



EPA

Superfund Record of Decision:

Algoma Municipal Landfill, WI



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12. Sponsoring Organization Name and Address U.S. Environmental Protection Agency 401 M Street, S.W. Washington, D.C. 20460					
15. Supplementary Notes					
16. Abstract (Limit: 200 words) The 13-acre Algoma Municipal Landfill site is an inactive municipal landfill in Algoma, Kewaunee County, Wisconsin. Surrounding land use is primarily agricultural/rural residential with wetlands adjacent to the site. The site overlies an aquifer that currently supplies water to private wells. From 1969 to 1983, the site was operated as a municipal landfill comprised of 3 distinct landfill areas. Solvents, thinners, lacquers, as well as municipal wastes were reportedly disposed of in the main landfill area known as the Landfill Disposal Area (LDA). Two smaller areas, the North Disposal Area (NDA) and the South Disposal Area (SDA) were reportedly used for the disposal of construction debris and asbestos-contaminated sludge. Approximately 400,000 cubic yards of municipal wastes were disposed of at the site. In 1983, the landfill was closed and the wastes were covered. However, over time, the cap has deteriorated due to weather and lack of protection from freezing and thawing. Therefore, the current cover has not been impermeable and landfill contaminants have been released into the ground water. EPA site investigations conducted in 1984 and 1989 revealed onsite ground water contamination caused by sources leaching from the LDA. This Record of Decision (ROD) addresses the remediation of contaminated source and ground water. The primary (See Attached Page)					
17. Document Analysis a. Descriptors Record of Decision - Algoma Municipal Landfill, WI First Remedial Action - Final Contaminated Media: debris, gw, soil Key Contaminants: VOCs (benzene), other organics, and metals (arsenic, cadmium) b. Identifiers/Open-Ended Terms c. COSATI Field/Group					
18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 66			
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EPA/ROD/R05-90/145
Algoma Municipal Landfill, WI
First Remedial Action - Final

Abstract (Continued)

contaminants of concern affecting the ground water, soil, and debris are VOCs including benzene; other organics; and metals including arsenic and cadmium.

The selected remedial action for this site includes capping the LDA with a soil/clay cover and installing a gas venting system to remove off-gases; covering the SDA and NDA with a soil cover, if further waste characterization determines these areas to be sources of asbestos contamination; monitoring ground water onsite, offsite, and in nearby private wells to determine the effectiveness of the landfill cap in controlling the migration of contaminants into ground water; monitoring landfill gases; and implementing institutional controls including deed restrictions, and site access restrictions such as fencing. The estimated present worth cost for this remedial action is \$1,298,000, which includes a total O&M cost of \$11,000 for 30 years.

PERFORMANCE STANDARDS OR GOALS: The State has determined that contaminant migration from the landfill to ground water must not exceed State Prevention Action Limits (PALs), including benzene 0.067 ug/l (PAL).

DECLARATION
RECORD OF DECISION
SELECTED REMEDIAL ALTERNATIVE

Site Name and Location:

Algoma Municipal Landfill (AMLF)
Algoma, Wisconsin

Statement of Basis and Purpose:

This decision document presents the selected remedial action for the Algoma Municipal Landfill located in Algoma, Wisconsin. The decision has been developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and in accordance with the National Oil and Hazardous Substance Contingency Plan (NCP). This decision is based on the Administrative Record for this site. The attached index identifies the items that comprise the Administrative Record, upon which the selection of the remedial action is based.

The State of Wisconsin concurs with the selected remedy. The letter of concurrence is attached to the Record of Decision (ROD) package.

Assessment of the Site:

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present a potential threat to public health, welfare, or the environment.

Description of the Selected Remedy:

The final remedy addresses protection of groundwater and exposure to soil contamination by reducing the risks posed by the site, through engineering and institutional controls. The remedy is described as follows:

- * A soil/clay cover in compliance with the Wisconsin Administrative Code NR 504.07 performance standards for the Landfill Disposal Area (LDA).
- * Extension of a soil cover over the North Disposal Area (NDA) and South Disposal Area (SDA) if warranted by further characterization of the wastes there during the Remedial Design.
- * Installation of additional ground water monitoring wells adjacent to and downgradient of the site.
- * Fencing the site, obtaining access rights to the areas adjacent to the

site, and placing deed restrictions on all fill areas.

State Concurrence:

The State of Wisconsin concurs with the selected remedy. The Letter of Concurrence is attached to this Record of Decision in Attachment 2.

Declaration:

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technology to the maximum extent practicable for this site. However, because treatment of the principal threats of the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element. Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within 5 years after commencement of remedial action, to ensure that the remedy continues to provide adequate protection of human health and the environment.

Sept. 29th, 1990.
Date

Valdas V. Adamkus
Regional Administrator

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ATTACHMENTS:

1. RESPONSIVENESS SUMMARY
2. LETTER FROM THE WDNR TO THE U.S. EPA DATED September 25, 1990

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

**ALGOMA MUNICIPAL LANDFILL
LOCATED IN ALGOMA, WISCONSIN**

SEPTEMBER 1990

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

ALGOMA MUNICIPAL LANDFILL

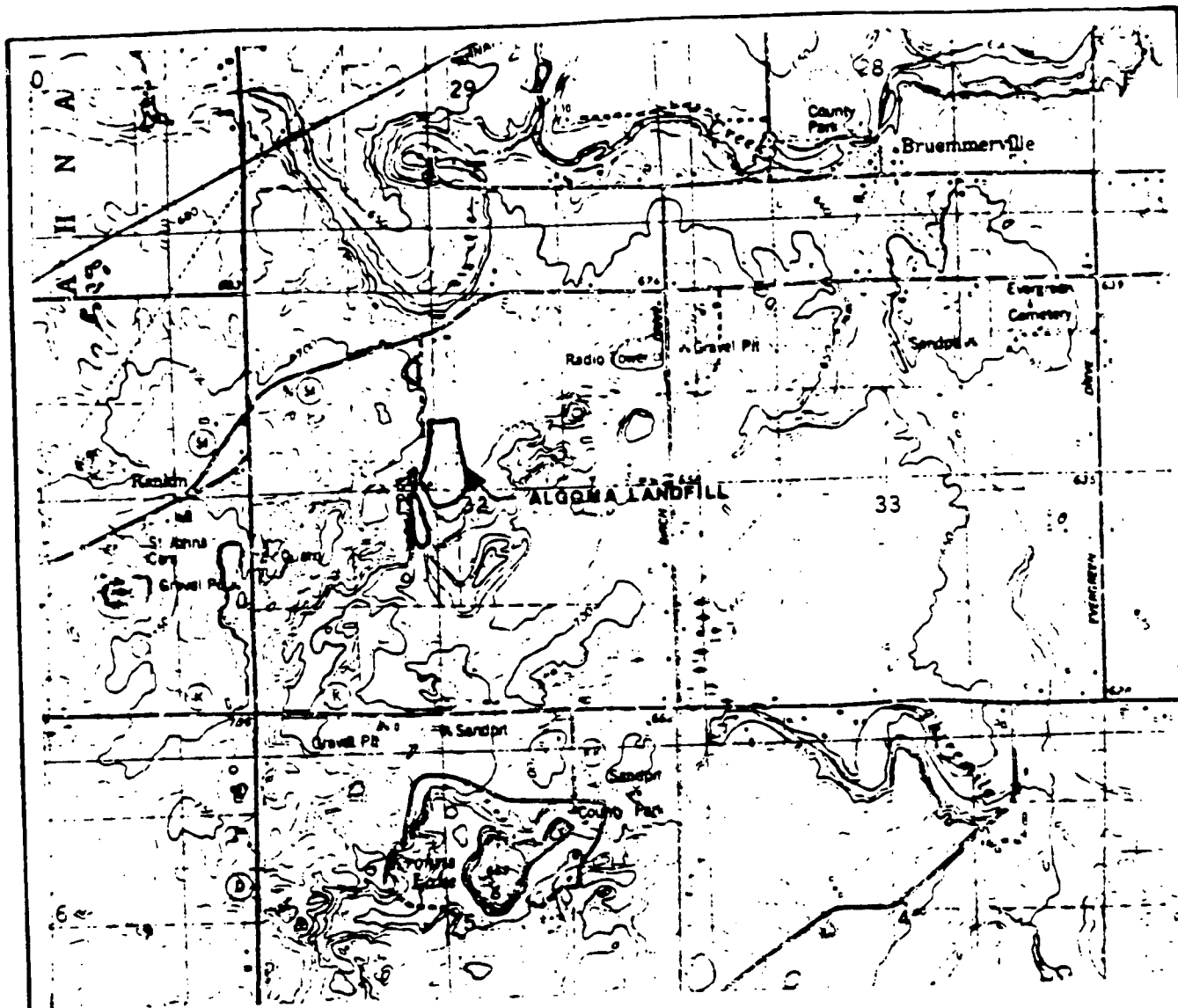
I. SITE LOCATION AND DESCRIPTION

The Algoma Municipal Landfill (AMLF) is located in the center of Section 32, T25N, R25E in Kewaunee County, approximately three miles west-southwest of the City of Algoma, Wisconsin (Figure 1). The site is south of Wisconsin State Route 54 and west of Birch Drive in a predominantly rural area. The surrounding terrain consists of rolling hills and is primarily used for agricultural purposes. Directly west and adjacent to the site is a quarry that currently is operational. Wetlands are situated south-southeast of the main portion of the site. There is no indication that the wetlands receive ground water from the site.

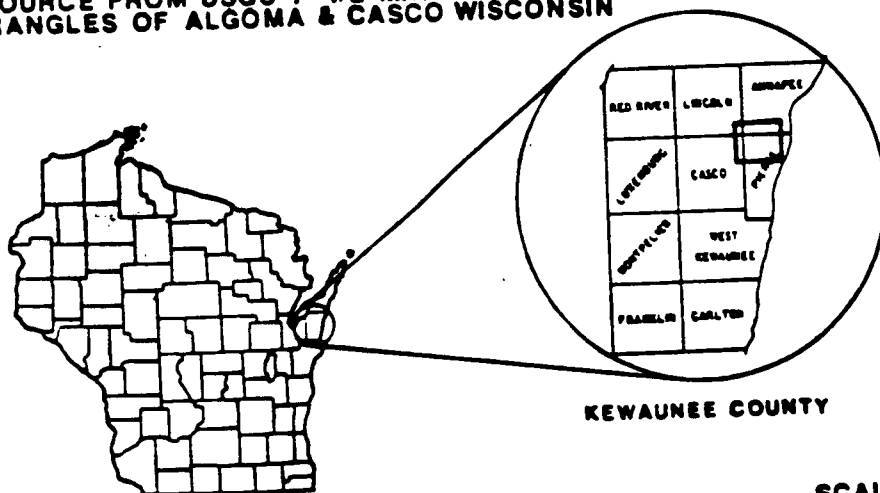
AMLF is situated between Silver Creek, 3,500 feet northwest of the site, and Threemile Creek, 3,000 feet east-southeast of the site. Silver Creek drains east and north away from the site into the Ahnapee River. Threemile Creek flows only a few months of the year south and west to Krohns Lake, 4,500 feet south of the AMLF. The site sits atop saturated and unsaturated, unconsolidated deposits of silt, sand and gravel, and silty clay averaging 135 feet in depth. This aquifer is used for private water supply wells in this area to the east of the site or downgradient. There is no designated Wisconsin Significant Habitat, agricultural land, nor historic or landmark sites directly or potentially affected.

The population within a three mile radius of the site is estimated at five thousand people. The population within a one-mile radius of the site is estimated at one hundred and eighty people, all utilizing private water supplies. The distance from the site to the nearest residence (private water supply) is approximately eleven hundred feet. Other nearby residents are located approximately 1/2 mile east and south of the site along Birch Drive.

The AMLF occupies a total of approximately 13 acres of disposal area, seven of which were licensed, and was operated by the City of Algoma as a municipal landfill. Seven acres of this land, referenced as the Landfill Disposal Area (LDA), were leased by the City from Duman Realty, Inc., of Algoma, Wisconsin. Approximately 400,000 cubic yards of municipal waste is contained within the waste boundary. The landfill expanded over an additional three acres of land during its period of operation which is included in the total estimated volume. Fill areas were identified outside the licensed tract. These fill areas are also considered part of the AMLF



MAP SOURCE FROM USGS 7-1/2 MIN
QUADRANGLES OF ALGOMA & CASCO WISCONSIN



KEWAUNEE COUNTY

WISCONSIN

SCALE : 1" = 2000'

RMT

Drawn by	GDB
Date	2/90
Proj. #	1493.60

MAR 26 1990

FIGURE 1: LOCATION MAP

and are described as follows:

- * A one acre depression west of the haul road and to the north of the landfill called the North Disposal Area (NDA).
- * A pit west of the landfill called the Animal Disposal Area (ADA).
- * A one and a half acre valley southwest of the landfill called the South Disposal Area (SDA).
- * A depression on the eastern edge of the landfill included in the Landfill Disposal Area (LDA). Figure 2 shows site area in detail.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Site History

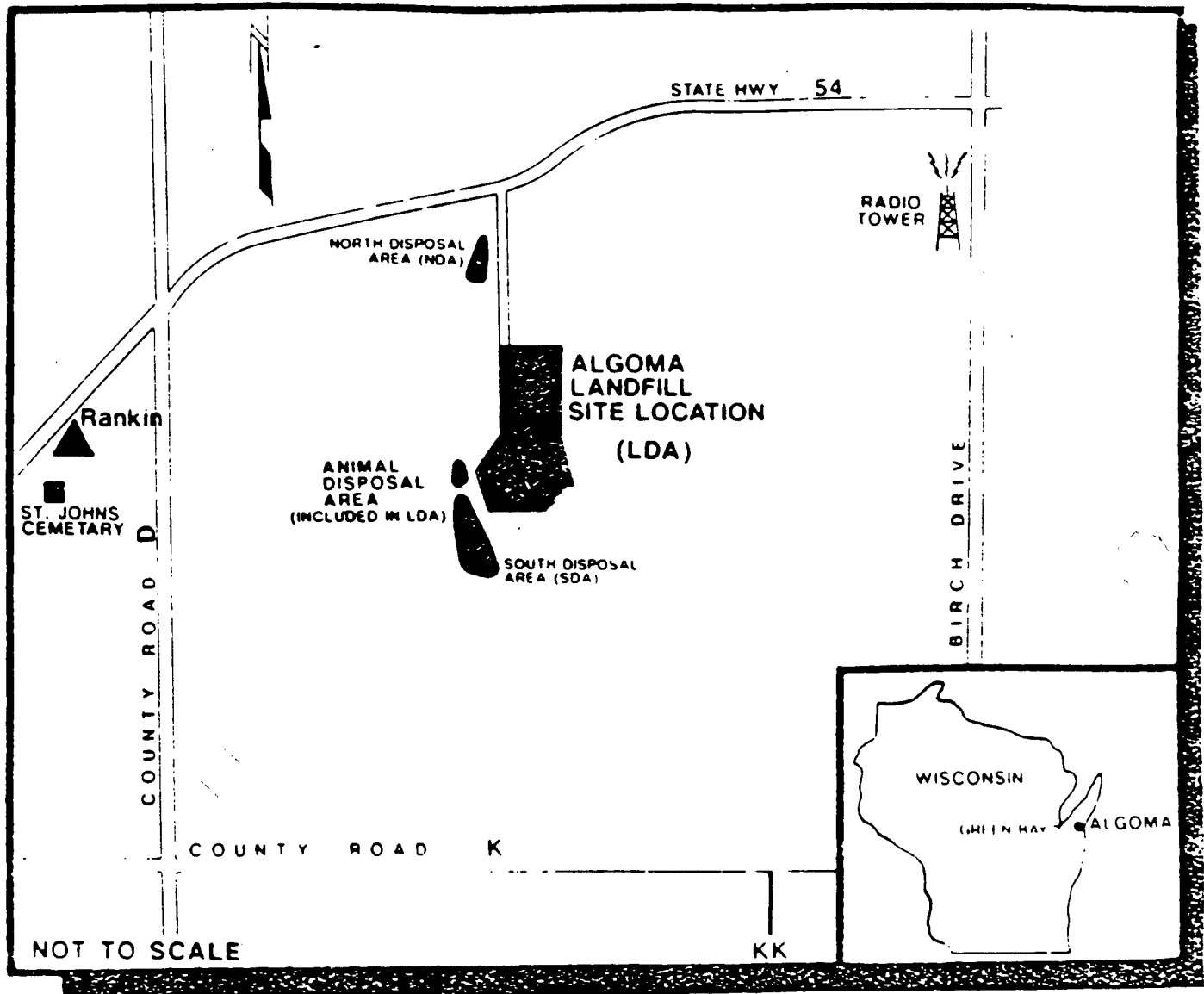
The AMLF was operated by the City of Algoma as a municipal landfill from 1969 until its closure in 1983. During operation, the AMLF accepted wastes from residential, commercial, and industrial sources which included paints and solvents. Upon closure, a final cover consisting of two feet of clay-like material was installed, and the Wisconsin Department of Natural Resources (WDNR) approved the documentation report. In May 1986, the AMLF was proposed for the inclusion on the National Priorities List based on a hazardous ranking system (HRS) score of 39.99, due to the detection of organic and inorganic compounds in several ground water monitoring wells. The site was placed on the final NPL in July 1987. The AMLF remains closed and has not received any wastes since 1981. The North and South Disposal Areas were reportedly used for the disposal of construction debris. Upon disposal, these items were allegedly covered with sludge containing asbestos.

During the operation of the AMLF, solvents, thinners and lacquers were deposited on the site according to historical information. There is no leachate collection system at the AMLF and the current cover was closed according to specifications of the Wisconsin Department of Natural Resources (WDNR) in 1983. The cover has been subject to freeze-thaw degradation over the years and the cover material does not conform to current WDNR NR 500 codes. The geological environment of the AMLF consists of sand and gravel deposits underneath and around the landfill. Waste is estimated to reach a depth of 32 feet and is assumed to be located within the ground water in a few areas. Based on the very porous environment, contaminants can readily escape off-site unless a more impermeable cover is constructed to prevent percolation of water through the waste to the ground water.

There have not been any Federal or State remedial or removal actions taken at this site to date.

Algoma Landfill Superfund Site

Ahnapee, Wisconsin



The Algoma Landfill Superfund site is a former municipal landfill located about three miles west of Algoma, Wisconsin, in unincorporated Ahnapee Township. The site includes three former disposal areas: the Landfill Disposal Area (LDA); the North Disposal Area (NDA), and the South Disposal Area (SDA).

FIGURE 1
SITE MAP

B. Enforcement

The Preliminary Assessment, site inspection reports, and the Hazard Ranking System (HRS) scoring package, all conducted in 1984, for the AMLF indicate that there exists actual or potential release of hazardous substances into the environment which may pose a risk to humans and/or the environment. The HRS score at 39.99 was high enough (above the 28.5 U.S. EPA cut off) so that the site was included on the NPL in July 1987.

Special Notice Letters informing 10 potentially responsible parties (PRPs) (including the site's owner/operator, waste generators and transporters) of their potential CERCLA liability for the AMLF site and offering them the opportunity to perform the Remedial Investigation and Feasibility Study (RI/FS), were sent via certified mail on September 24, 1987. The U.S. EPA, WDNR and 8 PRPs signed a Consent Order, with an effective date of January 28, 1988.

The Consent Order sets forth the agreement that the PRPs will conduct an RI/FS at the AMLF under the direct guidance of the U.S. EPA and the WDNR. The PRPs hired RMT, Incorporated to conduct the RI/FS.

Negotiations for the Remedial Design/Remedial Action (RD/RA) with the PRPs will proceed according to U.S. EPA general guidance and policies. The participants in the negotiations will likely include the PRPs, and WDNR.

C. Site Investigation

The Remedial Investigation (RI) field work began in September 1988 and was completed in April 1989. The RI at the AMLF consisted of the installation of ground water monitoring wells at and around the AMLF, soil/sediment sampling, surface water sampling, geophysical monitoring, and a landfill cover evaluation. The RI Report, with an Endangerment Assessment (EA) included, was completed on June 29, 1990. The RI Report, as well as the RI work plan and Quality Assurance Project Plan (QAPP), are part of the Administrative Record. The Remedial Investigation conducted during 1988 and 1989 included the following major work components:

- A land survey to verify the existing on-site vertical control, establish a horizontal control grid, and set elevations and locations for the new and existing monitoring wells and the new surface water staff gage.

- A geophysical survey of the landfill to delineate the areal extent and to help estimate the volume of disposal areas, provide information for locating the new monitoring wells, attempt to identify the location of concentrated areas of buried ferrous materials that may represent drums, and identify if the access road is encroaching onto the landfill.

- Collection of 15 soil and sediment samples near the landfill for chemical analysis and physical analysis.

- Collection of surface water samples at three locations and water staff

gages at two locations adjacent to the site, with laboratory analysis of the samples.

Installation of six new observation wells around the landfill.

In-situ permeability tests at the new wells.

Two rounds of ground water sampling from the six new wells, and four of the existing wells, with laboratory analysis of the samples.

Two rounds of sampling from existing potable water wells at five private residences upgradient and downgradient of the landfill.

Measurement of ground water elevations at the six new wells and all of the existing wells, and the surface water elevation.

Collection of 11 samples of cover materials on the landfill and at 2 additional suspected disposal areas adjacent to the landfill, and physical tests of the samples to determine the cover material properties.

3. Focused Feasibility Study (FFS) Report

The FFS Report was submitted in draft form by the Respondents to the U.S. EPA on March 29, 1990. Comments were made by the U.S. EPA and the WDNR, and the report was released for public comment from July 23, 1990 through August 22, 1990.

III. COMMUNITY RELATIONS

The draft FFS and the Proposed Plan were available for public comment from July 23, through August 22, 1990. A public meeting was held during this public comment period, on August 13, 1990 to inform the local residents of the Superfund process and about the work conducted under the RI. Many of the issues raised by the community involved the general health-related topics, cost, and concern over past landfill activities. The U.S. EPA has responded to all significant comments received during the public comment period pursuant to Sections 113(k)(2)(B)(i - v) and 117 of CERCLA. U.S. EPA's responses to said comments are included in the Responsiveness Summary which is attached to this ROD.

Two information repositories have been established: at the Algoma Public Library, 406 Freemont Street, Algoma, Wisconsin and at the Algoma City Hall, 416 Freemont Street, Algoma, Wisconsin. According to Section 113(k)(1) of CERCLA, which requires that the Administrative Record be available to the public at or near the facility at issue, the Administrative Record file has been made available to the public at the Algoma Public Library.

IV. SCOPE AND ROLE OF THE RESPONSE ACTION

The scope of this response action is to provide a final remedy to address

the contamination and potential contamination caused by the waste disposed at the AMLF. Periodic monitoring will need to be maintained, as well as a review of conditions after five years.

Based on the findings of the RI and on the basis of risks identified in the EA, and the Administrative Record, it was concluded that the AMLF is contributing to the contamination of ground water near the site. Therefore, the U.S. EPA has developed an approach to remediation that reduces the leaching of contaminants into the ground water by the LDA and addresses possible contamination associated with asbestos in the NDA and SDA.

V. SUMMARY OF CURRENT SITE CONDITIONS AND SITE RISKS

The RI/FFS Reports have adequately described the current conditions of the AMLF site. Contaminants found associated with ground water are listed in Table 1.

A summary of the conclusions of the RI Report and the EA is as follows:

Soil/Sediment

- * Based on the results of the soil/sediment analyses, there is no evidence of the transport of hazardous substances from the landfill into the wetlands, swales, and valleys in the vicinity.
- * Pesticides were found in low concentrations in soil/sediments at the site, but based on past uses they are believed to be residuals from agricultural application.
- * Several inorganic contaminants were detected in soil/sediments at the site. However, due to limited background data, it was difficult to determine if these naturally occurring metals are site-related. After an evaluation process by data review, arsenic, beryllium, chromium, copper, magnesium, selenium, silver, and zinc remained as constituents of potential concern. These inorganic contaminants were evaluated within the EA.

<u>Chemical</u>	<u>Sample Quantitation Limits</u>	<u>Maximum Concentrations</u>	<u>Range of Background Conc.</u>
Semivolatiles			
- Di-n-butyl phthalate	460-9,200	8,900BJ	200J-2,600B
- Benzoic Acid	2,600-12,000	1,700J	280J
Inorganics			
- Arsenic	3,200-3,800	52,300NS	1,400-1,900BmNW
- Beryllium	260-1,900	350	Not Detected
- Chromium	3,300-19,000	30,900	5,200
- Copper	1,600	31,500	5,800B
- Magnesium	Not reported	168,000,000	84,000-1,790,000
- Selenium	260-1,000	7,400	440B
- Silver	1,600-9,500	10,600	Not detected

- Zinc Not reported 339,000 20,600-37,100

- All concentrations are in ug/kg.
- B = Analyte was found in associated blank as well as sample.
- J = Estimated value.
- N = Spike recovery not within control limit.
- W = Post-digestion spike out of control limits.
- S = Value reported was determined by method of additions.

Surface Water

- * Surface water sampling results indicate that there has not been any apparent release of hazardous substances from the AMLF to any surface water body. Although surface water samples had measurable concentrations of constituents such as calcium, magnesium, potassium, and sodium, they are naturally occurring and are not believed to have been released from the landfill. Surface water samples were collected south-southeast of the landfill in the wetlands area. No Federal or Wisconsin (NR 105) Water Quality Criteria were exceeded or equalled in the surface water samples. No Maximum Contaminant Levels were exceeded or equalled in the surface water samples. The AMLF is located at the headwaters of a small creek, and therefore no background surface water samples could be taken.

<u>Chemical</u>	<u>Sample Quantitation Limits</u>	<u>Maximum Concentrations</u>	<u>Range of Background Conc.</u>
<u>Semivolatiles</u>			
- Bis(2-ethylhexyl) phthalate	10	9J	None
<u>Inorganics</u>			
- Cobalt	30	37.2	.9
- Nickel	25	48.7	5.5
- Selenium	1	3.1	Not available

- All concentrations in ug/L.

Groundwater

- * The AMLF, situated on a sand and gravel aquifer with moderate permeability (2×10^{-4} to 3×10^{-6} cm/sec), flows with a velocity of approximately 50 feet per year. The ground water, which is Class II A, moves to the east-southeast across much of the site, except in the area of the NDA, where the flow direction appears to be to the north. Class II A is described as ground water that is suitable for human consumption and is currently used as a source of drinking water.
- * The results of the RI indicate that localized releases of

TABLE 1
CHEMICALS DETECTED IN GROUND WATER OBSERVATION WELLS
ALGOMA LANDFILL

<u>Chemical</u>	<u>Frequency of Detection</u>	<u>Sample Quantitation Limits (#g/L)</u>	<u>Maximum Reported Concentrations (#g/L)^a</u>	<u>Range of Background Concentrations (#g/L)^{a,b}</u>	<u>Concentration of Significance (#g/L)^c</u>	<u>Included in Endangerment Assessment</u>	<u>Rationale for Exclusion</u>
A. Volatile Organics							
Chloroethane							
(Round 1)	3/11	5	3J	Not detected	---	Y	
(Round 2)	3/11	2	3J	Not detected	---		
Methylene Chloride							
(E&E/1984)	4/4	---	5.2	4.5	N/A	N	Present in method blanks/common laboratory contaminant.
(Round 1)	11/11	5	68J	38J	40		
(Round 2)	11/11	1	0.88J	0.58J	10		
1,1-Dichloroethane							
(Round 1)	1/11	5	2J	Not detected	---	Y	
(Round 2)	3/11	1	0.4J	Not detected	---		
Chlorodifluoromethane							
(Round 1)	0/11	---	Not detected	Not detected	---	N	Not detected by repeat analysis.
(Round 2)	2/11	---	1.4J	Not detected	---		
Acetone							
(Round 1)	3/11	10	168	Not detected	180	N	Present in method blanks/common laboratory contaminant in blank (for analyses of sample from ALOW-5R).
(Round 2)	2/11	2	2	Not detected	9		
Benzene							
(E&E/1984)	1/4	1	3.9	Not detected	---	Y	
(Round 1)	3/11	5	2J	Not detected	---		
(Round 2)	6/11	1	0.7J	0.4J	---		
1,1,1-trichloroethane							
(Round 1)	1/11	---	11J	Not detected	---	N	Not detected by repeat analysis.
(Round 2)	0/11	---	Not detected	Not detected	---		
Chloroform							
(Round 1)	4/11	5	7B	Not detected	35	N	Present in method blank; not repeated.
(Round 2)	0/11	---	Not detected	Not detected	---		

All footnotes are at the end of this table.

TABLE 1 (CONT'D)
CHEMICALS DETECTED IN GROUND WATER OBSERVATION WELLS
ALGOMA LANDFILL

<u>Chemical</u>	<u>Frequency of Detection</u>	<u>Sample Quantitation Limits (µg/L)</u>	<u>Maximum Reported Concentrations (µg/L)^a</u>	<u>Range of Background Concentrations (µg/L)^{a,b}</u>	<u>Concentration of Significance (µg/L)^c</u>	<u>Included in Endangerment Assessment</u>	<u>Rationale for Exclusion</u>
2-butanone (E&E/1984) (Round 1) (Round 2)	1/4 0/11 7/11	1 --- 2	5.4 Not detected 0.5J	Not detected Not detected 0.4	--- --- ---	N	Present in method blanks/common laboratory contaminant.
1,1,1-trichloroethane (Round 1) (Round 2)	2/11 3/11	5 1	18 4	Not detected Not detected	--- ---	Y	
TIC: propanol (Round 1) (Round 2)	1/11 0/11	---	8J Not detected	Not detected Not detected	--- ---	N	Not detected by repeat analysis.
Total Xylene (E&E 1984)	1/4	1	15	Not detected	---	N	Present only in ALLOW-9/ first sampling round, not confirmed by subsequent RI sampling.
B. Semivolatile Organics							
bis(2-ethylhexyl)phthalate (E&E, 1984) (Round 1) ^d	4/4 0/11	7 10	47 Not detected	7 Not detected	--- ---	N	Common laboratory contaminant.
Butylbenzyl phthalate (Round 1)	3/11	10	22	Not detected	---	Y	
Di-n-butyl phthalate (E&E, 1984)	4/4	2	3.6	2.3	---	N	Present in background and soil (cross media transfer); not confirmed by RI sampling of ground water.
Diethyl phthalate (Round 1)	1/11	10	3J	Not detected	---	Y	

All footnotes are at the end of this table.

TABLE 1 (CONT'D)
CHEMICALS DETECTED IN GROUND WATER OBSERVATION WELLS
ALGOMA LANDFILL

<u>Chemical</u>	<u>Frequency of Detection</u>	<u>Sample Quantitation Limits (µg/L)</u>	<u>Maximum Reported Concentrations (µg/L)^a</u>	<u>Range of Background Concentrations (µg/L)^{a,b}</u>	<u>Concentration of Significance (µg/L)^c</u>	<u>Included in Endangerment Assessment</u>	<u>Rationale for Exclusion</u>
di-n-octyl phthalate (E&E, 1984)	2/4	4	4	Not detected	---	N	Common laboratory contaminant; not repeated in RI sampling.
TIC: Dibutyloxy methanol (Round 1)	2/11	---	8J	Not detected	---	N	Not detected by repeat analysis.
TIC: Dodecanoic Acid (Round 1)	1/11	---	12J	Not detected	---	N	Not detected by repeat analysis.
C. Inorganics							
Aluminum ^o (Round 1)	9/11	55 ^d	332	1218	---	N	Present in background wells.
(Round 2)	6/11	55 ^d	99.38	748	---		
Antimony ^o (Round 1)	6/11	55 ^d	206	62.1	---	N	Present in background wells; not confirmed by second round.
(Round 2)	0/11	4	Not detected	Not detected	---		
Arsenic ^o (Round 1)	2/11	2	4.28m	Not detected	24	N	Present in blank first round; present in background second round.
(Round 2)	3/11	2	4.88mM	2.28M	---		
Barium ^o (Round 1)	6/11	35	1668m	Not detected	---	Y	
(Round 2)	7/11	35	1508m	Not detected	---		
Beryllium ^o (Round 1)	8/11	1	1.98m	Not detected	---	N	Not confirmed by second round of RI analysis.
(Round 2)	0/11	1	Not detected	Not detected	---		
Cadmium ^o (Round 1)	8/11	4	12.1	Not detected	---	N	Not confirmed by second round of RI analysis.
(Round 2)	0/11	1	Not detected	Not detected	---		

Footnotes are at the end of this table.

TABLE 1 (CONT'D)
CHEMICALS DETECTED IN GROUND WATER OBSERVATION WELLS
ALGOMA LANDFILL

<u>Chemical</u>	<u>Frequency of Detection</u>	<u>Sample Quantitation Limits (µg/L)</u>	<u>Maximum Reported Concentrations (µg/L)^a</u>	<u>Range of Background Concentrations (µg/L)^{a,b}</u>	<u>Concentration of Significance (µg/L)^c</u>	<u>Included in Endangerment Assessment</u>	<u>Rationale for Exclusion</u>
Calcium ^o (Round 1) (Round 2)	11/11 11/11	--- ---	141,000 134,000	69,500 67,800	467 1,465	N	Present in background.
Chromium ^o (Round 1) (Round 2)	7/11 0/11	10 10	31.9 Not detected	Not detected Not detected	80.5 ---	N	Detected in field blank analysis. No 2nd round confirmation.
Cobalt ^o (Round 1) (Round 2)	1/11 0/11	30 30	31.38m Not detected	Not detected Not detected	--- ---	N	Not confirmed by second round analysis.
Copper ^o (Round 1) (Round 2)	11/11 11/11	--- ---	31.3 12.18m	24.18 9.48	40 25.5	N	Present in blanks and background samples.
Iron ^o (Round 1) (Round 2)	11/11 10/11	--- 25	12,200 13,100Em	164 73.88Em	--- ---	Y	
Lead ^o (Round 1) (Round 2)	3/11 7/11	2-10 2	38m 3.48	Not detected Not detected	10 ---	N	Present in blank first round; detected at 3 µg/L in Kewaunee County well in USGS ground water data base (background).
Magnesium ^o (Round 1) (Round 2)	11/11 11/11	--- ---	92,000 98,500	36,100 39,000	--- 355	N	Present in background samples.
Manganese ^o (Round 1) (Round 2)	11/11 9/11	--- 5	393 400E	18.2 79.4Em	--- ---	Y	

Footnotes are at the end of this table.

TABLE 1 (CONT'D)
CHEMICALS DETECTED IN GROUND WATER OBSERVATION WELLS
ALGOMA LANDFILL

<u>Chemical</u>	<u>Frequency of Detection</u>	<u>Sample Quantitation Limits (µg/L)</u>	<u>Maximum Reported Concentrations (µg/L)^a</u>	<u>Range of Background Concentrations (µg/L)^b</u>	<u>Concentration of Significance (µg/L)^c</u>	<u>Included in Endangerment Assessment</u>	<u>Rationale for Exclusion</u>
Mercury ^d (Round 1) (Round 2)	1/11 0/11	0.2-0.4 0.2	1.2 Not detected	Not detected Not detected	3.5	N	Present in field blank.
Potassium ^d (Round 1) (Round 2)	11/11 11/11	--- ---	25,300 26,100	1,160B 822B	--- ---	Y	
Silver ^d (Round 1) (Round 2)	7/11 4/11	5 5	17.1 11.5W	8B Not detected	--- ---	N	Present in background well.
Sodium ^d (Round 1) (Round 2)	11/11 11/11	--- ---	66,200Em 89,300Em	2,320BE 2,840BE	1,445 2,260	Y	
Vanadium ^d (Round 1) (Round 2)	3/11 0/11	15 15	25.7Bm Not detected	Not detected Not detected	--- ---	N	Not confirmed by second round samples.
Zinc ^d (Round 1) (Round 2)	9/11 11/11	15 ---	47.8 17.1B-82	16.6B 17.2B	97 119	N	Detected in field blanks.
Cyanide ^e (Round 1) (Round 2)	2/11 0/11	10 10	28.7 Not detected	38.7 Not detected	---	N	Detected in background.

^a Qualifiers denote the following:

- J = Estimated value.
- B = Analyte was found in associated blank as well as sample.
- Bm = Reported value below Contract Required Detection Limit (CRDL).
- N = Spike recovery not within control limits.
- W = Post-digestion spike out of control limits.
- S = Value reported was determined by the method of additions.

^b Background observation well for RI is ALOW-14. Background well for E&E/1984 sampling is ALOW-2.

^c Blank data used to determine concentrations of significance as discussed in text.

^d Samples not analyzed for semivolatile organics during second RI sampling round.

^e Metals concentrations represent dissolved fraction detected in filtered samples.

^f Unfiltered sample used for cyanide analysis.

constituents of concern have occurred from the LDA to the ground water. Table 1 includes a list of all ground water contaminants detected in observation wells. Benzene, iron, cadmium and manganese concentrations exceeded the Wisconsin NR 140 ground water quality enforcement standards (ESs). Benzene was in exceedance during a 1984 sampling. The ESs and Preventive Action Limits (PALs) for these contaminants are listed in tabular form below. Chromium and Mercury were found in exceedance of PALs but not ESs. The following VOCs in the ground water were found above quantitation limits, which are greater than detection limits, but below NR 140 enforcement standards and preventive action limits (PALs): Chloroethane, 1,1,1-trichloroethane, and total xylene.

<u>Constituent</u>	<u>Actual level</u>	<u>Federal MCLs</u>	NR 140	
			<u>ESs</u>	<u>PALs</u>
Benzene	3.9	5	.67	.067
Iron	12,200	300*	300	150
Manganese	393	50*	50	25
Cadmium	12.1	10	10	1
Chromium	31.9	50	50	5
Mercury	1.2	2	2	.2

- * Indicates Secondary MCLs which are not enforceable.
- All concentrations are in ug/l.

Background concentrations for iron (164 ug/l) and manganese (18.2 ug/l) were not significant compared to the actual concentrations found of 12,200 ug/l for iron and 393 ug/l for manganese downgradient of the site. Federal MCLs were not exceeded in both sampling rounds. Cadmium did exceed the MCL with a level of 12.1 ug/l only in the first round.

- * There were no organic contaminants of concern or metals reported in concentrations significantly above background or blank concentrations in the private water supply wells near the AMLF. No samples of ground water were taken between residential wells and monitoring wells with contamination. These results indicate that the AMLF has not had a measurable impact on water quality in private residence wells east-southeast of the site to date. However, the potential to affect these wells in the future still exists.

General

- * The LDA has a 0.5 to 1.0 foot-thick layer of topsoil over a 1.0 to 1.5 foot-thick compacted silty clay to clay-like sand cover. The laboratory permeability of the cover averaged 7×10^{-6} cm/sec. The range of permeability was from 1.7×10^{-4} to 7.9×10^{-8} . The NDA and SDA do not have a cover over the waste.
- * The geophysical survey identified approximately 10 acres of

disposal area within the LDA, less than 1 acre in the NDA, and approximately 1.5 acres in the SDA. The survey did not identify any areas of concentrated metal, indicating drum disposal areas, within the LDA. The survey suggests that waste materials may be present under the haul road along the section of road where the LDA's cover material was disturbed. Since part of the haul road encompasses the LDA, a portion of it would have to be rerouted for any remedial activities.

Summary of Site Risks

The RI Report contains an Endangerment Assessment (EA) which characterizes the nature and magnitude of potential risks to human health and the environment caused by the contaminants identified at the AMLF. The EA, utilizing data obtained from the RI, has identified the following pathways or routes of actual or potential contamination that may reach the population and/or the environment and which need or may need to be addressed through some type of remedial action:

A. Selection of Indicator Chemicals

The following indicator chemicals were considered to be representative of site contamination and to pose the greatest potential health risk:

* Chloroethane	gw	* Benzene	gw
* 1,1-dichloroethane	gw	* 1,1,1-trichloroethane	gw
* Butylbenzyl phthalate	sw	* Diethyl phthalate	sw
* Cadmium	gw	* Iron	gw
* Manganese	gw	* Sodium	sw
* Potassium	sw	* Arsenic	s
* Barium	gw	* Beryllium	s

gw - ground water
sw - surface water
s - soil/sediment

B. Exposure Assessment

The objective of an exposure assessment is to estimate the type and magnitude of exposures to constituents of potential concern that are present at or migrating from a site. The following exposure scenarios for both current land use and future land use were evaluated based on an estimate of the reasonable maximally exposed individual (RMEI) and the maximally exposed individual (MEI) for future land-use scenarios:

- * Human consumption of nearby private wells that use the shallow aquifer. Human consumption includes dermal contact while bathing and inhalation of VOCs while showering.
- * Ingestion of soil by casual visitors, nearby gravel pit workers

and recreational users such as hunters.

- * Inhalation of VOC gases by casual visitors and nearby gravel pit workers.
- * Ingestion of fish and surface water from recreational users. Dermal contact while swimming is also included.
- * Ingestion of surface water and sediments for livestock, aquatic biota, and terrestrial biota.

C. Toxicity Assessment

The Toxicity Assessment explains contamination levels, risk levels and potential carcinogenic effects for contaminants of concern. Risk levels show the potential for increased cancer frequency based on a lifetime exposure (70 years) of the contaminants known to cause cancer. An acceptable risk range for the U.S. EPA according to the NCP is 10^{-4} to 10^{-6} . This means an increased cancer frequency of one additional person out of 10,000 to 1 out of 1,000,000 people. Risks to non-carcinogenic health hazards are based on a Hazard Index value. The Hazard Index value is calculated on the exposure amount compared to a Reference Dosage. Reference Dosage guidelines are established by the U.S. EPA. Hazard Index values over 1 indicate there may be potential health risks associated with exposure to the chemicals evaluated.

Table 2 lists the potential carcinogenic effects for the contaminants of concern.

D. Risk Characterization

The risks associated with each of the potential pathways using the indicator chemicals for the AMLF are as follows:

1. Under current site conditions, a potential health risk was identified for individuals exposed to contaminants identified by incidental ingestion of surface soil by casual site visitors and workers at the adjacent gravel pit. A calculated carcinogenic risk, using the contaminants arsenic and beryllium, of 1×10^{-6} (or one person out of 1,000,000) was identified with the assumption that this individual is exposed to reasonable maximum exposure estimates measured through direct soil contact on the landfill property. A higher risk (2×10^{-5}) would result if it is assumed that the individuals are exposed to only worst case scenarios. Risks from non-carcinogenic health hazards associated with soil ingestion at AMLF are listed in the RI as low, with a total exposure pathway Hazard Index Value of less than a value of .02 for worst case scenario and .004 for reasonable scenarios.

2. For ground water consumption, future land use was evaluated because there is no current contamination in drinking water supplies. Potential carcinogenic risks, using contaminants benzene, 1,1-

TABLE 2
ALGOMA LANDFILL: CONSTITUENTS OF CONCERN
TOXICITY VALUES: POTENTIAL CARCINOGENIC EFFECTS

<u>Chemical</u>	<u>Slope Factor (SF) (mg/kg-day)⁻¹</u>	<u>WOE^a Class</u>	<u>Type of Cancer</u>	<u>SF Basis</u>	<u>SF Source^b</u>
Oral Route					
1,1-dichloroethane	0.091	B2	Hemangiosarcoma	Gavage	HEAST
Benzene	0.029	A	Leukemia	Inhalation	IRIS
Butylbenzyl phthalate	NA ^c	C	--	--	IRIS
Arsenic	1.75 ^d	A	Skin cancer	Water	IRIS
Beryllium	NA ^c	B2	--	Water	IRIS
Inhalation Route					
Benzene	0.029	A	Leukemia	Inhalation	IRIS

^a WOE = Weight of evidence class

A = Human carcinogen

B1 = Probably human carcinogen; limited human data available.

B2 = Probable human carcinogen; animal data only.

C = Possible human carcinogen.

D = Not classifiable as to human carcinogenicity

E = Evidence of noncarcinogenicity for humans

^b HEAST = Health Effects Assessment Summary Table, USEPA, July 1989

IRIS = Integrated Risk Information System, USEPA, October, 1989

^c NA = Not available

^d The slope factor was calculated from the unit risk reported in IRIS as 0.00005 µg/L assuming 2 L/day ingestion by a 70 kg adult.

dichloroethane, and butylbenzyl phthalate, ranged from 3×10^{-7} for reasonable maximally exposed individual (RMEI) to 3×10^{-6} for a maximally exposed individual (MEI) under a worst case scenario. Potential risk from the adverse non-carcinogenic effects which may result from a subchronic exposure period have been calculated as having the hazard index value of .02 for reasonable maximally exposed individual and .2 for a maximally exposed individual.

3. Air emissions for contaminants of concern were considered in the RI work plan to be of historical interest only. Air emissions of VOCs from the AMLF were not evaluated quantitatively for the following reasons:

- * No vinyl chloride was detected by gas chromatographic analysis of soils using headspace volatile analysis during the RI.
- * Volatile compounds were not detected by air monitoring with a Hnu meter while drilling during the RI.
- * Vinyl chloride, the constituent of most concern in landfill gas, was not expected to occur in high concentrations in the soil gas or air at the AMLF.

Inhalation of Volatile Organic Compounds (VOCs) by nearby workers and residents while showering was evaluated and quantified. A calculated carcinogenic risk, using the contaminant benzene, for VOC inhalation under a worst case scenario, was 1×10^{-7} for RMEI and 1×10^{-6} for MEI. Risks associated with subchronic non-carcinogenic health hazards due to air contamination at AMLF have a Hazard Index value of .0003 (RMEI) and .002 (MEI).

Exposure of environmental organisms to contaminants of concern identified at the AMLF is expected to be low due to the small number of contaminants and their generally low concentrations at the site. No contaminants of concern exceeded water quality criteria for surface water. The potential detrimental effects on livestock and wildlife are expected to be small because of low concentrations of contaminants and the existing cover which prevents direct contact with contamination sources.

The analytical methods used in making the risk calculations are described within the EA portion of the RI Report. The summary of the risk characterization for the AMLF is listed in Table 3.

E. Uncertainties

In addition to the chemicals considered in the endangerment assessment, there are several other contaminants present in the waste and ground water which were not included as indicator chemicals. These contaminants were below PALS, Quantitation Limits, or removed from the EA for statistical reasons.

Waste characterization was not completed for the AMLF so as not to disturb the present landfill cover. Historical records provide a base for waste estimation and characterization, but not a detailed description.

TABLE 3
SUMMARY OF RISK CHARACTERIZATION
ALCONA LANDFILL

CARCINOGENIC RISK ESTIMATES						
Exposure Scenario	Worst Case ^(a)			Reasonable ^(b)		
	Total Risk ^(c)	Route-Specific Risk ^(d)	Routes ^(e)	Total Risk ^(c)	Route-Specific Risk ^(d)	Routes ^(e)
Current Land Use	2×10^{-6}	2×10^{-6}	Soil Ingestion	1×10^{-6}	1×10^{-6}	Soil Ingestion
Future Land Use/MEI	2×10^{-6}	2×10^{-6} 3×10^{-7} 1×10^{-7}	Soil Ingestion GW Ingestion VOC Inhalation	1×10^{-6}	1×10^{-6} 3×10^{-7} 1×10^{-7}	Soil Ingestion GW Ingestion VOC Inhalation
Future Land Use/REI	2×10^{-6}	2×10^{-6} 3×10^{-7} 1×10^{-6}	Soil Ingestion GW Ingestion VOC Inhalation	5×10^{-6}	3×10^{-6} 1×10^{-6} 1×10^{-6}	GW Ingestion Soil Ingestion VOC Inhalation
NONCARCINOGENIC HAZARD INDEX (HI) ESTIMATE						
Exposure Scenario	Worst Case ^(a)			Reasonable ^(b)		
	Total HI	Route-Specific HI	Routes ^(e)	Total HI	Route-Specific HI	Routes ^(e)
Current Land Use	0.02	0.02	Soil Ingestion	0.004	0.004	Soil Ingestion
Future Land Use/MEI	0.04	0.02 0.02 0.0003	GW Ingestion Soil Ingestion VOC Inhalation	0.02	0.02 0.0004 0.0003	GW Ingestion Soil Ingestion VOC Inhalation
Future Land Use/REI	0.2	0.2 0.02 0.002	GW Ingestion Soil Ingestion VOC Inhalation	0.2	0.2 0.02 0.002	GW Ingestion Soil Ingestion VOC Inhalation
<p>^(a) WORST-CASE estimates include some data that may not be representative of the site; e.g., arsenic.</p> <p>^(b) REASONABLE estimates include reduction of total risk by removing contributions from questionable constituents or concentrations (see discussion in Sections 7.5.1 through 7.5.3).</p> <p>^(c) TOTAL RISK is the total excess upper bound lifetime cancer risk summed across all appropriate routes for each exposure scenario.</p> <p>^(d) ROUTE-SPECIFIC RISK is the risk contributed by the individual exposure routes.</p> <p>^(e) ROUTES are the exposure routes that contribute to the risk.</p> <p>GW - ground water</p> <p>VOC - volatile organic compound</p> <p>MEI - maximally exposed individual</p> <p>REI - reasonable maximally exposed individual</p>						

VI. FEASIBILITY STUDY: DESCRIPTION OF REMEDIAL ALTERNATIVES

The FFS, based on the findings of the RI and the EA, has identified and evaluated an array of remedial alternatives that could be used to mitigate or correct the contamination problems at the site. According to the guidelines within the National Contingency Plan (NCP), the groundwater at and near the site may be classified as a Class II-A aquifer, groundwater that is currently being used as a drinking water sole source, and therefore treatment is preferred where practicable. Applicable or relevant and appropriate requirements (ARARs), such as Federal and State regulations governing proper landfill closure, must be considered in evaluating each of the alternatives. The alternatives considered for the site are presented within the FFS and are summarized below. For a more detailed description of the alternatives, please refer to the FFS Report.

ALTERNATIVE 1 - NO ACTION

Under this alternative, the public health, welfare and environmental consequences of taking no further action at the AMLF site will be evaluated. This alternative would not comply with State requirements that are relevant and appropriate to ground water remediation (WAC NR 140) and landfill closure (WAC NR 504.07). The requirement of these regulations are discussed in more detail in the description of Alternative 3 below and in the comparative analysis section below. There are no costs associated with this action.

ALTERNATIVE 2 - LIMITED ACTION - ACCESS RESTRICTIONS, GROUND WATER MONITORING PROGRAM

This alternative will involve the implementation of a long-term ground water monitoring program, and the use of deed and land use restrictions to assure that future use of this site does not increase the release or potential release of hazardous substances to the environment or become dangerous to the life or health of the people. A fence will be installed around the site to restrict access and prevent damage to the site.

The ground water monitoring program would supplement the ongoing quarterly ground water monitoring that is currently being conducted. This supplemental program includes sample collection from eight wells and analysis for selected VOCs annually. Nearby private wells would also be continually analyzed for indicator parameters and VOCs annually.

The fencing, deed restrictions, and/or land acquisition included with this alternative would be partially effective in preventing direct contact with solid waste. This alternative would not reduce the potential for release of constituents to the ground water via leaching or the potential for ingestion of ground water containing constituents of concern. This alternative would only be chosen if more active responses were determined to be impracticable. This alternative would not comply with WAC NR 140, or WAC NR 504 standards.

Fence and monitoring well installation are the only construction aspects of this alternative, which are readily implementable. Implementation time would be within one year.

Capital costs associated with the Limited-Action Alternative include monitoring well installation and fencing. Operation and maintenance costs include ground water monitoring described above for 30 years. Estimated costs are listed below:

Capital costs:	\$37,000
Annual O&M costs:	\$4,000
Present Worth:	\$98,000

ALTERNATIVE 3: - ACCESS RESTRICTIONS, IMPROVEMENT OF EXISTING COVER, GROUND WATER MONITORING, AND LANDFILL GAS VENTILATION SYSTEM

This alternative consists of improving the existing cover of the LDA to provide better frost protection and reduce infiltration; installing a gas venting system; rerouting a portion of the access road; fencing the LDA; implementing a long-term ground water monitoring program; and obtaining deed restrictions and/or purchasing additional property.

A topographic survey and additional soil borings would be performed on the LDA to determine local depressions and clay depths. Using the survey, final grades would be established. The topsoil would be removed to the clay layer and then additional clay performing to the permeability rate of 1×10^{-7} centimeters per second (cm/s) would be added to a depth of approximately two feet. This layer would consist of various combinations of new and existing clay. Granular material of a minimum depth of one and a half feet or a depth that would provide sufficient freeze-thaw protection for this area would be placed on the clay before topsoil and vegetation would be restored.

A gas venting system would be installed over the site along with a gas migration trench on the northwest side of the LDA. Gas monitoring probes and wells would be constructed with periodic monitoring of the probes. The gas wells would also provide a means to flare off the gas so air quality standards are achieved.

This alternative would reduce the potential for release of constituents to the ground water and the potential for ingestion of ground water containing constituents of concern. This alternative would also reduce the erosion on the landfill and the area surrounding it. The cover improvements, fencing, and deed restrictions would further reduce the potential for direct contact with the solid waste.

As stated above, the ground water classification for ground water at or near the site, according to the NCP 40 CFR Part 300.430(f)(5), would be Class II A. Class II A is described as ground water that is suitable for human consumption and is currently used as a source of drinking water. This classification is appropriate since residents are using water from the shallow aquifer. CERCLA Section 121(d) requires that remedial actions selected for Superfund sites meet "applicable or relevant and appropriate requirements" (ARARs) of Federal or more stringent state environment laws. Under U.S. EPA's ground water protection policy, relevant and appropriate chemical concentration standards for Class II A aquifers are Maximum

Contaminant Levels (MCLs) and non-zero MCL goals (MCLGs) promulgated under the Federal Safe Drinking Water Act or more stringent state standards. The State of Wisconsin has promulgated ground water quality standards at WAC Ch. NR 140. Chapter 160, Wis. Stats. and NR 140 direct the WDNR to take action to prevent the continuing release of contaminants exceeding these standards (PALs and ESSs). These standards are relevant and appropriate to all ground water in the state. Since WAC NR 140 ground water quality standards are more stringent than the Federal MCLs and non-zero MCLGs for the contaminants of concern at the AMLF site, compliance with WAC NR 140 groundwater quality standards is required under CERCLA.

The existing cover does not provide secure containment of the waste. Infiltration, and consequently leaching, may not be controlled due to the poor condition of the clay layer. This cover, therefore, would not be as protective of human health and the environment since contaminants could still reach the ground water. This conclusion is based on the landfill cover study completed in the RI Report. A large percentage (14%) of granular material was found in the existing clay layer with hydraulic conductivity greater than the 1.0×10^{-7} cm/sec for multiple samples. This alternative does not meet the existing WAC NR 504.07 requirement of two feet of compacted clay, and therefore does not comply with this ARAR for the site.

The construction of this alternative is readily implementable with standard landfill cover technologies, materials, and construction techniques. This action would be implementable within a one year period.

Capital costs associated with this alternative are based on the estimate that 6 acre-feet of fill would be needed for the local depressions, and 3 acre-feet of clay would be needed for the cover. The clay fill volume approximation is 9,680 cubic yards and the general fill volume is 24,200 cubic yards. These estimates would be further refined with data from the topographic survey, included with this alternative. The estimated costs which include monitoring are as follows:

Capital Costs:	\$480,000
Annual O&M Costs:	\$7,000
Present Worth:	\$590,000

ALTERNATIVE 4 - ACCESS RESTRICTIONS, CONSTRUCTION OF NEW SOIL COVER, AND LANDFILL GAS VENTILATION SYSTEM

a) This alternative consists of constructing a soil/clay cover over the entire LDA site (approximately 10 acres), installing a gas vent system, rerouting of a portion of the access road, fencing the LDA, implementing a long-term ground water monitoring program; and obtaining deed restrictions and/or purchasing additional property.

Specifically, the alternative includes the removal and stockpiling of the existing topsoil, placement of the clean fill consistent with design grading contours, and placement and compaction of a 2-foot clay cover layer with a permeability of 1×10^{-7} cm/s. The cover layer must have a minimum of a 1.5-foot layer of fill and .5-foot layer of topsoil over the clay layer to

primarily serve as a frost protection layer. The general fill layer should be deep enough to ensure the clay layer is not exposed to the frost layer. The clean fill layer will also protect the clay layer from penetration by deep-rooted plants and burrowing animals and provides lateral drainage for precipitation. The approximate amount of select clay fill necessary is 32,270 cubic yards. General fill would consist of 24,200 cubic yards of material.

This alternative would conform to WAC NR 504.07 cap requirements and is expected to result in reduction of contaminants in the ground water so as to achieve the WAC NR 140 groundwater quality standards.

A gas ventilation system similar to Alternative 3 will be installed, as well as construction of fencing, implementation of deed restrictions to preserve the cover, and relocation of the access road to the west of the ADA. The NDA and SDA will be characterized for waste contamination and include an appropriate soil cover if determined necessary.

This alternative would reduce the potential for release of contaminants to the ground water and the potential for ingestion of ground water containing contaminants of concern. This alternative would also reduce the erosion on the landfill and the area surrounding it. The cover improvements, fencing, and deed restrictions would further reduce the potential for direct contact with the solid waste.

The construction of this alternative is readily implementable with standard landfill cover technologies, materials, and construction techniques. This action would be implementable within a one year period. Resolution of property ownership issues is necessary to determine if a waiver from required setbacks from property boundaries is needed.

Capital costs are based on the fact that the clay volume used for the estimate does not include the existing clay. The implementation time for this alternative would be 1 year. The probable costs are as follows:

Capital Costs:	\$1,100,000
Annual O&M Costs:	\$7,000
Present Worth:	\$1,200,000

b) This alternative consists of the construction of a soil/clay cover over the LDA site, as in alternative #4a, and also includes the South Disposal Area (SDA). An additional 4,840 cubic yards of clay and 3,630 cubic yards of cover soil would be necessary. The implementation time for this alternative would be 1 year. The costs are segmented below.

	<u>LDA</u>	<u>SDA</u>	<u>Total</u>
Capital Costs:	\$1,100,000	\$210,000	\$1,310,000
Annual O&M Costs:	\$7,000	\$3,500	\$10,500
Present Worth:	\$1,200,000	\$240,000	\$1,440,000

The SDA primarily received construction debris and white goods. Sludge containing asbestos was believed to be incorporated with the debris.

Additional waste characterization for asbestos would occur during the remedial design to determine if asbestos is exposed to the air. A soil/clay cover would eliminate the potential release of asbestos to the air. Ground water contamination is not attributable to the SDA and therefore the focus of asbestos containment is for air pathway migration. A soil layer over the area would be effective in preventing direct contact and a release of asbestos and would be more cost effective than a soil/clay cover.

c) This alternative consists of the construction of a soil/clay cover over the LDA site, as in alternative #4a, and also includes the North Disposal Area (NDA). An additional 3,230 cubic yards of clay material and 2,420 cubic yards of cover soil would be necessary. The implementation time for this alternative would be 1 year. The costs are segmented below.

	<u>LDA</u>	<u>NDA</u>	<u>Total</u>
Capital Costs:	\$1,100,000	\$150,000	\$1,250,000
Annual O&M Costs:	\$7,000	\$3,500	\$10,500
Present Worth:	\$1,200,000	\$190,000	\$1,390,000

The NDA primarily received construction debris during operation. Sludge containing asbestos was believed to be incorporated with the debris. Asbestos is a CERCLA hazardous waste according to the Clean Water Act (CWA), Section 307(a) and the Clean Air Act (CAA), Section 112.

Additional waste characterization for asbestos would occur during the remedial design to determine if asbestos is exposed to the air. A soil/clay cover would eliminate the potential release of asbestos to the air. Ground water contamination is not attributable to the SDA and therefore the focus of asbestos containment is for air pathway migration. A soil layer over the area would be effective in preventing direct contact and a release of asbestos and would be more cost effective than a soil/clay cover.

ALTERNATIVE 5 - ACCESS RESTRICTIONS, CONSTRUCTION OF NEW COMPOSITE COVER, AND LANDFILL GAS VENTILATION SYSTEM

a) The composite cover is identical to the soil/clay cover alternative (#4), except that a 60-mil geomembrane and a sand drainage layer is placed on top of the clay layer. In addition, a geotextile fabric would then be placed on the granular fill. This cover would provide additional reduction of infiltration because a large portion of the water infiltration is diverted by the flexible membrane liner and drains through the sand layer off-site.

This alternative would exceed the WAC NR 504.07 requirements and address the NR 140 groundwater quality standards.

Similar to Alternative 4, the construction of this alternative is readily implementable with standard landfill cover technologies, materials, and construction techniques. This action would be implementable within a one year period. This alternative would satisfy the substantive requirements of

Wisconsin NR 500-520.

Costs are similar to Alternative #4a, except for additional expenses incurred for the 60-mil flexible membrane, the sand drainage layer, and the geotextile fabric. The implementation time for this alternative would be 1 year. The costs are shown below.

Capital Costs:	\$1,800,000
Annual O&M Costs:	\$7,500
Present Worth:	\$1,900,000

b) This alternative consists of the construction of a composite cover over the entire LDA, as in Alternative #5a, with a similar design over the South Disposal Area (SDA). An additional 4,840 cubic yards of clay material, 2,420 cubic yards of granular fill, and 3,630 cubic yards of cover soil would be necessary. The implementation time for this alternative would be 1 year. The costs are segmented as shown below.

	<u>LDA</u>	<u>SDA</u>	<u>Total</u>
Capital Costs:	\$1,800,000	\$330,000	\$2,130,000
Annual O&M Costs:	\$7,500	\$2,500	\$10,000
Present Worth:	\$1,900,000	\$370,000	\$2,270,000

The description of waste characterization for asbestos in Alternative 5b is the same as Alternative 4b.

c) This alternative consists of the construction of a composite cover over the entire LDA, as in Alternative #5a, with a similar design over the North Disposal Area (NDA). An additional 3,230 cubic yards of clay material, 1,160 cubic yards of granular fill, and 2,420 cubic yards of cover soil would be necessary. The implementation time for this alternative would be 1 year. The costs are segmented as shown below.

	<u>LDA</u>	<u>NDA</u>	<u>Total</u>
Capital Costs:	\$1,800,000	\$240,000	\$2,040,000
Annual O&M Costs:	\$7,500	\$2,000	\$9,500
Present Worth:	\$1,900,000	\$270,000	\$2,170,000

The description of waste characterization for asbestos in Alternative 5c is the same as Alternative 4c.

ALTERNATIVE 6 - EXCAVATION OF REMOTE DISPOSAL AREAS AND CONSOLIDATION
This alternative consists of excavating the waste material in the NDA and/or the SDA, then transporting and placing it on the LDA. Alternative 6 is an add-on alternative that directly addresses the NDA and SDA and would be used in conjunction with one of the previous alternatives. It does not specifically address the current groundwater contamination at the site. Any excavated material would need to be tested for RCRA toxicity characteristics using Toxicity Characteristic Leaching Procedures (TCLP). Any material designated as RCRA waste would have to be disposed in compliance with Land Disposal Restrictions (LDRs) according to 40 CFR 268. Following excavation, the NDA and/or SDA would be brought to grade using clean fill and then

revegetated. This would be completed after a waste characterization determined that no hazardous waste was found in these areas. Currently it is not believed that any hazardous substances were deposited in these areas with the exception of sludge containing asbestos.

This alternative would not by itself satisfy any ARARs for this site that have been previously listed. Specifically, compliance with WAC NR 140 and NR 500-520 would not be achieved.

Similar to the previous alternatives, the construction of this alternative is readily implementable with standard excavation and landfill cover technologies, materials, and construction techniques. This action would be implementable within a one year period.

Costs for this Alternative are as follows:

	<u>SDA</u>	<u>NDA</u>	<u>Total</u>
Capital Costs:	\$450,000	\$250,000	\$700,000
Annual O&M Costs:	0	0	0
Present Worth:	\$450,000	\$250,000	\$700,000

VII. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The alternatives for the AMLF site have been evaluated using the nine criteria set forth by the U.S. EPA under NCP 300.430(e)(9)(iii). These nine criteria are summarized as follows:

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT addresses whether or not a remedy provides adequate protection and describes how risks are posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

COMPLIANCE WITH ARARS (APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS) addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

LONG-TERM EFFECTIVENESS AND PERMANENCE refers to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

SHORT-TERM EFFECTIVENESS addresses the period of time needed to achieve protection, and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME through treatment is the anticipated performance of the treatment technologies a remedy may employ.

IMPLEMENTABILITY is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

COST includes estimated capital, operation and maintenance, and net present worth costs.

STATE ACCEPTANCE indicates whether, based on its review of the RI/FFS and Proposed Plan, U.S. EPA and WDNR agree on the selected remedy.

COMMUNITY ACCEPTANCE indicates the public support of a given alternative. This criteria is discussed in the Responsiveness Summary.

The following briefly describes how the selected alternative for the site compares to the other alternatives with respect to the nine criteria.

1) OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT: All alternatives which incorporate capping as an element of the alternative will be protective of human health and the environment. Direct human contact potential would be decreased with the selected remedy, and the other capping alternatives, due to the reduction of soil erosion of the existing cover and prevention of direct contact. Through containment, the capping alternatives would also limit infiltration and therefore reduce the leaching of contamination into the groundwater. The cover upgrade alternative, Alternative 3, may not prevent infiltration due to the poor condition of the current cover. This alternative would not maintain protection over time. The No Action (Alternative 1) and Limited Action (Alternative 2) alternatives are not protective over the long-term. Fence construction and deed restrictions (as per Alternative 2) would contribute to the cover preservation, non-disturbance, and would further limit direct human contact to the wastes.

If, after waste characterization, a soil cover is warranted for the NDA and/or SDA, that portion of the remedy will also provide overall protection of human health and the environment.

2) COMPLIANCE WITH ARARS: The Selected Remedy (#4a & #2) will meet ARARS, including WAC NR 504.07, which alternatives #1, #2, and #3 do not meet. The current Wisconsin NR 140 Enforcement Standards (ESs) of .67 ug/l for benzene, 300 ug/l for iron and 50 ug/l for manganese are exceeded. Benzene was found in exceedance of ESs at wells OW5 and OW9 for both sampling rounds. This ES is scheduled to increase to 5 ug/l on October 1, 1990. The Preventative Action Limit (PAL) for benzene will remain the same at .067 ug/l. Cadmium was found in exceedance of Federal Maximum Contaminant Levels (MCLs) and NR 140 ESs of 10 ug/l during the first round of sampling at one well.

The selected remedy, installation of a NR 504.07 cover to prevent migration of contaminants to the ground water, is an appropriate response to ES and PAL exceedances, pursuant to NR 140.24 and NR 140.26. Pursuant to §40 CFR 300.430(f)(5)(iii)(A) of the NCP and consistent with Section NR 140.22, U.S. EPA is setting a point of standards application for ground water standards for the AMLF at the waste boundary. According to Ch. NR 140, PAL's are the standards that must be met at the waste boundary. The upgrade in the soil/clay cover over the LDA will substantially reduce the flux of contaminants out of the landfill by reducing leachate generation. This

reduction is expected to result in a reduction in the ground water contamination levels to the PALS for benzene, iron, manganese, and cadmium, thereby meeting this State ARAR.

Although the RCRA Subtitle C landfill closure requirements are relevant to the AMLF because it did receive RCRA type wastes, in the form of paints and solvents, it was determined that these requirements are not appropriate under the circumstances at this site. Specifically, with the low concentrations of contamination being released from the site, the NR 504.07 cap will effectively reduce infiltration and consequent leachate generation and migration to the ground water. The greater impermeability of the RCRA Subtitle C cap is not necessary under these site-specific circumstances to achieve these remediation goals.

Alternatives involving the treatment of ground water were not carried through the evaluating process within the FSS due to the relatively low levels of contaminants found and the assumption that a proper landfill cap will directly reduce the levels of contaminants within the groundwater.

WAC NR 504 requirements for capping landfills were identified as ARARs for the AMLF. The State and Federal regulations that have been identified and that will be met by the Selected Alternative are listed within the FFS and the ROD.

3) **LONG-TERM EFFECTIVENESS AND PERMANENCE:** The Selected Remedy (#4a & #2) will provide long-term effectiveness and permanence. Alternatives 1 and 2 do not provide long-term effectiveness, mainly because of the lack of a frost line protection layer and the inadequacy of the present clay layer. The Selected Remedy (#4a & #2) will provide more substantial long-term effectiveness and permanence than Alternative 3 since the clay layer will be thicker and less permeable. Alternative 5 would provide better long-term effectiveness than the Selected Remedy, but the extra degree of effectiveness offered by Alternative 5 is not warranted at this site. If, after minimal further waste characterization for asbestos, a soil cover is warranted for the NDA and/or SDA, long-term effectiveness will be achieved by eliminating the potential for any airborne contamination in these areas. Further waste characterization would be air monitoring for asbestos to detect a release. Alternative 6 would provide the greatest degree of long-term effectiveness and permanence for the NDA and SDA.

4) **SHORT-TERM EFFECTIVENESS:** The Selected Remedy (#4a & #2) will provide some degree of short-term risk. Since the Selected Remedy would take approximately 1 year to construct, some exposure to contaminants by workers could occur, but should be minimal if proper installation procedures are followed. The limited action portion of the Selected Remedy (#2) will produce immediate short-term effectiveness, by providing access restrictions to waste areas, while the containment portions of the Selected Remedy (#4a) will not provide short-term effectiveness since portions of the present cover will need to be disturbed prior to the placement of the new cap. The short-term effectiveness of Alternative 4 is comparable to Alternative 3. Alternative 6 will not provide short-term effectiveness because of the potential risks that would be caused by the excavation of the NDA and SDA.

5) **REDUCTION OF TOXICITY, MOBILITY OR VOLUME THROUGH TREATMENT:** The Selected Remedy will not reduce the toxicity, mobility or volume of the hazardous waste through treatment at the site. None of the alternatives within the FFS provide treatment technologies to address the contamination found at the site. Alternatives involving the treatment of ground water were not carried through the evaluating process within the FFS due to the relatively low levels of contaminants found and the assumption that a proper landfill cap will directly reduce the levels of contaminants within the groundwater. The treatment of ground water was not considered to be warranted at this time. While the selected alternative will not reduce the toxicity, mobility, or volume of hazardous wastes through treatment, the preferred cover will reduce infiltration and consequently, reduce the leaching of contamination into the ground water.

6) **IMPLEMENTABILITY:** The Selected Remedy (#4a & #2) is readily implementable and would satisfy the substantive requirements of the action-specific ARAR of WAC NR 500-520. Capping Alternatives #3 and #5 pose similar implementation tasks as will Alternatives #4 a,b, and c. Alternative 6 would be the most difficult to implement since the waste within the NDA and SDA would be excavated and consolidated. The Limited Action Alternative (#2) would be easily implemented but may have similar access problems as the capping alternatives.

7) **COST:** The costs, presented in the FFS Report, indicate that the Preferred Alternative (#4) is the least costly with respect to total present worth and is similar in total (O&M) costs compared to other alternatives producing similar protection to human health and the environment and achieving ARARs. The Selected Alternative has the second lowest total present worth among the capping alternatives presented. The cost estimates for the remedial action alternatives do not include the possible costs associated with the purchasing or leasing of neighboring properties. These costs would be similar for Alternatives 3,4,5 and 6. Alternative 1 (No Action) and Alternative 2 (Limited Action) are lower in cost than the capping alternatives, but they do not address protection of human health and the environment nor do they achieve ARARs.

The total estimated costs for the Selected Remedy is as follows:

<u>Alternative</u>		<u>Total Capital Cost</u>	<u>Total O&M, 30yr.</u>	<u>Total Present Worth</u>
#4	Soil/Clay Cover	\$1,100,000	\$ 7,000	\$ 1,200,000
#2	Limited Action	\$ 37,000	4,000	98,000
Total		1,137,000	11,000	1,298,000

A soil cover, if necessary after further waste characterization, over the NDA and/or SDA (Alt. 4b & c) would be cost effective when compared with Alternative 6, which calls for the excavation of these areas, particularly with respect to short and long-term effectiveness. The cost for a soil cover over the NDA and SDA is not included in the cost summary for the alternatives, but would be minor compared to total costs. The costs

associated with Alternative 2, the Limited Action portion of the preferred remedy, may duplicate fencing and institutional control costs already included within estimates for Alternative 4a.

8) **COMMUNITY ACCEPTANCE:** No significant issues were raised during the public meeting to alter the components of the Preferred Alternative, which was identified in the Proposed Plan. The overall response by the community was negative based on the cost and low levels of contamination. Individual comments and letters are summarized within the Responsiveness Summary (Attachment 1) located at the back of this document.

9) **STATE ACCEPTANCE:** The letter stating the WDNR's concurrence of the U.S. EPA's Selected Remedial Action Alternative is found as Attachment 2 to this document.

VIII. THE SELECTED REMEDY

Based on the findings of the RI/FFS and the documents within the Administrative Record file and the results of the public comment period, the selected remedy for the AMLF is as follows:

- * A soil/clay cover meeting the performance standards of WAC NR 504.07 over the LDA.
- * The NDA and SDA will be covered with a soil cover unless, upon further characterization of wastes deposited within these disposal areas, they show no potential for contributing to the contamination of the site.
- * A ground water monitoring program would continue to measure and detect increases or decreases in ground water contamination.
- * A landfill gas venting system would be installed with a gas migration trench along the northwest side of the LDA. Gas monitoring probes and wells would be constructed with periodic monitoring of the probes. The landfill gas extraction system will be designed during the Remedial Design stage, but may involve extraction wells connected by a pipe system to a mechanical blower.
- * Institutional controls would be implemented to supplement engineering controls. The institutional controls include: access restrictions to assure that future use of this site does not increase the release or potential release of hazardous substances to the environment or become dangerous to the life or health of people; and installation a fence to protect the public from direct contact and to prevent disturbance of the cover.

IX. STATUTORY DETERMINATIONS

The selected remedy for the Algoma Municipal Landfill, as listed in Section VIII of this ROD, meets the statutory requirements in that it is protective

of human health and the environment, attains ARARs, and provides long term effectiveness through containment.

Protection of Human Health and the Environment;

The selected remedy, a combination of alternatives (#4a and #2) addressing the AMLF, will be protective of human health and the environment through land use restrictions, containment of wastes and subsurface soils, and by the extraction of landfill gas.

Protectiveness will be achieved by the installation of the a soil/clay cap and by assuring the proper maintenance and drainage control for the AMLF. Cover installation and proper maintenance practices are reliable methods to alleviate the direct contact threat from the site's contents and will also help in reducing leachate generation, thereby reducing the amount of contamination reaching the ground water. Since untreated wastes will remain within the site, the ground water will continue to be monitored to ensure the protectiveness of the selected remedy. Ground water may be restored to the State's PALs via natural attenuation, over a reasonable period of time. The point of compliance for measuring attainment of the ground water standards is the waste management boundary.

Protectiveness will also be achieved by the ventilation of the landfill gas at the AMLF site preventing gas migration and/or buildup beneath the landfill cap. A passive gas venting system could be installed since the amount of waste material is less than 500,000 cubic yards. By venting off the landfill gas no build-up of potentially explosive and contaminant gas would occur.

The access/land use restrictions implemented by the selected alternative will aid in achieving the protectiveness of human health and the environment. The restrictions will reduce the likelihood of activities occurring on-site that may damage the cover and allow direct exposure of contaminants to humans and the environment.

Attainment of ARARs;

The selected remedy will be designed to meet all the applicable, or relevant and appropriate requirements (ARARs) of Federal and more stringent State environmental laws. A list of the probable ARARs for the AMLF site is listed within the FFS. As discussed earlier, the primary ARARs that will be achieved by the selected alternative are as follows:

Action-specific

- * capping requirements as stated in WAC NR 504.07.

Chemical-specific

- * WAC NR 140 groundwater quality standards.

Location-specific

- * there are no location-specific ARARs.

Cost effectiveness;

The selected remedy for the AMLF is considered cost effective, particularly when compared to the other alternatives that achieve both protectiveness of human health and ARARs. The added protection by installing a RCRA facility cover (Alternative #5) would be minimal in comparison to the chosen remedy at a significantly higher cost. The cover upgrade (Alternative 3) does not conform to ARARs and therefore would not be effective in performance although the cost is less than the chosen remedy.

Utilization of Permanent Solutions to the Maximum Extent Practicable;

The alternative chosen represents the best balance of alternatives evaluated to address the contamination problems found at the AMLF. Although the cover alternative chosen does not provide a treatment solution, it does retard the movement of contaminants to the ground water by reducing the generation of leachate. The U.S. EPA and WDNR feel this remedy is sufficient to provide the necessary protection at AMLF due to the levels of contamination and site-specific conditions. The land use restrictions implemented by the selected remedy will further assure added protection to the public health and environment. Due to the moderate size of the landfill and the discovery of no "hot spots" within the landfill during the RI, alternatives involving the treatment or removal of wastes were deemed impracticable and were not carried forward. The selected remedy represents the maximum extent to which a permanent solution can be practicably utilized for this action.

The WDNR has concurred with the selected remedy. A majority of the local community does not feel the cost of the selected remedy is warranted based on the low contamination levels.

Preference for Treatment as a Principal Element;

The principal threat posed by the Algoma Municipal Landfill is the presence of contaminants in the ground water in concentrations that exceed WAC NR 140 groundwater quality standards. Cadmium was also found to exceed MCLs during one of the sampling rounds. The selected remedy does not utilize treatment because it was deemed impractical.

X. DOCUMENTATION OF SIGNIFICANT CHANGES

The selected remedy has not changed significantly from the preferred remedy that was presented within the Proposed Plan and which was available for public review and comment from July 23, 1990 through August 22, 1990.

XI. SUMMARY

The presence of ground water contamination at and around the Algoma Municipal Landfill requires that remedial actions be implemented to reduce the actual and/or potential risk to human health and the environment. The

U.S. EPA and WDNR believes, based on the RI/FS and the Administrative Record file, that the selected remedy provides the best balance of trade-offs among alternatives with respect to the criteria used to evaluate the remedies. Based on the information available at this time, the U.S. EPA believes that the selected remedy will be protective of human health and the environment, will attain ARARs and will utilize treatment to the maximum extent practical and is cost-effective.

ATTACHMENT 1

RESPONSIVENESS SUMMARY

COMMENT 1: RMT Comments on Proposed Plan for the PRPs

RMT has reviewed U.S. EPA's Proposed Plan dated July 20, 1990, for the Algoma Municipal Landfill (AMLF) site and hereby submits these comments on behalf of the Respondents to the Administrative Order by Consent.

1.1 Based on the information contained in the Remedial Investigation (RI) and Focused Feasibility Study (FFS) reports, the most appropriate response for this site is Alternative 2 - Limited Action. Alternative 2 includes additional monitoring wells, long-term ground water monitoring, acquisition of property rights for the disposal area, fenced disposal areas, and deed restrictions to prevent future use of the disposal areas. Alternative 2 is protective of human health and the environment and, after balancing the criteria set forth in the NCP, should be the preferred alternative for addressing conditions at the site.

1.2 The AMLF exhibits no present threat to human health or the environment. The landfill has had a minimal impact on ground water quality, and even then only in the immediate vicinity of the landfill. The final RI report confirms that the AMLF has not had a measurable impact on water quality in private residential wells east-southeast of the site to date. The RI also addressed possible impacts on surface water and soil/sediment near the landfill. These investigations also showed "...there is no evidence of the transport of hazardous substances from the landfill into the wetlands, swales, and valleys in the vicinity;" and "...there has not been any apparent release of hazardous substances from the AMLF to any surface water body."

It is clear that, in its present condition, the AMLF does not pose a threat to human health. In evaluating site risks, U.S.EPA concluded: "The effects of the contamination on the environment are expected to be low due to the small number of constituents...and their generally low concentrations at the site." A reasonable estimate for excess cancer risks under current conditions was one in a million (10^{-6}). U.S. EPA considers this level to be protective of human health. Risk of non-cancer effects was below a level of concern for these conditions. This was to be expected since private potable wells have not been affected by the site. Moreover, the area of impact is highly localized and is not used for drinking water purposes.

Risks associated with future uses were calculated assuming placement of a potable well directly within the affected area. Even under these highly unlikely circumstances, the excess future cancer risk had an upper bound lifetime risk of 5×10^{-6} , only slightly above the 1×10^{-6} point of departure.

1.3 All organic and inorganic constituents in ground water samples collected during the RI were found to be below the Federal Drinking Water Standard MCLs. In addition, benzene was the only organic to exceed the Wisconsin NR 140 ground water quality Enforcement Standards (ES). Benzene was detected in only one of four ground water samples collected by the U.S.

EPA's contractor in 1984; this one sample had the highest benzene concentration detected to date (3.9 ppb, which is below the MCL of 5 ppb). In addition, benzene was found above the Wisconsin NR 140 Enforcement Standard (currently .67 ppb) in only 3 of 32 samples during the RI, with all concentrations below the quantitation limit. As a practical matter, concentrations below the quantitation limit should not even be reported because they have no statistical validity.

With regards to benzene, a revision to the Wisconsin NR 140 ground water enforcement standards for benzene has been proposed by the WDNR to increase the enforcement standard from the present value of .67 ppb to 5 ppb, which is the same as the Federal Drinking Water Standards MCL. When this revision is made effective, the AMLF will be in compliance with all Federal and State public health-related ground water standards. The WDNR Bureau of Legal Services was contacted on August 21, 1990, regarding the schedule for finalizing the NR 140 revisions. The WDNR indicated that the revisions are final, and are presently awaiting publication, which has been scheduled for October 1990.

After the benzene enforcement standard under Wisconsin NR 140 is raised to 5 ppb, the only ground water quality ARARs that will not be met under present conditions are enforcement standards for iron and manganese under Wisconsin NR 140 in an area where ground water is not even presently used. The ARARs for iron and manganese are public welfare-related standards (NR 140.12) rather than public health-related standards (NR 140.10). Iron and manganese are both essential nutrients. The iron standard is based on the aesthetic effects of taste and staining of fixtures and clothing. The manganese standard is based on taste and color.

The only effect caused by minor amounts of iron and manganese is a slight increase in water hardness. The ground water hardness near the landfill, contributed by iron and manganese, based on the highest iron and manganese concentrations detected during the RI, is only approximately 24 milligrams per liter (as CaCO_3). Waters are commonly classified as "hard" only when total hardness is in the range of 150 to 300 milligrams per liter (as CaCO_3).

Moreover, these naturally occurring inorganics were within the concentration ranges found in the corresponding sand and gravel aquifer in Wisconsin. Thus, the concentrations found do not necessarily reflect a release from the landfill.

The presence of certain metals might also be attributable to localized "reducing conditions." Organic matter in the waste materials provides a source of food for microorganisms. Aerobic degradation of organic matter consumes oxygen, which is taken from water percolating through the area. These oxygen-depleted conditions in the ground water are called "reducing conditions." The effect on ground water chemistry is to enhance the solubility of certain multivalent inorganic parameters such as iron, and to some extent manganese, present in natural soils. As background conditions return downgradient, however, the solubilized metals are again precipitated out of solution and become generally immobile in the ground water. For example, under reducing conditions, iron exists in one of its hydroxide (or soluble) states as ferrous iron (Fe^{++}). As oxidizing conditions return downgradient, the iron is precipitated out of solution.

Finally, compliance with NR 140 standards, to the extent existing concentrations are a concern at all, might be addressed in an alternate

fashion. The City of Algoma may acquire properties adjacent to the AMLF site. If such properties were purchased, the point of standards application for purposes of NR 140 could be extended by an additional 300 to 450 feet from the present edge of waste at certain locations around the LDA (see NR 140.22 and NR 140.26). As provided under NR 140.22(5)(d), construction of an additional monitoring well may be necessary at the new property line to demonstrate compliance at that location. If this were done, however, the monitoring wells where Enforcement Standard exceedances have occurred would fall well within the property boundaries. Before implementing an expensive alternative to address "hardness" or aesthetic ground water quality, the option of extending the point of standards application should be incorporated into any final remedial alternative.

1.4 The WDNR issued permits, monitored operations, and approved the closure of the AMLF. The Proposed Plan indicates that the U.S. EPA intends to "re-open" the AMLF, and will require the Algoma community to bear the high cost of additional construction at the landfill simply to meet new state landfill regulations which were promulgated after the landfill closure was approved by the WDNR. It is unreasonable to require re-construction of the final cover at the AMLF simply to meet ever-changing state design standards for new and active landfills, especially considering the lack of existing threats and the fact that the AMLF was closed according to all state requirements.

Chapter NR 504 establishes closure requirements for new solid waste landfills. The WDNR has routinely acted on a case-by-case basis in determining whether sites closed under prior regulatory standards should be subject to newer standards set forth in NR 504. Section NR 506.08(3) allows the WDNR to impose NR 504 requirements if the department makes a determination that such requirements are necessary to attain, or abate exceedances of, NR 140 ground water standards. As discussed above, ground water conditions at the AMLF are already consistent with NR 140 standards. Moreover, no measures other than those set forth in Alternative 2 are required to prevent or abate exceedances of the standards.

1.5 The discussion in items 2-4 above establishes that Alternative 2 meets both threshold requirements for alternatives under the NCP (protection of human health and the environment and ARARs compliance). To the extent there is any remaining concern about compliance with NR 140 or NR 504, an exception under NR 140.28 and/or an ARARs waiver under 40 C.F.R. 300.430(f)(1)(ii)(C) would be appropriate and are hereby requested since current and future conditions under Alternative 2 would not pose a threat to public health or welfare.

The remaining criteria for the evaluation of alternatives are characterized as "balancing" criteria and "modifying" criteria, under 40 CFR 300.430(f)(1)(i). No single criterion governs remedy selection. Instead, each criterion should be considered and balanced in the process of selecting an appropriate response.

For Alternative 2, implementability and reduction through treatment are not really an issue. With respect to short- and long-term effectiveness, there is every reason to believe that effectiveness will be assured by the selection of Alternative 2. Wastes have been in place for almost a decade. The passage of time has helped stabilize the waste. The fact that

subsurface impacts are minor and localized indicates that the existing cover is and will remain effective. This is especially true since Alternative 2 will assure that the site will not be disturbed in the future. Moreover, the selection of Alternative 2 will eliminate risks associated with exposure to waste caused by construction activities on the existing cap.

1.6 The estimated present worth cost of the remedial action proposed by U.S. EPA may be as much as \$1.6 million. The City of Algoma's Treasurer has estimated that financing of the City's share of this cost will cause the average taxpayer's annual personal property tax to increase by approximately \$2.50 per \$1,000 assessed value over the next 10 years. Comments made at the public hearing in Algoma on August 13, 1990, reflect the serious concerns felt by local taxpayers.

In recent years, the City has struggled to retain its population, businesses and tax base. As for other Wisconsin communities, there have been ever-increasing demands for public-funded facilities and services. An upgrading of the Wastewater Treatment Plant is estimated to cost \$3.5 million. This expenditure will be funded through the sewer use charge, which is expected to double when the project is complete in 1992. The average sewer use charge will go from \$10.00 monthly to \$19.75 monthly. A \$2.1 million harbor improvement project will be completed in 1991; this project is funded with 50 percent city money and 50 percent state money. The \$1.0 million city share of the harbor project will also be funded through the tax roll.

There are few large employers in Algoma. Three of the larger employers are manufacturing companies that are Respondents to the Consent Order for the RI/FS. These companies have agreed to accept a share of the cost allocated within the Respondents' group. As taxable entities within the community, they will also have to bear an additional share of the cost for the work at the landfill through increased local taxes. This amounts to a double tax. These additional costs, with other tax pressures on the Respondent companies, will have a cumulative, detrimental effect on the local business labor situation.

Other potentially responsible parties (PRPs), not currently Respondents to the Consent Order, include the owners of manufacturing companies that generated and transported waste to the AMLF, but have since gone out of business; commercial transporters of waste taken to the AMLF; and an owner of property on the southern end of the AMLF, within the site boundary. The State of Wisconsin is also known to have disposed of animal carcasses at the AMLF. The lack of financial participation by these non-participating PRPs will unfairly and disproportionately increase the cost burden on the participating parties.

RESPONSE

1.1 Alternative 2 - Limited Action - provides monitoring for the site and institutional controls, but does not satisfy ARAR threshold criteria. Exceedances have occurred of Wisconsin NR 140 public welfare ES for iron and manganese and public health PAL for benzene, cadmium, chromium, and silver. According to Wisconsin NR 140, specific actions can occur based on these exceedances. Alternative 4 - Cap according to the Wis. NR 504.07 - which has been determined to be an ARAR and is one of several options

listed in Table 6 NR 140, will satisfy the ARAR requirements according to WDNR interpretation.

In addition, there are other factors which have contributed to the decision for a NR 504.07 cover. First, the site has a history of accepting hazardous waste. The potential exists for future release of contaminants and action to prevent this occurrence is warranted. Second, the current condition of the present cover reflects weathering of the cover therefore increasing infiltration into the landfill. Third, the landfill exists in a sandy soil environment in which rapid movement of contamination occurs in the surrounding environment via ground water. These factors were considered in the final remedy selection for the site.

1.2 The AMLF currently exhibits no risk to human health or the environment, but potential risk exists as shown in the Endangerment Assessment. Based on the factors of site history and present conditions, the possibility of future release and transport of contamination must be addressed. Actions can be based on risk or ARARs. This action is based on ARARs.

Although only the immediate vicinity was shown to have ground water contamination present, future development of this area could occur. The likelihood of this occurrence is not an issue in the U.S. EPA evaluation process, rather the possibility of an occurrence must be considered.

1.3 The Federal Drinking Water Standard MCL for cadmium is currently 10 ug/l and proposed to be 5 ug/l. Cadmium levels have been found to be as high as 12.1 ug/l and therefore Federal MCLs for constituents in ground water are exceeded. Iron and manganese were also found to exceed Federal Secondary MCLs. Secondary MCLs are not enforceable.

Benzene was the only organic to exceed the current Wisconsin NR 140 water public health ES of .67 ug/l with a level of 3.9 ug/l which was found by the U.S. EPA's contractor in 1984. The Federal MCL for benzene is 5 ug/l and is not exceeded as of the sampling conducted 2 years ago.

The RI shows only 3 of 22 samples containing benzene which were all below quantitation limits. However, the U.S. EPA recognizes these concentrations as presented in the RI and are statistically valid even though they were below quantitation limits. In addition, the concentrations were included in the RI as usable data, which was prepared by the PRPs.

A revision to the Wisconsin NR 140 ground water ES for benzene may be published in October 1990. At that time the ES will change from .67 ug/l to 5 ug/l and the AMLF will be in compliance with the NR 140 public health-related ES. However, benzene will still exceed the PALs.

Under present conditions, the Wisconsin NR 140.12 public welfare ES for iron and manganese are exceeded. Public welfare groundwater quality standards are based on aesthetic effects for iron and taste and color for manganese. Although the effects of increased hardness may not appear as significant as public health-related standards, the State interprets them nonetheless as enforcement standards. As such, the State requires that they be addressed in the same manner regardless of the effects.

The State of Wisconsin is authorized to administer the implementation of the Federal Safe Drinking Water Act (SDWA). The State has also promulgated ground water quality standards in Ch. NR 140, WAC, which the WDNR is consistently applying to all facilities, practices, and activities which are regulated by the WDNR and which may affect ground water quality in the State. Chapter 160, Wis. Stats., directs the WDNR to take action to

prevent the continuing release of contaminants at levels exceeding standards at the point of standards application. Ground water quality standards pursuant to Ch. NR 140, WAC, may be PALs, ESs, and/or alternative concentration limits (ACLs). PALs (and ESs) are generally more stringent than corresponding Federal standards. These state standards apply to all ground water in Wisconsin regardless of use.

Iron and manganese are naturally occurring inorganics but not within the concentration ranges found in the corresponding sand and gravel aquifer, adjacent to the AMLF. The concentrations at wells downgradient of the landfill are as much as 40 times more than ESs and background levels for iron. Manganese was found at levels as much as five times greater than ESs and three times the background levels. The presence of inorganic concentrations significantly different from background would not be attributable to localized "reducing conditions."

Pursuant to 40 CFR 300.430(f)(5)(iii)(A) of the NCP, U.S. EPA is setting a point of standards application for ground water standards for the AMLF at the waste boundary. State or Federal ground water standards, whichever are more stringent for a compound in ground water, must be met at that point. In this case, the State ch. NR 140, Wis. Adm. Code, PALs are the standards that must be met at the waste boundary. Acquiring property beyond the waste boundary will not change the point of standards application for the AMLF, nor bring the AMLF into compliance with the ground water standards at that point of standards application.

1.4 The WDNR approved of the AMLF closure according to State landfill regulations in 1983. This action is separate from any U.S. EPA actions relating to Superfund. Since the AMLF was included on the NPL in 1984, the decision for actions at the site do not consider previous state actions. The U.S. EPA Proposed Plan does not require the current landfill to be "re-opened". Rather a more effective cover will be placed on the current cover. Topsoil will be removed and stockpiled for reuse, but the waste will not be exposed. Section 506.08(3) allows the WDNR to impose NR 504 requirements if the department makes a determination that such requirements are necessary to attain or abate exceedances of NR 140 ground water standards. Since there are exceedances of NR 140 standards for iron and manganese, the WDNR has the authority to require an action to comply with new State landfill regulations in order to effect reductions in ground water contaminants to PALs. The selected remedy includes a cover that complies with NR 504.07 for the action at AMLF, since the NR 504.07 is an ARAR.

1.5 The previous arguments in items 2-4 do not establish that Alternative 2 meets the threshold requirements under the NCP. Protection of human health is currently not violated, but ARARs compliance would not be achieved. Consistent with the exemption criteria of NR 140.28 and 40 CFR 300.430 (f)(1)(ii)(C) a waiver from the PALs may be granted under specified circumstances. No showing has been made that such a waiver is justified.

The remaining "balancing" and "modifying" criteria are evaluated and considered for the decision process by the U.S. EPA. No single criteria is being selected in the evaluation without consideration of all criteria.

Alternative 2, if chosen, would have only been an interim action that would not have addressed the current problem of an inadequate cover at the AMLF. Implementability would not be difficult for Alternative 2, but reduction through treatment would not be addressed since this alternative does not provide any treatment remedy. Short and long-term effectiveness

will not necessarily be assured through Alternative 2. Wastes that are placed in the landfill may not be released soon thereafter. The passage of time does not stabilize all wastes. In some cases the deterioration of containers storing waste such as drums might not occur for several years. The passage of time also contributes to the deterioration of the landfill cover. This is especially true for the cover at AMLF because it does not have a freeze-thaw protective layer. Alternative 2 will not reduce the risks associated with exposure to waste caused by construction activities on the existing cap. This is one reason why Alternative 2 is incorporated in the ROD. However, Alternative 2 alone is not acceptable for a final remedy based on all nine criteria set forth by the NCP.

1.6 The estimated present worth of the remedial action is \$1.2 million not \$1.6 million as stated in the comment. As a PRP the City of Algoma is only one of seven entities and proportionate costs can be allocated at the PRP steering committee's discretion. The concerns of the local taxpayers are important to the U.S. EPA and the comments regarding costs of the remedy are duly noted. Cost control and options to reduce the cost during remedial design and action will be pursued. One such option is the use of the current clay material as a borrow source if it complies with standards for clay sources according to Federal and State regulations. Comments relating to other city expenditures and tax bases are also duly noted.

The U.S. EPA understands and appreciates the participation of all the Respondents to the Consent Order for the RI/FS and the fact that some of these Respondents are employers in Algoma. The comment that these additional costs will have a cumulative, detrimental effect on the local business labor situation is duly noted.

The U.S. EPA responsibilities under CERCLA includes investigation of PRPs related to the AMLF. Based on EPA's continuing investigation, EPA has not identified additional PRPs, transporters or defunct corporations. The property owner at the south end of the AMLF is currently viewed as a innocent landowner under CERCLA because of overfilling of the landfill. Since the AMLF was extended beyond the property boundaries that were established for the landfill and no evidence exists that illegal dumping occurred, the property owner is not viewed as a PRP. The State of Wisconsin disposed of animal carcasses at the AMLF, but animal carcasses do not constitute hazardous wastes and therefore the State is not recognized as a PRP. The U.S. EPA encourages and requires the disclosure of information regarding the disposal of hazardous wastes by any generator or transporter relating to the AMLF. Currently, other PRPs are still being investigated and information is still being collected. This would distribute costs among the current responsible parties and lessen their financial burden.

COMMENT 2: Tony Vogel (attorney for the PRPs) letter from August 22, 1990

2.1 As noted on the comment letter prepared by RMT and submitted on August 22, 1990, the ES for benzene will be revised to 5.0 ug/l in the very near future. Even if the PAL for benzene remains the same (0.067 ug/l), there will be no recorded exceedances of the ES for benzene or any other public health-related standard attributable to the site. Alternatives for responding to a PAL exceedance are set forth in Table 5, Section NR 140.24, Wis. Adm. Code. Three of the available options are: (1) no action, (2) well sampling and (3) changes in ground water monitoring, any of which are

appropriate under circumstances where, as in this case, contamination is highly localized and private wells have not been adversely affected. Thus, Alternative 2 in the Proposed Plan (as well as Alternative 3) assure compliance with NR 140 for all public health-related standards.

2.2 The Respondents advocate the acquisition of property as a means of demonstrating compliance with NR 140 under Alternative 2. There is no need nor basis to consider active restoration of ground water in the ROD. The final RI reflects a thorough subsurface investigation and the absence of significant threats to human health or the environment. Any further investigation of the north and south disposal areas, for example, (while not required under Alternative 2), can be accomplished during remedial design. An additional focused feasibility study simply is not required.

2.3 It would be inappropriate to dismiss Alternative 3 based on the current condition of the existing cover. The approaches described in Alternatives 2 & 3 are consistent with NR 504 and NR 506. (NR 506.08(3)(a)-(d) identifies a cover design that is sufficient for landfills like the AMLF where an NR 504 cover is not required).

2.4 Feasibility studies in general frequently discuss alternatives that are "more" protective, "more" effective and provide a "more" permanent solution. Such alternatives are frequently rejected, however, because of other factors such as cost and community acceptance. When cost and community acceptance suggest, as here, that an alternate response is more appropriate, the focus should shift to whether such alternatives are sufficiently protective, effective and permanent under the circumstances. We believe that Alternative 2 (and Alternative 3) are sufficiently protective, effective and permanent to justify their selection as the preferred alternative for this site.

RESPONSE

2.1 A revision to the Wisconsin NR 140 ground water ES for benzene is projected to be published in October 1990. At that time, the ES will change from .67 ug/l to 5 ug/l and the AMLF will be in compliance with the NR 140 public health-related ESs. However, the benzene PAL will still be exceeded.

Under present conditions, the Wisconsin NR 140.12 public welfare ES for iron and manganese are exceeded. These ESs are not treated differently by the State because they are public welfare-related rather than health-related standards. The WDNR has indicated to the U.S. EPA that if PAL exceedances were the only violated regulations at the AMLF that the basis for selecting appropriate remedial action the remedy, would not change, because the ch. NR 140, Wis. Adm. Code has authority to require such an action based solely on PAL exceedances. The three options mentioned in the comment based on PAL exceedances are only a few of several alternatives available. Therefore Alternative 2 and Alternative 3 do not assure compliance with the NR 140 public health-related ESs according to WDNR interpretation.

2.2 The point of standards application for ground water standards for the AMLF is at the waste boundary. State or Federal ground water standards, whichever are more stringent for a compound in ground water, must be met at that point. In this case, the State ch. NR 140, Wis. Adm. Code, PALs are the standards that must be met at the waste boundary. Acquiring property

beyond the waste boundary will not change the point of standards application for the AMLF, nor bring the AMLF into compliance with the ground water standards at that point of standards application. Active restoration of ground water will not be included in the ROD. The final RI reflects a thorough investigation and the absence of significant threats to human health at the present time, however, potential threats to human health and the environment exist considering the history of AMLF accepting hazardous waste, current physical conditions of the landfill cover and surrounding environment. With regards to the NDA and SDA, any further investigation can be accomplished during the remedial design. No additional FFSs will be required and this ROD is for a final remedy.

2.3 Alternative 3 was rejected based on the current condition of the existing cover. However, the clay material may be used as a borrow source if it complies with the specifications for use in a clay cover. The approaches described in Alternatives 2 & 3 are consistent with NR 504 and NR 506. The present cover, although required to meet the same specifications as in NR 506.08, currently does not. In addition, NR 506.08(3) provides for a NR 504.07 cap if it is determined that such a cap is necessary to attain NR 140 ground water standards.

2.4 Alternatives 2 and 3 were rejected because they did not meet one of the threshold criteria, compliance with ARARs. Also, Alternatives 2 & 3 are not sufficiently protective of human health and the environment based on the history, conditions of the landfill cover and environment in which the landfill is situated.

The following are comments from the court reporter's recording of the August 13, 1990 public hearing in Algoma.

COMMENT 3: p. 44 line 12, Mr. Terry Fulwiler

3.1 I think we have a situation where we are seeing some changes in the water level but it certainly appears to be very minor. We aren't even exceeding drinking water standards on most of the contaminants, and the only one that's really exceeding a level is benzene, and that isn't even exceeding an enforcement level.

3.2 I would like to request that the agency take into consideration the great difference in cost between putting the cap on and the continued monitoring, because it would appear that we could continue to monitor without any significant increase based on previous monitoring. As a matter of fact, I think if we would check the amount that got this site on the fund anyway, I think this Remedial Investigation actually showed that there was a lessening of contamination.

RESPONSE

3.1 The "changes in water level" comment is interpreted as the contamination level in ground water found at the AMLF which has not increased over the years. While the RI sampling rounds of ground water in January and April of 1989 did not show significant variations, it should be noted that these were taken during drought conditions.

Drinking water standards do not have to be exceeded by many contaminants in order to justify action at a particular site. Iron, Cadmium, Benzene and Manganese are in exceedance of ESs and PALs. PALs are enforceable levels and action is justifiable according to WDNR.

3.2 For a more detailed discussion concerning cost please see Response 1.6. The U.S. EPA evaluates all nine criteria set forth by the NCP before a decision on action is chosen. Monitoring as an action would not be a final remedy and if contamination worsens, the cost of a cover would be necessary under future action.

The contamination level for benzene was lower for the RI sampling rounds in 1989 compared to the initial investigation when the site was placed on the NPL in 1984. The potential exists for increased contamination based on the weathering of the present cover and sampling rounds completed during drought conditions.

COMMENT 4: p. 51 line 1, Mr. Keith Haasch

4.1 The option of mounding and tiling the top portion of the landfill could be considered. Mounding and tiling would take the water away so it doesn't go down into the waste. This option would provide the same results as covering the landfill by preventing water from reaching the waste. If you keep the water away from the waste and the solution is more permanent as well as less expensive it would be a better solution.

RESPONSE

4.1 Mr. Gary Edelstein WDNR project manager, provided a response to this comment during the public hearing and the report of proceedings can be reviewed for a detailed answer. The reason why drain tiles are not used for landfill caps is that drain tiles are only effective where saturated ground water conditions exist. A landfill cover attempts to prevent saturated ground water conditions so no water reaches the waste to produce leachate.

COMMENT 5: p. 55 line 8, Mr. Norbert Dier

5.1 The Algoma Landfill was closed and covered according to the Wisconsin Department of Natural Resources guidelines in 1983. At that time, the state and engineering contractor oversaw the construction of the cover. However, within five years there is now a demand for an additional cap. The permanence and effectiveness of this new cover is questionable based on previous experience.

RESPONSE

5.1 Response to comment 1.4 discusses the WDNR closure of the present AMLF cover. The permanence and effectiveness of the new cover according to NR 504.07 regulations has been studied at the Omega Hills Landfill in Germantown, Wisconsin, according to Mr. Edelstein. A cap that meets the new standards would be more effective than one that met the old standards. The increased effectiveness is mainly attributable to the extra protection from the freeze-thaw cycle. Further discussion on this topic is provided in the report of proceedings.

COMMENT 6: p. 65 line 12, Mr. Mike Dovichi

6.1 The Remedial Investigation does not indicate at all conclusively that there is, in fact, less than two feet of clay material on that site.

The document reads that the soil is fractured and the Shelby Tube pushed stones through the clay. Therefore, it was very difficult to obtain good samples because of these conditions. Before a definitive statement regarding the unsuitableness of the clay cap is presented, actual soil borings and or back hoe pits should be dug and the results documented. Pushing Shelby Tubes is not an acceptable method. Chapter six of the RI describes the purpose of the Shelby Tube was to determine soil type and permeability.

The soil type meets or exceeds all of the current state standards. Specifically, the permeability, liquid limits, plasticity and clay percentage are appropriate. The average permeability of the cover at 6.9×10^{-6} centimeters per second is definitively restrictive of filtration.

RESPONSE

6.1 The RI report provides information to satisfy objectives as set forth by the U.S. EPA. The objective for the cover evaluation was to evaluate the physical characteristics of the cover material. Based on this objective, the cover thickness was estimated at 1 to 1.5 from the interval depths when using the Shelby Tube. Soil borings or back hoe pits would have more conclusively determined the cover thickness but would have also disturbed the cover more than the Shelby Tube method. Since the objective of this portion of the report was to determine the physical characteristics of the cover material, the Shelby Tube method is an acceptable practice. The depth of the present cover is informative, but not the most vital information necessary. The soil type and characteristics provide the most useful information as well as current condition of the structure due to weathering.

Since only four of the 10 samples opened were appropriate because they were undisturbed, the average permeability comes from a limited group. The impact of weathering and age also degrades the current cover since there is no freeze-thaw protection layer.

COMMENT 7: p. 69 line 3, Mr. Mike Dovichi

7.1 Currently, the monitoring wells are right at the edge of the landfill where contamination would be expected to be found. However, if the city was to obtain property 150 feet around the existing limits of fill and install additional monitoring wells further away, then the possibility of little or no contamination could occur. At that time, the need for any enforcement action may not be justifiable.

RESPONSE

7.1 Please see the final paragraph of the response to comment 1.3 for an in-depth answer to this comment.

COMMENT 8: p. 75 line 2, Mr. David Groessl

8.1 Since the current cover was approved by the State and currently does not perform to State regulations, there is no guarantee that a cover put on now will conform to the future regulations. Based on that scenario, a ground water monitoring program would be most effective because of changes in future regulations that would require additional work.

RESPONSE

8.1 Please see the response to comment 5.1 for information regarding the performance of the current cover. According to Mr. Edelstein, there is no guarantee that any action will conform to future regulations, since those regulations are not known. However, future action at the site would have to be warranted by a current or potential threat at that time. The proper installation and maintenance of the NR 504 cover would, according to the study conducted at Omega Hills Landfill, provide significant protection and prevent the future release of contaminants to the environment.

COMMENT 9: p. 78 line 10, Mr. Norbert Dier

9.1 The clay material used for the cover is a significant portion of the cost and would be difficult to find in the Algoma area to the specifications required. The cost of the cover at \$1.2 million may not include adequate transportation costs of the material.

RESPONSE

9.1 The clay cover is a significant portion of the cost for the AMLF. Approximately \$500,000 of the total cost is for the two feet of clay material. The transportation cost was incorporated into this figure and was an average value that the contractor uses for all of its projects throughout the state. Since the estimated costs incorporate a range of -30 percent to +50 percent, as allowed by CERCLA, the difference in transportation costs would not exceed this range. The soil characteristics of the region around Algoma may indicate transportation costs are underestimated because an additional distance may be required to find clay soils of the characteristics specified by the WDNR.

COMMENT 10: p. 89 line 20, Mayor Orville DeMeuse

10.1 At this time, Alternative 2 which is monitoring of the ground water along with continuous checking of surface water and residential wells, would be sufficient to ensure no problem. The negative ramifications and potential future problems of disturbing the present cap could worsen the current conditions.

RESPONSE

10.1 Alternative 2 would not conform to the ARARs criteria used to evaluate an action. The disturbance of the present cap under Alternative 4 should not significantly worsen the problem if done with proper construction procedures and in a manner so as not to expose waste or the current cover for extended periods of time.

COMMENT 11: p. 90 line 14, Mr. Terry Fulwiler

11.1 In lieu of the very low levels of contamination at the site, where most of the levels are under the drinking water standards as well as enforcement standards, and the fact that there is no guarantee that the proposed cover will solve the problem of ground water contamination, the ground water monitoring alternative would be the most appropriate solution.

11.2 Since cost is a major factor for the Algoma Landfill site, the cost-effective solution would be to monitor ground water for a number of years and if a problem presents itself at a future time, then implementation of a cover or water purification system would be appropriate.

RESPONSE

11.1 Please see response to comments 5.1 and 1.4 for an in-depth answer to the effectiveness of the present cover.

11.2 Cost is only one of five balancing criteria used in the U.S. EPA evaluation process. One of the two threshold criteria which is not currently satisfied is ARARs. Specifically, NR 140 regulations are currently not being met. Monitoring for a number of years to wait and see if a problem magnifies and then take action would not be as cost effective as implementing an action now. Since WDNR interpretation of NR 140 regulations demands that a NR 504 cover is necessary under current exceedances, a cover must be constructed.

COMMENT 12: p. 92 line 7, Mr. Lawrence Schmitz

12.1 At this time, Alternative 2 would be most feasible to monitor ground water and then identify any weak areas in the current cover. Construction and improvement of the current cover could be accomplished like a quilting pattern or modified steps on a voluntary basis through construction companies in the area and the City of Algoma. This process would accomplish both objectives.

RESPONSE

12.1 Construction and improvement of the current cover was evaluated in the ROD and rejected because it still would not meet WDNR NR 504.07 requirements. As stated above, under State law, remedial action must be taken to address exceedances of ground water quality standards. Monitoring alone insufficient.

COMMENT 13: p. 93 line 3, Mr. Mike Dovichi

13.1 Through the reading of the Remedial Investigation and Feasibility Study, there is no scientific justification for the cost that is going to be incurred and the alternative that is recommended by the EPA and WDNR. The four years that this site has been capped has to be weighed against the 14 or 16 years that the site was open, exposed to precipitation and infiltration, and any ground water contamination that might have occurred during this period.

The limited amount of contamination, as indicated by EPA records, does not justify spending \$1.2 million. In addition, the cost of monitoring

wells for future observation is too much of a financial burden on this community. This would be a better cap but there is no justification for it at this point.

13.2 As an alternative, the recommendation is to cap the north and south disposal areas with on-site soils so they are abandoned and no longer exposed, potentially put in a fence around the area and have the City either obtain easements or purchase the property around the existing site.

RESPONSE

13.1 CERCLA requires that the selected remedy for a site be cost effective, i.e. that the effectiveness of the remedy proportional to its cost. The upgrading of the cap was determined to be the most cost effective means of remedying the existing ground water contamination and preventing further releases.

The ground water contamination was found during the RI sampling in 1989. This was eight years after the landfill stopped allowing the disposal of refuse and six years after the landfill was closed. Contamination was still found in these samples during drought conditions indicating that continued releases are occurring.

13.2 The recommendation to cap the NDA and SDA with on-site soils is part of the current preferred alternative based on testing done during the remedial design. A fence is also included as part of the preferred alternative. The obtainment of easements or purchase of property will not be necessary and further information on this topic is available in the response to comment number 1.3.

COMMENT 14: p. 95 line 2, Mr. Jerry Guth

14.1 The people of the City of Algoma and the surrounding area, if they knew there was a real disaster or real problem, wouldn't be afraid to back their money up and pay for a solution, but it has not been proven that there is a serious problem.

RESPONSE

14.1 The cooperation by the City of Algoma and other PRPs as respondents to the Consent Decree for the RI/FS is greatly appreciated by the U.S. EPA. The U.S. EPA does not doubt that the citizens would respond to action under adverse conditions. Based on the history of the AMLF accepting hazardous waste, the current cover and lack of protection from weathering, naturally occurring sands and gravels in the region, and the exceedance of ARARs, the problem at the AMLF warrants the action of capping according to NR 504 guidance.

COMMENT 15: p. 98 line 12, Mr. Dan Fulwiler

15.1 The community in and around Algoma is small. The discussion of Potentially Responsible Parties has been termed as if it's them there, over there. That's not true. The PRP's are the community in that they are the Hardwoods, the label company, the City, and everyone else named in the whole episode. If you put these companies out of business, the community goes

down the tubes because they are paying the taxes here. The PRPs and the community are the same except for Champion International.

RESPONSE

15.1 The comment regarding the interpretation is duly noted. The U.S. EPA did not intend to diminish the severity of the cost consequences to the citizens of Algoma. The intention of the U.S. EPA project manager was to note that the City was not responsible for the total cost, but rather a portion of that cost.

COMMENT 16: p. 100 line 21, Mr. Warren Maddike

16.1 Judging from the conversation at the public meeting and the different comments and questions, it appears that the report to some extent may be creating a mountain out of a mole hill. The \$90,000 additional monitoring will take care of the mole hill and that's it.

RESPONSE

16.1 Please see the responses to comments 10.1 and 12.1.

COMMENT 17: p. 102 line 9, Mr. Keith Haasch

17.1 The contamination that was found could have been from the ground water 10 years ago, not from any ground water that came in lately. No one knows, so until things get worse, no matter who pays for it, it is wasting money. You have got to keep on watching it. But now you only have five years or less than five years of really watching. These wells are not that old.

RESPONSE

17.1 Please see response to comment 13.1 for a description on the possibility of ground water contamination from the AMLF original construction stages.

COMMENT 18: p. 106 line 12, Mr. Mike Dovichi

18.1 Through reading the RI report, it indicated that the garbage may, in fact, be in the ground water table, so that may want to be looked at again. If that is the case, then some of the statements made tonight at the public meeting are a little shaky.

RESPONSE

18.1 The waste in spots is in the ground water but not the entire landfill. This is based on historical records examined during the RI preparation.

The following comments were submitted at the public meeting or through the mail as written comments.

Comment 19: Letter to Susan Pastor, Office of Public Affairs, from
Mr. and Mrs. Carl Novak

- 19.1 Algoma is a community of 4,000 mostly retired people who cannot afford the preferred alternative cost of a million dollars.
- 19.2 Review of the RI/FS indicates no evidence of extensive contamination.

RESPONSE

- 19.1 The present financial hardship on the community of Algoma is duly noted. The City of Algoma is only one of seven PRPs at the AMLF site and therefore will not bear the entire cost directly.
- 19.2 Contamination presently exceeds levels mandated by Federal and State regulations and, by law, must be addressed. Therefore, by law, an action must be taken, and according to WDNR interpretation the NR 504 cover must be implemented.

Comment 20: Terry Fulwiler, Comment Sheet

- 20.1 Results from the RI indicate less contamination than the original sampling which placed the site on the NPL list.
- 20.2 The current PAL for benzene is .5 ppb and the enforcement limit is 5 ppb. One of 13 wells has 3.9 ppb of benzene presently, however, the WDNR is raising the PAL for benzene to 5.0 ppb in the near future.
- 20.3 Water samples indicate the water is still fit to drink. Additionally, the water quality at other Superfund sites after clean-up is worse than the water quality at this site if no action would be taken.
- 20.4 The \$1.2 million cost would place a great burden on the citizens and small businesses of Algoma.
- 20.5 Continued monitoring of existing monitoring wells and the installation of a new monitoring well downgradient of the landfill would give ample warning of any increased contamination.

RESPONSE

- 20.1 Less contamination was found for benzene and could be attributable to the drought conditions which existed during the 1989 RI sampling rounds. The current condition of the landfill cover, history of accepting hazardous waste, and geological environment of sandy, permeable soil in which the waste is located were all contributing factors to the preferred alternative.
- 20.2 The PAL for benzene is currently .067 ppb and is not going to change. The enforcement standard for benzene is .67 ppb and will likely be changed to 5.0 ppb on October 1, 1990. PALs will still be exceeded for benzene at this time and, according to WDNR interpretation of PAL exceedances, the NR 504 cover will still be required.
- 20.3 The current contamination is minimal. Please see response to comment 20.1 as to other considerations evaluated for this remedy.
- 20.4 The approximate tax increase cost of \$350 per person in the City is based on the City incurring the entire cost of the remedial action. Since there are seven PRPs, the cost should be distributed among those other parties. The U.S. EPA is concerned over the community awareness of this issue. The U.S. EPA is willing to look at cost-effective ways to implement

the preferred alternative such as using the present clay material as a borrow source if it complies with WDNR specifications.
20.5 A new monitoring well at a further distance from the landfill would not be necessary based on the discussion provided in response to comment 1.3.

Comment 21: Letter to Susan Pastor, Office of Public Affairs, from
James L. Evans

21.1 The citizens of Algoma cannot afford to pay for the cleanup.

21.2 The landfill does not appear to be a threat to anyone's health.

21.3 Continued monitoring of wells appears to be the most appropriate course of action at this time.

RESPONSE

21.1 The City of Algoma is not the only responsible party in this action and will not bear the entire cost of the action.

21.2 At the present time, the AMLF is not a threat to anyone's health. Protection of human health and environment is the first of two threshold criteria the U.S. EPA uses to determine if an action is warranted. The second is compliance with ARARs which are Federal and State laws. This second criteria is not met and therefore action is warranted. In addition, the U.S. EPA considers future threat to public health in the evaluation of alternatives. Based on the history of AMLF accepting hazardous waste, the permeability of surrounding soil, and the poor condition of the current cover, a potential threat exists to human health.

21.3 Based on the criteria evaluated by the U.S. EPA, the preferred alternative is for a cover in compliance with NR 504 requirements. See response to comment 1.1 for further details.

Comment 22: Sharon Busch, Comment Sheet

22.1 Hazardous substances have not been released into either of the two nearby creeks. The RI concluded that the landfill has had no measurable impact on water quality in private drinking water wells near the site. Therefore, no action should be considered for the site.

RESPONSE

22.1 The RI has concluded there is no measurable impact on the private drinking wells or the nearby creeks. The U.S. EPA considered no action for the AMLF as required by CERCLA guidance to provide a baseline against which other alternatives can be compared. The No-Action Alternative would not provide additional effectiveness in reducing water percolation flow through the landfill waste. This alternative also would not comply with WDNR ARARs. The chosen remedy satisfies ARARs according to WDNR interpretation.

Comment 23: Ione Van Price, Comment Sheet

23.1 Check old farms and machinery southeast of the landfill for possible sources of contamination.

23.2 Continued monitoring of existing wells is the appropriate course of action.

RESPONSE

23.1 Based on the initial investigation and ongoing monitoring of the AMLF there is no reason to believe an alternative source of contamination exists.

23.2 Please see response to comment 1.1.

Comment 24: Carol Nimmer, Comment Sheet

24.1 A \$1.2 million cap is too expensive. Consider option B as the most feasible.

RESPONSE

24.1 Please see response to comment 1.5 regarding cost and 1.1 regarding Alternative 2.

Comment 25: Annille DeMeuse, Comment Sheet

25.1 If continued monitoring of existing and additional wells indicates increasing contamination then alternative 3 could be justified.

25.2 The landfill presents no threat to human health or the environment.

25.3 Disturbing the cap would increase the possibility of contamination, especially disturbing the asbestos.

25.4 Based on the information in the RI, Alternative 2 is the best solution.

RESPONSE

25.1 Alternative 3 could not be justified according to WDNR interpretation of NR 500 & 140 codes. Alternative 3 also would not prevent continuing releases of contaminants to the aquifer. Alternative 4 is the preferred remedy based on the nine criteria used to evaluate the alternatives.

25.2 Please see response to comment 21.2.

25.3 Please see response to comment 10.1 regarding the disturbance of the present cap. The asbestos is not believed to be within the LDA which is the area that is proposed to be covered. Previous investigation of the site suggests this would not be a problem.

Comment 26: Marion Moss, Comment Sheet

26.1 The citizens of Algoma cannot afford a \$1.2 million cap. Limited action (Alternative 2) appears to be all that is necessary.

RESPONSE

26.1 Please see response to comments 1.5 and 1.1 for details regarding cost and Alternative 2 as a chosen remedy.

Comment 27: John DeKeyser, Comment Sheet

27.1 Widespread future contamination could cost more, keep it from becoming a problem for future generations.

RESPONSE

27.1 The preferred alternative would address the future release of contamination by providing a more secure cover to prevent the percolation of water through the waste. For future protection of human health and the environment, compliance with ARARs, and long-term effectiveness the chosen alternative is most appropriate.

Comment 28: David G. Hudson, Comment Sheet

28.1 Alternative 4 is too expensive until a different health hazard can be proven. Therefore, Alternative 2 is the best recommendation.

RESPONSE

28.1 Please see response to comment 1.1 and 1.5 regarding cost and Alternative 2 as the preferred remedy.

Comment 29: Gerald LeGreve, Comment Sheet

29.1 Monitoring the wells and waiting for something to happen is foolish. Prevent further contamination by using a clay cap and implementing Alternatives 2 and 4.

RESPONSE

29.1 The comment is duly noted and appreciated. Please see response to comment 27 for further information.

Comment 30: Reiny Howrse, Comment Sheet

30.1 The results of the tests show no significant hazardous material in the ground water at this time. Therefore, it appears that no further action is necessary-Alternative 1. Alternative 2 would certainly be adequate at this time.

RESPONSE

30.1 The results of the RI show that benzene, manganese and iron exceed of NR 140 ESs and PALs. Contamination is present in wells off site and the potential for future release of contamination is present. For further information regarding no action or Alternative 2 as an option, please see responses to comments 22.1 and 1.1.

Comment 31: Earl B. Krueger, Comment Sheet

31.1 Sampling results from the site indicate contaminants are under acceptable limits by U.S. EPA standards.

31.2 Alternative 2 is the most feasible for the site since Alternative 4 would be an economic blow to Algoma industry and the citizens of Algoma.

RESPONSE

31.1 Under CERCLA, remedial actions must meet applicable or relevant and appropriate Federal or State standards, whichever are more stringent. State regulation NR 140 is more stringent than federal standards and it is applicable to the ground water at this site. By law, the U.S. EPA must recognize this law and act accordingly even if U.S. EPA standards are not exceeded.

Comment 32: Thomas J. Romdenne, Comment Sheet

32.1 To this point, nothing that would be a danger to human health and safety has been found. Therefore, continued monitoring of existing wells and limiting access to the site to see if anything surfaces in the years to come is the appropriate action.

32.2 The proposed alternative costing \$1.6 million cannot guarantee any better protection than what exists now. The City cannot afford this liability and the people of Algoma feel that no more money should be spent at the site. The agencies involved should look at the overall impact of their suggested plan on Algoma.

32.3 The site was closed and capped in 1983 according to WDNR specifications. The closure plan was approved and supervised by the WDNR. This was seven years ago and since that time no problem has been detected at the site. As time goes by the site would only appear to get better, not worse.

RESPONSE

32.1 Please see response to comment 1.1 regarding Alternative 2 as the preferred alternative.

32.2 The preferred alternative would cost only \$1.2 million and would provide better protection against infiltration of water into the waste and then the ground water. Please see response to comment 1.5 for additional information regarding cost and overall impact to the community of Algoma.

32.3 Please see response to comment 1.3 regarding closure of the AMLF according to WDNR regulations. The statement that no problem has been detected since the closure is false according to the RI results and WDNR interpretation of NR 140. The prediction of the site improving over time is also invalid based on the past drought conditions that would minimize contamination detection and the poor condition of the current cover.

Comment 33: Alfred Vandertre, Comment Sheet

33.1 No hazardous substances were released to the two nearby creeks or detected in drinking water wells, therefore, no further action is needed at the site.

RESPONSE

33.1 Please see response to comment 22.1 for information.

Comment 34: Lynn H. Busch, Comment Sheet

34.1. The landfill has a cap that was approved by the WDNR when it was constructed. Additionally, the landfill will be restricted by a fence to prevent contact with waste on site. Therefore, Alternative 2 is the appropriate course of action.

RESPONSE

34.1 Please see response to comments 1.3 for WDNR closure approval and 1.1 for Alternative 2 as appropriate course of action.

Comment 35: Letter to Susan Pastor, Office of Public Affairs,
from Harold Nell

35.1 The public meeting for the Algoma landfill indicates no further action is needed other than continued monitoring of existing wells. This case would not hold up in a court of law.

35.2 There is no justification for spending \$1.2 million on a cap, it would only put an extra burden on Algoma taxpayers.

35.3 The landfill presently has five feet of required clay and dirt over most of the area and at no time was it under the required amount or depth.

RESPONSE

35.1 Please see response to comment 1.1 regarding monitoring as the recommended course of action. Comments directly relating to the alternatives are addressed in this responsiveness summary. This comment does not directly relate to the alternatives and therefore will not respond to comments regarding legal enforcement.

Comment 36: Letter to Susan Pastor, Office of Public Affairs,
from Michael D. Dovichi

36.1 The U.S. EPA and WDNR should not have initiated the expenditure of \$500,000 worth of study without first having the City confirm the presence of the contaminants detected by (the consulting firm) E & E in 1984. The City should have been given the opportunity to have an Infield Conditions Investigation completed as defined in NR 140 Ground water Quality. This type of investigation could have been completed for a tenth of the cost spent to date.

36.2 There is a lack of meaningful data in the RI/FS. The topographic map is a USGS 10 foot contour map instead of an up-to-date two foot contour map. There are also no cross sections in the report to show that an evaluation was made of the subsurface material, ground water surface, and areas of contamination. Additionally, there has not been an investigation of alternative sources of contamination in the area. This is critical since the contaminant is benzene, a highly volatile compound.

36.3 This landfill was constructed in highly permeable soil, daily cover was spotty to nonexistent, the area upgradient of the contaminated well was filled in the late 1970s, and no other volatiles were found in this well. This possibly indicates another source of contamination.

36.4 Given the opportunity to apply the design management zone criteria to the landfill, the City would be in compliance with the State of Wisconsin ground water standards. A 300 foot DMZ would apply to this site since it is regulated under ss. 144.43 to 144.47 Stats. This statute and associated administrative code were developed because the scientific community recognized that landfills leak, especially non-engineered landfills. The fact that this landfill has leaked so little justifies the conservative distance of 300 feet.

36.5 The position that the final cover is inadequate is not justified based upon the data presented in the RI/FS. The only value of collecting Shelby Tube samples in gravelly soil is to try to obtain an undisturbed sample. The fact that undisturbed samples could not be collected does not justify the U.S. EPA and WDNR positions that the present cap is unacceptable. Therefore, before spending \$1.2 million to recap the landfill, additional documentation is required.

36.6 The cleanup plan proposed by the U.S. EPA is not justified considering the lack of serious contamination, insufficient data regarding the quality of the final cover, and the extreme impact on the economy of the City.

36.7 By the U.S. EPA's own statement, the site has had minimal impact to the environment to date and since there is no immediate threat to human health or welfare, why not take the time to gather additional ground water data to establish a trend? The WDNR requires a minimum of eight quarters of ground water sampling before it will permit a new landfill to be opened. Why not have the city take an additional four rounds? Additionally, a 300 foot DMZ should be created around the landfill and if appropriate, additional wells could be installed to monitor the ground water quality. Only after the scientific data shows that the landfill is actually having an increasing impact on water quality should remediation begin.

36.8 I wish to voice my objection to the manner in which the public meeting was held on August 13, 1990. The moderator cut off participants and did not allow as many questions to be asked as needed. Considering this was the only opportunity for the public to discuss the RI study, FS, and Proposed Plan, the meeting should not have been cut short.

RESPONSE

36.1 This comment is duly noted.

36.2 The comments from this section pertain to the RI and will be duly noted. Contour maps with two foot intervals and cross section elevations would have been helpful but not necessary in the determination and evaluation of the AMLF. There was no reason to believe alternative sources existed at the AMLF because of the background data and field observation.

36.3 This comment was confusing and will be answered based on the

interpretation of the meaning. The soil in this area is highly permeable which is one reason why an NR 504 cover will protect from actual or potential future releases from occurring. The fact that the area upgradient of the contaminated well was filled during the operation of the landfill and spotty daily cover was provided does not prove that the volatiles would have already been completely released or that another source is responsible.

36.4 The WDNR has provided interpretation regarding the DMZ and its application at AMLF. Please see the response to comment 1.3 for further information.

36.5 The current cover inadequacy is based on the information in the RI as well as the fact that there is no protective cover from freeze-thaw. The standards for a cap layer according to NR 504 specifications include: a minimum 50 percent by weight passing the 200 sieve, a saturated hydraulic conductivity of 1×10^{-7} centimeters per second, and six inch lifts compacted to 90 percent modified or 95 percent standard proctor density. Four of the 10 samples did not pass the #200 sieve test, and only 1 of the 4 samples capable of being tested for hydraulic conductivity passed, with an geometric average of 6.9×10^{-6} . The six inch compacted lifts could not be verified.

36.6 Contamination of ground water was found at levels above State NR 140 ESs and PALs. A Federal MCL was also exceeded for cadmium during one round of sampling of the RI. These exceedances warrant the action taken based on the interpretation by the WDNR of NR 140 regulations. For information regarding the inadequacy of the present cover, please see response to comment 36.5. The cost impact for the citizens of Algoma is addressed in response to comment 1.5.

36.7 The site has had minimal impact to the environment and there is no immediate threat to human health or welfare. However, there is exceedance of ARARs, specifically State NR 140 ESs and PALs. According to WDNR interpretation, Alternative 4 is warranted. The current data validates the preferred action and additional monitoring is not required. Please see the response to comment 1.3 for issues regarding the DMZ. Scientific data shows that the AMLF is actually having an impact on water quality. Therefore, action is justifiable and to wait and see if it becomes an increasing impact of water quality is not necessary. The highly permeable soils, history of accepting hazardous waste, and poor current cover condition are all considerations for this action.

36.8 This comment is duly noted. The incorporation of questions and comments together by the public disrupted the order of the meeting. The intention of the moderator was not to cut off any question or shorten the meeting, but ensure all those present had an opportunity to comment. If you have concerns or questions that had not been addressed either through the public meeting or writing, please contact the U.S. EPA project manager at (312) 353-6261.

Comment 37: Dean R. Eggert, Comment Sheet

37.1 The AMLF was closed and capped in 1983. Over the years it has been monitored and in the U.S. EPA's own words, "the site has actually gotten better." The study and findings show such a minute amount of contamination at the site that Alternative 4 would not be needed.

37.2 The financial burden of \$1.2 million would really hurt the citizens of Algoma. Please don't burden the citizens of Algoma with this additional cost. Implement Alternative 2 for monitoring instead of Alternative 4.

RESPONSE

37.1 Please see response to comment 1.2 regarding contamination at the AMLF.

37.2 Please see responses to comment 1.1 regarding Alternative 4 as a preferred remedy and 1.5 regarding costs incurred by the citizens of Algoma.

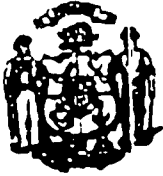
APPENDIX A

LIST OF RESPONDENTS DURING THE PUBLIC COMMENT PERIOD FOR THE ALGOMA MUNICIPAL LANDFILL FROM JULY 23, 1990 TO AUGUST 22, 1990

COMMENT #	NAME AND AFFILIATION	SOURCE OF COMMENT
COMMENT 1:	ERIC GREDELL RMT, INC., CONSULTANT FOR RESPONDENTS TO CONSENT DECREE	LETTER, DATED AUGUST 22, 1990
COMMENT 2:	ARTHUR A. VOGEL JR. QUARLES & BRADY, ATTORNEY FOR RESPONDENTS TO CONSENT DECREE	LETTER, DATED AUGUST 22, 1990
COMMENT 3:	TERRY FULWILER, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 4:	KEITH HAASCH, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 5:	NORBERT DIER, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 6 & 7:	MIKE DOVICH, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 8:	DAVID GROESSL, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 9:	MR. DIER, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 10:	ORVILLE DEMEUSE, MAYOR, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 11:	MR. FULWILER, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 12:	LAWRENCE SCHMITZ, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING

COMMENT 13:	MR. DOVICH, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 14:	JERRY GUTH, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 15:	DAN FULWILER, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 16:	WARREN MADDOKE, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 17:	KEITH HAASCH, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 PUBLIC HEARING
COMMENT 18:	MR DOVICH, PUBLIC MEETING, REPORT OF PROCEEDINGS	STATEMENT MADE AT THE AUGUST 13, 1990 HEARING
COMMENT 19:	MR. AND MRS. CARL NOVAK, RESIDENTS	LETTER TO SUE PASTOR DATED AUGUST 15, 1990
COMMENT 20:	TERRY FULWILER, RESIDENT	COMMENT SHEET DATED AUGUST 16, 1990
COMMENT 21:	JAMES L. EVANS, ATTORNEY, MILLER, BLAZKOVEC, EVANS AND BURKE	LETTER TO SUE PASTOR DATED AUGUST 16, 1990
COMMENT 22:	SHARON BUSCH, RESIDENT	COMMENT SHEET DATED AUGUST 14, 1990
COMMENT 23:	IGNE VAN PRICE, COUNCILMAN, ALGOMA, WISCONSIN	COMMENT SHEET DATED AUGUST 14, 1990
COMMENT 24:	CAROL NIMMER, RESIDENT	COMMENT SHEET DATED AUGUST 16, 1990
COMMENT 25:	ANNILLE DEMEUSE, RESIDENT	COMMENT SHEET DATED AUGUST 15, 1990
COMMENT 26:	MARION MOSS, RESIDENT	COMMENT SHEET DATED AUGUST 15, 1990

COMMENT 27:	JOHN DEKEYSER, RESIDENT	COMMENT SHEET DATED AUGUST 15, 1990
COMMENT 28:	DAVID G. HUDSON, RESIDENT	COMMENT SHEET DATED AUGUST 15, 1990
COMMENT 29:	GERALD LEGREVE, RESIDENT	COMMENT SHEET DATED AUGUST 15, 1990
COMMENT 30:	REINY HOWRSE, PRESIDENT, ALGOMA LUMBER COMPANY	COMMENT SHEET DATED AUGUST 15, 1990
COMMENT 31:	EARL B. KRUEGAR, RESIDENT	COMMENT SHEET DATED AUGUST 19, 1990
COMMENT 32:	THOMAS J. ROMDENNE, RESIDENT	COMMENT SHEET DATED AUGUST 13, 1990
COMMENT 33:	ALFRED VANDERIRE, ALDERMAN, ALGOMA WISCONSIN	COMMENT SHEET DATED AUGUST 13, 1990
COMMENT 34:	LYNN H. BUSCH, RESIDENT	COMMENT SHEET DATED AUGUST 10, 1990
COMMENT 35:	HAROLD NELL, RESIDENT	LETTER TO SUE PASTOR DATED AUGUST 14, 1990
COMMENT 36:	MICHAEL D. DOVICH, RESIDENT	COMMENT SHEET DATED AUGUST 19, 1990
COMMENT 37:	DEAN R. EGGERT, RESIDENT	COMMENT SHEET DATED AUGUST 22, 1990



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Carroll D. Beaudry, Secretary
Box 7821

Madison, Wisconsin 53707

TELEFAX NO. 608-267-3579

TDD NO. 608-267-4897

SOLID WASTE TELEFAX NO. 608-267-2768

IN REPLY REFER TO: 4440

September 25, 1990

Mr. Valdas V. Adamkus, Administrator
U. S. EPA Region V
230 S. Dearborn St.
Chicago, Ill 60604

SUBJECT: Selected Remedy, Algoma Landfill Superfund Site
Town of Ahnapee, WI

Dear Mr. Adamkus:

The Department is providing you with this letter to document our position on the proposed final remedy for the Algoma Landfill Site. The proposal, as identified in the July 20, 1990 Proposed Plan, includes the following:

- Construction of a new soil/clay cover over the landfill disposal area (LDA) meeting the requirements of s. NR 504.07, Wis. Adm. Code.
- Construction of the same soil/clay cover over the north and south disposal areas (NDA and SDA), unless pre-design investigations find that the areas show no potential for contributing to the contamination at the site.
- Installation of a landfill gas venting system at the LDA.
- Groundwater and gas monitoring, installation of additional monitoring wells, a site fence, obtaining access rights and obtaining deed restrictions for property the disposal areas are located on.

Capital Cost:	\$1,100,000
Annual O&M Cost:	\$ 11,000
Total Present Worth Cost:	\$1,300,000

* Based on 30 years of O&M

The Department concurs with the selection of this remedy, as determined in the Record of Decision for the site.

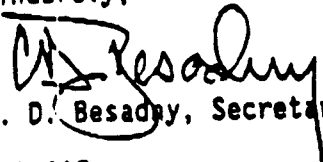
Mr. Valdas V. Adamkus - September 25, 1990

The State of Wisconsin will contribute 50% of the remedial action costs associated with this action and 50% of the O&M costs for the first year and provide for all O&M after that, if the potentially responsible parties (PRP's) do not agree to fund the remedy and the O&M. We provide this assurance on the assumption that U. S. EPA will pursue all actions with the PRP's prior to expending the fund at the site.

We also understand that our staff will continue to work in close consultation with your staff during the pre-design, design and construction phases of the remedy.

Thank you for your support and cooperation in addressing this contamination problem at the Algoma Landfill Site. If you have any questions regarding this matter, please contact Mr. Paul Didier, Director of the Bureau of Solid and Hazardous Waste Management, at (608) 266-1327.

Sincerely,


C. D. Besada, Secretary
CDB:GAE

cc: Lyman Wible - AD/5
Linda Meyer - LC/5
Paul Didier - SW/3
Doug Rossberg - LMD
Bill Haubold - U. S. EPA Region V, SHS/11
Mark Giesfeldt/Sue Bangert/Gary Edelstein - SW/3