas extraction system, monitoring ground water, and maintenance of the clay cap.

V. Progress Since the Last Five-Year Review

This is the third five-year review. The key actions over the last five years have been:

1. The discovery of private water supply well contamination from vinyl chloride at concentrations exceeding state and federal drinking water standards;

2. Continued operation of landfill gas extraction system as a remedial response to reduce volatile organic chemical concentrations within the waste fill.

VI. Five-Year Review Process

Administrative Components

This Five-Year Review was conducted by Michael Schmoller of the WDNR, Remedial Project Manager (RPM).

From March to May 2009, the reviewer established a review schedule whose components included:

Document Review;
Data Review;
Five-Year Review Report Development and Review.

Community Involvement

There was no active community involvement during the writing of this five-year review. The site has traditionally not been a subject of public interest for a number of years. Because of its location and lack of problems, the neighbors and general public have had little interest in the site.

With the recent discovery of private well contamination the level of public interest has increased considerably. There have been requests for information and a public meeting regarding these developments. It is the state's intention to conduct a town meeting sometime in the summer of 2009 when additional site investigation data is complete. Further public involvement efforts will be dependent on the data results.

Lastly, if the decision is made to move the waste mass from the current location into a newly designed landfill, there would be a public involvement effort concerning the decision and means of moving the waste mass. This public discourse would be part of a larger effort discussing all the waste management activities at the site. An ad will be placed in the local paper notifying the public of the five-year review.

Document Review

This five-year review consisted of a review of relevant documents including O&M records, monitoring data, the OU1 and OU2 RODs, and the First and Second Five-Year Review Reports.

Data Review

Ground Water Monitoring

Ground water monitoring has been conducted at the site since the early 1980s. However, ground water quality data collected since the early 1990's are primarily used to make decisions about the condition of the site. Modeling studies conducted with the data available during the time the RODs were written, September 1994, suggested that the shallow groundwater quality lying in the unconsolidated material north of the site should improve significantly from 1992 -2009. These improvements have not taken place at the rate predicted. Rather the groundwater data shown in Table 3 indicates the groundwater conditions at the site are only slowly improving. Since 1992 improvements in concentrations have been seen in wells MW-1AR and MW-3AR close to the

waste edge. Also improvements have been seen in well nest MW-210 about 400 feet down-gradient of the waste edge. While not improving at the rate predicted, shallow groundwater conditions at the site are better. Also, importantly the plume in the shallow unconsolidated material has not significantly expanded down-gradient of the landfill. The vertical and horizontal dimensions of the shallow plume seem to have remained nearly constant over the last 10 years.

The most important result of recent groundwater monitoring is the discovery of drinking water contamination northeast of the landfill in the bedrock units underlying the site. Private drinking water wells that capture water from the dolomitic aquifers beneath the dolomite and shale layers of the Maquoketa Formation contain vinyl chloride and other volatile organic chemicals. These wells draw water from depths of 205 to 445 feet below ground surface. The combination of organic parameters found in the drinking water wells match, to a large degree, the combination of organic contaminants found in the groundwater at the landfill. Additional monitoring of existing and planned new monitoring wells will help determine the source and nature of this deep contamination.

Table 3 - Comparison of Groundwater Concentrations*

Well Number	Sample Date	Concentration in ppb		
		TCE	cis-1,2 DCE	Vinyl Chloride
MW-1AR	10/08/1999	NR	6100	2000
	04/03/2000	54	5700	2200
	10/03/2001	NR	4910	2000
	10/01/2002	NR	5660	1220
	04/02/2003	17	4860	1100
	04/05/2004	16	4130	1550
	10/06/2005	NR	4420	951
	10/05/2006	NR	3590	1020
	04/05/2007	NR	2020	887
	04/10/2008	.5	590	196
W-3AR	10/07/1999	NR	1000	710
	10/03/2000	NR	1100	404
	10/02/2001	NR	1240	901
	10/01/2002	NR	1340	521
	10/08/2003	1.3	712	407
	10/04/2004	NR	715	730
	10/05/2005	NR	628	258
	04/06/2006	1.1	700	352
	04/04/2007	NR	418	402
	04/11/2008	NR	476	382

Well Number	Sample Date	Concentration in ppb		
		TCE	cis-1,2 DCE	Vinyl Chloride
MW-210	10/11/1999	NR	98	240
	10/05/2000	NR	1.61	5.3
	10/03/2001	NR	1.21	13.2
	10/03/2002	NR	1.59	12.8
	10/08/2003	NR	NR	1.02
	10/05/2004	NR	NR	1.46
	10/05/2005	NR	NR	NR
	10/04/2006	NR	.49	.45
	10/25//2007	NR	.23	NR
	10/09/2008	NR	.41	NR
W-210A	10/11/1999	40	800	440
	04/04/2000	32	820	440
	10/03/2001	55.9	520	425
	10/03/2002	NR	940	327
	10/08/2003	10	293	29.2
	10/05/2004	7.3	230	45.6
	10/05/2005	7.9	217	29.5
	10/04/2006	5.6	184	45.6
	10/25/2007	5.7	251	73.2
	10/09/2008	7.7	325	124
MW-214A	10/08/2003	NR	NR	.225
	10/06/2004	NR	NR	.912
	10/05/2005	NR	NR	.488
	10/04/2006	NR	NR	1.67
	03/14/2008	NR	NR	4.74
	10/09/2008	NR	NR	6.54

NR = Means there may have been a detected concentration below a regulatory standard or the analyte was not detected in the laboratory analysis. Based on available data it is not certain which situation it could be.

- The MCL for TCE is 5ppb.
- The MCL for cis-1,2 DCE is 70ppb.
- The MCL for Vinyl Chloride is 2ppb.

Site Inspection

A site inspection was conducted as part of this five-year review in April 2009. The cap is well maintained and the vegetative cover is very well established. The cap and cover are acting as high quality nesting habitat for wildlife. The gas extraction system is operating and groundwater monitoring is being conducted in accordance with state approvals. The site is being very well managed. No significant issues have been identified at any time during the last five years regarding the cap or gas extraction system.

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 ongoing monitoring indicate that the remedy is functioning as intended by the ROD. The capping of contaminated wastes within the landfill is working to achieve the remedial objectives to minimize the migration of contaminants to shallow groundwater and prevent significant ecological exposures through surface waters.

Operation and maintenance of the cap and gas extraction system have been effective. The 10 year trend in the shallow groundwater quality results show a stable plume with reducing concentrations within the plume.

However, the potential for the landfill to be the source of a deeper, more serious, groundwater contamination plume to the northeast raises some concerns about the current remedy. There may be landfill related ongoing contamination spreading 1800-4000 feet from the site and possibly as deep as 180-190 feet within the bedrock aquifer. If this is the situation, adjustments to the current remedies may be necessary to comply with state and federal cleanup regulations.

Additionally, since long-term protectiveness requires compliance with effective ICs, additional IC evaluation activities must be undertaken to ensure that ICs are in place and effective and are monitored, maintained and enforced.

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

No.

While there have been no changes in the state or federal groundwater standards for the key contaminants of cis 1,2 dichloroethene, trichloroethene and vinyl chloride, there have been changes in the physical conditions of the site that may affect the protectiveness of the remedy. The assumptions used during the development of the baseline risk assessment and the screening ecological assessment may not be valid. The earlier risk assessments were based on no known exposures to contaminants through drinking water. There now could be potential contaminant exposures through drinking water ingestion and inhalation. If the landfill is found to be the source of these exposures, a complete rethinking of the risk posed by the landfill and remedial objectives will be required.

Changes in Standards and To Be Considered

ARARs that still must be met at this time and that have been evaluated include: ch. NR 140, Wisconsin Administrative Code (Enforcement Standards and Preventative Action Levels); the Safe Drinking Water Act (SDWA) (40 CFR 141.11-141.16) from which many of the groundwater cleanup levels were derived - [Maximum Contaminant Levels (MCLs), and MCL Goals (MCLGs)]; and ARARs related to monitoring and landfill capping as contained in the WDNR Plan Modification Approvals. There have been no changes in these ARARs and no new standards or TBCs affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the original human health and environmental risk assessment included direct contact with the waste; release of the contaminants to ambient air, groundwater migration of contaminants to water supply wells and groundwater migration of contaminants to surface waters. There have been changes at the site that would alter these exposure possibilities. Historically it was believed there were no completed exposure pathways from the site to receptors. There may be a completed groundwater/drinking water exposure pathway. This pathway is currently being eliminated by providing bottled water and/or relocation of the impacted water users, however, further investigation of the contamination in the deep aquifer is needed. There have been no known changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy.

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

Yes.

Information generated during recent water sampling investigations has identified drinking water contamination that may be related to past operations at the landfill. Ongoing releases from the landfill could be the source of these drinking water impacts. One means of addressing these possible ongoing releases is the proposed relocating of the waste mass to an adjacent engineered lined landfill. The area around the NPL site is still used for waste disposal, including the new Veolia Glacier Ridge South Expansion Landfill. There are tentative plans for a large expansion of the waste disposal capacity. This expansion could be up to about 14 million cubic yards. If these plans are implemented it could possibly involve moving the NPL site to a new location about 600 feet west of its current location.

From an environmental perspective this relocation would be desirable. Moving the entire waste mass from an unlined location to a lined facility would be a major improvement in controlling contaminant migration from the site. Expected impacts to the groundwater and nearby wetlands would be reduced compared to existing circumstances. The extent of this reduction would not be clear until completion of further engineering work and actual movement of the waste. Moving the waste to a newly engineered site would improve the protection of public health and the environment.

Technical Assessment Summary

There have been recently detected changes in the physical conditions of the site that affect the protectiveness of the remedy. A groundwater migration pathway may exist that carries contaminants from the site to nearby private well users. There has 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 change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other known information that further calls into question the short term protectiveness of the remedy.

VIII. Issues

1. The deep aquifer contamination and water supply contamination concerns are affecting the future protectiveness of the remedy.

2. Institutional Controls: The required ICs have not been fully evaluated. A review of the institutional controls 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.

IX. Recommendations and Follow-Up Actions

1. There is a need to permanently resolve the contamination found in the deep aquifer and the drinking water supply concerns. An investigation of the contamination in the deep aquifer will be conducted by the landfill owner.

2. Since effective ICs must be implemented, monitored, maintained and enforced, an IC Plan will be prepared to identify the required IC activities including a schedule to ensure ICs are in-place and effective, and subject to long–term stewardship.

Recommendations/ Follow-up Actions	Responsible Party	Oversight	Milestone	Affects Protectiveness (Y/N) Current/ Future
An investigation of the contamination in the deep aquifer will be conducted by the landfill owner.	**PRP**	**WDNR**	**Fall 2009**	**Current – No Future – Yes**
An IC Plan will be prepared by U.S. EPA and WDNR documenting required IC activities necessary by the PRPs and the agencies to further evaluate and implement additional ICs, as necessary, and to ensure that effective ICs are in place and effective and are monitored, maintained and enforced.	**U.S. EPA and WDNR**	**U.S. EPA**	**June 2010**	**Current – No Future – Yes**

X. Protectiveness Statement

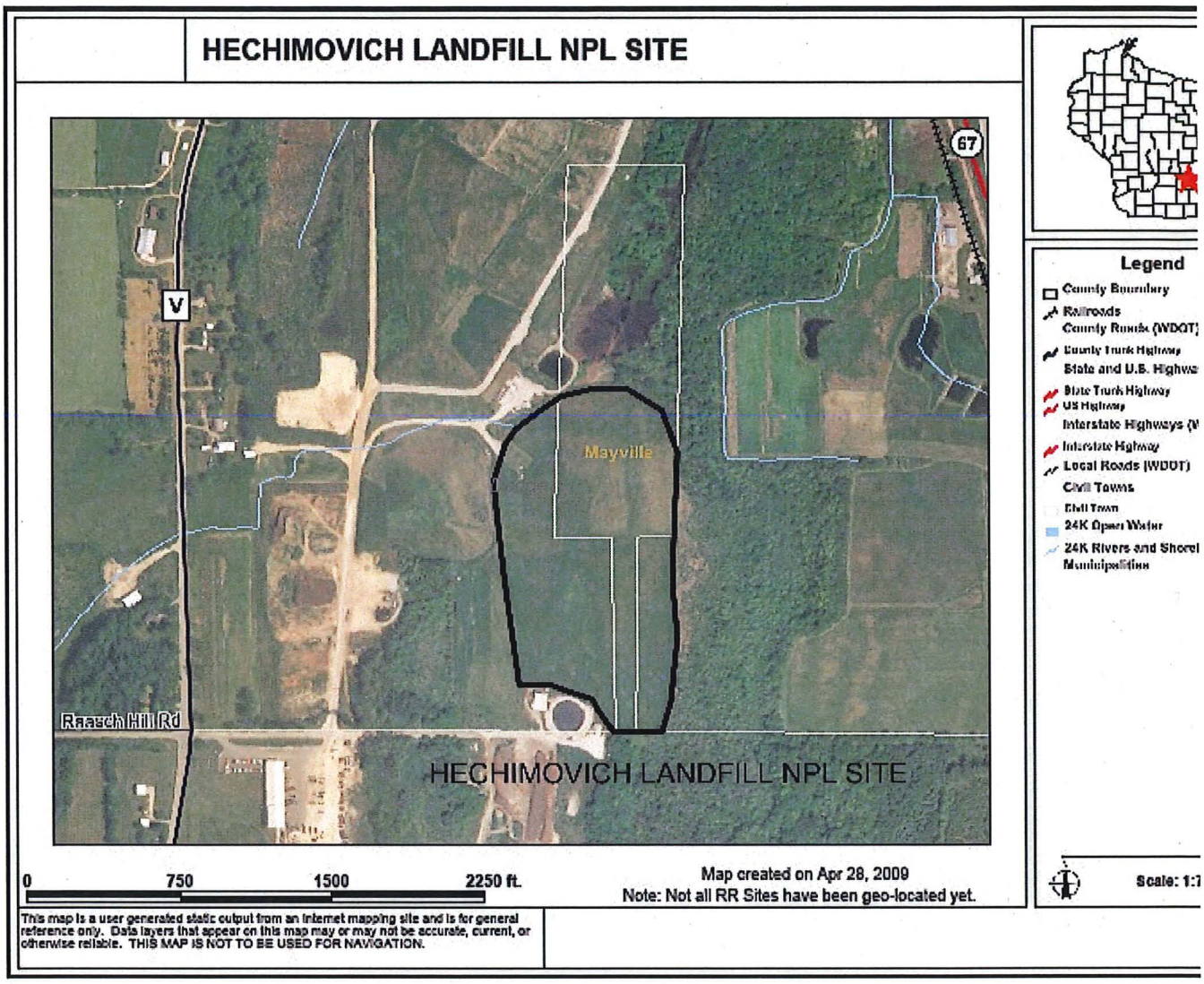
Based on the 2009 site inspection, as it exists today, with the provision of bottled water and the relocation of some of those residents with vinyl chloride contaminated water, the remedy selected in the ROD is protective of human health and the environment in the short-term. The bottled water and relocation activities are mitigating the groundwater/drinking water exposure pathway. If the landfill is found to be the source of these known threats, the exposure pathways will need to be addressed through one or more response actions to be taken by the potential responsible party group.

However, long-term protectiveness will require further investigation of the deep aquifer contamination, implementation of possible further remedial measures, and compliance with effective ICs. Compliance with effective ICs will be ensured by conducting additional IC evaluation activities to ensure that effective ICs have been implemented. The ICs must also be maintained, monitored and enforced via long-term stewardship as well as maintaining the site remedy components.

ATTACHMENTS

Attachment 1

Site Location Map



Attachment 2

1975 Air Photo of Hechimovich Landfill Showing Waste Solvent Disposal Pit

Attachment 3

Close up Photo of 1975 Waste Solvent Disposal Pit

Attachment 4

Site Plan