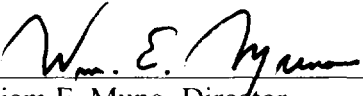
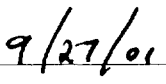


*Waste, Inc. Landfill
Michigan City, Indiana
First Five Year Review*



William E. Munro, Director
Superfund Division
USEPA Region 5



Date

I Introduction

EPA Region 5 has conducted a five year review of the remedial actions implemented at the Waste, Inc. Landfill (Waste, Inc.) in Michigan City, Indiana. This five year review represents the first review for the Waste, Inc. site. This review was conducted from July 1, 2001 to September 1, 2001 and a site visit was conducted on July 11, 2001. This site visit was attended by Dion Novak, Remedial Project Manager-USEPA; Gary Connor, Weil McLain-one of the responsible parties for the site, Danielle Livinghouse, LaPorte County Health Department; Sue Claussen, Michigan City Sanitary District; and Candice Kloss, Weaver, Boos, and Gordon (O&M contractor). This report documents the results of this review. The purpose of five year reviews is to determine whether the remedy at the site remains protective of human health and the environment. The methods, findings, and conclusions of these 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.

This review is required by statute and is a Level 1 review. EPA must implement five year reviews consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 (c) as amended, 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 initiation of such remedial actions to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP Part 300.430 (f)(ii) of the Code of Federal Regulations (CFR) 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 remedial action.

This is the first five year review for the Waste, Inc. Site. The triggering action for this statutory review is the date of actual on-site remedial action construction, which was September, 1996. Because hazardous substances remain at the Site above levels that allow for unlimited use and unrestricted exposure, a five year review is required by statute.

II Site Chronology

Table 1 below lists the chronology of events for the Waste, Inc. Site.

<u>Date</u>	<u>Event</u>
1965 - 1972	Dis-Pos-All Services Division, a division of Northern Indiana Steel Supply Company (NISSCO), operated the Site as a landfill.
1972	NISSCO sold its disposal operations to Waste, Inc.
1972-1982	Waste, Inc. operated the Site as a landfill.
8/82	Consent order signed with Waste, Inc., closing the Site, but allowing Waste, Inc. to accept foundry sand for disposal and to begin covering the Site with clay.
1983	In response to State of Indiana enforcement actions, a Court Order demanded proper closure of the Site.
January 1985	USEPA Hazard Ranking System (HRS) evaluation of the Site resulting in a HRS score of 50.63.
July 1987	Site placed on the National Priorities List (NPL).
3/87 to 9/93	Remedial Investigation and Feasibility Study (RI/FS) conducted pursuant to Administrative Order on Consent with USEPA.
August 1994	Record of Decision (ROD) signed for the Site.
January 1995	Unilateral administrative order (UAO) became effective, requiring responsible parties to perform remedial design/remedial action (RD/RA) activities.
August 1996	Remedial design for the Site approved by USEPA.
September 1996	Commencement of on-site remedial action construction
December 1997	Preliminary Site Closeout Report (PCOR) completed

III Background

The Waste, Inc. Site is located in LaPorte County, Indiana, at 1701 East US Highway 12, in Michigan City, Indiana. The 32 acre Site, which is comprised of the Waste, Inc and Lin-See Ltd. properties, is bounded by US Highway 12 to the northwest, Sullair Corporation to the east, Trail Creek to the east and south, and Lake Aluminum (property formerly owned by NISSCO) to the west (See Figure 1).

The Waste, Inc. Site consisted of agricultural land with some lowlands in 1939 prior to its development as a landfill. From 1965 to 1972, the Site was operated as an unpermitted landfill by Dis-Pos-All Services Division, a division of NISSCO. From 1972 to 1982, Waste, Inc. operated the landfill at the Site. In August 1982, the Site was closed by Court order, which also allowed the acceptance of foundry sand as cover material and required Waste, Inc. to cover the Site with clay. In 1983, in response to State of Indiana enforcement actions, a court order demanded proper closure of the Site. The Site was proposed to the NPL on 4/10/85 and added to the final NPL on 7/21/87.

Soil and groundwater samples collected at the Site were found to be contaminated with volatile organics, semi-volatile organic, and inorganic compounds. The presence of these contaminants at the Site was determined by the Site risk assessment to pose unacceptable risks to human health and the environment and the is the basis for the site remedial action.

IV Remedial Actions

Remedy Selection/Objectives

The Site remedy, as outlined in the ROD dated August 18, 1994, entails the following activities:

- Installation of a Subtitle D cap, meeting the requirements of 329 Indiana Administrative Code (IAC) 2-14-19(3)(b) and 329 IAC 19(3)(a)-(c).
- Installation of a trench to collect shallow groundwater and leachate with direct discharge to the Sanitary District of Michigan City, pursuant to discharge standards listed below in Figure 2 and also in Table 5 of the Site ROD .
- Collection and disposal of landfill gas
- Containment of groundwater in the deep portion of the underlying aquifer
- Re-routing or abandoning the sewer located on-site
- Removal or disposal of an underground storage tank located on-site
- Posting of fish advisory signs along Trail Creek
- Proper abandonment of an on-site water supply well
- Long term surface and groundwater monitoring

Figure 1

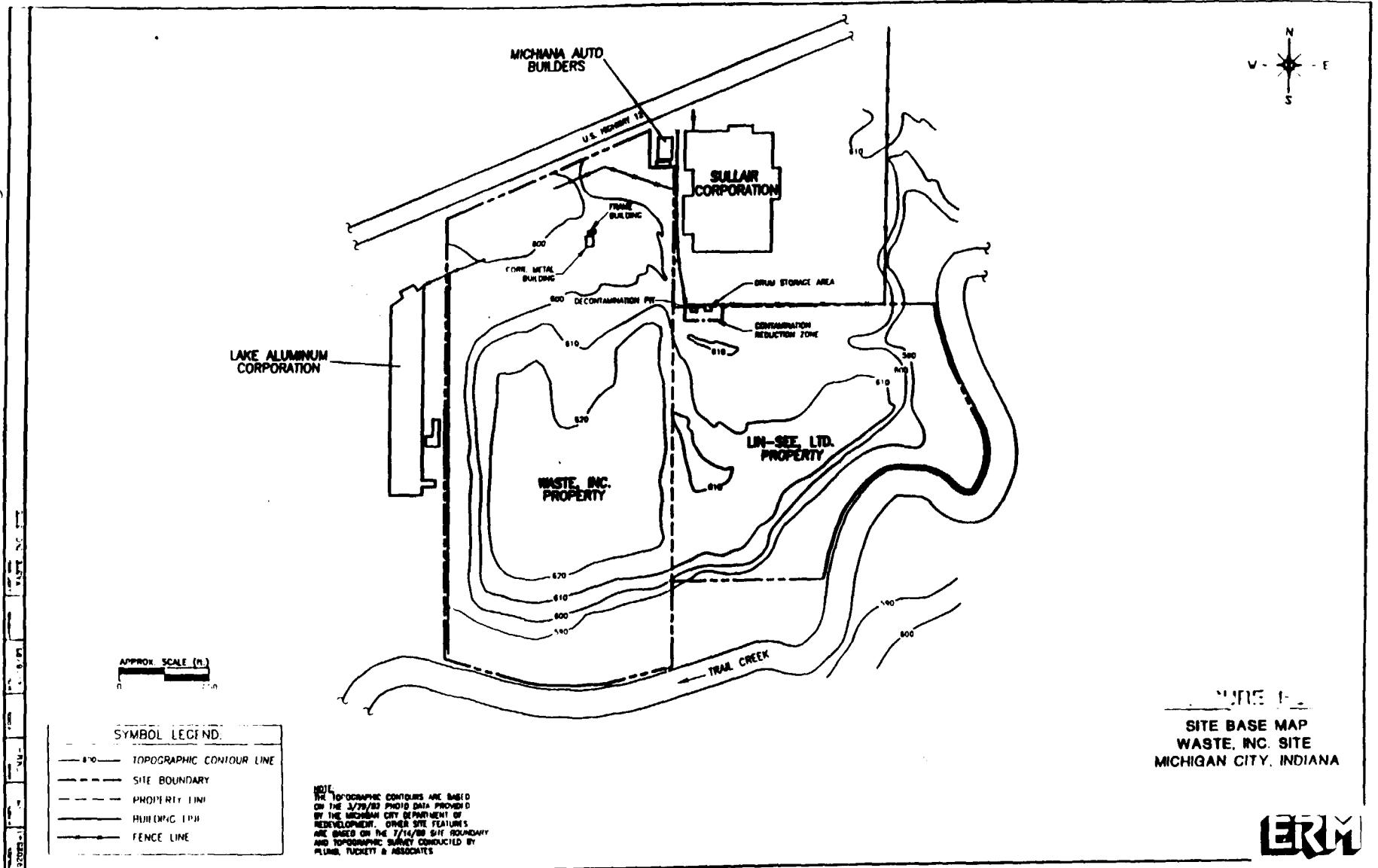


Figure 1

Remedy Implementation

The USEPA determined that the remedy construction would be accomplished in two phases. From September 1996 to January 1997, the following Phase 1 remedy construction tasks were completed: clearing and grubbing of on-site vegetation; waste reconsolidation and regrading; installation of a leachate and shallow groundwater collection system including the construction of a dedicated discharge from the Site to the Sanitary District; sliplining of the on-site sewer line; proper abandonment of the on-site monitoring well; proper removal of the on-site underground storage tank; and the posting of fish advisory signs along Trail Creek.

From April 1997 to September 1997, the following Phase 2 remedy construction tasks were completed: final grading of the Site; installation of a landfill gas collection and disposal system; replacement of Site fencing; and the construction of a multi-layer cap over the Site.

System Operations/O&M

Montgomery Watson began operating the leachate collection system in 1997, under contract with the Site responsible parties. Weaver, Boos and Gordon took over Site O&M in February 1999. Leachate and shallow groundwater are collected in the collection trench and migrate to a sump located on the southwest corner of the property, where it is pumped through a dedicated discharge line to the Sanitary District for eventual treatment. Landfill gas is collected in 20 extraction/venting wells and is transferred through header pipes to the on-site blower building. From the blower building, the collected gas is vented through a vent stack located on the roof of the blower building. Testing conducted during remedial design and confirmed during remedial action construction indicates that no treatment of the gas is necessary.

Progress since the last five year review

This is the first five year review for the Site.

V. Five Year Review Findings

The shallow groundwater and leachate collection system began operating in January, 1997. Leachate pre-treatment standards are listed below in Figure 2, which is taken directly from the August 1994 Record of Decision. Groundwater and surface water sampling began on a quarterly basis shortly thereafter. Landfill gas sampling occurred monthly for the first three months and has been occurring on a quarterly basis thereafter.

Figure 2 Pre-treatment standards for leachate discharge

Arsenic	290 ppb	Nickel	3000 ppb
Cadmium	600 ppb	Silver	50 ppb
Chromium	7000 ppb	Zinc	4200 ppb
Copper	3400 ppb	Cyanide	1000 ppb
Lead	600 ppb		
Mercury	60 ppb		

In July 1997, EPA received and approved a **technical memorandum** from the Site PRP group which summarized construction and **monitoring data** for the integrity of the Site barrier trench. In this report, an integrity analysis was **completed** for the barrier trench installation and the results indicated that the wall permeability **was meeting** design standards.

In January, 1998, EPA approved a **reduction in reporting frequency** from monthly to quarterly. In May, 1998, EPA approved a change in the **analytical laboratory** to Compu Chem Laboratories.

In January, 1999, EPA approved a **change in the Site operation and maintenance contractor** from Montgomery Watson to Weaver, Boos and Gordon (WBG) and also approved a change in the analytical laboratory to Sima Labs International.

In February, 1999, USEPA received a **request for modification** of the Site monitoring program. This request asked for a reduction in **monitoring frequency** at the monitoring well and surface water sampling locations as well as a **reduction in the analytical sampling requirements**.

In a letter dated July 13, 1999, USEPA **approved the following modifications** to the sampling program: monitoring frequency was **reduced from quarterly to annual** for all but one well; sampling was reduced from seven well **locations to five**; analysis for only PCBs at MW-8. EPA did not approve the request for **elimination of semi-volatile organics** from the Site analytical program.

In December, 1999, EPA identified an **apparent anomaly** in the monthly leachate discharge for the period of May 1999 to September 1999. **Leachate discharge quantities** for that period were elevated when compared to previous **monthly discharge quantities**. WBG analysis of the issue showed that these amounts were **incorrectly reported** to the Sanitary District and the PRPs have since petitioned for a credit for monies **paid for discharge**. In a letter dated December 22, 1999, WBG presented data to demonstrate that **these discharge values** for this period were incorrect when compared to Site historical averages. **Since that analysis**, the anomalies have not been repeated.

A review of Site monitoring data has **uncovered a discrepancy** from the monitoring reductions approved by EPA in July, 1999. In that **letter**, EPA required that sampling continue at MW-5S

and MW-5D. This well has not been sampled during the 1999 and 2000 annual sampling events and should be added to the annual sampling beginning immediately.

There is no significant erosion on the landfill cap and the cover vegetation is healthy and uniform across the cap. The landfill gas collection wells are also intact.

VI Technical Assessment

A review of available groundwater monitoring data (from the quarterly reports) indicates that the groundwater collection trench is creating a capture zone that prevents contamination from migrating off-site. To date, leachate quality is as predicted in the remedial design, and pre-treatment before direct discharge has been unnecessary. This was confirmed at the Site visit with District personnel and is summarized in Table 2 below.

Data collected to date shows stable concentrations in the on-site monitoring wells, with monitoring results throughout the five year period similar to those detected during the RI/FS.

During the Site visit, WBG indicated that the polyvinyl chloride (PVC) protective casings installed around the gas monitoring wells were beginning to damage the gas wells due to subsidence and recommended that they be removed. Removal of the PVC casings would not impact well or sample quality. WBG indicated that all gas well caps have been replaced with caps that allow for direct sampling through the cap without cap removal.

VII Deficiencies

At present, the Site remedy is performing adequately and achieving ROD performance standards. There are no deficiencies at present with any component of the implemented remedy.

VIII Recommendations and Required Actions

This five year review report has summarized the current remedial activities at the Waste, Inc. Site and also described future monitoring activities. The following actions are recommended for continued operation and maintenance of Site remedies.

The leachate and shallow groundwater collection system should continue to be operated, providing down gradient containment of Site contamination.

It is recommended that the current groundwater and surface water monitoring data be studied to prepare a trend analysis report to evaluate contaminant trends in groundwater and surface water near the Site. This report, to be prepared by the Site PRP group, should also include a summary of groundwater elevation data, both inside of and outside of the barrier wall, that will support

TABLE 2

MICHIGAN CITY SANITARY DISTRICT PRETREATMENT

Waste, Inc.

JANUARY- DECEMBER

Self-Monitoring and Quarterly Compliance Results
For Year 2000

Date	Remarks	Flow (gpd)	PCB's (mg/l)	NH ₃ (mg/l)	Arsenic (mg/l)	Molybdenum (mg/l)	Selenium (mg/l)	Mercury (mg/l)
01/19/00	Self	6,000	0.001	48.1	0.026	0.01	0.060	0.0002
01/19/00	Lift Station Maint.	11,500						
	Total Monthly Gallons	213,300						
02/07/00	Compliance		0.0005	44.4	0.005	0.0014	0.021	0.0001
02/21/00	Self	10,282	0.0005	102.0	0.020	0.005	0.100	0.0001
	Total Monthly Gallons	339,300						
03/23/00	Self	8,277	0.0005	91.9	0.024	0.005	0.100	0.0001
	Total Monthly Gallons	184,600						
04/12/00	Compliance		0.002	71.6	0.020	0.05	0.005	0.0001
04/21/00	Self	17,450	0.0005	59.9	0.020	0.012	0.100	0.0001
	Total Monthly Gallons	506,054						
05/23/00	Self	32,344	0.0005	58.7	0.012	0.01	0.100	0.0001
	Total Monthly Gallons	443,830						
06/26/00	Self	14,315	0.0005	48.9	0.017	0.01	0.005	0.0001
	Total Monthly Gallons	468,720						
07/26/00	Compliance		0.00025	47.8	0.020	0.05	0.005	0.0001
07/25/00	Self	17,248	0.0005	100.0	0.028	0.01	0.100	0.0001
	Total Monthly Gallons	431,200						
08/23/00	Self	21,890	0.0005	78.0	0.019	0.01	0.100	0.0001
	Total Monthly Gallons	834,800						
09/19/00	Self	14,752	0.0005	71.0	0.019	0.01	0.100	0.0001
	Total Monthly Gallons	398,300						
10/20/00	Self	16,374	0.0005	56.0	0.023	0.01	0.100	0.0001
	Total Monthly Gallons	507,600						
10/25/00	Compliance		0.00025	70.0	0.030	0.05	0.005	0.0001
11/21/00	Self	15,738	0.0005	54.0	0.013	0.075	0.100	0.00023
	Total Monthly Gallons	503,600						
12/27/00	Self	15,997	0.0005	12.0	0.021	0.013	0.100	0.00041
	Total Monthly Gallons	575,900						
	Number of Samples	25	18	16	16	16	16	16
	Average		0.0006	63.3	0.0198	0.0207	0.0688	0.0001
	Maximum		0.002	102	0.03	0.075	0.1	0.00041
	Daily Effluent Limit	75000	0.002	Surcharge	0.29	Report	Report	0.06
	Monthly Avg. Limit	NA	NA	over 20mg/l	NA	NA	NA	NA

NOTE:

The numbers in bold are half values of the actual reported result which was a less than value. For example, < 0.01 mg/L is entered in the spreadsheet as .005 mg/L. This method of using half less than values was recommended by IDEM for calculating averages and maximums.

MICHIGAN CITY SANITARY DISTRICT
 PRETREATMENT
 Waste, Inc.
 Self-Monitoring and Quarterly Compliance Results
 For Year 2001

Date	Remarks	Avg Flow (gpd)	PCB's (mg/l)	NH ₃ (mg/l)	Arsenic (mg/l)	Molybdenum (mg/l)	Selenium (mg/l)	Mercury (mg/l)
01/19/01	Self	15,765	< 0.001	61.0	0.015	< 0.02	< 0.20	< 0.0002
02/07/01	Compliance		< 0.0005	32.9	< 0.01	< 0.10	< 0.01	< 0.0002
02/20/01	Self	17,775	< 0.0011	64.0	0.017	< 0.05	< 0.20	< 0.0002
03/19/01	Self	19,759	< 0.001	73.0	0.016	0.018	< 0.20	< 0.0002
04/23/01	Self	19,480	< 0.0012	81.0	0.017	0.035	< 0.20	< 0.0002
05/22/01	Self	19,190	< 0.0011	72.0	< 0.01	0.014	< 0.20	< 0.0002
05/30/01	Compliance		< 0.0005	55.5	0.02	< 0.10	< 0.01	< 0.0002
	Samples	5	7	7	7	7	7	7
	Average	18,195	0.0009	62.8	0.0150	0.0481	0.148	0.0002
	Maximum		0.0012	81	0.02	0.1	0.2	0.0002
Daily Effluent Limit		75000	0.002	Surcharge	0.29	Report	Report	0.06
Monthly Avg. Limit		NA	NA	over 20mg/l	NA	NA	NA	NA

FLOW	
Month	Gallons
Jan	362,800
Feb	568,000
Mar	533,500
Apr	681,600
May	558,500
June	
TOTAL	2,702,200

collected data to demonstrate Site containment. A summary table containing groundwater and surface water data should be included and updated annually.

Every five years, a barrier wall integrity video is required to be completed to check for leaks and to determine if the collection trench requires cleaning. This video check also includes the sewer that was sliplined as part of the remedial action. The results of this video and subsequent cleaning activities should be submitted to EPA by December 2001 and summarized in the subsequent quarterly report for the Site.

PVC casing removal documentation should also be submitted to EPA by December 2001, including wells where the casing was not removed. MW-5S and MW-5D should be immediately added to the annual sampling program as their removal was not previously approved by EPA.

IX Protectiveness of Remedy

Because the remedial action at all operable units are protective, the Waste, Inc. Site is protective of human health and the environment.

X Next Review

The next five year review will be conducted within five years of the completion of this report, which will be September, 2006.