

# **Five-Year Review Report**

EPA Region 5 Records Ctr.



334805

## **Fourth Five-Year Review Report for Metamora Landfill Superfund Site Village of Metamora Lapeer County, Michigan**


**September 2009**

**PREPARED BY:**

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Region 5  
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9.23-09

## Fourth Five-Year Review Report

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## List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSMR	Conceptual Site Model Report
ICIAP	Institutional Control Implementation and Assurance Plan
LEL	Lowest Explosive Level
LTMWN	Long Term Monitoring Well Network
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MLSPG	Metamora Landfill Settling PRP Group
MNA	Monitored Natural Attenuation
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
µg/L	Micrograms per liter

## Executive Summary

*The remedy for the Metamora Landfill Superfund Site (the Site) consisted of construction of a 22.6 acre landfill cap system, meeting or exceeding the requirements of the Michigan Administrative Rule R299.9619 (as regulated by Act 451, Part 111) and Resource Conservation and Recovery Act (RCRA) Subtitle C, and monitored natural attenuation for the groundwater. The Site achieved construction completion with the signing of the Preliminary Close Out Report (PCOR) on September 27, 2001. This five-year review is the fourth five-year review conducted for the site. The third five-year review for this site was completed on September 27, 2004. The trigger for this five-year review was the completion date for the third five-year review.*

*The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the two Records of Decision (ROD) and two ROD Amendments. Operable Unit (OU) 1 addresses source control and is addressed under the 1986 ROD. OU2 addresses the capping of the landfill and treatment of the contaminated groundwater. The remedy for OU2 is embodied in the ROD dated September 28, 1990. However, on August 28, 1996 an amendment was applied to the 1986 OU1 ROD. Specifically the ROD amendment presented an alternative for soil remediation in Drum Area 1. The second ROD amendment, dated September 27, 2001, amended the 1990 OU2 ROD from groundwater pump and treat to monitored natural attenuation.*

The remedy is protective of human health and the environment in the short-term because the landfill cap and site fencing effectively restricts any surface soil exposures. The Site landfill cap is functional, operational and effective. Restrictions to Site access, development of the Site, and use of contaminated groundwater associated with the Site remain in place. No methane gas or other landfill gases were detected in the basements of residences adjacent to the landfill. No contaminants of concern above MCLs, MDEQ drinking water criteria, or naturally occurring background concentrations were detected in any of the nearby residential drinking water wells. Continued annual monitoring of nearby residential drinking water wells, including quarterly monitoring for 1,4-dioxane in one drinking water well adjacent to the Site and continued semiannual monitoring of landfill and perimeter methane gas probes will be conducted. Thus, there are currently no exposure pathways and the remedy is functioning as designed. However, in order for the remedy to be protective in the long-term, the following actions need to be continued/taken: continued compliance with ICs on the landfill property; enactment of ICs for properties downgradient of the Metamora Landfill Site encompassing the contaminant plume area in both the Shallow and Intermediate Aquifers; and the site remedy components, including ICs, must be maintained, monitored, and enforced to ensure long-term protectiveness.

The MDEQ has a different interpretation than the U.S. EPA on how the remedy is being implemented, level of protectiveness, and compliance with the ROD Amendment. The MDEQ's support agency comments can be found in Attachment 3 of this Report.

## Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Metamora Landfill Superfund Site		
EPA ID (from WasteLAN): MID980506562		
Region: 5	State: MI	City/County: Village of Metamora, Lapeer County
SITE STATUS		
NPL status: Final		
Remediation status Complete		
Multiple OUs? Yes	Construction completion date: 09/27/2001	
Has site been put into reuse? No		
REVIEW STATUS		
Lead agency: U.S. EPA		
Author name: Nan Gowda		
Author title: Remedial Project Manager	Author affiliation: U.S. EPA	
Review period: August 7, 2008 to September 25, 2009		
Date(s) of site inspection: October 8, 2008		
Type of review: Statutory		
Review number: 4 (Fourth Five-Year Review)		
Triggering action: Previous Five-Year Review Report		
Triggering action date (from WasteLAN): September 27, 2004		
Due date (five years after triggering action date): September 27, 2009		

## **Five-Year Review Summary Form, cont'd.**

### **Issues:**

The following issue was identified for the Site during this Five-Year Review:

Effective ICs must be implemented (or demonstrated to be in-place), monitored, maintained, and enforced to assure that the remedy is functioning as intended.

### **Recommendations and Follow-up Actions:**

A review of the ICIAP will be done to ensure that effective ICs are in-place or will be implemented and monitored, maintained, and enforced. The review will address all existing ICs to ensure that they are properly mapped and run with the land; and a review of the O&M Plan will be done to ensure long-term site stewardship.

### **Protectiveness Statements:**

The remedy is protective of human health and the environment in the short-term because the landfill cap and site fencing effectively restricts any surface soil exposures. The Site landfill cap is functional, operational and effective. Restrictions to Site access, development of the Site, and use of contaminated groundwater associated with the Site remain in place. No methane gas or other landfill gases were detected in the basements of residences adjacent to the landfill. No contaminants of concern above MCLs, MDEQ drinking water criteria, or naturally occurring background concentrations were detected in any of the nearby residential drinking water wells. Continued annual monitoring of nearby residential drinking water wells, including quarterly monitoring for 1,4-dioxane in one drinking water well adjacent to the Site and continued semiannual monitoring of landfill and perimeter methane gas probes will be conducted. Thus, there are currently no exposure pathways and the remedy is functioning as designed. However, in order for the remedy to be protective in the long-term, the following actions need to be continued/taken: continued compliance with ICs on the landfill property; enactment of ICs for properties downgradient of the Metamora Landfill Site encompassing the contaminant plume area in both the Shallow and Intermediate Aquifers; and the site remedy components, including ICs, must be maintained, monitored, and enforced to ensure long-term protectiveness.

The MDEQ has a different interpretation than the U.S. EPA on how the remedy is being implemented, level of protectiveness, and compliance with the ROD Amendment. The MDEQ's support agency comments can be found in Attachment 3 of this Report.

Metamora Landfill Superfund Site  
Metamora, Michigan  
Fourth 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 deficiencies found during the review, if any, and identify recommendations to address them.

The United States Environmental Protection Agency (U.S. EPA) has prepared this Fourth 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.*

U.S. 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.*

U.S. EPA conducted the five-year review of the remedy implemented at the Metamora Landfill Superfund Site in Metamora, Michigan. This review was conducted by Nan Gowda, Remedial Project Manager for the entire site, from August 2008 through September 2009. This report documents the results of the review.

This is the fourth five-year review for the Metamora Landfill Superfund Site. The first and second five-year reviews were completed on August 24, 1993 and September 14, 1999, respectively. The triggering action for this statutory review was the third five-year review report signed on September 27, 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

Chronology of Site Events	
Event	Date
Landfill Operations	1955 – 1980
Listed on the National Priorities List (NPL) as Proposed	September 8, 1983
Listed on the NPL as Final	September 21, 1984
Phased Feasibility Study	August 1986
OU1 ROD	September 30, 1986
Remedial Investigation	March 1, 1989
Feasibility Study	April 1, 1990
OU2 ROD	September 28, 1990
Explanation of Significant Difference for OU1 ROD	September 4, 1991
Consent Decree Entered	March 17, 1993
First Five-Year Review	August 24, 1993
ROD Amendment	August 28, 1996
Second Five-Year Review	September 14, 1999
Conceptual Site Model Report	June 2001
Pre-Final Inspection Report	September 24, 2001
ROD Amendment	September 27, 2001
Preliminary Close Out Report	September 27, 2001
Final Inspection of Landfill	July 16, 2002
Third Five-Year Review	September 27, 2004
Operation and Maintenance Plan for MNA	November 2005
Baseline Groundwater Monitoring Report	March 2008

### **III. BACKGROUND**

#### **A. Physical Characteristics**

The Metamora Landfill Site is a closed landfill located approximately 3/4 miles east of the Village of Metamora in Lapeer County, Michigan (Figures 1 and 2). The Village of Metamora has a population of approximately 507. The area incorporating the landfill occupies about 25 acres of land on a 160-acre parcel. Residential homes are to the north and east of the Site on 20-acre plots. A gravel mine operates south of the Site on the 160-acre parcel. The Site is situated on a local topographic high which is comprised of extensive sand and gravel deposits. The surrounding land use is both residential and agricultural.

#### **B. History of Contamination**

The landfill began operations in 1955 as a privately owned, unregulated open dump. In 1969, the landfill was upgraded to meet existing standards, and licensed to receive general refuse. The landfill received industrial (which included as many as 35,000 drums containing PCBs, and other contaminants) and municipal waste until it closed in 1980.

#### **C. Initial Response**

From 1982 to 1990, many studies were performed at the Site. State lead remedial action (RA) work began in the spring of 1989 and continued until December 1990. This RA consisted of removing the drums from the Site and incinerating them off-site. The basis for the 1984 NPL listing of the Site was primarily from conducting test pits, along with results from a magnetic survey that estimated that as many as 35,000 drums were buried at the Site. After December 1990, the RA at the Site was conducted by a group of potentially responsible parties, under U.S. EPA oversight, who completed the excavation of the drums and incinerated them off-site.

#### **D. Basis for Taking Action**

In 1981, approximately eight drums were unearthed in the northwest area of the Site during borrow excavations for the nearby solid waste transfer station. The Michigan Department of Natural Resources (MDNR) sampled seven of these drums and identified (but did not quantify) the presence of methylene chloride, methyl chloroform, dichloroethylene, and styrene. In 1982, MDNR conducted a magnetometer survey which concluded that as many as 35,000 drums, some containing liquid waste, might be present in five disposal areas around the Site. The survey concluded that areas one and four contained about 74% of the total estimated number of buried drums in the landfill. A Site layout map illustrating these features is provided in Figure 2.

In the summer of 1985, the MDNR initiated pre-remedial investigation activities at the Site, during which soil borings were taken and thirteen groundwater monitoring wells were installed. Sampling results from the investigation confirmed the existence of inorganic and organic groundwater contamination.

In the fall of 1986, the MDNR initiated a remedial investigation/feasibility study (RI/FS) at the Site. A Phased FS was completed in August, 1986 which culminated in a ROD for OU1 signed on September 30, 1986. The 1986 ROD called for the excavation and disposal of all waste at an off-site RCRA compliant incinerator.

The RI report for OU2 was completed in March, 1989. The FS for OU2 was completed in April 1990. The 1990 ROD for OU2 was signed on September 28, 1990 and called for a RCRA Subtitle C landfill cap and a groundwater pump and treat system. The contaminants of concern are:

<b>Contaminant of Concern</b>	<b>Groundwater</b>		
	<b>Ingestion</b>	<b>Inhalation</b>	<b>Dermal Adsorption</b>
Arsenic	X		X
Barium	X		X
Benzene	X	X	X
2-Butanone			
1,1-Dichloroethane	X	X	X
1,2-Dichloroethane	X	X	X
1,1-Dichloroethene	X	X	X
1,2-Dichloroethene	X	X	X
cis 1,2-Dichloroethene			
Trans 1,2-Dichloroethene			
Ethylbenzene	X	X	X
Tetrachloroethene			
Trichloroethene	X	X	X
1,1,2-Trichloroethane	X	X	X
Vinyl chloride	X	X	X
Xylene	X	X	X

#### **IV. REMEDIAL ACTIONS**

##### **A. Remedy Selection**

The September 1986 ROD for OU1 called for the excavation and disposal of waste from Drum Areas 1 and 4 at an off-site RCRA compliant incinerator. The objective of the 1986 ROD was to control the source of contamination. An Explanation of Significant Difference was issued on September 1991 that permitted the incineration to take place on-site, though this action was never implemented. On August 28, 1996, U.S. EPA signed an amendment to the 1986 ROD for OU1. This ROD amendment required the excavation of contaminated soils (OU3) from Drum Area 1, placement of the excavated material in separate areas on the landfill, and capping of these materials under the OU2 landfill cap.

The 1990 ROD for OU2 called for a RCRA Subtitle C landfill cap and a groundwater pump and treat system. The objective of the 1990 ROD was to remediate groundwater and soil for protection of human health and the environment. On September 27, 2001, U.S. EPA signed an amendment to the 1990 ROD for OU2 changing the groundwater pump and treat remedy to monitored natural attenuation (MNA).

The selected remedies have the following specific components:

- the excavation and off-site incineration of drums and contaminated soil in Drum Areas 1 and 4;
- the placement of approximately 46,000 cubic yards of contaminated soil in the landfill;
- regrading and seeding of Drum Areas 1 and 4;
- construction of a landfill cap and fence;
- construction of a groundwater well network to monitor natural attenuation in the groundwater; and
- placement of institutional controls on the site.

The landfill cap consists of the following components listed in order from bottom to top:

- on-site grading fill layer (varying depths);
- 12-inch bedding soil layer;
- geosynthetic clay liner;
- 40-mil flexible membrane liner;
- 12-inch sand drainage layer;
- 6-inch common fill layer;
- 6-inch topsoil layer; and
- vegetative cover.

The purpose of the excavation was to remove drummed material and contaminated soil from concentrated "hot spots" at the landfill site. Excavation in Drum Area 4 was completed on December 6, 1989. Excavation and transport of the Soil Staging Area soils to the south side of the landfill was completed in August 1998. Excavation and transport of the Drum Area 1 soils to the south side of the landfill was completed in November 1998. Regrading and seeding of Drum Area 1 was performed during the construction of the remedy for OU2 in 1999. Institutional controls to limit both land and groundwater use on the landfill portion of the Site were put in place through an environmental covenant. The covenant prohibits the use of groundwater and surface water on-Site, any use of the property that is inconsistent with the remedial action, and any interference with the remedial action. Gravel operation is permitted to continue outside the area of the landfill (i.e., where the environmental covenant is in-place).

The purpose of the clay cap and pump and treat system was to contain groundwater and protect drinking water supplies. The Potentially Responsible Party (PRP) group requested reopening of the 1990 ROD for OU2 to allow for a natural attenuation remedy for the groundwater. As a result, the PRP group performed an analysis of the groundwater for several years after the 1990 ROD and presented the results in the Conceptual Site Model Report (CSMR) by Conestoga Rovers & Associates, dated June 2001. The results of the study indicate

that the groundwater is naturally attenuating and that the groundwater no longer requires containment. As stated above, the ROD was amended on September 27, 2001, changing the groundwater pump and treat remedy to MNA.

An Operation and Maintenance (O&M) Plan for long-term monitoring of the aquifers was approved in November 2005. The O&M Plan requires monitoring of the Shallow, Intermediate, and Bedrock Aquifers on a quarterly basis for the first two years, with reduced frequencies thereafter, as approved by U.S. EPA. The quarterly monitoring data was evaluated to determine if MNA is achieving the goal of remediating the aquifers in a reasonable time frame as compared to more active methods. If MNA is not successful, the 2001 ROD Amendment set forth a contingency plan that would consider using more active methods to achieve remediation goals.

Pursuant to the Groundwater Protection Strategy, the groundwater located in both the Shallow and Intermediate Aquifers is classified as Class IIA groundwater. Applicable, or relevant and appropriate requirements (ARARs) of Federal and more stringent State environmental laws for the Site landfill construction and groundwater MNA remedies are listed below:

- RCRA Closure regulations (40 CFR 264.110).
- Air emission standards as required by CAA Regulations (40 CFR 50).
- Air emission standards as required by Michigan Air Pollution Control Regulations (R336, Part 201).
- Capping requirements as stated by Michigan Act 64.
- Monitoring, collection, or treatment of emissions depending on the actual landfill gas constituents as required by Michigan Act 348.
- Subparts G, Closure and Post Closure and Subpart N, Landfills off RCRA as referenced by Michigan Act 64.
- Limitations of fugitive dust as required by BACT R336 rules 701 and 702.
- Michigan Air Pollution Control Commission General Rules (R336 Part 9).
- Groundwater recharge quality as required by SDWA MCLS (40 CFR 141.11-141.16).
- Deed notices as required by RCRA closure regulations (40 CFR 264.119).
- Deed notices as required by Michigan Act 64.
- MCLS under the Federal Safe Drinking Water Act and any more stringent Generic Residential drinking Water Criteria under Michigan Part 201.

## **B. Remedy Implementation**

Work for OU1 began in April 1989 and completed in November 1994. The work began as a State lead remedial action and continued until December 1990. During the summer of 1990, off-site incineration capacity became extremely limited and drums awaiting disposal began to accumulate at the site. In addition, many more drums were discovered than originally estimated in the Remedial Design. This, in combination with the new RCRA Land Ban regulations, began to affect remedy implementation. In November 1990, negotiations began with PRPs for Remedial Design/ Remedial Action (RD/RA) for OU2. In April of 1991 a settlement was reached that addresses the completion of all remedial activity remaining at the site, including the

completion of OU1. In September 1991, an explanation of significant differences was issued, but never implemented, to allow for the option of on-site incineration of drummed waste and contaminated soils of Drum Area 1. Drum Area 4 had been completed.

The consent decree was entered by the federal court on March 17, 1993. Off-site incineration of Drum Area 1 drums and severely contaminated soils continued in November 1993, and was completed in November 1994. This completed the work required for OU1.

The remedy selected for OU2 addressed the remaining risk threats, namely the landfill and contaminated groundwater. The 1993 Consent Decree required the MLSPG to implement the selected remedy of a landfill cap and a groundwater pump and treat system. The amendment to the OU1 ROD (OU3) incorporated the remediation of Drum Area 1 soils and the soil staging soils into the cap portion of the OU2 remedy.

Significant difficulties and changes occurred for the design of the remedy selected for OU2. The 1993 Pre-Design Hydrogeology Investigation found that pumping even low volumes of groundwater north east of the landfill boundary resulted in the test well running dry. Also, a more thorough investigation of the contaminant plume showed that the plume was not expanding as the RI predicted. As a result of these difficulties, and based on other factors as well, the remedy was changed to MNA after its potential was thoroughly examined in the CSMR.

The RA for the construction of the landfill cap began in April 2001 and was completed in September 2001. The Landfill Cap System has performed as designed since the RA was completed. The landfill gas control system installed in conjunction with the landfill cap was designed to meet the ROD objectives of ensuring that unsafe levels of explosive gases do not migrate away from the landfill and that other hazardous gases are not present in the ambient air at the Site in unsafe levels.

The Consent Decree also required the MLSPG to implement an O&M plan for the landfill and conduct groundwater monitoring for the MNA remedy. The O&M Plan was approved in November 2005. Quarterly monitoring of the Long-Term Monitoring Well (LTMW) Network began in January 2006 and was completed in December 2007. Semi-annual monitoring is currently being conducted.

### **C. Institutional Controls**

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). Institutional Controls were required as part of the remedy.

The remedy for the Metamora Landfill Site required ICs, including use restrictions, "to prohibit future development of the land within the contaminated shallow groundwater aquifer downgradient of the site where clean-up levels are exceeded. The use restrictions regarding future development should be considered permanent, while restrictions regarding the future of

groundwater drinking wells may be lifted, if the contaminant levels within the aquifer at and surrounding the site fall below the clean-up levels.” The Consent Decree requires institutional controls, including use restrictions, “to prohibit future development of the site (including, but not limited to on-site excavations, construction and drilling) and the installation of groundwater drinking wells and/or production wells at the site and within the contaminated shallow groundwater aquifer downgradient of the site where clean-up levels are exceeded. 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 table below summarizes institutional controls for these restricted areas.

**IC Summary Table:**

<b><i>Media, remedy components &amp; areas that do not support UU/UE based on current conditions</i></b>	<b><i>Objectives of IC</i></b>	<b><i>Title of Institutional Control Instrument Implemented</i></b>
<b><i>Metamora Landfill and adjacent land.</i></b> (Portions of the Parrish and County Transfer Station properties that include the landfill cap system area)	Prohibit development, restrict access, and prohibit installation and use of groundwater wells	Environmental covenants are in place. See attached covenant (Parrish and County Transfer Station Properties).
<b><i>Adjacent areas affected by the landfill operations.</i></b> (Portions of the Parrish and County Transfer Station properties affected by past landfill operations).	Restrict access, and prohibit installation and use of groundwater wells	Environmental covenants are in place. See attached covenant (Parrish and County Transfer Station Properties).
<b><i>Groundwater on-site</i></b>	Prohibit use of groundwater from Shallow and Intermediate Aquifers until cleanup standards are achieved.	Environmental covenants are in place. See attached covenant (Parrish and County Transfer Station Properties).
<b><i>Groundwater off-site (downgradient from the landfill)</i></b> – contaminant plume area that exceeds cleanup standards. MNA remedy is in place.	Prohibit use of groundwater from Shallow and Intermediate Aquifers until cleanup standards are achieved	Environmental covenant and/or Ordinance required to restrict the use of groundwater.

***Physical Areas Requiring ICs:***

The areas requiring ICs to comply with the Consent Decree Scope of Work include the following:

- Portions of the Parrish and County Transfer Station properties that include the landfill cap system area,
- Portions of the Parrish and County Transfer Station properties affected by past landfill operations, and
- Properties downgradient (north) of the Parrish property where constituents above cleanup levels have been identified in groundwater.

ICs are currently in place for the portion of the Parrish and County Transfer Station properties that contain the landfill cap system area property affected by past landfill operations.

The landfill occupies approximately 25 acres of land on a 154-acre parcel. Eugene Parrish is the owner of 141 acres of the 154-acre parcel that includes the landfill, hereafter referred to as the Parrish property. The cap is part of the remedy that meets RCRA Subtitle C and Michigan Act 451, Part 111 requirements for landfills. The remaining 13 acres of the 154-acre parcel is owned by County Transfer Station, a former municipal waste transfer facility. A sand and gravel mining operation is located on the Parrish property south of the landfill. The surrounding land is used for residential and agricultural purposes. The legal description (or map) of the landfill area in the attached restrictive covenant covers the landfill cap area as constructed and the other areas of IC interest.

***Status of Access Restrictions and ICs and Required Follow-up Actions:***

At the Site, access and use are restricted with a security perimeter fence, along with a restriction on the use of surface water and groundwater on the property. These controls and restrictions are in place at the Site. Restrictive covenants were put in place at the Site in July 1997 (as modified in October 1998) and May 2002 (as modified in July 2009). Additionally, a groundwater regulation (Administrative Rule R. 325.1621) in place in the State of Michigan regulates the installation and abandonment of water wells in the state; this regulation prohibits the construction of wells in the areas of contamination near the Site. Additional groundwater ICs, however, may be needed.

On August 19, 2008, U.S. EPA requested that the MLSPG prepare an Institutional Control Implementation and Assurance Plan (ICIAP) for the Site. The purpose of the ICIAP was to evaluate ICs to ensure they are effective and properly maintained, monitored, and enforced. The MLSPG submitted the ICIAP in November 2008. The ICIAP concluded that the ICs were in place. The MLSPG has modified the current environmental covenant on the landfill property to more accurately reflect the limits of the landfill boundary as the fence was realigned several years ago. Further, additional ICs along the contaminated groundwater plume further downgradient from the landfill site were determined to be necessary to limit the use of groundwater. U.S. EPA will work with the MLSPG in establishing the boundaries of the groundwater contaminant plume downgradient from the landfill site and in implementing the required ICs to cover the plume. The MLSPG will also demonstrate that all the environmental covenants run with the land.

A review of the ICIAP will be done to ensure that effective ICs are in-place or will be implemented, monitored, maintained, and enforced. The review will address all existing ICs to



ensure that they are properly mapped and run with the land; and review of the O&M Plan will be done to ensure long- term stewardship as is discussed below.

***Current Compliance:*** Based on the Site inspection and data reviewed, U.S. EPA is not aware of site or media uses which are inconsistent with the stated objectives of the ICs and cleanup goals. Access is further restricted by use of fencing. Therefore, at this time, the remedy appears to be functioning as intended since the property is not being used in a manner which is inconsistent with the required use restrictions or other ICs. However, long term protectiveness requires compliance with effective ICs.

***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, monitoring and enforcement of effective ICs, long term stewardship procedures will be reviewed and the O&M Plan will be revised as necessary.

***Review of Existing ICs:*** The PRPs have proposed covenant language for the off-site property, as well as a modification of the ICs on site. The State of Michigan has been developing model language in recent months for covenants to ensure that such instruments are enforceable under state law. This model language is in the final stages of development. EPA is evaluating these alternate instruments. As noted, the existing ICs will be evaluated and considered for amendment. If changes are needed, EPA anticipates that draft covenants can be developed later this winter and finalized by the end of 2010.

#### **D. Systems Operations/Operations and Maintenance**

The Site remedy has two major components covered by the O&M Plan: the landfill cap system and monitored natural attenuation for groundwater. The purpose of the landfill cap system is to prevent contact with and minimize surface water infiltration into the waste. The landfill cap system has no operational requirements, but requires regular inspections and maintenance to ensure that it serves its intended purpose. MNA does not have operational requirements, but regular monitoring is required to verify that natural attenuation continues to reduce site-related constituents in groundwater.

The MLSPG has been conducting long-term monitoring and maintenance activities at the Metamora Landfill Site according to the approved O&M Plan. The primary activities associated with the O&M Plan include the following:

**Inspection of the landfill cap system:** Semi-annual inspections of the landfill system are conducted to ensure that the remedial components are functioning as designed. These inspections include an overall site inspection along all access roads and perimeter security fencing. The surface of the landfill cap is inspected to ensure the integrity of the cap and for signs of damage due to loss of vegetation, settlement, erosion, and burrowing animals.

**Maintenance activities:** Maintenance activities include cutting, fertilizing, and restoring of the landfill vegetative cover, grading of access roads, patching of potholes in road surfaces,

repair of surficial erosion and sloughing along the perimeter slopes, repair of damage caused by burrowing animals, repair of seeps, and cleaning of ditches, catch basins, and culverts.

Landfill Gas Vent Monitoring: Landfill gas vents installed through the cap allow the release of gas to the atmosphere. Vents installed along the north and east perimeters beyond the cap limit allow the release of gas which may be migrating laterally from the Site. These vents are monitored to ensure that they are in good working order. As part of the O&M Plan, the MLSPG conducts semi-annual landfill gas monitoring to assess combustible gas levels.

Groundwater monitoring: Semi-annual monitoring of LTMW Network of wells in the Shallow, Intermediate, and Bedrock aquifers is conducted as part of the MNA remedy.

The following table summarizes annual O&M costs incurred within the past five years.

**Annual Landfill System O&M Costs**

Dates		Total Cost	Remarks
From	To		
January 2003	December 2004	\$25,000	
January 2004	December 2005	\$30,000	
January 2005	December 2006	\$228,000	O&M costs include Quarterly Groundwater Monitoring
January 2006	December 2007	\$209,500	O&M costs include Quarterly Groundwater Monitoring
January 2007	December 2008	\$169,500	O&M costs include Quarterly Groundwater Monitoring

## **V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW**

U.S. EPA, in its third Five-Year Review Report (September 27, 2004), concluded that the remedy selected for the Metamora Landfill Site remained protective of human health and the environment in the short term. In order to be protective of human health and the environment in the long-term, U.S. EPA made five site-specific recommendations. The following table summarizes these recommendations and follow-up actions to be taken:

### Actions Taken Since the Last Five-Year Review

Recommendations From Previous Review	Party Responsible	Action Taken
Complete LTMW Network	U.S. EPA/MDEQ/ PRP	Completed
Complete Final O&M manual after LTMW Network is complete	PRP	Completed
Resolve methane vadose zone issue	PRP	Completed
Institutional Controls on Residential Property	PRP	In Progress
Evaluate MNA	U.S. EPA/MDEQ/ PRP	In Progress

**LTMW Network and Final O&M Plan:** The third five-year review report recommended the completion of the long-term monitoring well network and an O&M manual. Between May 2004 and January 2007, the MLSPG installed a total of ten additional monitoring wells (MW46I-04, MW42I-5, MW50I-05, MW51I-05, MW52I-05, MW54I-05, MW55I-05, MW57I-07, MW58I-07, and MW59I-07) in the Intermediate Aquifer, and one monitoring well (MW42-05) in the Shallow Aquifer. The LTMW Network and O&M Plan were finalized in January 2006. The LTMW Network for hydraulic monitoring includes a total of 31 Shallow Aquifer monitoring wells, 23 Intermediate Aquifer monitoring wells, and seven Bedrock Aquifer monitoring wells. The LTMW Network for chemical monitoring includes a total of 20 Shallow Aquifer monitoring wells, 22 Intermediate Aquifer monitoring wells, and seven Bedrock Aquifer monitoring wells.

**Methane Vadose Zone Issue:** To address MDEQ's concerns about the possibility of methane gas migrating onto adjacent residential properties at concentrations above the lower explosive limit (LEL), which is 5% methane by volume, the MLSPG conducted a methane gas monitoring in the basements of residences located adjacent to the Site. The monitoring was conducted from April 21, 2006 to May 12, 2006, and from June 29, 2006 to July 6, 2006. Based on the results of the gas monitoring activities, no explosive gases or potential landfill gases were detected above the MDEQ action levels (10% LEL for methane). To further address MDEQ's concerns relating to methane gas migration, the MLSPG installed six permanent multi-level gas probes (PGP-8 to PGP-13) and monitored the gas probes for the presence of methane. The average methane readings from probes PGP-8 to PGP-13 are 0.0%, thus delineating the extent of the methane gas migration north of the landfill boundary. PGP-14 was installed approximately 200 feet north of PGP-3 (PGP-8 to PGP-13 are approximately 350 feet farther to the north); the average methane readings from monitoring PGP-14 ranged from 0.1% to 0.2%, showing that methane gas is limited to within a short distance of the Site.

**Institutional Controls:** To address the issue of residential ICs, U.S. EPA requested in August 2008 that the MLSPG submit an ICIAP to determine what ICs were in place and what ICs were still needed. The MLSPG submitted an ICIAP in November 2008. The ICIAP concluded that ICs were in place for the landfill, and that governmental controls could preclude the use of groundwater at the Site and beyond. However, the ICIAP recommended restrictive covenants for two properties downgradient of the Site.

Evaluate MNA: Following the approval of the O&M Plan, the MLSPG began the baseline groundwater monitoring of the LTMW Network on a quarterly basis from January 2006 through December 2007 for a total of eight quarters. In March of 2008, the LTMW Group completed a Baseline Groundwater Monitoring Report. This report includes an evaluation of MNA downgradient of the Site, a statistical evaluation of baseline data, and recommendations for future monitoring. Evaluating the MNA component of the remedy is an on-going process and a comprehensive evaluation will be done as a part of the next five year review.

### 2004 Five-Year Review

The 2004 Five Year Review for the Site documented the Protectiveness Statement as follows:

“Completion of the current five-year review confirms that the Metamora Landfill Superfund Site is protective of human health and the environment, and exposure pathways that could result in unacceptable risks are being controlled. The Site landfill cap is functional, operational and effective. Restrictions for Site access and use of contaminated groundwater associated with the Site remain in place.

The other remaining component of this remedy is the groundwater. Monitoring to evaluate the effectiveness of MNA will begin by Fall 2004. The effectiveness of the MNA remedy will be assessed within five years. If this assessment determines that MNA alone will not be successful in achieving remediation goals within a reasonable time period, which is generally defined as approximately 30 years in the NCP, U.S. EPA will implement the contingency plan. Long-Term protectiveness for groundwater media, will be assessed in the next Five Year- Review.”

MNA has been evaluated and been determined to be effective. Evaluating the MNA component of the remedy is an on-going process and a comprehensive evaluation will be done as a part of the next five year review.

## **VI. FIVE-YEAR REVIEW PROCESS**

### **A. Administrative Components**

In its August 7, 2008 letter, U.S. EPA notified MDEQ of its intention to conduct the statutory five-year review of the Metamora Landfill Site in Metamora, Michigan. The Metamora Landfill Five-Year Review team was led by Nan Gowda, U.S. EPA Remedial Project Manager for the Metamora Landfill Site and Keith Krawczyk of the MDEQ. The review team’s responsibilities included the following components:

- Community Notification;
- Document Review;
- Data Review; and
- Site Inspection

## **B. Community Involvement**

A notice was published on August 31, 2008 in the local newspaper, County Press, that a five-year review was being conducted. Since the newspaper ad was published, no member of the community or any other individual has offered any comments on the five-year review of the Metamora Landfill Site.

## **C. Document Review**

The five-year review consisted of the review of the following documents:

1. Record of Decision for the Metamora Landfill Site, Operable Unit 1 (September 30, 1986)
2. Record of Decision for the Metamora Landfill Site, Operable Unit 2 (September 28, 1990)
3. Record of Decision Amendment for the Metamora Landfill Superfund Site – Operable Unit 1 (August 28, 1996)
4. Record of Decision Amendment for Operable Unit 2 of the Metamora Landfill Site (September 27, 2001)
5. Third Five-Year Review Report for the Metamora Landfill Site (September 27, 2004)
6. Operation and Maintenance Plan for the Metamora Landfill Site (January 2006)
7. Basement Methane Gas Monitoring Report (November 2006)
8. Baseline Groundwater Monitoring Report for the Metamora Landfill Site (March 2008)
9. Metamora Landfill Superfund Site – MDEQ Issues Statement (January 2008)
10. U.S. EPA's response to MDEQ Issues Statement dated January 2008.
11. O&M Groundwater Monitoring Reports – 1<sup>st</sup> Quarter 2008 Metamora Landfill Site
12. O&M Groundwater Monitoring Reports – 2<sup>nd</sup> Quarter 2008 Metamora Landfill Site
13. O&M Groundwater Monitoring Reports – 4<sup>th</sup> Quarter 2008 Metamora Landfill Site
14. O&M Groundwater Monitoring Reports – 1<sup>st</sup> 2009 Semi-Annual Sampling Event - Metamora Landfill Site
15. O&M Site Inspection Memoranda for the Metamora Landfill Site (2008 and 2009)
16. Residential Water Well Sampling Data for 1,4-Dioxane (June 17, 2009)
17. Institutional Control Implementation and Assurance Plan (November 2008)
18. MDEQ's comments on the Draft Fourth Five-Year Review Report for the Metamora Landfill Site

## **D. Data Review**

### Review of Long-Term Monitoring Network:

The LTMW Network for chemical monitoring included a total of 27 Shallow Aquifer monitoring wells, 23 Intermediate Aquifer monitoring wells, and seven Bedrock Aquifer monitoring wells until March 2009, when the network was reduced to 20 Shallow Aquifer monitoring wells, 22 Intermediate Aquifer monitoring wells, and seven Bedrock Aquifer

monitoring wells, based on the results presented in the Baseline Groundwater Monitoring Report. The downgradient and lateral extent of the volatile organic compound (VOC) plume in the Shallow Aquifer (Figure 3) has been defined by monitoring wells MW32-94, MW43-03, MW33-94, MW42-05, MW47-03, MW34-94, MW26-98, and MW35-94. The downgradient and lateral extent of the VOC plume in the Intermediate Aquifer (Figure 4) has been defined by monitoring wells MW43I-03, MW54I-05, MW 55I-05, MW59I-07, MW57I-07, MW58I-07, MW52I-05, and MW50I-05. There are no organic parameters detected in the Bedrock Aquifer (Figure 5) except for very low and stable concentrations of 1,4-dioxane, detected in one well (MW49R-02) at approximately 1 µg/L, significantly below the MDEQ drinking water criterion of 85 µg/L. This is not evidence that the plume is expanding in the Bedrock Aquifer. This parameter was added to the list of monitored parameters just prior to the 2006-2007 quarterly sampling. Prior to 2006, no 1,4-dioxane analyses were undertaken. 1,4-dioxane concentrations are reported in the Baseline Groundwater Monitoring Report to be stable over the two-year quarterly monitoring period. Periodic groundwater monitoring continues, and will identify any changes to the groundwater plume.

Monitoring wells were not installed on an adjacent property northeast of the landfill as a result of access constraints. Since access was denied, additional monitoring wells were installed at alternate nearby locations. The Shallow Aquifer on this property thins substantially to the east; as a result, this area is not a significant flow path. Monitoring wells that could not be installed on this property are not critical in the evaluation of the effectiveness of the remedy.

The existing monitoring network provides sufficient coverage to detect any changes in the plume. Both the MNA Guidance (Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Site – April 21, 1999) and the document titled “Performance Monitoring of MNA Remedies for VOCs in Groundwater (EPA/600/R-04/027)” recommend having a monitoring program that can verify that the plume is not expanding and verify that there are no unacceptable impacts to the downgradient receptors. The monitoring program at the Metamora Landfill Site does this via residential well sampling and the “lateral extent” and downgradient “performance evaluation” wells. Monitoring wells MW-25, MW26-98, MW34-94, and MW35-94 together serve as downgradient and lateral extent wells to the east and northeast of the Site in the Shallow Aquifer. Downgradient from the Site in the Intermediate Aquifer, MW50I-05 (located adjacent to the Site) serves as the eastern lateral extent well. Further downgradient, MW52I-05 serves as an eastern lateral extent well. The downgradient “performance evaluation” monitoring wells in the monitoring well network include, in the Shallow Aquifer, MW43-03, MW33-94, MW42-05, MW47-03, and MW34-94, and in the Intermediate Aquifer, MW55I-05, MW59I-07, MW57I-07, and MW58I-07.

### Review of Monitored Natural Attenuation Process:

The MLSPG conducted the groundwater monitoring of the LTMW Network on a quarterly basis from January 2006 through December 2007 for a total of eight quarters. Following completion of the eight quarterly monitoring events, the MLSPG completed a Baseline Groundwater Monitoring Report in March 2008. This report includes an evaluation of monitored natural attenuation (MNA) downgradient of the Site, a statistical evaluation of baseline data, and recommendations for future monitoring.

The results of the natural attenuation evaluation for the Site indicate that the natural attenuation processes including biodegradation are reducing the concentrations of Site-related VOCs in both the Shallow and Intermediate Aquifers. Conditions are conducive to the reductive dechlorination of the chlorinated VOCs present, and daughter products have been detected confirming that biodegradation is occurring. Concentrations of chlorinated ethanes and ethenes have generally remained stable or decreased over time in Shallow and Intermediate Aquifer monitoring wells. MNA remains the appropriate remedy for the Site groundwater.

The results of the statistical evaluation of the 2006 to 2007 baseline data indicate that the statistical evaluation methods presented in the O&M Plan are appropriate for their intended use. Based on the MNA and statistical evaluation, the report recommends continuing the groundwater monitoring program on a reduced frequency, and this recommendation has been followed.

### Review of Groundwater Monitoring

Subsequent to the baseline monitoring period, the MLSPG completed three more quarterly sampling events in 2008 and one semi-annual sampling event in 2009. Based on these results, 1,4-dioxane was present in one monitoring well (MW49R-02) in the Bedrock Aquifer at concentrations less than 2 µg/L, well below the MDEQ drinking water criterion of 85 µg/L. Cis-1,2-dichloroethene was also detected at estimated concentrations of 0.23J to 0.29J, which are well below the detection limit (1.00 µg/L) and the drinking water criterion (70 µg/L). No other organics were present in any of the monitoring wells in the Bedrock Aquifer. Periodic groundwater monitoring continues, and any significant change in conditions will be identified.

In the Intermediate Aquifer, out of nineteen monitoring wells sampled for 1,4-dioxane, five of the wells (MW33I-99, MW23I-98, MW46I-04, MW25I-98, and MW49I-04) showed concentrations above the MDEQ drinking water criterion in at least one quarterly sampling event conducted in 2008. All other contaminants detected in the Intermediate Aquifer remained stable when compared with the results of the Baseline Groundwater Monitoring Report. Periodic groundwater monitoring continues, and any significant change in conditions will be identified.

In the Shallow Aquifer, vinyl chloride was detected in MW36-98 at a concentration of 2.3 µg/L above the MDEQ drinking water criterion (2.0 µg/L) in the June 2008 quarterly sampling event. However, in subsequent sampling events, the concentration of vinyl chloride was detected in this well at estimated concentrations varying from 0.98J µg/L to 0.32J µg/L, which is consistent with previous results. In MW41-03, concentrations of TCE varied from 10 µg/L to 15 µg/L. These levels are slightly higher than the levels of TCE in MW41-03 presented

in the Baseline Groundwater Monitoring Report. Contaminant levels in all other wells in the Shallow Aquifer remained stable when compared with the results of the Baseline Groundwater Monitoring Report. Periodic groundwater monitoring continues, and any significant change in conditions will be identified.

#### Review of Residential Drinking Water Well Monitoring:

MDEQ conducts sampling of nearby residential drinking water wells on an annual basis. However, no monitoring of the residential drinking water wells was conducted in 2008. In their 2007 annual sampling, 1,4-dioxane was detected at 17 µg/L in one residential drinking water well. Although this level is significantly below the MDEQ drinking water criterion of 85 µg/L, the MLSPG began monitoring this residential well for 1,4-dioxane on a quarterly basis. Based on the quarterly monitoring conducted between March 2008 and March 2009, levels of 1,4-dioxane at this residential well are stable with levels varying from 7.4 µg/L to 18 µg/L. Arsenic and iron were detected at concentrations above MDEQ drinking water criteria; however these chemicals are naturally occurring in groundwater in the Metamora area and the detected concentrations are below background levels.

#### Review of Methane Gas Monitoring:

The MSLPG conducts landfill gas monitoring at the Metamora Landfill Site on a semi-annual basis. The results indicate that methane gas levels are either steady or have a decreasing trend. The results of the methane gas monitoring conducted in the basements of residences located near the landfill site did not show the presence of explosive gases or potential landfill gases above the action level (10% LEL for methane). In addition, the six perimeter gas probes (PGP-8, PGP-9, PGP-10, PGP-11, PGP-12, and PGP-13) installed along the northern boundary of the landfill showed no methane gas, thus delineating the extent of the methane gas migration north of the landfill boundary. PGP-14 was installed approximately 200 feet north of PGP-3 and 350 feet south of PGP-8 to PGP-13; the average methane readings from monitoring PGP-14 ranged from 0.1% to 0.2%, showing that methane gas is limited to within a short distance of the Site. Due to lack of access and other difficulties, no additional gas probes were installed along the east, south, or west sides of the landfill. No methane gas was detected above the action level of 10% LEL for methane gas in the basement of the nearest residence which is about 600 feet from the edge of the landfill. U.S. EPA believes that methane gas is limited to within a short distance of the landfill boundary and that methane concentrations are decreasing over time. U.S. EPA will continue to monitor the situation and expects that over time landfill gas will continue to decrease, eventually being confined within the landfill property boundary.

#### **E. Site Inspection**

An inspection of the Metamora Landfill Site was performed as part of this five-year review on October 8, 2008 by Keith Krawczyk of the MDEQ and Nan Gowda of the U.S. EPA. In addition, James Reid and Kristen Aspinall of Conestoga-Rovers & Associates (CRA) representing the MLSPG also participated in the Site visit. The purpose of the inspection was to determine the current site conditions and to assess the protectiveness of the remedy.



Fencing was generally found to be in good condition. Gates were locked, and there was no evidence of unauthorized access to the site. The landfill cap was generally found to be in good condition. There were no cracks or eroded areas observed during the site inspection. There were no areas of disturbance, such as animal burrows. Several clean-out pipe stickups were loose. One gas vent was found to be damaged. Based on CRA's March 17, 2009 O&M Inspection Memorandum, the damaged gas vent has been repaired and the loosened clean-out pipe stickups are reinstalled.

## **VII. TECHNICAL ASSESSMENT**

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

Yes. The results of the natural attenuation for the Site indicate that the natural attenuation processes including biodegradation are reducing the concentrations of Site-related VOCs in both the Shallow and Intermediate Aquifers. Conditions are conducive to the reductive dechlorination of the chlorinated VOCs present, and daughter products have been detected confirming that biodegradation is occurring. Concentrations of chlorinated ethanes and ethenes have generally remained stable or decreased over time in Shallow and Intermediate Aquifer monitoring wells. MNA remains the appropriate remedy for the Site groundwater. The landfill cap is also functioning as intended by preventing exposure to waste. No exposure pathways exist at the Site.

The 1990 ROD required institutional controls implementing deed and access restrictions to prevent development of the Site, and to prevent the use of groundwater. Site access and use is restricted with a security perimeter fence, along with a restriction on the surface water and groundwater on the property. These controls and restrictions remain and are in place at the Metamora Landfill Site.

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

Yes. There have been no changes in the physical conditions of the Metamora Landfill Site that would 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?

No. While 1,4-dioxane was detected in one residential water well adjacent to the Site at levels varying from 7.4 µg/L to 18 µg/L, these levels are significantly below the MDEQ drinking water criteria of 85 µg/L. The MLSPG is monitoring this drinking water well for 1,4-dioxane on a quarterly basis. No other events have affected the protectiveness of the remedy and there is no other information that calls into question the protectiveness of the remedy.

## Technical Assessment Summary

The review of documents, applicable or relevant and appropriate requirements, risk assumptions, and the results of the site inspection indicates that the remedy is functioning as intended by the RODs, and ROD amendments. The results of the natural attenuation evaluation for the Site indicate that the natural attenuation processes including biodegradation are reducing the concentrations of Site-related VOCs in both the Shallow and Intermediate Aquifers. Conditions are conducive to the reductive dechlorination of the chlorinated VOCs present, and daughter products have been detected confirming that biodegradation is occurring. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. ARARs for soil contamination and the landfill cap cited in the RODs and the amendments have been met. 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 remedy.

Continued annual monitoring of nearby residential drinking water wells, including quarterly monitoring for 1,4-dioxane in one drinking water well adjacent to the Site, semi-annual monitoring of methane gas probes, and long-term monitoring of the monitoring well network will ensure that protection of human health and the environment.

## **VIII. ISSUES**

The following issue was identified for the Site during this Five-Year Review:

<b>Issue</b>	<b>Affects Current Protectiveness (Y/N)</b>	<b>Affects Future Protectiveness (Y/N)</b>
<b>Institutional Controls</b>  Effective ICs must be implemented, monitored, maintained, and enforced to assure that the remedy is functioning as intended.	No	Yes

## **IX. RECOMMENDATIONS**

Because the contaminants of concern are still present at the landfill Site and in the on-site and off-site groundwater monitoring wells, institutional controls to prohibit the off-Site use of groundwater from the Shallow and Intermediate Aquifers are necessary. ICs to prevent the use of groundwater at the Site as well as to prohibit the development of the Site are already in place. Following is the recommendation.

## **Recommendations/Follow Up Actions**

Issue	Recommendations/ Follow-up Actions	Responsible Party	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N) Current/ Future
Institutional Controls	A review of the ICIAP will be done to ensure that effective ICs are in-place or will be implemented, and are monitored, maintained, and enforced. The review will address all existing ICs to ensure that they are properly mapped and run*/// with the land; and review of the O&M Plan to ensure long-term site stewardship.	U.S. EPA/MLSPG	U.S. EPA	December 2010	Current – No Future – Yes

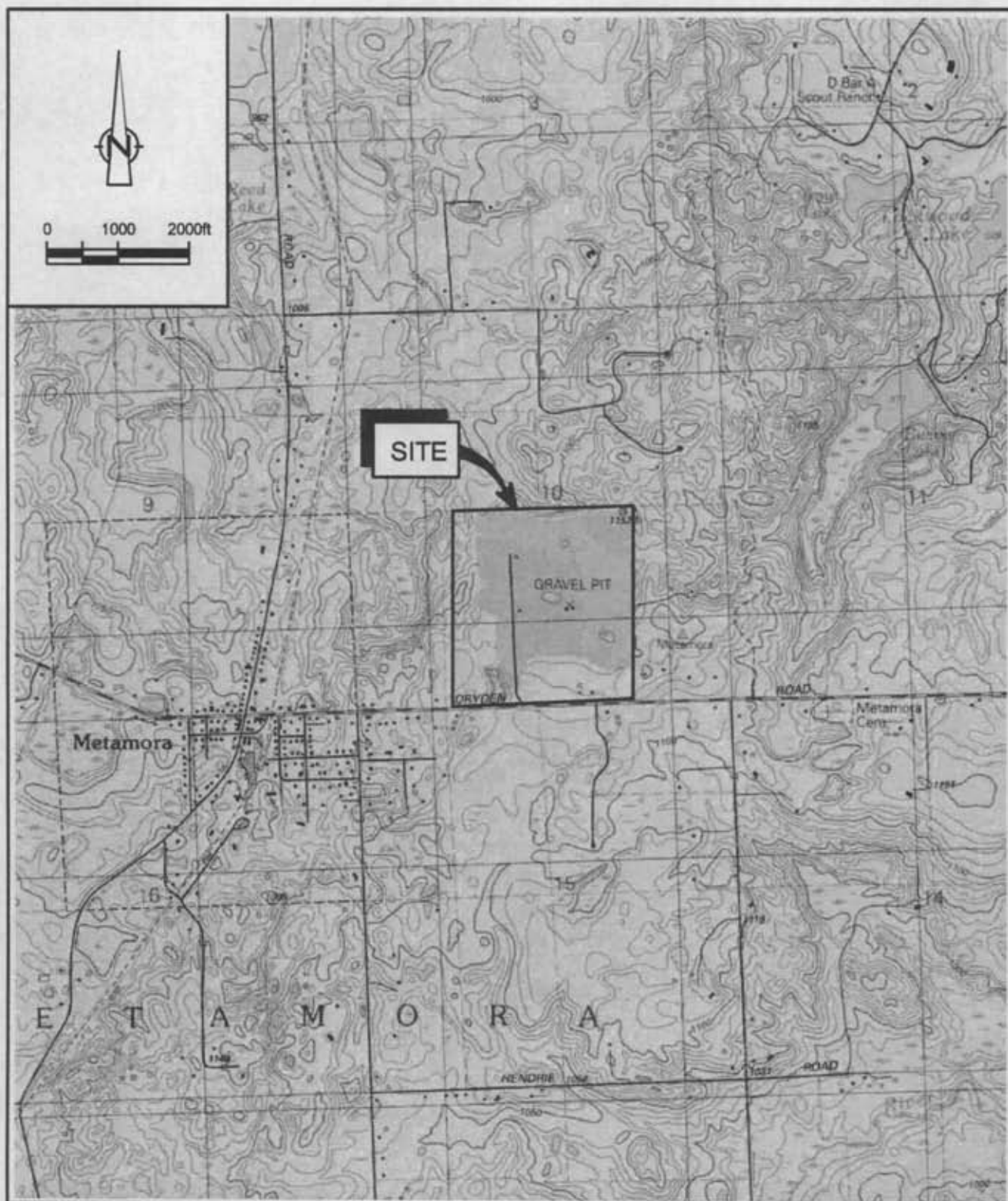
## **X. PROTECTIVENESS STATEMENT**

The remedy is protective of human health and the environment in the short-term because the landfill cap and site fencing effectively restricts any surface soil exposures. The Site landfill cap is functional, operational and effective. Restrictions to Site access, development of the Site, and use of contaminated groundwater associated with the Site remain in place. No methane gas or other landfill gases were detected in the basements of residences adjacent to the landfill. No contaminants of concern above MCLs, MDEQ drinking water criteria, or naturally occurring background concentrations were detected in any of the nearby residential drinking water wells. Continued annual monitoring of nearby residential drinking water wells, including quarterly monitoring for 1,4-dioxane in one drinking water well adjacent to the Site and continued semiannual monitoring of landfill and perimeter methane gas probes will be conducted. Thus, there are currently no exposure pathways and the remedy is functioning as designed. However, in order for the remedy to be protective in the long-term, the following actions need to be continued/taken: continued compliance with ICs on the landfill property; enactment of ICs for properties downgradient of the Metamora Landfill Site encompassing the contaminant plume area in both the Shallow and Intermediate Aquifers; and the site remedy components, including ICs, must be maintained, monitored, and enforced to ensure long-term protectiveness.

The MDEQ has a different interpretation than the U.S. EPA on how the remedy is being implemented, level of protectiveness, and compliance with the ROD Amendment. The MDEQ's support agency comments can be found in Attachment 3 of this Report.

## **XI. NEXT REVIEW**

The next five-year review for the Metamora Site is required by September 2014, five years from the date of this report.



SOURCE: USGS QUADRANGLE MAP;  
METAMORA, MICHIGAN

figure 1



**SITE LOCATION**  
**METAMORA LANDFILL SITE**  
*Lapeer County, Michigan*

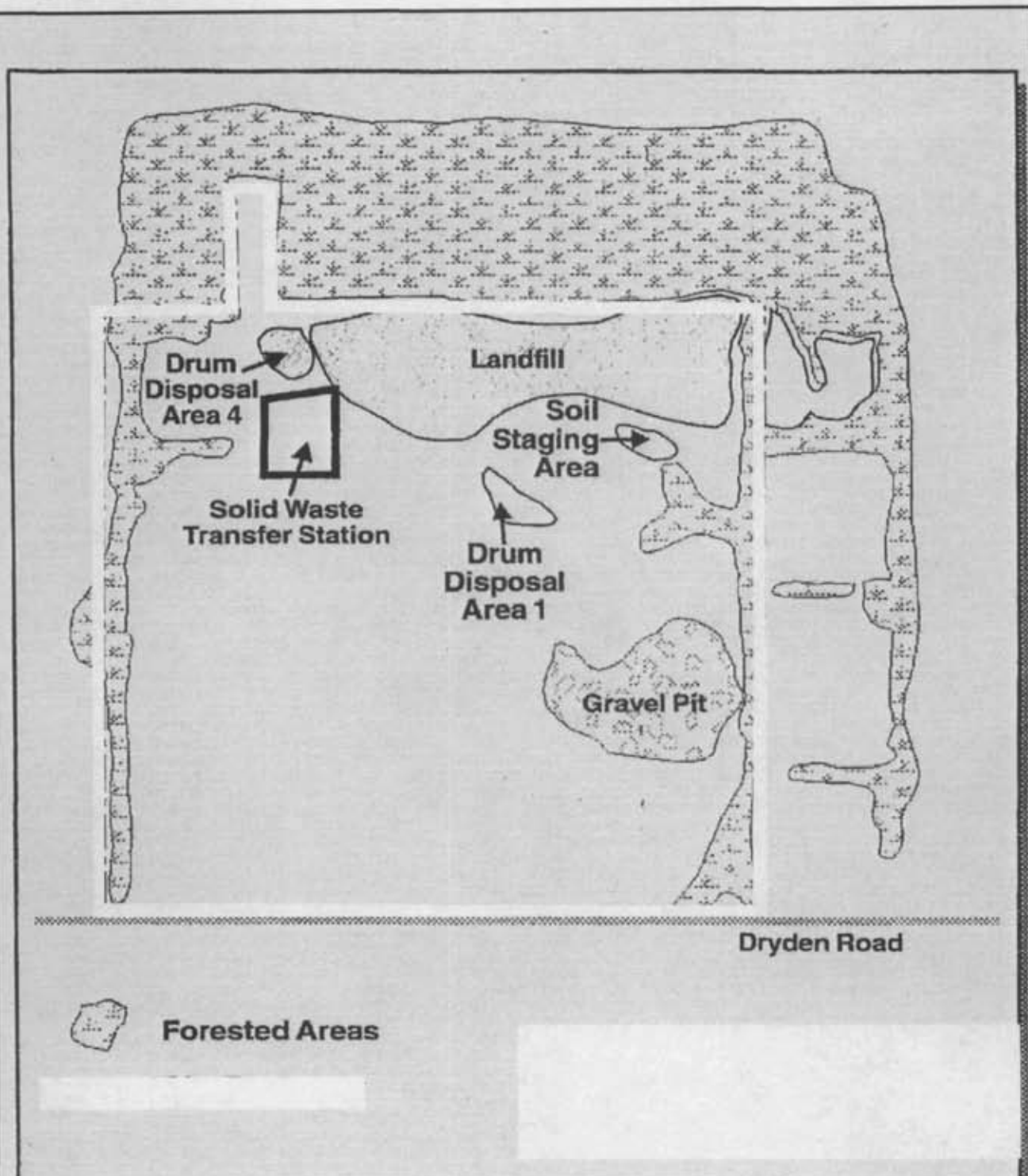
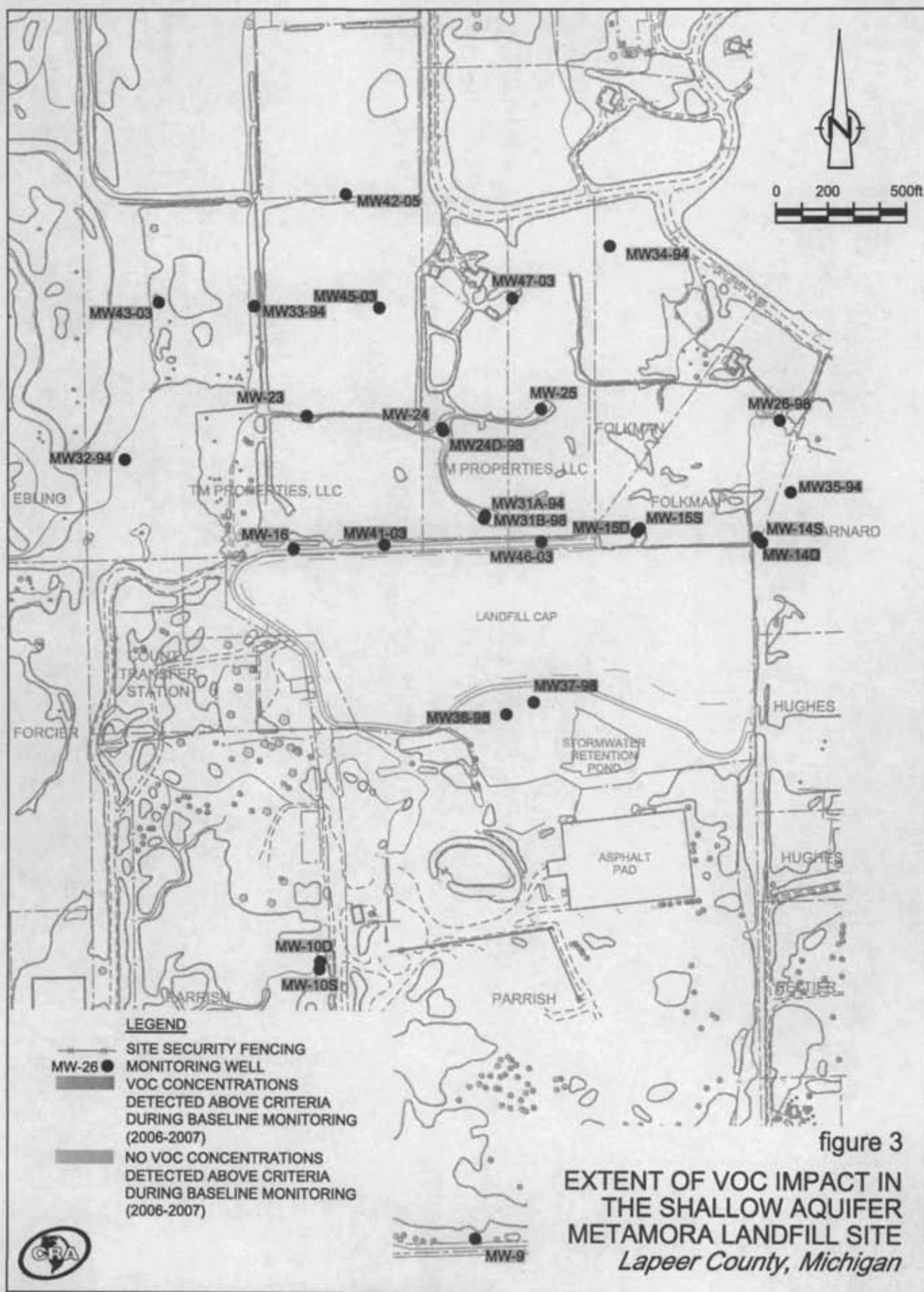


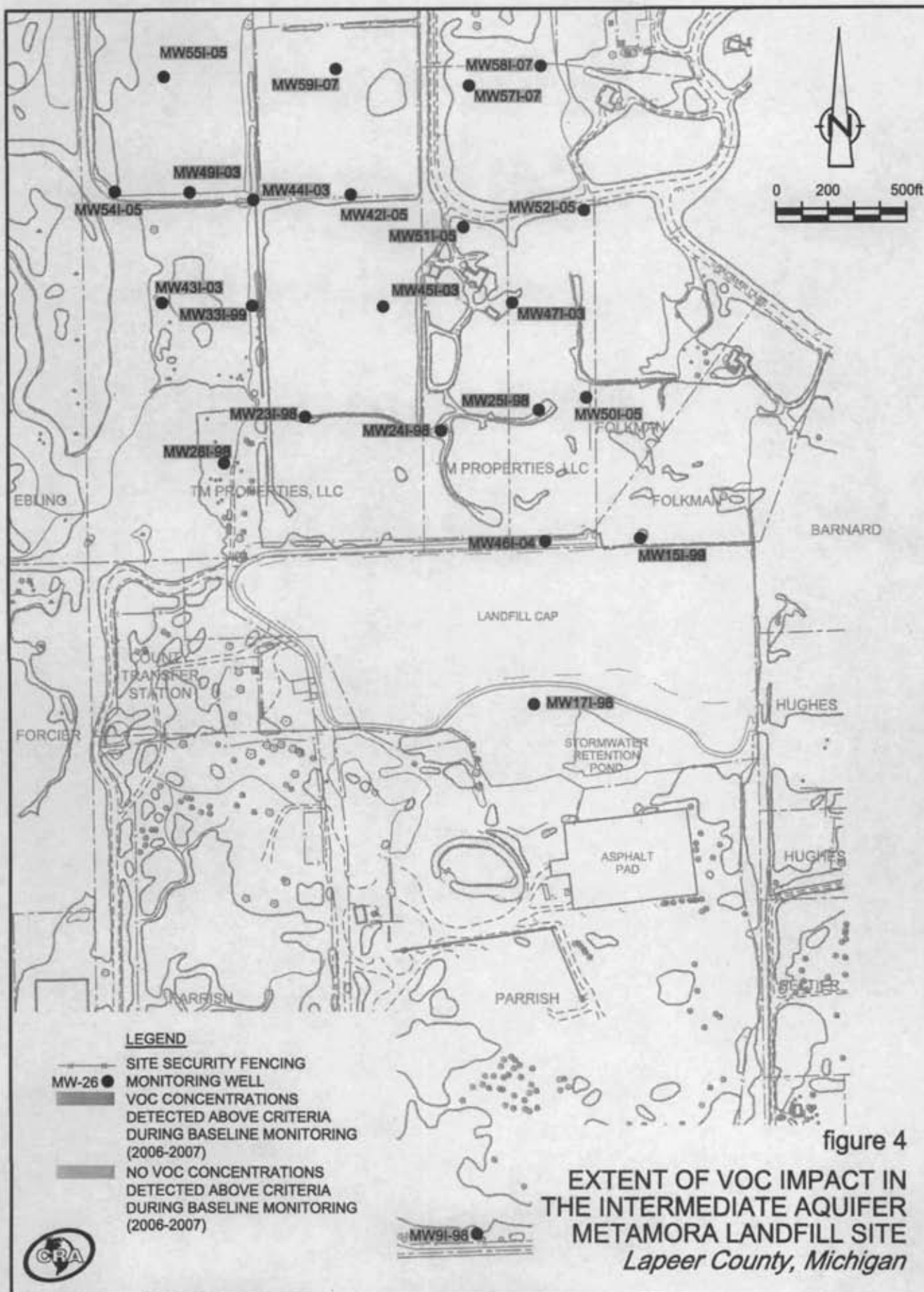
figure 2

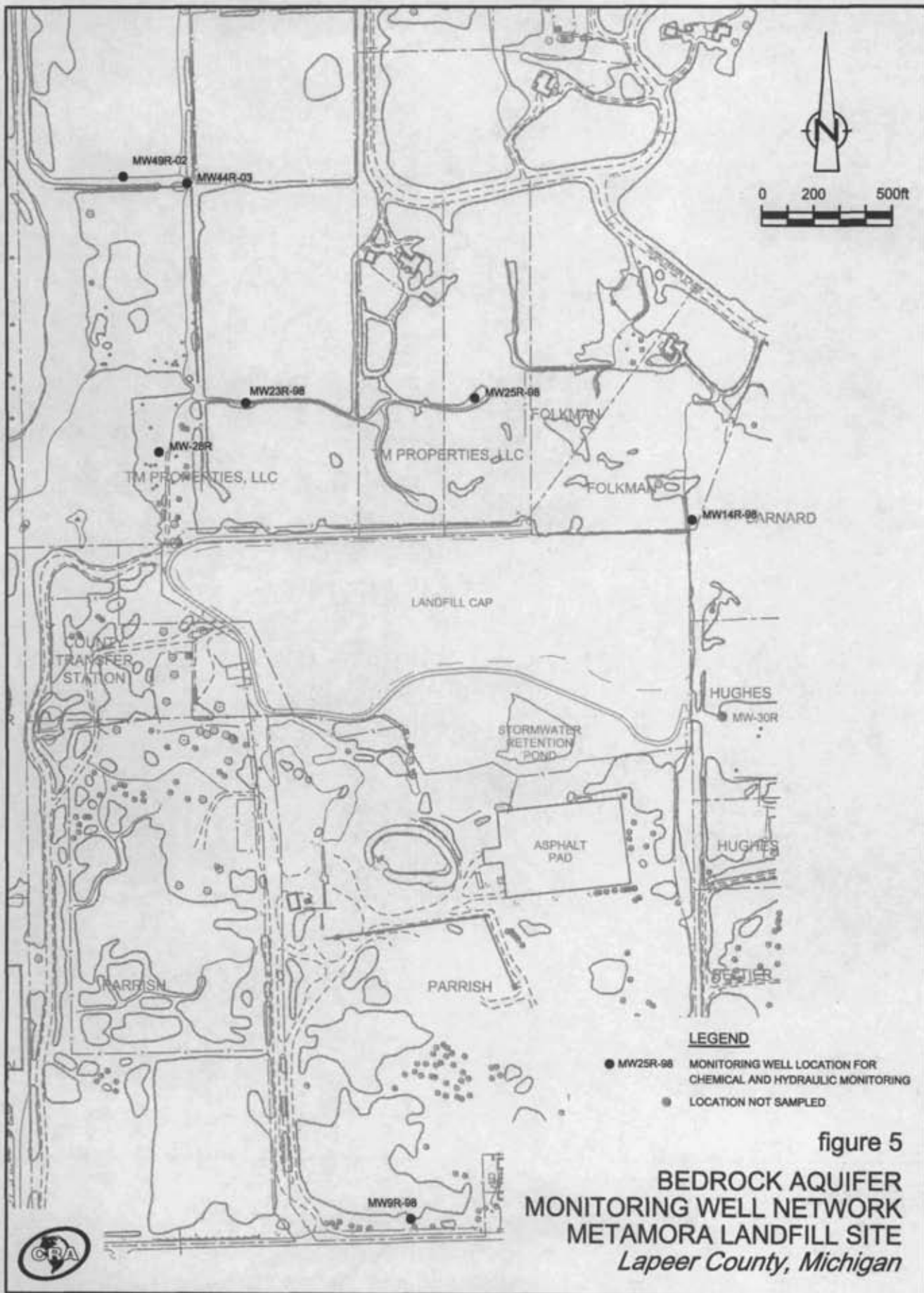
HISTORICAL SITE LAYOUT  
METAMORA LANDFILL SITE  
*Lapeer County, Michigan*







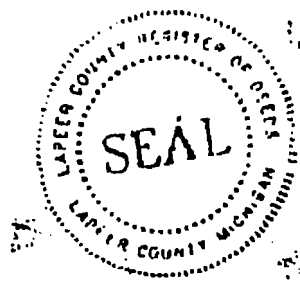






## ATTACHMENT 1

02 MAY 28 AM 11:06

*Helen De Vaughn*  
REGISTER OF DEEDS  
LAPEER COUNTY, MICHIGAN

**DECLARATION OF THE ESTATE RUSSELL PARRISH  
OF CONDITIONS, COVENANTS AND RESTRICTIONS  
IMPOSED PURSUANT TO A CONSENT DECREE**

THIS DECLARATION is made as of this 10th day of May 2002 by the Estate of Russell Parrish (the "Declarant").

WHEREAS, the Declarant is the owner of approximately 141 acres of real property located on Dryden Road, in Metamora Township, Lapeer County, Michigan (the "Property"), a legal description of which is attached hereto as Exhibit A and made a part hereof; and

WHEREAS, pursuant to the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, the Property was placed on the National Priorities List to require remedial action because of a release or a substantial threat of a release of a hazardous substance at or from the Property; and

WHEREAS, on March 17, 1993, a Consent Decree, entitled "United States of America v. BASF-Inmont et al.," filed in Civil Action No. 91-CV-40320-FL was entered in the United States District Court for the Eastern District of Michigan Southern Division, a copy of which is attached hereto as Exhibit B and made a part hereof; and

WHEREAS, the Consent Decree in Section II.B of the Statement of Work requires the imposition of restrictions on the use of Declarant's Property; and

WHEREAS, this Declaration covers the portion of Declarant's Property as described in Exhibit C, and is being recorded with the Lapeer County Register of Deeds for the purpose of protecting public health, safety and welfare and the environment, preventing interference with the performance and maintenance of any action taken pursuant to the Consent Decree, by any party thereto.

NOW THEREFORE, in order to comply with the Consent Decree, the Declarant declares that the Property shall be owned, held, transferred, sold, conveyed, used and occupied subject to the conditions, covenants and restrictions (collectively "Covenants and Restrictions") provided in this Declaration which Covenants and Restrictions shall run with the land and shall be binding on and inure to the benefit of all persons having right, title or interest in any part of the Property and to the parties to the Consent Decree as same are defined in the Consent Decree.

1. Any deed, title, or other instrument of conveyance which transfers any right, title, or interest, or which permits any use of the Property underlying this Declaration shall contain a notice that the Property is the subject of that certain Consent Decree entered on March 17, 1993, in the matter of the United States of America v. BASF-Inmont, et al., and shall contain a notice that this Declaration, and any amendment or modification thereof, shall continue into

perpetuity or until terminated in accordance with the provisions of this Declaration.

2. Not later than thirty (30) days prior to any transfer of any interest in any real property covered by this Declaration, the then current owner(s) of the Property shall submit a true and correct copy of the transfer documents to the United States Environmental Protection Agency (USEPA), and shall identify the transferee(s) by name, principal business address and effective date of the transfer.
3. Any future use of any portion of the Declarant's Property described in Exhibit C that is inconsistent with the remedial action work performed under the Consent Decree is prohibited. Prohibited uses include, but are not limited to, excavation, grading, filling, drilling, mining, storage or disposal of junk, debris and trash, or other construction or development.
4. Groundwater beneath that portion of the Declarant's Property described in Exhibit C shall not be used. This includes a prohibition against the installation of drinking water and/or production wells.
5. Surface water on the that portion of the Declarant's Property described in Exhibit C shall not be used, or permitted to be used, without the advance written approval of the United States Environmental Protection Agency (U.S. EPA).
6. The removal of the cap, components of the groundwater extraction and treatment system, groundwater monitoring wells, landfill gas probes/vents, access roads, ponds, drainage systems, fencing, signs or any other improvement provided as part of the remedial action work performed under the Consent Decree is prohibited.
7. The portion of the Declarant's Property described in Exhibit C shall not be used for the storage or disposal of oil or any toxic or hazardous materials, with the exception of any storage associated with work performed under the Consent Decree.
8. Until termination of the Consent Decree, the U.S. EPA, the Michigan Department of Environmental Quality and the Settling Defendants (as that term is defined in the Consent Decree) shall have unlimited access to the Property.
9. Permanent markers shall be installed on each side of the portion of the Declarant's Property described in Exhibit C describing the restricted area and the nature of the prohibitions specified herein.
10. The Settling Defendants, the United States of America and/or the State of Michigan may enforce the restrictions set forth in this Declaration by legal action in a court of competent jurisdiction.

If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provision hereof. All such provisions shall continue unimpaired in full force and effect.

This Declaration shall not be amended, modified or terminated except by written instrument by and between the then current owner(s) of the Property and the United States Environmental Protection Agency. Within five (5) days of executing an amendment, modification or termination of this Declaration, the owner(s) shall record such amendment, modification or termination with the Lapeer County Register of Deeds and within five (5) days thereafter, the owner(s) shall provide a true copy of the recorded amendment, modification or termination to the United States Environmental Protection Agency.

If any provision of this Declaration is also the subject of any laws or regulations established by any federal, state or local government, the stricter of the two standards shall prevail.

WITNESS WHEREOF, the Estate of Russell Parrish, Declarant, have signed this Declaration this 10th day of May 2002.

Witnessed:

Judith A. Hillman  
Judith A. Hillman

Richard J. Bahls  
Richard J. Bahls

Owner:

Ralph Swain  
Estate of Russell Parrish

\*By Ralph Swain, Personal Representative

Drafted by: Santo Longo, Esq. (27)  
Jeanine Dames, LeBoeuf, Lamb, Greene  
& MacRae, LLP  
225 Asylum Street, Hartford, CT 06103

STATE OF MICHIGAN )  
 ) SS.  
COUNTY OF LAPEER )

BEFORE ME, a notary public in and for said County and State, personally appeared the above-named Estate of Russell Parrish who acknowledged that he did execute the within Declaration and that said execution was his free act and deed.

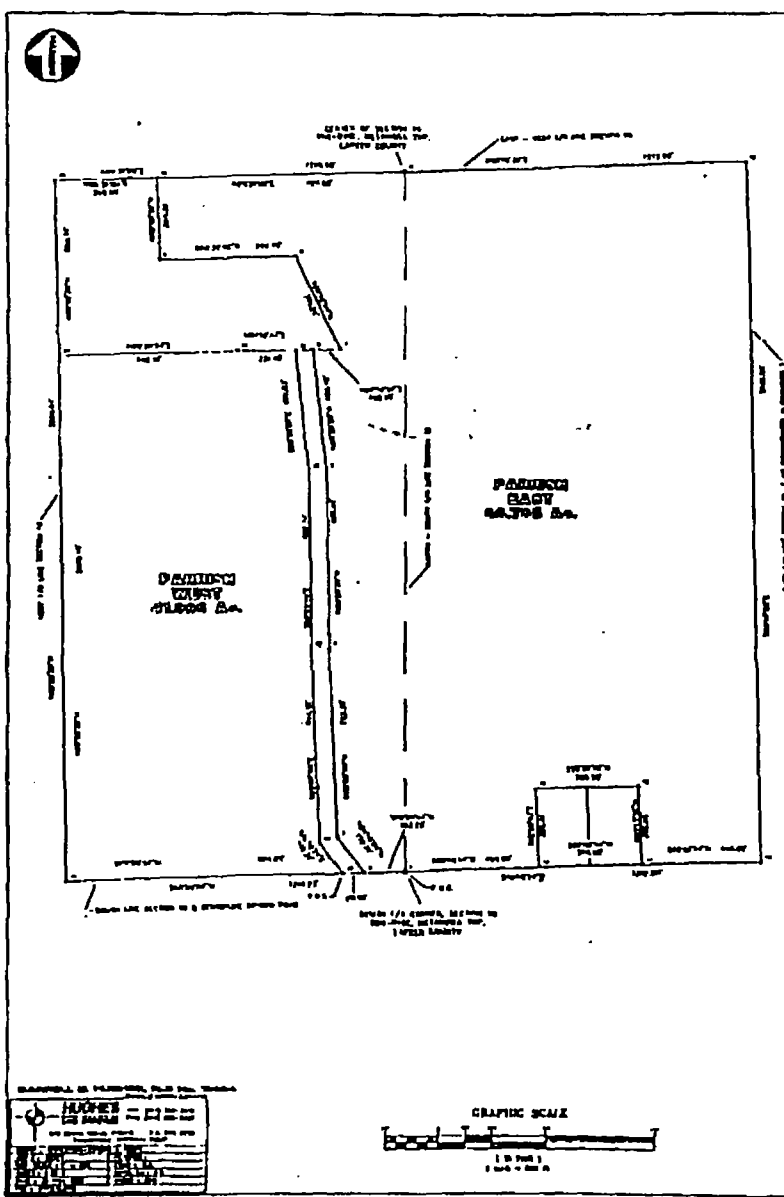
IN TESTIMONY WHEREOF, I have herein set my hand this 10th day of May 2002.

Judith A. Hillman  
Notary Public Judith A. Hillman



1524 11520479

**EXHIBIT A**



1524 100480

PARRISH EAST

A PARCEL OF LAND BEING PART OF THE SOUTHWEST 1/4 AND PART OF THE SOUTHEAST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 10 EAST, METAMORA TOWNSHIP, LAPEER COUNTY, STATE OF MICHIGAN, MORE PARTICULARLY DESCRIBED BY DARRELL HUGHES, MICHIGAN REGISTERED LAND SURVEYOR NO. 19834, AS BEGINNING AT THE SOUTH 1/4 CORNER OF SECTION 10; PROCEEDING THENCE SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 153.23 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 36 DEGREES 10 MINUTES 06 SECONDS WEST 170.51 FEET; THENCE NORTH 02 DEGREES 06 MINUTES 49 SECONDS WEST 723.35 FEET; THENCE NORTH 00 DEGREES 59 MINUTES 20 SECONDS WEST 682.69 FEET; THENCE NORTH 06 DEGREES 29 MINUTES 23 SECONDS WEST 458.46 FEET; THENCE NORTH 87 DEGREES 58 MINUTES 07 SECONDS EAST 102.40 FEET; THENCE NORTH 25 DEGREES 18 MINUTES 59 SECONDS WEST 391.24 FEET; THENCE SOUTH 88 DEGREES 30 MINUTES 46 SECONDS WEST 504.40 FEET; THENCE NORTH 00 DEGREES 50 MINUTES 56 SECONDS WEST 304.29 FEET; THENCE NORTH 88 DEGREES 31 MINUTES 09 SECONDS EAST 924.99 FEET, ALONG THE EAST AND WEST 1/4 LINE OF SECTION 10, TO THE CENTER OF SECTION 10; THENCE NORTH 88 DEGREES 16 MINUTES 27 SECONDS EAST 1273.96 FEET, ALONG THE EAST AND WEST 1/4 LINE OF SECTION 10; THENCE SOUTH 00 DEGREES 47 MINUTES 52 SECONDS EAST 2661.56 FEET, ALONG THE EAST 1/8 LINE OF SECTION 10, AS MONUMENTED AND OCCUPIED; THENCE SOUTH 88 DEGREES 06 MINUTES 14 SECONDS WEST 440.00 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 02 DEGREES 17 MINUTES 35 SECONDS WEST 302.95 FEET; THENCE SOUTH 88 DEGREES 25 MINUTES 18 SECONDS WEST 380.30 FEET; THENCE SOUTH 02 DEGREES 20 MINUTES 42 SECONDS EAST 305.06 FEET; THENCE SOUTH 88 DEGREES 06 MINUTES 14 SECONDS WEST 498.06 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, TO THE POINT OF BEGINNING, CONTAINING 98.785 ACRES. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PART USED FOR DRYDEN ROAD.

PARRISH WEST

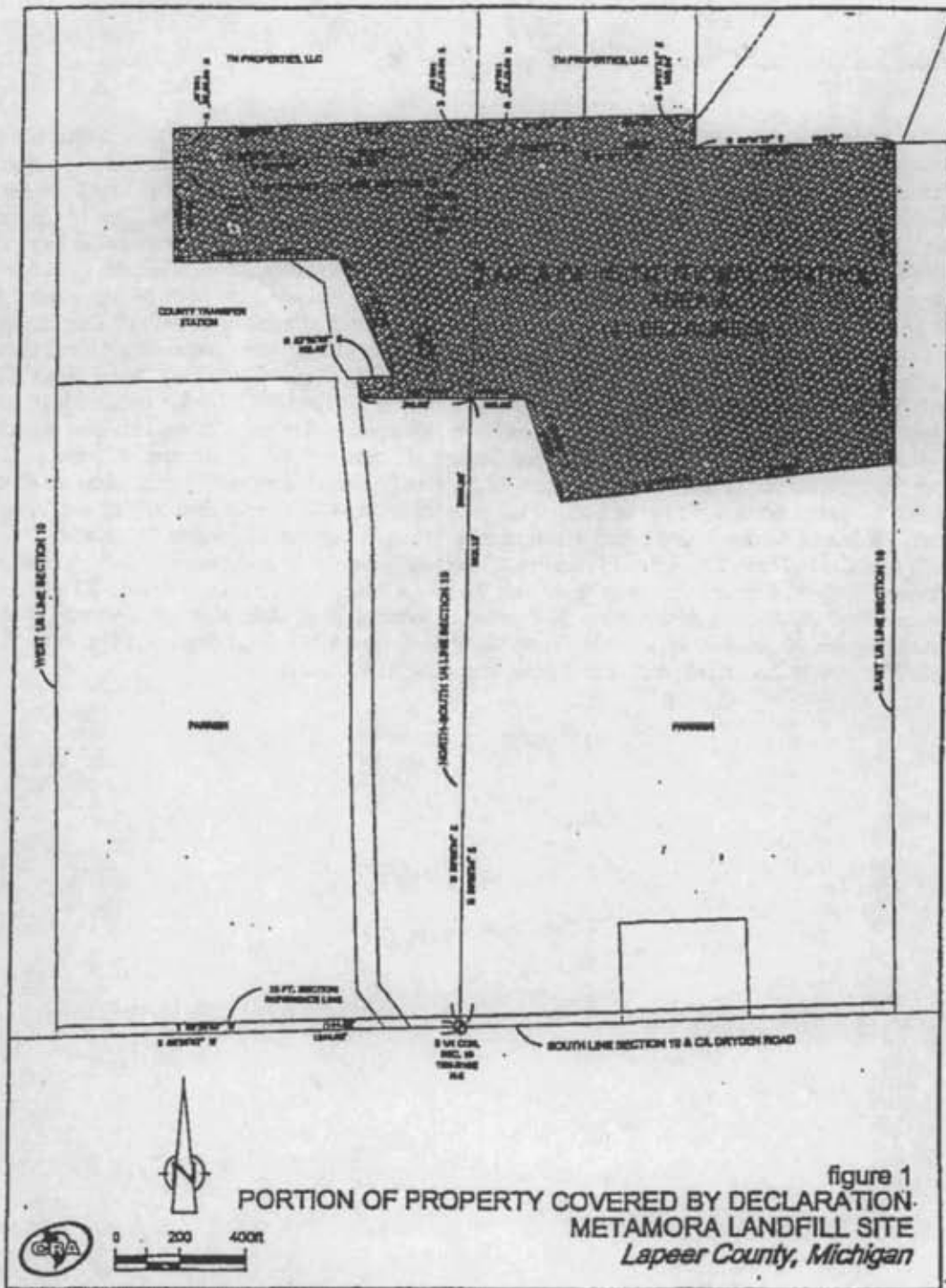
A PARCEL OF LAND IN THE SOUTHWEST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 10 EAST, METAMORA TOWNSHIP, LAPEER COUNTY, STATE OF MICHIGAN, MORE PARTICULARLY DESCRIBED BY DARRELL HUGHES, MICHIGAN REGISTERED LAND SURVEYOR NO. 19834, AS BEGINNING AT A POINT ON THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, SAID POINT BEING DISTANT SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 233.27 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, FROM THE SOUTH 1/4 CORNER OF SECTION 10; PROCEEDING THENCE, FROM SAID POINT OF BEGINNING, SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 1011.26 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 00 DEGREES 50 MINUTES 38 SECONDS WEST 2009.45 FEET, ALONG THE WEST 1/8 LINE OF SECTION 10; THENCE NORTH 88 DEGREES 30 MINUTES 57 SECONDS EAST 642.11 FEET; THENCE NORTH 89 DEGREES 16 MINUTES 47 SECONDS EAST 221.47 FEET; THENCE SOUTH 06 DEGREES 28 MINUTES 57 SECONDS EAST 461.03 FEET; THENCE SOUTH 00 DEGREES 59 MINUTES 25 SECONDS EAST 680.24 FEET; THENCE SOUTH 02 DEGREES 07 MINUTES 06 SECONDS EAST 744.26 FEET; THENCE SOUTH 36 DEGREES 10 MINUTES 21 SECONDS EAST 145.31 FEET TO THE POINT OF BEGINNING, CONTAINING 41.996 ACRES. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PART USED FOR DRYDEN ROAD.



LIB 1524 PAGE 0700

DUPLICATE  
RECORDS CENTER  
7TH FLOOR

EXHIBIT C



AREA OF INSTITUTIONAL CONTROLS (PORTION A)

A parcel of land being in the Northwest 1/4 of Section 10, in the Northeast 1/4 of Section 10, in the Southwest 1/4 of Section 10 and in the Southeast 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at a point on the East and West 1/4 line of Section 10, said point being distant the following three courses from the South 1/4 corner of Section 10: South 88 degrees 20 minutes 07 seconds West 1244.53 feet, along the South line of Section 10 and the center line of Dryden Road; thence North 00 degrees 50 minutes 38 seconds West 2669.64 feet, along the West 1/8 line of Section 10, as monumented; thence North 88 degrees 31 minutes 09 seconds East 365.66 feet, along the East and West 1/4 line of Section 10, to the point of beginning; proceeding thence, from said point of beginning, North 00 degrees 50 minutes 56 seconds West 100.01 feet; thence North 88 degrees 31 minutes 09 seconds East 926.26 feet, parallel with the East and West 1/4 line of Section 10, to the North and South 1/4 line of Section 10; thence North 88 degrees 16 minutes 27 seconds East 665.25 feet, parallel with the East and West 1/4 line of Section 10; thence South 00 degrees 07 minutes 23 seconds East 100.04 feet; thence North 88 degrees 16 minutes 27 seconds East 608.71 feet, along the East and West 1/4 line of Section 10; thence South 00 degrees 47 minutes 52 seconds East 970.89 feet, along the East 1/8 line of Section 10, as monumented; thence South 83 degrees 15 minutes 30 seconds West 1012.00 feet; thence North 20 degrees 19 minutes 07 seconds West 336.76 feet; thence Due West 508.76 feet; thence North 06 degrees 29 minutes 23 seconds West 63.46 feet; thence North 87 degrees 58 minutes 07 seconds East 102.40 feet; thence North 25 degrees 18 minutes 59 seconds West 391.24 feet; thence South 88 degrees 30 minutes 46 seconds West 504.40 feet; thence North 00 degrees 50 minutes 56 seconds West 304.29 feet, to the point of beginning, containing 41.862 acres.



RECORDED ON  
08/17/2009 3:13:08 PM  
MELISSA R. DEVAUGH  
LAPEER COUNTY REGISTER OF DEEDS

LIBER 2404 PAGE 719

RECEIPT# 3170. STATION 2  
\$47.00 MISC DEED

**AMENDMENT NUMBER 1 to the  
May 10, 2002 DECLARATION OF THE ESTATE OF RUSSELL PARRISH  
OF CONDITIONS, COVENANTS AND RESTRICTIONS  
IMPOSED PURSUANT TO A CONSENT DECREE**

**THIS AMENDMENT NUMBER 1 to the May 10, 2002 DECLARATION OF THE ESTATE OF RUSSELL PARRISH OF CONDITIONS, COVENANTS AND RESTRICTIONS IMPOSED PURSUANT TO A CONSENT DECREE is made as of this 14 day of JULY 2009 by Eugene Parrish (the "Amendment Declarant").**

**WHEREAS, on May 10, 2002 the Estate of Russell Parrish (the "Declarant") signed a certain DECLARATION OF THE ESTATE OF RUSSELL PARRISH OF CONDITIONS, COVENANTS AND RESTRICTIONS IMPOSED PURSUANT TO A CONSENT DECREE, (the "Declaration"); and**

**WHEREAS, the Declaration identifies the Declarant's property as described in Exhibit A of the Declaration; and references the March 17, 1993 U.S. EPA Consent Decree and attaches the U.S. EPA Consent Decree as Exhibit B of the Declaration.**

**WHEREAS, the Amendment Declarant now owns approximately 144.4 acres of real property located on Dryden Road (including the property described in Exhibit A of the Declaration), in Metamora Township, Lapeer County, Michigan (the "Property"); and**

**WHEREAS, the Declaration covers the portion of the Amendment Declarant's property as described in Exhibit C of the Declaration; and**

**WHEREAS, the Amendment Declarant wishes to modify the portion of the property affected by the Declaration; and**

**WHEREAS, the United States Environmental Protection Agency (the "USEPA") agrees with the modification of the portion of the property affected by the Declaration. Written evidence of the USEPA's concurrence with this Amendment Number 1 is provided in the attached letter dated March 17, 2004 (Exhibit D of Amendment 1).**

**NOW THEREFORE, the Amendment Declarant declares that Exhibits A and C of the Declaration are deleted and replaced in their entirety with the attached Exhibits A (including Figure 1 and pages A-1 through A-4) and C (including Figure 1 and pages C-1 through C-2).**

**In all other respects, the Declaration shall remain in full force and effect.**

**If some or all of this Amendment Number 1 to the Declaration are held to be invalid by any court of competent jurisdiction, such invalidity shall not affect the validity of the Declaration, or any portions of the Amendment Number 1 which are not invalidated by such Court proceeding, and all provisions of the Declaration and the surviving valid provisions of the Amendment Number 1 shall continue unimpaired in full force and effect.**

08-17-09A10:12 RCVD

12

This Amendment Number 1 to the Declaration shall not be amended, modified or terminated except by written instrument by and between the then current owner(s) of the Property and the USEPA. Within five (5) days of executing an amendment, modification or termination of this Amendment Number 1 to the Declaration, the current owner(s) shall record such amendment, modification or termination with the Lapeer County Register of Deeds and within five (5) days thereafter, the current owner(s) shall provide a true copy of the recorded amendment, modification or termination to the United States Environmental Protection Agency.

WITNESS WHEREOF, Eugene Parrish, Amendment Declarant, has signed this Amendment Number 1 to the Declaration this 14 day of July 2009.

Witnessed:

Peggy L Moore

Brendy Blanchard

Owner:

Eugene Parrish  
Eugene Parrish

FL  
STATE OF MICHIGAN )  
COUNTY OF LAPEER ) SS.  
Lapeer

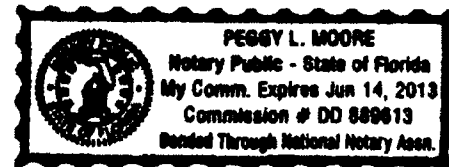
BEFORE ME, a notary public in and for said County and State, personally appeared the above-named Eugene Parrish who acknowledged that he did execute the within Amendment Number 1 to the Declaration and that said execution is his free act and deed.

IN TESTIMONY WHEREOF, I have herein set my hand this 14 day of July 2009.

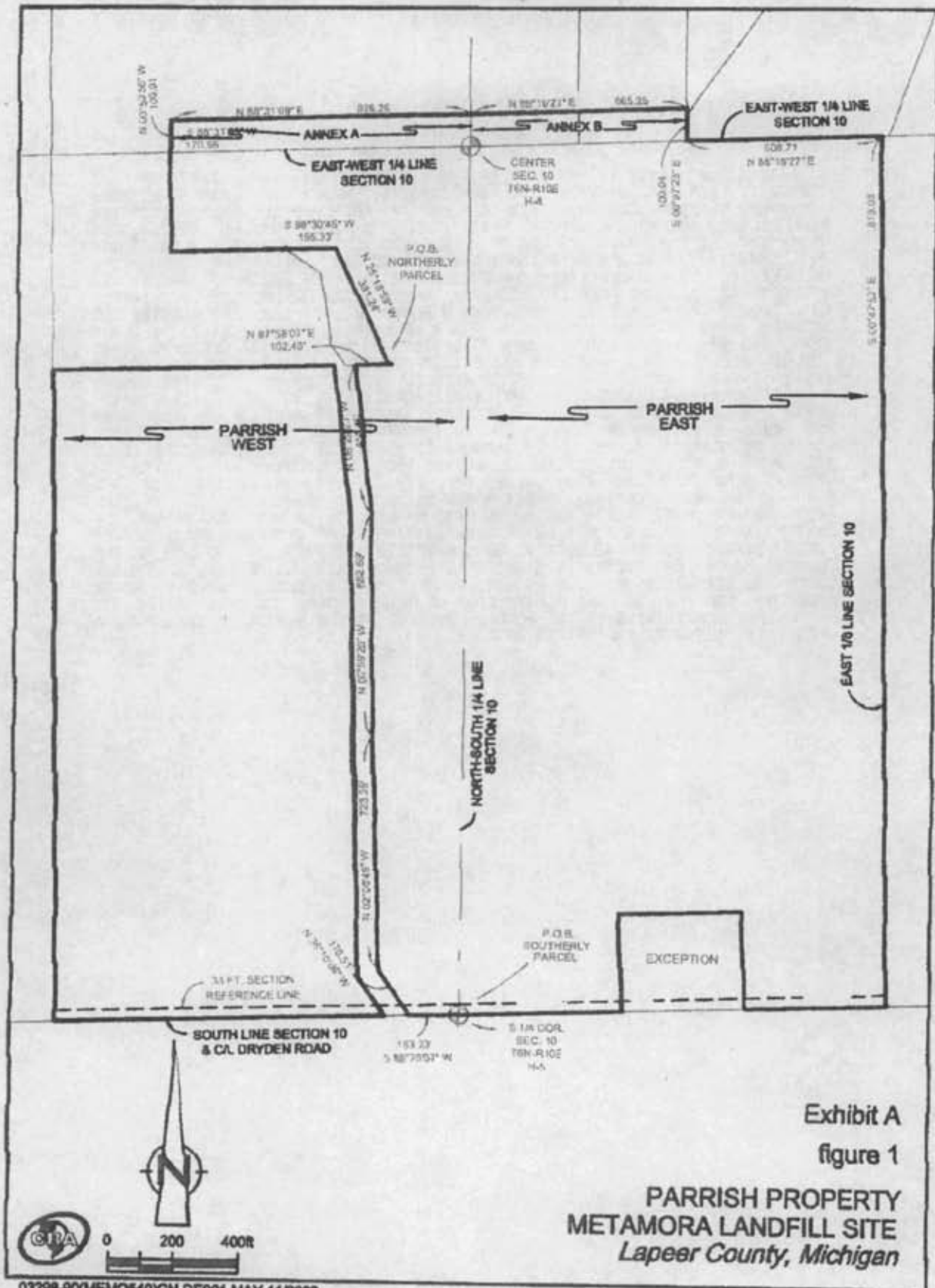
Peggy L Moore  
Notary Public

**THIS DOCUMENT PREPARED BY  
AND WHEN RECORDED RETURN TO:**

Steven C. Nadeau  
Honigman Miller Schwartz and Cohn LLP  
660 Woodward Avenue, Suite 2290  
Detroit, Michigan 48226  
(313) 465-7492



DETROIT.3659007.3



PARRISH EAST

A PARCEL OF LAND BEING PART OF THE SOUTHWEST 1/4 AND PART OF THE SOUTHEAST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 10 EAST, METAMORA TOWNSHIP, LAPEER COUNTY, STATE OF MICHIGAN, MORE PARTICULARLY DESCRIBED BY DARRELL HUGHES, MICHIGAN REGISTERED LAND SURVEYOR NO. 19834, AS BEGINNING AT THE SOUTH 1/4 CORNER OF SECTION 10; PROCEEDING THENCE SOUTH 89 DEGREES 20 MINUTES 07 SECONDS WEST 153.23 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 36 DEGREES 10 MINUTES 06 SECONDS WEST 170.51 FEET; THENCE NORTH 02 DEGREES 06 MINUTES 49 SECONDS WEST 723.35 FEET; THENCE NORTH 00 DEGREES 59 MINUTES 20 SECONDS WEST 682.69 FEET; THENCE NORTH 06 DEGREES 29 MINUTES 23 SECONDS WEST 458.46 FEET; THENCE NORTH 87 DEGREES 58 MINUTES 07 SECONDS EAST 102.40 FEET; THENCE NORTH 25 DEGREES 18 MINUTES 59 SECONDS WEST 391.24 FEET; THENCE SOUTH 88 DEGREES 30 MINUTES 46 SECONDS WEST 504.40 FEET; THENCE NORTH 00 DEGREES 50 MINUTES 56 SECONDS WEST 304.29 FEET; THENCE NORTH 88 DEGREES 31 MINUTES 09 SECONDS EAST 924.99 FEET, ALONG THE EAST AND WEST 1/4 LINE OF SECTION 10, TO THE CENTER OF SECTION 10; THENCE NORTH 88 DEGREES 16 MINUTES 27 SECONDS EAST 1273.96 FEET, ALONG THE EAST AND WEST 1/4 LINE OF SECTION 10; THENCE SOUTH 00 DEGREES 47 MINUTES 52 SECONDS EAST 2661.56 FEET, ALONG THE EAST 1/8 LINE OF SECTION 10, AS MONUMENTED AND OCCUPIED; THENCE SOUTH 88 DEGREES 06 MINUTES 14 SECONDS WEST 440.00 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 02 DEGREES 17 MINUTES 35 SECONDS WEST 302.95 FEET; THENCE SOUTH 88 DEGREES 25 MINUTES 18 SECONDS WEST 380.30 FEET; THENCE SOUTH 02 DEGREES 20 MINUTES 42 SECONDS EAST 305.06 FEET; THENCE SOUTH 88 DEGREES 06 MINUTES 14 SECONDS WEST 498.06 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, TO THE POINT OF BEGINNING, CONTAINING 98.785 ACRES. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PART USED FOR DRYDEN ROAD.

PARRISH WEST

A PARCEL OF LAND IN THE SOUTHWEST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 10 EAST, METAMORA TOWNSHIP, LAPEER COUNTY, STATE OF MICHIGAN, MORE PARTICULARLY DESCRIBED BY DARRELL HUGHES, MICHIGAN REGISTERED LAND SURVEYOR NO. 19834, AS BEGINNING AT A POINT ON THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, SAID POINT BEING DISTANT SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 233.27 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, FROM THE SOUTH 1/4 CORNER OF SECTION 10; PROCEEDING THENCE, FROM SAID POINT OF BEGINNING, SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 1011.26 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 00 DEGREES 50 MINUTES 38 SECONDS WEST 2009.45 FEET, ALONG THE WEST 1/8 LINE OF SECTION 10; THENCE NORTH 88 DEGREES 30 MINUTES 57 SECONDS EAST 642.11 FEET; THENCE NORTH 89 DEGREES 16 MINUTES 47 SECONDS EAST 221.47 FEET; THENCE SOUTH 06 DEGREES 28 MINUTES 57 SECONDS EAST 461.03 FEET; THENCE SOUTH 00 DEGREES 59 MINUTES 25 SECONDS EAST 680.24 FEET; THENCE SOUTH 02 DEGREES 07 MINUTES 06 SECONDS EAST 744.26 FEET; THENCE SOUTH 36 DEGREES 10 MINUTES 21 SECONDS EAST 145.31 FEET TO THE POINT OF BEGINNING, CONTAINING 41.996 ACRES. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PART USED FOR DRYDEN ROAD.



Annex A

ALL that certain plot, piece or parcel of land, situate, lying and being in the East 1/2 of the Northwest 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described as follows:

BEGINNING at a point on the East and West 1/4 line of Section 10, said point being distant the following three courses from the South 1/4 corner of Section 10;

- 1) South 88 degrees 20 minutes 07 seconds West 1244.53 feet, along the South line of Section 10 and the center line of Dryden Road;
- 2) Thence North 00 degrees 50 minutes 38 seconds West 2669.64 feet, along the West 1/8 line of Section 10, as monumented;
- 3) Thence North 88 degrees 31 minutes 09 seconds East 365.66 feet, along the East and West 1/4 line of Section 10, to the point or place of beginning;

Proceeding thence, from said point or place of beginning, North 00 degrees 50 minutes 56 seconds West 100.01 feet;

Thence North 88 degrees 31 minutes 09 seconds East 926.26 feet;

Thence South 00 degrees 07 minutes 23 seconds East 100.04 feet, along the North and South 1/4 line of Section 10, to the Center of Section 10;

Thence South 88 degrees 31 minutes 09 seconds West 924.99 feet, along the East and West 1/4 line of Section 10, to the point of BEGINNING.

CONTAINING within said bounds, 2.125 acres according to survey by Darrell Hughes, Michigan Registered Land Surveyor No. 19834.

Annex B

ALL that certain plot, piece or parcel of land, situate, lying and being in the Northeast 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described as follows:

BEGINNING at a point, said point being the Center of Section 10, said point being distant North 00 degrees 08 minutes 54 seconds East 2666.55 feet, along the North and South 1/4 line of Section 10, from the South 1/4 corner of Section 10;

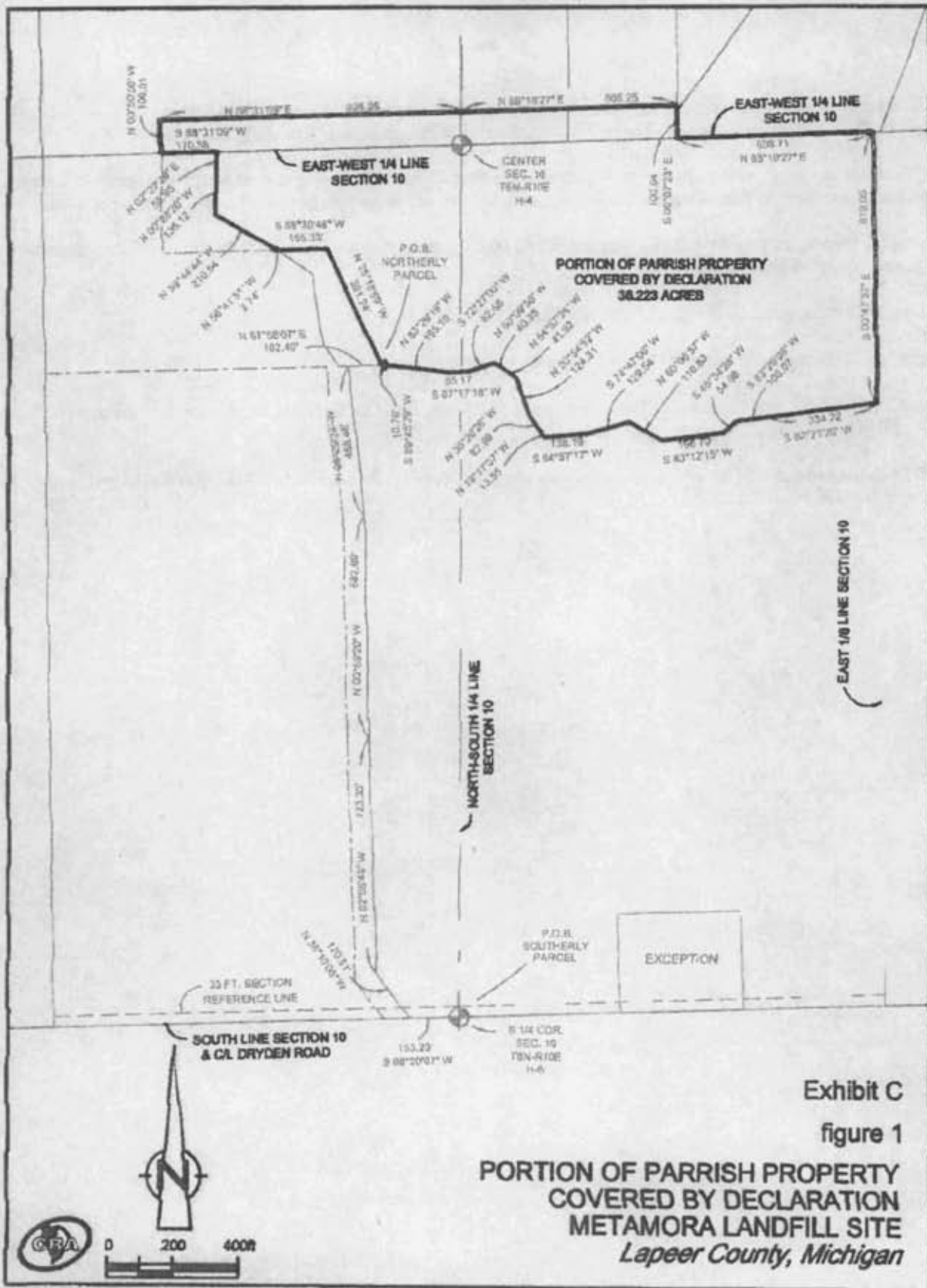
Proceeding thence, from said point of beginning, North 00 degrees 07 minutes 23 seconds West 100.04 feet, along the North and South 1/4 line of Section 10;

Thence North 88 degrees 16 minutes 27 seconds East 665.25 feet;

Thence South 00 degrees 07 minutes 23 seconds East 100.04 feet;

Thence South 88 degrees 16 minutes 27 seconds West 665.25 feet, along the East and West 1/4 line of Section 10, to the point of BEGINNING.

CONTAINING within said bounds, 1.527 acres according to survey by Darrell Hughes, Michigan Registered Land Surveyor No. 19834.



**PORTION OF PARRISH PROPERTY COVERED BY AMENDMENT NUMBER 1 TO THE DECLARATION**

A parcel of land being part of the Northeast 1/4 of Section 10, part of the Northwest 1/4 of Section 10, part of the Southwest 1/4 of Section 10 and part of the Southeast 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at a point, said point being distant the following six courses from the South 1/4 corner of Section 10: South 88 degrees 20 minutes 07 seconds West 153.23 feet, along the South line of Section 10 and the center line of Dryden Road; thence North 36 degrees 10 minutes 06 seconds West 170.51 feet; thence North 02 degrees 06 minutes 49 seconds West 723.35 feet; thence North 00 degrees 59 minutes 20 seconds West 682.69 feet; thence North 06 degrees 29 minutes 23 seconds West 458.46 feet; thence North 87 degrees 58 minutes 07 seconds East 102.40 feet, to the point of beginning; proceeding thence, from said point of beginning, North 25 degrees 18 minutes 59 seconds West 391.24 feet; thence South 88 degrees 30 minutes 46 seconds West 155.33 feet; thence North 56 degrees 41 minutes 51 seconds West 2.74 feet; thence North 59 degrees 44 minutes 44 seconds West 210.54 feet; thence North 00 degrees 28 minutes 20 seconds West 136.12 feet; thence North 02 degrees 22 minutes 26 seconds East 55.95 feet; thence South 88 degrees 31 minutes 09 seconds West 170.56 feet, along the East and West 1/4 line of Section 10; thence North 00 degrees 50 minutes 56 seconds West 100.01 feet; thence North 88 degrees 31 minutes 09 seconds East 926.26 feet, to the North and South 1/4 line of Section 10; thence North 88 degrees 16 minutes 27 seconds East 665.25 feet; thence South 00 degrees 07 minutes 23 seconds East 100.04 feet; thence North 88 degrees 16 minutes 27 seconds East 608.71 feet, along the East and West 1/4 line of Section 10; thence South 00 degrees 47 minutes 52 seconds East 819.05 feet, along the East 1/8 line of Section 10, as monumented; thence South 82 degrees 21 minutes 20 seconds West 334.22 feet; thence South 83 degrees 20 minutes 08 seconds West 105.07 feet; thence South 48 degrees 34 minutes 28 seconds West 54.08 feet; thence South 83 degrees 12 minutes 15 seconds West 196.79 feet; thence North 60 degrees 06 minutes 57 seconds West 110.83 feet; thence South 74 degrees 47 minutes 06 seconds West 129.54 feet; thence South 84 degrees 57 minutes 17 seconds West 138.19 feet; thence North 19 degrees 17 minutes 57 seconds West 13.55 feet; thence North 35 degrees 20

minutes 26 seconds West 62.99 feet; thence North 20 degrees 54 minutes 52 seconds West 124.31 feet; thence North 54 degrees 57 minutes 24 seconds West 41.92 feet; thence North 60 degrees 09 minutes 58 seconds West 40.35 feet; thence South 72 degrees 27 minutes 00 seconds West 82.66 feet; thence South 87 degrees 17 minutes 16 seconds West 65.17 feet; thence North 83 degrees 29 minutes 16 seconds West 195.10 feet; thence South 89 degrees 45 minutes 29 minutes West 10.76 feet, to the point of beginning, containing 36.223 acres.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

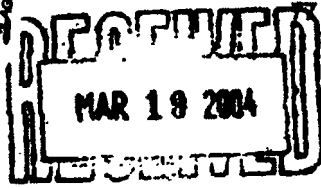


Exhibit D

REPLY TO THE ATTENTION OF:

March 17, 2004

James R. Campbell  
Engineering Management, Inc.  
1500 Ardmore Boulevard  
Suite 502  
Pittsburgh, Pennsylvania 15221-4468

RE: Revised Amendment of the Declaration of the Estate of Russell Parrish

Dear Mr. Campbell:

The United States Environmental Protection Agency (U.S. EPA) has reviewed your proposed amendment to the Declaration of the Estate of Russell Parrish. U.S. EPA agrees that the Declaration may be amended as set forth in the Amended Declaration so that the portion of the Metamora Site that the Amended Declaration covers is now a parcel of land being part of the Northeast 1/4 of Section 10, part of the Northwest 1/4 of Section 10, part of the Southwest 1/4 of Section 10 and part of the Southeast 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at a point, said point being distant the following six courses from the South 1/4 corner of Section 10: South 88 degrees 20 minutes 07 seconds West 153.23 feet, along the South line of Section 10 and the center line of Dryden Road; thence North 36 degrees 10 minutes 06 seconds West 170.51 feet; thence North 02 degrees 06 minutes 49 seconds West 723.35 feet; thence North 00 degrees 59 minutes 20 seconds West 682.69 feet; thence North 06 degrees 29 minutes 23 seconds West 458.46 feet; thence North 87 degrees 58 minutes 07 seconds East 102.40 feet, to the point of beginning; proceeding thence, from said point of beginning, North 25 degrees 18 minutes 59 seconds West 391.24 feet; thence South 88 degrees 30 minutes 46 seconds West 155.33 feet; thence North 56 degrees 41 minutes 51 seconds West 2.74 feet; thence North 59 degrees 44 minutes 44 seconds West 210.54 feet; thence North 00 degrees 28 minutes 20 seconds West 136.12 feet; thence North 02 degrees 22 minutes 26 seconds East 55.95 feet; thence South 88 degrees 31 minutes 09 seconds West 170.56 feet, along the East and West 1/4 line of Section 10; thence North 00 degrees 50 minutes 56 seconds West 100.01 feet; thence North 88 degrees 31 minutes 09 seconds East 926.26 feet, to the North and South 1/4 line of Section 10; thence North 88 degrees 16 minutes 27 seconds East 665.25 feet; thence South 00 degrees 07 minutes 23 seconds East 100.04 feet; thence North 88

degrees 16 minutes 27 seconds East 608.71 feet, along the East and West 1/4 line of Section 10; thence South 00 degrees 47 minutes 52 seconds East 819.05 feet, along the East 1/8 line of Section 10, as monumented; thence South 82 degrees 21 minutes 20 seconds West 334.22 feet; thence South 83 degrees 20 minutes 08 seconds West 105.07 feet; thence South 48 degrees 34 minutes 28 seconds West 54.08 feet; thence South 83 degrees 12 minutes 15 seconds West 196.79 feet; thence North 60 degrees 06 minutes 57 seconds West 110.83 feet; thence South 74 degrees 47 minutes 06 seconds West 129.54 feet; thence South 84 degrees 57 minutes 17 seconds West 138.19 feet; thence North 19 degrees 17 minutes 57 seconds West 13.55 feet; thence North 35 degrees 20 minutes 26 seconds West 62.99 feet; thence North 20 degrees 54 minutes 52 seconds West 124.31 feet; thence North 54 degrees 57 minutes 24 seconds West 41.92 feet; thence North 60 degrees 09 minutes 58 seconds.

The above description of the property of the Estate of Russell Parrish covered by the Amended Declaration will be made Exhibit C to the original declaration and replace any previous Exhibit C.

After the Amended Declaration has been filed, a true copy of the Amended Declaration should be sent to Thomas Williams of U.S. EPA. If you have any questions, please contact me at (312) 886-5114.

Sincerely,



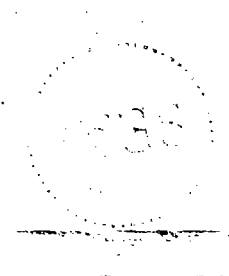
Peter M. Felitti

cc: Thomas Williams, SR-6J

## ATTACHMENT 2



97 DEC -2 AM 10: 32



Melissa De Vaughn  
REGISTER OF DEEDS  
LAPEER COUNTY, MICHIGAN

**DECLARATION OF TIMOTHY FAULKENDER  
OF CONDITIONS, COVENANTS AND RESTRICTIONS  
IMPOSED PURSUANT TO A CONSENT DECREE**

**THIS DECLARATION** is made as of this 16<sup>TH</sup> day of JULY 1997 by Timothy Faulkender (the "Declarant").

**WHEREAS**, the Declarant is the owner of approximately 13.4 acres of real property located on Dryden Road, in Metamora Township, Lapeer County, Michigan (the "Property"), a legal description of which is attached hereto as Exhibit A and made a part hereof; and

**WHEREAS**, pursuant to the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, the Property was placed on the National Priorities List to require remedial action because of a release or a substantial threat of a release of a hazardous substance at or from the Property; and

**WHEREAS**, on March 17, 1993, a Consent Decree, entitled "United States of America v. BASF-Inmont et al.," filed in Civil Action No. 91-CV-40320-FL was entered in the United States District Court for the Eastern District of Michigan Southern Division, a copy of which is attached hereto as Exhibit B and made a part hereof; and

**WHEREAS**, the Consent Decree in Section II.B of the Statement of Work requires the imposition of restrictions on the use of Declarant's Property; and

**WHEREAS**, this Declaration covers the portion of the Declarant's Property as described in Exhibit C, and is being recorded with the Lapeer County Register of Deeds for the purpose of protecting public health, safety and welfare and the environment, preventing interference with the performance and maintenance of any action taken pursuant to the Consent Decree, by any party thereto.

**NOW THEREFORE**, in order to comply with the Consent Decree, the Declarant declares that the Property shall be owned, held, transferred, sold, conveyed, used and occupied subject to the conditions, covenants and restrictions (collectively "Covenants and Restrictions") provided in this Declaration which Covenants and Restrictions shall run with the land and shall be binding on and inure to the benefit of all persons having right, title or interest in any part of the Property and to the parties to the Consent Decree as same are defined in the Consent Decree.

1. Any deed, title, or other instrument of conveyance which transfers any right, title, or interest, or which permits any use of the Property underlying this Declaration shall contain a notice that the Property is the subject of that certain Consent Decree entered on March 17, 1993, in the matter of the United States of America v. BASF-Inmont, et al., and shall

- contain a notice that this Declaration, and any amendment or modification thereof, shall continue into perpetuity or until terminated in accordance with the provisions of this Declaration.
2. Not later than thirty (30) days prior to any transfer of any interest in any real property covered by this Declaration, the then current owner(s) of the Property shall submit a true and correct copy of the transfer documents to the United States Environmental Protection Agency (USEPA), and shall identify the transferee(s) by name, principal business address and effective date of the transfer.
  3. Any future use of any portion of the Declarant's Property described in Exhibit C that is inconsistent with the remedial action work performed under the Consent Decree is prohibited. Prohibited uses include, but are not limited to, excavation, grading, filling, drilling, mining, storage or disposal of junk, debris and trash, or other construction or development.
  4. Groundwater beneath that portion of the Declarant's Property described in Exhibit C shall not be used. This includes a prohibition against the installation of drinking water and/or production wells.
  5. Surface water on that portion of the Declarant's Property described in Exhibit C shall not be used, or permitted to be used, without the advance written approval of the USEPA.
  6. The removal of the cap, components of the groundwater extraction and treatment system, groundwater monitoring wells, landfill gas probes/vents, access roads, fencing or any other improvement provided as part of the remedial action work performed under the Consent Decree is prohibited.
  7. The Property shall not be used for the storage or disposal of oil or any toxic or hazardous materials, with the exception of any storage associated with work performed under the Consent Decree.
  8. Until termination of the Consent Decree, the USEPA, the Michigan Department of Environmental Quality and the Settling Defendants (as that term is defined in the Consent Decree) shall have unlimited access to the Property.
  9. Permanent markers shall be installed on each side of the Property describing the restricted area and the nature of the prohibitions specified herein.
  10. The Settling Defendants, the United States of America and/or the State of Michigan may enforce the restrictions set forth in this Declaration by legal action in a court of competent jurisdiction.

If any provision of this Declaration is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provision hereof. All such provisions shall continue unimpaired in full force and effect.

This Declaration shall not be amended, modified or terminated except by written instrument by and between the then current owner(s) of the Property and the United States Environmental Protection Agency. Within five (5) days of executing an amendment, modification or termination of this Declaration, the owner(s) shall record such amendment, modification or termination with the Lapeer County Register of Deeds and within five (5) days thereafter, the owner(s) shall provide a true copy of the recorded amendment, modification or termination to the United States Environmental Protection Agency.

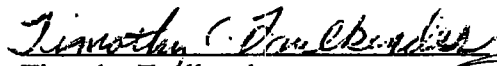
If any provision of this Declaration is also the subject of any laws or regulations established by any federal, state or local government, the stricter of the two standards shall prevail.


**WITNESS WHEREOF**, Timothy Faulkender, Declarant, has signed this Declaration this 16th day of July 1997.

Witnessed:

Owner:

  
Gerald L. Stange

  
Timothy Faulkender  
P.O. Box 164  
Metamora, MI 48455

  
BARBARA A FAULKENDER

Drafted by: James R. Campbell  
Engineering Management, Inc.  
1500 Ardmore Blvd, Ste 502  
Pittsburgh, PA 15221

STATE OF MICHIGAN )  
 ) SS.  
COUNTY OF ~~Lapeer~~ MACOMB )

**BEFORE ME**, a notary public in and for said County and State, personally appeared the above-named Timothy Faulkender who acknowledged that he did execute the within Declaration and that said execution is his free act and deed.

**IN TESTIMONY WHEREOF**, I have herein set my hand this 16th day of July 1997.

metamora\epa\deedrst.cts

  
Notary Public Gerald L. Stange

**GERALD L. STANGE**  
Notary Public, Macomb County, Mich  
My Commission Expires Nov. 6, 1998

**EXHIBIT A**

COUNTY TRANSFER STATION

A PARCEL OF LAND IN THE SOUTHWEST 1/4 OF SECTION 10, TOWN 6 NORTH, RANGE 10 EAST, METAMORA TOWNSHIP, LAPEER COUNTY, STATE OF MICHIGAN, MORE PARTICULARLY DESCRIBED BY DARRELL HUGHES, MICHIGAN REGISTERED LAND SURVEYOR No. 19834, AS BEGINNING AT A POINT ON THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, SAID POINT BEING DISTANT SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 153.23 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD, FROM THE SOUTH 1/4 CORNER OF SECTION 10; PROCEEDING THENCE, FROM SAID POINT OF BEGINNING, SOUTH 88 DEGREES 20 MINUTES 07 SECONDS WEST 80.05 FEET, ALONG THE SOUTH LINE OF SECTION 10 AND CENTERLINE OF DRYDEN ROAD; THENCE NORTH 36 DEGREES 10 MINUTES 21 SECONDS WEST 145.31 FEET; THENCE NORTH 02 DEGREES 07 MINUTES 06 SECONDS WEST 744.26 FEET; THENCE NORTH 00 DEGREES 59 MINUTES 25 SECONDS WEST 680.24 FEET; THENCE NORTH 06 DEGREES 28 MINUTES 57 SECONDS WEST 461.03 FEET; THENCE SOUTH 89 DEGREES 16 MINUTES 47 SECONDS WEST 221.47 FEET; THENCE SOUTH 88 DEGREES 30 MINUTES 57 SECONDS WEST 642.11 FEET; THENCE NORTH 00 DEGREES 50 MINUTES 38 SECONDS WEST 660.19 FEET, ALONG THE WEST 1/8 LINE OF SECTION 10; THENCE NORTH 88 DEGREES 31 MINUTES 09 SECONDS EAST 365.66 FEET, ALONG THE EAST AND WEST 1/4 LINE OF SECTION 10; THENCE SOUTH 00 DEGREES 50 MINUTES 56 SECONDS EAST 304.29 FEET; THENCE NORTH 88 DEGREES 30 MINUTES 46 SECONDS EAST 504.40 FEET; THENCE SOUTH 25 DEGREES 18 MINUTES 59 SECONDS EAST 391.24 FEET; THENCE SOUTH 87 DEGREES 58 MINUTES 07 SECONDS WEST 102.40 FEET; THENCE SOUTH 06 DEGREES 29 MINUTES 23 SECONDS EAST 458.46 FEET; THENCE SOUTH 00 DEGREES 59 MINUTES 20 SECONDS EAST 682.69 FEET; THENCE SOUTH 02 DEGREES 06 MINUTES 49 SECONDS EAST 723.35 FEET; THENCE SOUTH 36 DEGREES 10 MINUTES 06 SECONDS EAST 170.51 FEET, TO THE POINT OF BEGINNING, CONTAINING 13.418 ACRES. SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THAT PART USED FOR DRYDEN ROAD.

15-10-6-10

SW

LIBRARY 1049 MAR 02 2006

EXHIBIT B

**ENTERED**

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION - FLINT

FILED-CLERK  
U.S. DISTRICT COURT

Mar 17 2 40 PM '93

EAST. DIST. MICHIGAN  
SOUTHERN DIV. - FLINT

UNITED STATES OF AMERICA,

Plaintiff,

v.

CIVIL ACTION

NO: 91-CV-40320-FL

BASF-INMONT CORPORATION, CHRYSLER CORPORATION, FORD MOTOR COMPANY, GENERAL MOTORS CORPORATION, SEA RAY BOATS, INC., REICHOLD CHEMICALS, INC., SHERWIN-WILLIAMS COMPANY, GROW GROUP, INC., MAYCO PLASTICS, INC., BUNDY CORPORATION, FILLMORE THOMAS & CO., INC., KELSEY-HAYES COMPANY, METAL ALLOYS CORPORATION, MET-L-AID, INCORPORATED, SPENCER OIL COMPANY, THE STROH BREWERY COMPANY, WHITE COLOR CARD COMPANY, CONSUMERS POWER COMPANY, ALLIED-SIGNAL INC., HOOVER UNIVERSAL, INC., PRATT 7 LAMBERT INC., PETSCHKE MANUFACTURING COMPANY, INC., HENKEL CORPORATION, ELECTRO-COTE CHEMICAL CO., INC., DOEHLER-JARVIS LIMITED PARTNERSHIP, MERCURY PAIN COMPANY, LAPEER METAL PRODUCTS COMPANY, CINCINNATI MILACRON INC., PPG INDUSTRIES, INC., FOAMSEAL, INC., GRACO INC., LAIDLAW WASTE SYSTEMS INC., BFI OF NORTH METRO, INC., RICHFIELD DISPOSAL, INC., and OLSONITE CORPORATION,

Defendants.

I hereby certify that the foregoing is a true copy of the original on file in this Office.

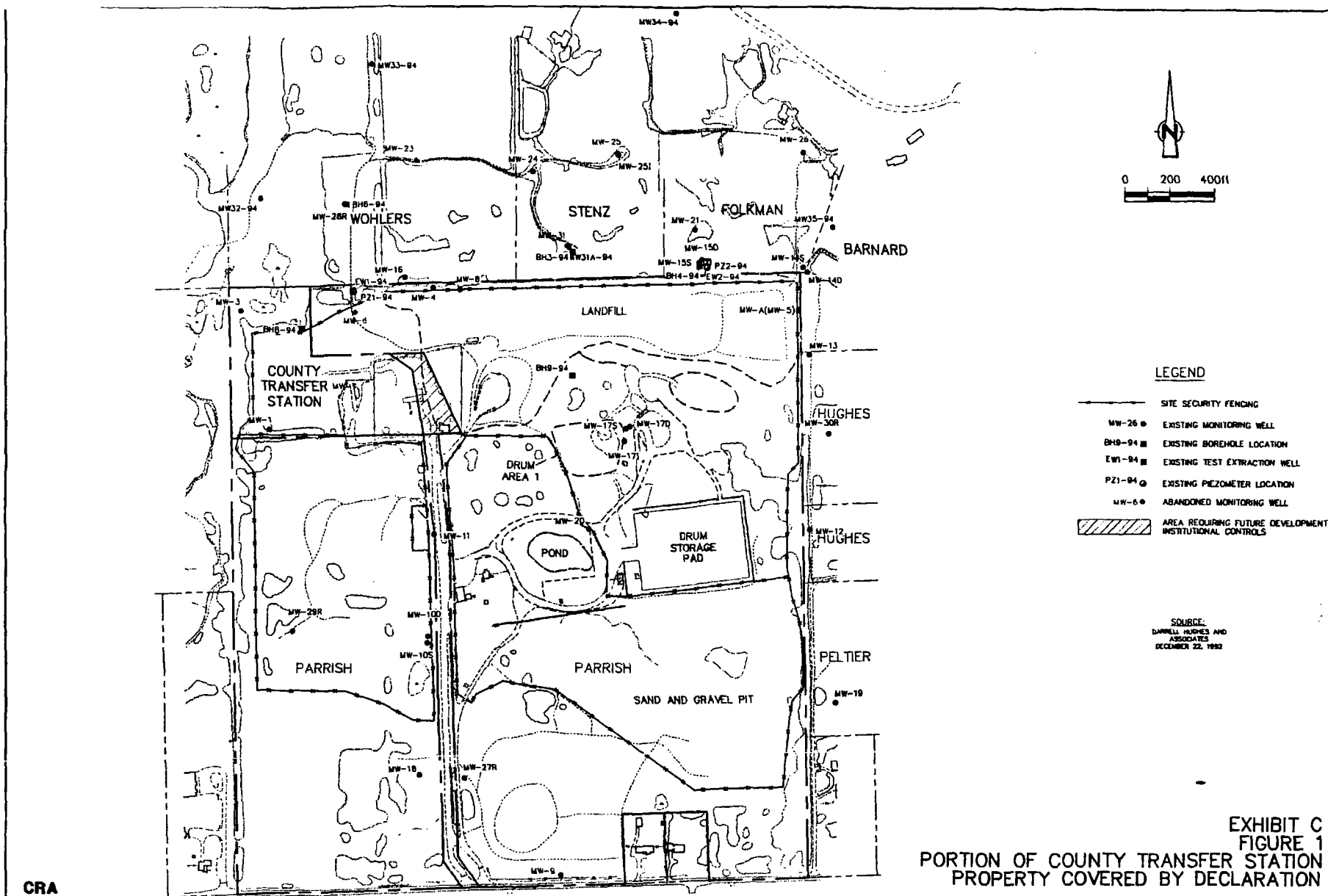
CLERK, U.S. DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN

By [Signature]  
Deputy

CONSENT DECREE

EXHIBIT C

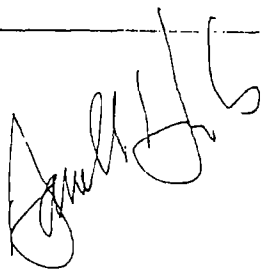




CRA

PORTION OF COUNTY TRANSFER STATION PROPERTY COVERED BY DECLARATION(EXHIBIT C, FIGURE 1, NO. 1) REVISED 2-13-1997

A parcel of land in the Southwest 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at a point, said point being distant the following 5 courses from the South 1/4 corner of Section 10: South 88 degrees 20 minutes 07 seconds West 153.23 feet, along the South line of Section 10 and centerline of Dryden Road; thence North 36 degrees 10 minutes 06 seconds West 170.51 feet; thence North 02 degrees 06 minutes 49 seconds West 723.35 feet; thence North 00 degrees 59 minutes 20 seconds West 682.69 feet; thence North 06 degrees 29 minutes 23 seconds West 458.16 feet, to the point of beginning; proceeding thence, from said point of beginning, South 88 degrees 32 minutes 28 seconds West 66.21 feet; thence North 08 degrees 55 minutes 03 seconds West 286.13 feet; thence North 56 degrees 32 minutes 35 seconds West 131.12 feet; thence North 88 degrees 30 minutes 46 seconds East 155.02 feet; thence South 25 degrees 18 minutes 59 seconds East 391.24 feet; thence South 87 degrees 58 minutes 07 seconds West 102.40 feet, to the point of beginning, containing 1.015 acres.




# **HUGHES**

## **LAND SURVEYORS**

DARRELL D. HUGHES & ASSOCIATES  
P.O. BOX 1039 - 838 SOUTH GRAND AVE.  
FOWLERVILLE, MICHIGAN 48836

(OFF) 517 223-3512 (FAX) 517 223-9987

CLIENT:

CRA REF. NO. 3298-69

SW 1/4 SEC. 10, T6N, R10E

M - Measured Dist. R - Recorded Dist.  
MON - Found Concrete Monument  
FIR - Found Iron Rod  
FIP - Found Iron Pipe  
SIR - Set Iron Rod  
SPK - Set "PK" Nail  
P.O.B. - Point of Beginning  
-x-x- Fence

SCALE:

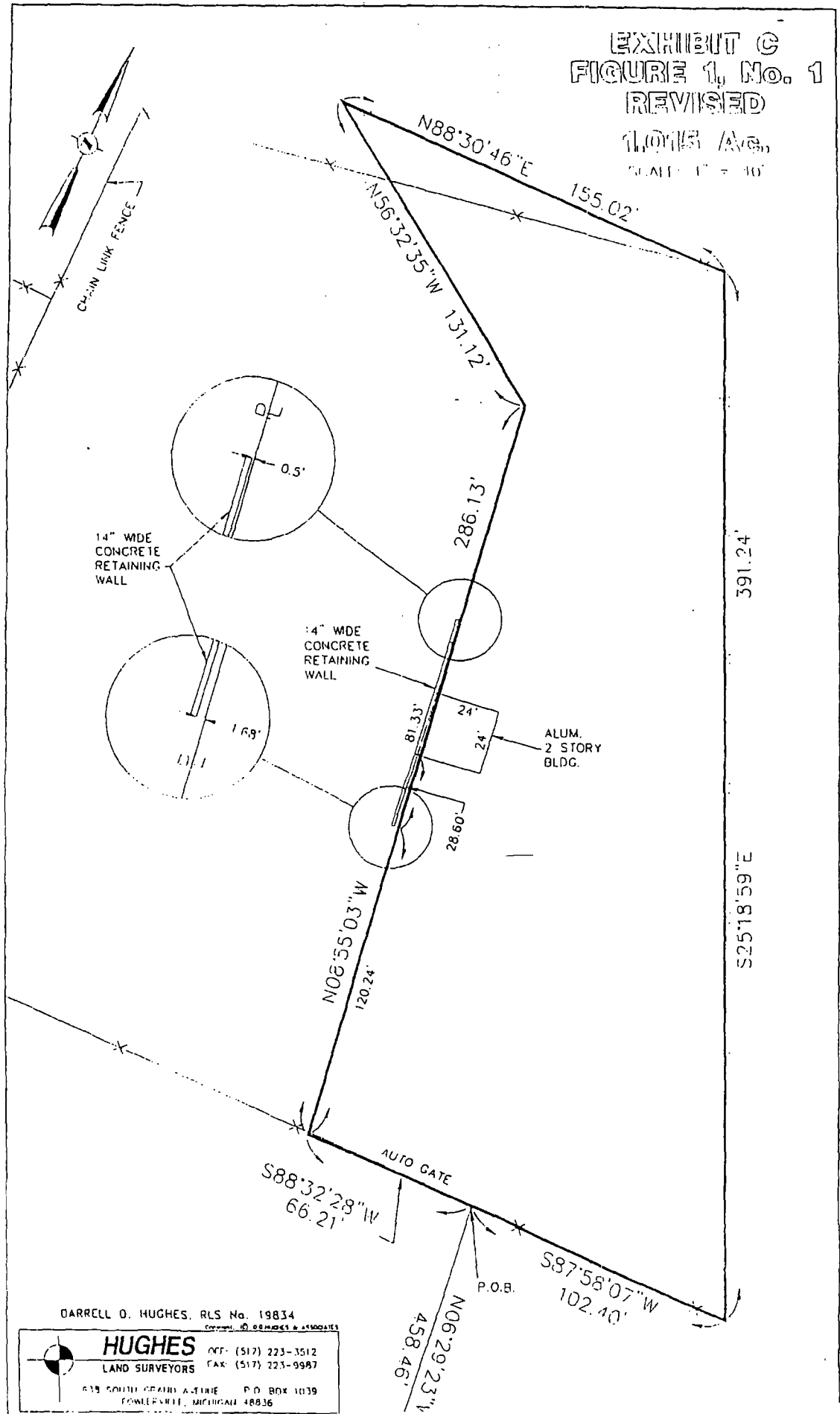
DATE: 2-13-97

SHEET: 3 of 3

DR. BY: *ddh* CLK:

EXHIBIT C  
FIGURE 1, No. 1  
REVISED

110113 Ave.  
SCALE: 1" = 40'



DARRELL O. HUGHES, RLS No. 19834

CONTRACTOR & ASSOCIATES

**HUGHES**  
LAND SURVEYORS

OFF: (517) 223-3512  
FAX: (517) 223-9997

619 SOUTH GRAND AVENUE P.O. BOX 1039  
POWERSVILLE, MICHIGAN 48836

12-01-1998  
10:00 AM  
AG-100000

**AMENDMENT NUMBER 1 to the**

**July 16, 1997 DECLARATION OF TIMOTHY FAULKENDER  
OF CONDITIONS, COVENANTS AND RESTRICTIONS  
IMPOSED PURSUANT TO A CONSENT DECREE**

**THIS AMENDMENT NUMBER 1 to the July 16, 1997 DECLARATION OF TIMOTHY FAULKENDER OF CONDITIONS, COVENANTS AND RESTRICTIONS IMPOSED PURSUANT TO A CONSENT DECREE** is made as of this 23rd day of October 1998 by Timothy Faulkender (the "Declarant").

**WHEREAS**, on July 16, 1997 the Declarant signed a certain DECLARATION OF TIMOTHY FAULKENDER OF CONDITIONS, COVENANTS AND RESTRICTIONS IMPOSED PURSUANT TO A CONSENT DECREE, (the "Declaration"); and

**WHEREAS**, the Declaration covers the portion of the Declarant's property as described in Exhibit C of the Declaration; and

**WHEREAS**, the Declarant wishes to modify the portion of the property affected by the Declaration.

**WHEREAS**, the United States Environmental Protection Agency (the "USEPA") agrees with the modification of the portion of the property affected by the Declaration. Written evidence of the USEPA's concurrence with this Amendment Number 1 is provided in the attached letter dated October 7, 1998.

**NOW THEREFORE**, the Declarant declares that Exhibit C of the Declaration is deleted and replaced in its entirety with the attached Exhibit C.

In all other respects, the Declaration shall remain in full force and effect.

If this Amendment Number 1 to the Declaration is held to be invalid by any court of competent jurisdiction, such invalidity shall not affect the validity of the Declaration and all provisions of the Declaration shall continue unimpaired in full force and effect.

This Amendment Number 1 to the Declaration shall not be amended, modified or terminated except by written instrument by and between the then current owner(s) of the Property and the USEPA. Within five (5) days of executing an amendment, modification or termination of this Amendment Number 1 to the Declaration, the owner(s) shall record such amendment, modification or termination with the Lapeer County Register of Deeds and within five (5) days thereafter, the owner(s) shall provide a true copy of the recorded amendment, modification or termination to the United States Environmental Protection Agency.

WITNESS WHEREOF, Timothy Faulkender, Declarant, has signed this Amendment Number 1 to the Declaration this 23rd day of October 1998.

Witnessed:

Owner:

Barbara A. Faulkender  
Barbara A. Faulkender

Timothy Faulkender  
Timothy Faulkender

Catrena M. Graves  
Catrena M. Graves

STATE OF MICHIGAN           )  
  ) SS.  
COUNTY OF MACOMB        )

BEFORE ME, a notary public in and for said County and State, personally appeared the above-named Timothy Faulkender who acknowledged that he did execute the within Amendment Number 1 to the Declaration and that said execution is his free act and deed.

IN TESTIMONY WHEREOF, I have herein set my hand this 23rd day of October 1998.

Gerald L. Stange  
Notary Public Gerald L. Stange

metamora/epalcts deed restriction amendment

DRAFTED BY;

JAMES CAMBELL

1500 ARDMORE BLVD.

SUITE 502

PITTSBURGH, PA

15221-4468

GERALD L. STANGE  
Notary Public, Macomb County, Mich  
My Commission Expires Nov. 8, 1999



LIBER 1132 PAGE 0179  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

FILED  
USEA (copy)  
**RECEIVED**  
OCT 13 1998

October 7, 1998

REPLY TO THE ATTENTION OF

James R. Campbell  
Engineering Management, Inc.  
1500 Ardmore Boulevard  
Suite 502  
Pittsburgh, Pennsylvania 15221-4468

RE: Revised Amendment of the Declaration of Timothy Faulkender for the County Transfer Station, Inc. Property

Dear Mr. Campbell:

The United States Environmental Protection Agency (U.S. EPA) has reviewed your request that it modify the Development Restriction Area by agreeing to an amendment of the Declaration of Timothy Faulkender for the County Transfer Station Property. U.S. EPA agrees that the Declaration may be amended so that the portion of the County Transfer Station Property that the Amended Declaration covers is now a parcel of land in the Southwest 1/4 of Section 10, Town 6 North Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at a point, said point being distant the following 5 courses from the South 1/4 corner of Section 10: South 88 degrees 20 minutes 07 seconds West 153.23 feet, along the South line of Section 10 and centerline of Dryden Road; thence North 36 degrees 10 minutes 06 seconds West 170.51 feet; thence North 02 degrees 06 minutes 49 seconds West 723.35 feet; thence North 00 degrees 59 minutes 20 seconds West 682.69 feet; thence North 06 degrees 29 minutes 23 seconds West 458.46 feet, to the point of beginning; proceeding thence, from said point of beginning, South 88 degrees 32 minutes 28 seconds West 30.20 feet; thence North 35 degrees 01 minutes 53 seconds West 81.11 feet; thence North 08 degrees 55 minutes 03 seconds West 217.97 feet; thence North 56 degrees 32 minutes 35 seconds West 131.12 feet; thence North 88 degrees 30 minutes 46 seconds East 155.02 feet; thence South 25 degrees 18 minutes 59 seconds East 391.24 feet; thence South 87 degrees 58 minutes 07 seconds West 102.40, to the point of beginning containing 0.988 acres.

The above description of the County Transfer Station property covered by the Amended Declaration will be made Exhibit C to the original declaration and replace any previous Exhibit

C. Mr. Faulkender should attach a copy of this letter indicating the agreement of the U.S. EPA to the Amendment to the Declaration that he files with the appropriate County Office.

Please be advised that by agreeing to the modification of the Development Restriction Area and agreeing to the Amendment of the Declaration of Timothy Faulkender, the U.S. EPA does not grant Mr. Faulkender the right to develop a road on the area that the Development Restriction Area previously covered. Mr. Faulkender's ability to construct a road on such property is dependent on his being able to obtain an agreement with the parties that have property or mining rights for that area.

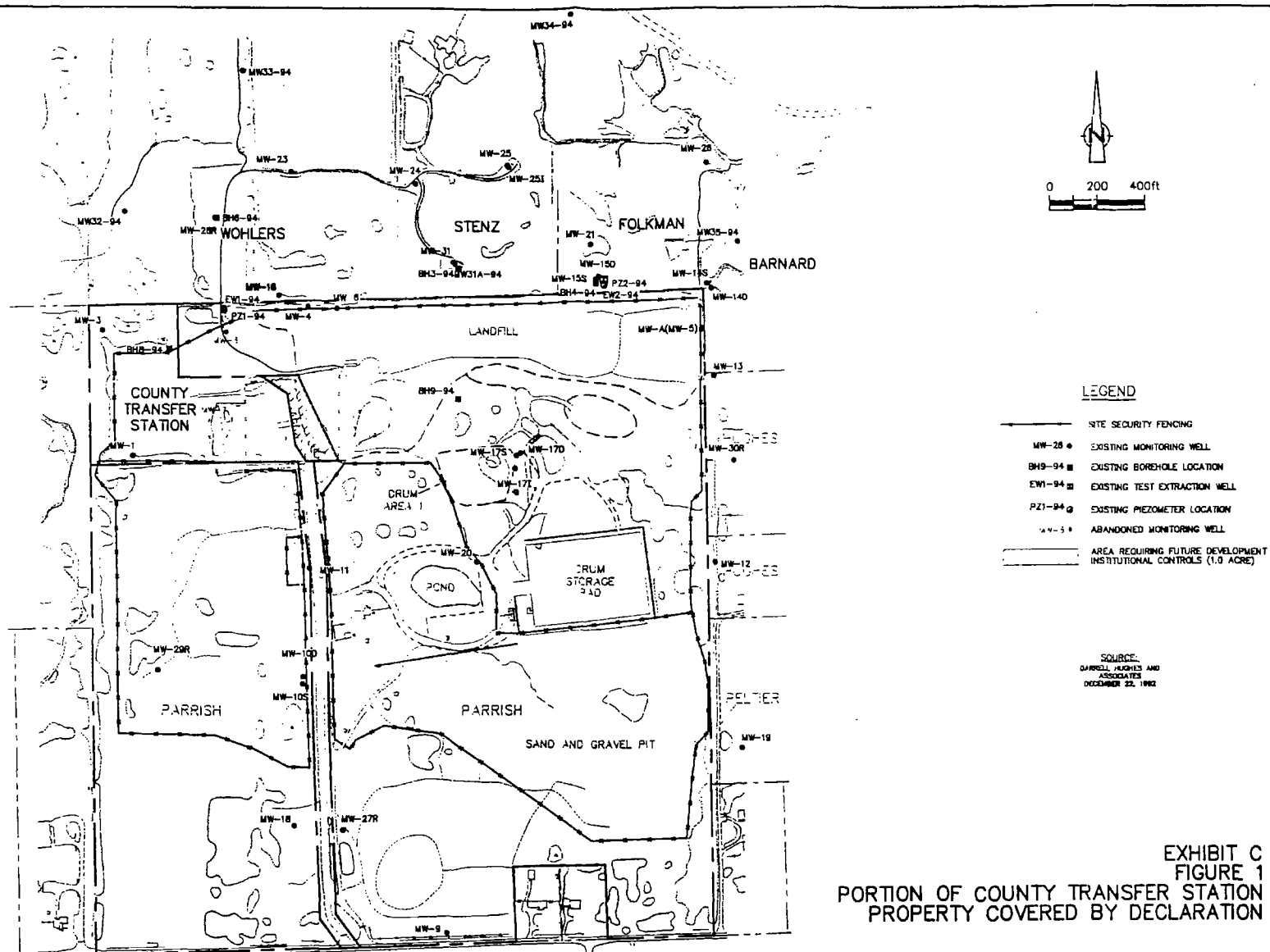
After Mr. Faulkender has filed the Amended Declaration, a true copy of the Amended Declaration should be sent to Thomas Williams of U.S. EPA. If you have any questions, please contact me at (312) 886-5114.

Sincerely,



Peter M. Felitti

cc: Thomas Williams, SR-6J

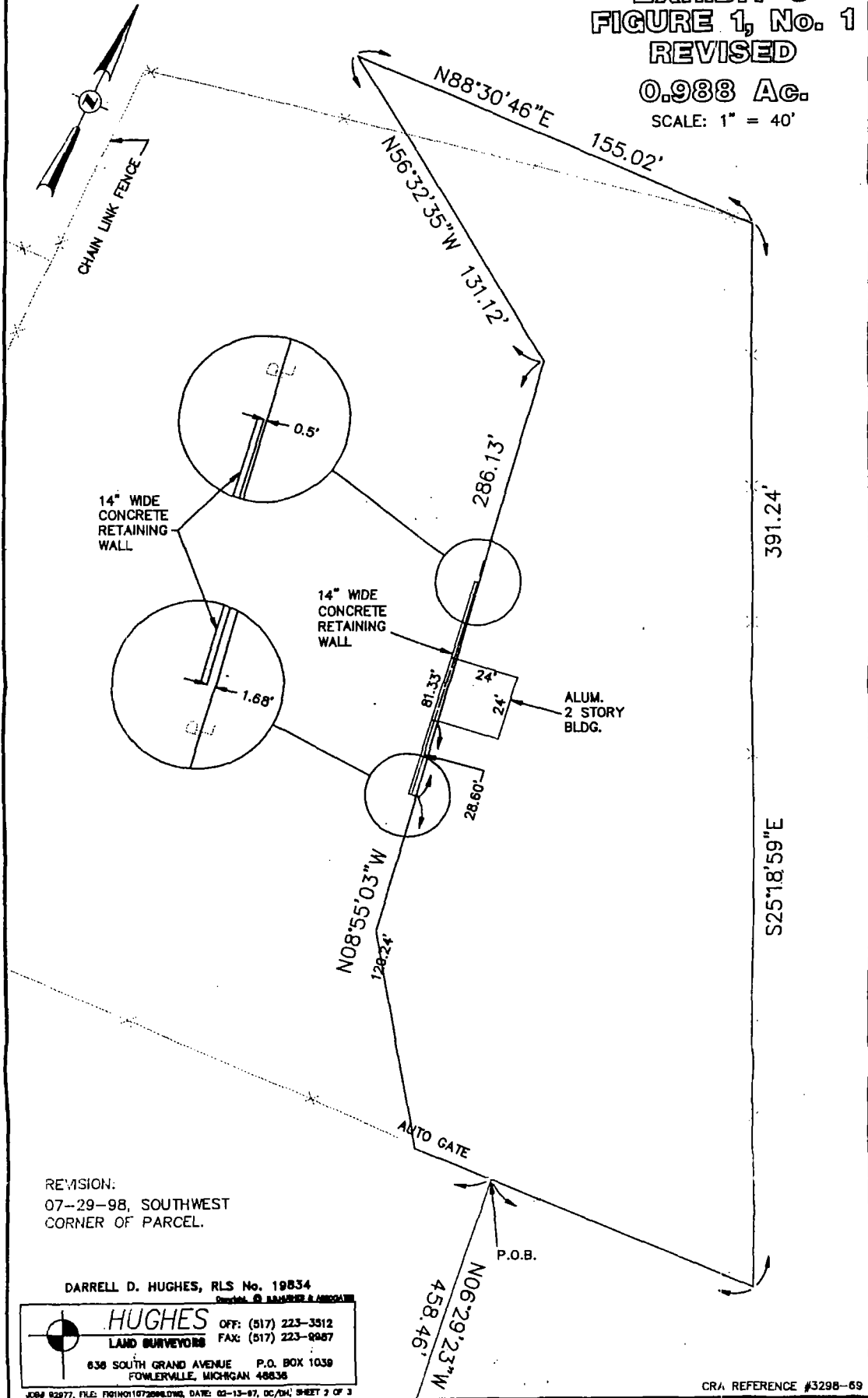




**EXHIBIT C**  
**FIGURE 1, No. 1**  
**REVISED**

**0.988 Ac.**

SCALE: 1" = 40'



REVISION:  
07-29-98, SOUTHWEST  
CORNER OF PARCEL.

DARRELL D. HUGHES, RLS No. 19834

	<b>HUGHES</b>	OFF: (517) 223-3512
	LAND SURVEYORS	FAX: (517) 223-9087
636 SOUTH GRAND AVENUE P.O. BOX 1039 FOWLERVILLE, MICHIGAN 48836		

JOB# 92977, FILE: F01101072098.DWG, DATE: 02-13-97, DC/DM, SHEET 2 OF 3


CRA REFERENCE #3298-69

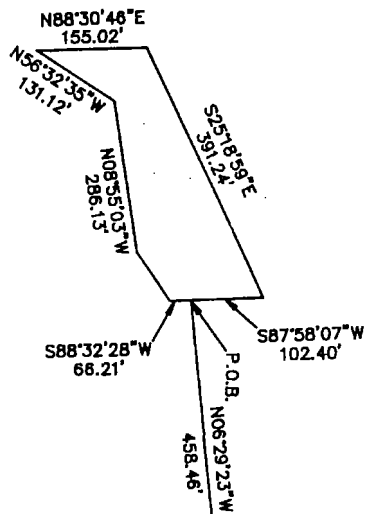
PORTION OF COUNTY TRANSFER STATION PROPERTY COVERED BY DECLARATION  
(EXHIBIT C, FIGURE 1, NO. 1)

A parcel of land in the Southwest 1/4 of Section 10, Town 6 North, Range 10 East, Metamora Township, Lapeer County, State of Michigan, more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at a point, said point being distant the following 5 courses from the South 1/4 corner of Section 10: South 88 degrees 20 minutes 07 seconds West 153.23 feet, along the South line of Section 10 and centerline of Dryden Road; thence North 36 degrees 10 minutes 06 seconds West 170.51 feet; thence North 02 degrees 06 minutes 49 seconds West 723.35 feet; thence North 00 degrees 59 minutes 20 seconds West 682.69 feet; thence North 06 degrees 29 minutes 23 seconds West 458.46 feet, to the point of beginning; proceeding thence, from said point of beginning, South 88 degrees 32 minutes 28 seconds West 30.20 feet; thence North 35 degrees 01 minutes 53 seconds West 81.11 feet; thence North 08 degrees 55 minutes 03 seconds West 217.97 feet; thence North 56 degrees 32 minutes 35 seconds West 131.12 feet; thence North 88 degrees 30 minutes 46 seconds East 155.02 feet; thence South 25 degrees 18 minutes 59 seconds East 391.24 feet; thence South 87 degrees 58 minutes 07 seconds West 102.40 feet, to the point of beginning, containing 0.988 acres.

REVISION: 07-29-98

Copyright, © D. HUGHES & ASSOCIATES, Inc.

	<p><b>HUGHES</b> <b>LAND SURVEYORS</b> DARRELL HUGHES &amp; ASSOCIATES, Inc. P.O. BOX 1039 - 638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836 (OFC) 517 223-3512 (FAX) 517 223-9987</p>	CLIENT:	CRA REF# 3298-69
		SW 1/4 SEC 10, T6N-R10E	
		<p>M - Measured Dist. R - Recorded Dist.          ⊗ MON - Found Concrete Monument          ● FIR - Found Iron Rod          ● FIP - Found Iron Pipe          ○ SIR - Set Iron Rod          ○ SPK - Set "PK" Nail          P.O.B. - Point of Beginning          -x-x - Fence</p>	
<p>DATE: 02-13-97</p>		DR. BY: MB	CHK: DDH
SCALE: N/A	SHEET: 3 of 3	FILE:	JOB No. 92977



**EXHIBIT C**  
**FIGURE 1, No. 1**  
**REVISED**

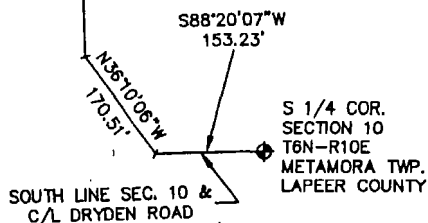
**0.988 Ac.**

SCALE: 1" = 200'

REVISION:  
 07-29-98, SOUTHWEST  
 CORNER OF PARCEL.

DARRELL D. HUGHES, RLS No. 19834

Surveyor, R. D. HUGHES & ASSOCIATES



S 1/4 COR.  
 SECTION 10  
 T6N-R10E  
 METAMORA TWP.  
 LAPEER COUNTY

SOUTH LINE SEC. 10 &  
 C/L DRYDEN ROAD

## ATTACHMENT 3



JENNIFER M. GRANHOLM  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



STEVEN E. CHESTER  
DIRECTOR

August 17, 2009

Mr. Thomas Short  
United States Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard (SR-6J)  
Chicago, Illinois 60604

Dear Mr. Short:

SUBJECT: Metamora Landfill, Lapeer County, Michigan, Fourth Five-Year Review Report

The Michigan Department of Environmental Quality (MDEQ) has conducted a review of the United States Environmental Protection Agency's (USEPA) draft Fourth Five-Year Review report (Report) for the Metamora Landfill site submitted July 17, 2009. The MDEQ simply has a different interpretation than the USEPA regarding how the requirements and objectives of the Operable Unit 2 (OU-2) Record of Decision (ROD) Amendment are being addressed at the site. The statutory determinations in the OU-2 ROD Amendment require protection of human health and the environment, including groundwater quality monitoring, to ensure that residents are not exposed to contaminated groundwater. Additionally, the ROD Amendment does not change the 1990 ROD requirements for landfill capping and landfill gas control. The above two requirements are taken directly from the ROD Amendment. The MDEQ believes that compliance and protectiveness are not being met.

Numerous documents have been submitted to the USEPA by the MDEQ over the years, and the agencies have also engaged in a few meetings that relate directly to what the MDEQ considers outstanding issues regarding the various decision documents. We have also engaged often regarding the Issues, Recommendations and Follow-up Actions identified during the Third Five-Year Review (September 27, 2004). For those reasons, this comment letter is being addressed to you. From our perspective, there still remains a lack of compliance with the site's decision documents.

Rather than providing an exhaustive point-by-point comment to this draft Report, these MDEQ comments more broadly address how some of the long-standing different viewpoints appear to be addressed by the USEPA in this Report, but from our perspective, are not substantiated with information. Pursuant to USEPA guidance (see 3.6 from the *Comprehensive Five-Year Review Guidance*), the MDEQ requests that this comment letter be included as an attachment to the Report, and that the Report indicates that our comment letter can be found in Attachment XX. We request that the following language be added at the end of all Protectiveness Statement sections within the Report (including in the Executive Summary):

As the support agency, the MDEQ has a long-standing different interpretation than the USEPA on how the remedy is being implemented, level of protectiveness, and compliance with the ROD Amendment. The MDEQ's support agency comments can be found in Attachment XX of this Report.

This Report should acknowledge the USEPA's attempts to gain access for investigating groundwater and methane at some residential properties near the landfill (the MDEQ recommends that surnames not be used and instead represented by directional descriptions in relation to the landfill). The USEPA should clearly be identifying lack of access as an Issue in this Report. The Recommendations and Follow-up Actions should still identify a process for addressing methane and groundwater delineation needs at the site.

The draft provided to the MDEQ is incomplete and contains unsubstantiated statements. As you know, five-year reviews should evaluate the implementation and performance of the remedy, and that does not seem to be well addressed in this Report. Data and information to support all findings and conclusions [emphasis added] is not available, and the Report does not include actual analysis of data to support assertions made. Given the nature of the remedy and the number of documents the MDEQ has submitted since the ROD Amendment, the brief list of documents reviewed does not meet a reasonable benchmark for five-year reviews. The draft Report provided to the MDEQ does not represent a comprehensive review and requires significant revisions if not a re-write.

Because the agencies have attempted at length to resolve the outstanding issues, the Report should reflect those efforts; therefore, the MDEQ requests that the February 13, 2008, correspondence transmitting the January 2008 "Issues Statement" sent to the USEPA be added to the Document Review list found in Section VI.C. of the Report. The USEPA's subsequent response should also be added as an attachment to the Report.

Compliance and protectiveness is not being provided for at this site. The groundwater contaminant plume(s) is not defined, and data indicate it is migrating. At least one resident is being exposed via contaminated groundwater in the residential water supply well, albeit, currently at levels below criteria. The data also show that methane is migrating beyond the property boundaries above the lower explosive limits. Thus, the landfill gas management system has not achieved the strict ROD Amendment requirement of no migration beyond the property boundary.

The Report states in the second paragraph of Section VI.D. that *"Monitoring wells that could not be installed on the [privately held properties near the northeast portion of the landfill] are not critical in the evaluation of the effectiveness of the remedy."* Full delineation of any and all plumes is foundational to a monitored natural attenuation (MNA) remedy. Only then can one determine whether MNA is actually working. The MDEQ believes the "foundational" requirements have not been met, and the remedy being implemented is inconsistent with the objectives of the ROD Amendment. Briefly, there is known contamination in the shallow (see data from MW-15S and MW-14D) and intermediate (MW-15I) aquifers upgradient of two privately held residential wells near the northeast portion of the landfill, but no monitoring points (e.g., sentinel wells, as recommended in the USEPA's own MNA guidance) are in between those well locations and the residences, or to the east. Also, the only data from the bedrock aquifer in that area of the site indicate 1,4-dioxane is present. Thus, it simply is not clear how the plume delineation can be considered "good enough" as the USEPA has indicated. Furthermore, 1,4-dioxane is not amenable to natural attenuation.

The contaminant plume(s) emanating from the landfill and two former drum areas, or perhaps from one or more of the three known remaining drum areas, is now much larger than was predicted in the Remedial Investigation (RI) report and Conceptual Site Model Report (CSMR) for this site. Those documents were used as the basis for selecting the remedy. More recent data (i.e., 2003 to present) shows the assumptions in the RI and CSMR are no longer accurate.

The contamination is expanding and as previously mentioned, 1,4-dioxane has now reached at least the location of one nearby residential well. Previously, 1,4-dioxane had not been detected at that location; that does indicate migration within/into the bedrock aquifer, not to mention the lack of evaluation and delineation. It should also be noted that 1,4-dioxane concentrations measured at MW-49I (in the northwest portion of the monitoring network) during the monitoring period in the Baseline Groundwater Monitoring Report (2006 and 2007) were below criteria. Currently, analytical data from 2008-present indicate 1,4-dioxane concentrations are now above criteria at the location of MW-49I. Vinyl chloride and 1,4-dioxane are also increasing at the location of MW-55I. The data suggest contaminant migration is occurring in that portion of the site as well.

How data are interpreted is a key issue. There is a hydraulic connection between aquifers at the landfill proper (see MW-46I and MW-15I as examples) and there is also a thinning and absence of a confining till between the geologic units in the north-central portion (e.g., see MW-42I and MW-52I) of the existing monitoring network. That is significant information because the hydrogeology influences groundwater flow and contaminant transport in and from upper to lower aquifers. That includes the bedrock aquifer used for the region's water supply; however, bedrock aquifer monitoring wells that could better evaluate that contaminant pathway are absent.

It should be recognized that although vinyl chloride and trichloroethylene are amenable to natural attenuation, 1,4-dioxane is a parameter that is not suited for attenuation. The fact that it is currently below criteria in a nearby residential well, as pointed out by the USEPA, is of little comfort in light of the fact that it is being detected in a residential well on privately owned property. On a related note, the MDEQ acknowledges that the USEPA has identified institutional controls (ICs) for follow-up in the Third Five-Year Review as well as this Report; however, it is not clear how the USEPA intends to implement ICs when the extent of contamination is not known.

Although several monitoring wells have been installed (primarily in the intermediate aquifer) as part of the long-term monitoring network, the ROD Amendment objectives and the Recommendations and Follow-up Action identified in the Third Five-Year Review have not been met. From parameter analysis and frequency to location, the current MNA remedy monitoring and this Report do not accurately represent the contaminant transport and potential exposure pathways from this decades-old landfill. The MDEQ disagrees with the USEPA's interpretation of data. For example, 1,4-dioxane is present at almost every shallow and intermediate well (concentrations above criteria as high as 290 micrograms per liter) but has only been analyzed for in two of the existing bedrock wells. At the intermediate aquifer monitoring location (MW-23I), where 1,4-dioxane is routinely detected at concentrations above criteria, there were virtually no analyses for 1,4-dioxane in the co-located bedrock aquifer well, and no additional monitoring is proposed in the future. It should be recognized as an Issue and Follow-up Action in this Report that at least a few additional bedrock monitoring (sentinel) wells are needed at appropriate locations as part of contaminant plume delineation. These additional wells are necessary to ensure residents are not exposed to contaminated groundwater, as required by the ROD Amendment.

Lastly, the MDEQ suggests that as a Recommendation and Follow-up Action, an independent technical advisory group be solicited to review all relevant site information so as to provide an objective professional opinion regarding the level of protectiveness and compliance with the site's decision documents.

The MDEQ appreciates the opportunity to comment on this draft Report in our role as a support agency. Please let me know if there are any questions regarding these comments. In closing, the MDEQ requests to hear whether the USEPA is willing to re-draft the Report and incorporate the requests and suggestions contained within this comment letter. If lieu of that, the MDEQ requests that the final re-draft, before signature, is shared.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Kline', with a stylized flourish at the end.

David Kline  
Acting Chief, Superfund Section  
Remediation and Redevelopment Division

cc: Mr. Richard Karl, USEPA  
Ms. Sharon Jaffess, USEPA  
Mr. Nanjunda Gowda, USEPA  
Mr. Jim Sygo, Deputy Director, MDEQ  
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Mr. James Heinzman, MDEQ  
Mr. Keith Krawczyk, MDEQ  
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