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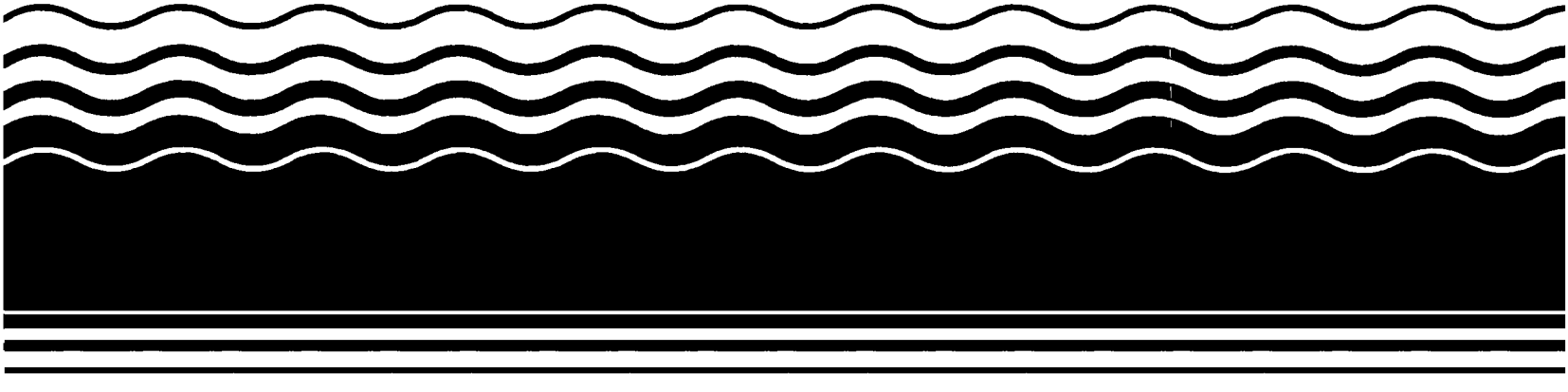
EPA 541-R98-159
March 1999

EPA Superfund
Record of Decision:

Spartan Chemical Co.
Wyoming, MI
4/9/1998



INTERIM ACTION RECORD OF DECISION

FOR THE

SPARTAN CHEMICAL COMPANY SUPERFUND SITE

Kent County, Michigan

April 1998

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APPENDICES

Declaration
Selected Interim Remedial Action
for the
Spartan Chemical Company Site
City of Wyoming, Kent County
Michigan

Statement of Basis and Purpose

This decision document presents the selected Interim Remedial Action (RA) for the Spartan Chemical Company site, in the city of Wyoming, Kent County, Michigan. This Interim RA was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act, 1980 PL 96-510, as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is based on the Administrative Record for this site.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the Interim RA in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

The selected remedy utilizes Soil Vapor Extraction (SVE) for remediation of the volatile organic compounds (VOCs) in the soil. Primary components of the remedy are as follows:

- SVE technology for remediation of the VOCs found in the site soil.
- Treatment of the off-gases generated from the SVE process to meet acceptable air quality standards.

Declaration

This interim RA is protective of human health and the environment, complies with federal and state applicable or relevant and appropriate requirements directly associated with this action, and is cost-effective. This action utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, given the limited scope of the action. Because this action does not constitute the final remedy for the site, the statutory preference for remedies that employ treatment that reduce toxicity, mobility, or volume as a principal element, although partially addressed in this remedy, will be fully addressed by the final response action.

Subsequent actions are planned to address the remaining principal threats posed by this site.

Wm. E. Muno

William E. Muno, Director, Superfund Division
United States Environmental Protection Agency

4/9/98
Date

W. Charles McIntosh

Russell J. Harding, Director
Michigan Department of Environmental Quality
ACTING

4/3/98
Date

A. SITE NAME, LOCATION, AND DESCRIPTION

The Spartan Chemical Company Superfund site (Spartan) is located at 2539 28th Street about one block northwest of the intersection of Byron Center Avenue and 28th Street (see Figure 1). It is in the southeast one-quarter of Section 9, T6N, R12W, city of Wyoming, Kent County, Michigan.

Spartan is located on the eastern edge of an industrial/commercial area, with a school and residential area to the east and northeast. Residential areas are also located to the north and northeast beyond the industrial/commercial area located directly adjacent to the site. This area is serviced by the city of Wyoming municipal water supply and sanitary sewer system. The municipal water supply system draws water from Lake Michigan. No known private wells exist in the vicinity of the site.

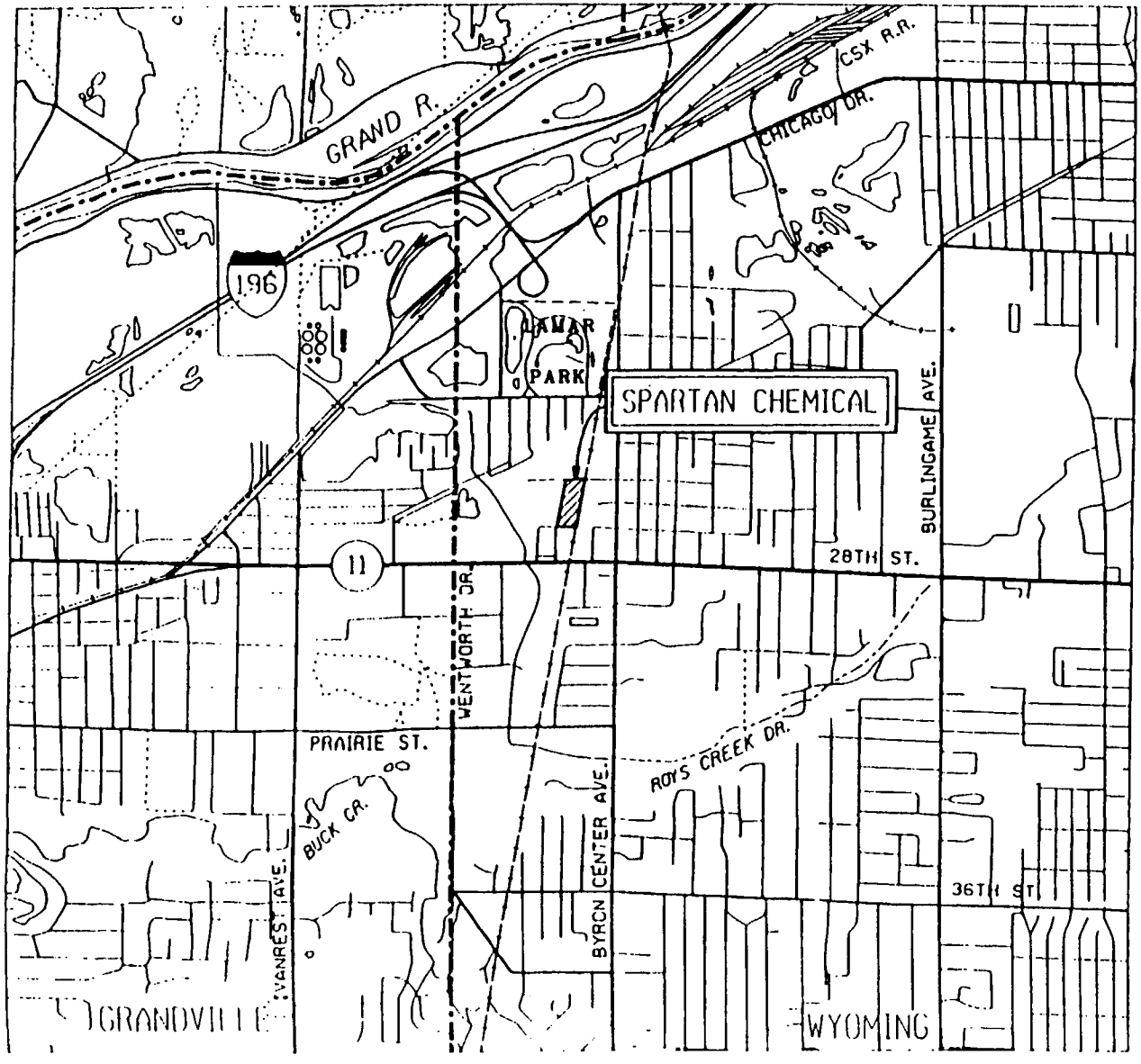
The 2-acre site is located in the Grand River drainage basin and exhibits approximately 13 feet of topographic relief. The elevation of the site ranges from 615 to 628 feet above mean sea level. The site consists of an office building, two warehouses, one drum/tank storage building, several smaller storage/maintenance buildings, tank farm areas, and a loading dock in the southern portion of the site. The northern two-thirds of the property is an open vegetated area with a small groundwater treatment system building in the northwest corner, which contains an inactive air stripper. A 7-foot fence surrounds the Spartan property, providing security against unauthorized site access. Five underground storage tanks have been removed from the site, while 34 above-ground storage tanks remain. The above-ground tanks rest on concrete pads which are surrounded by concrete containment walls. Figure 2 presents the layout of the site.

B. SITE HISTORY (*See Glossary for definitions of terms used in this section)*

Spartan operated as a bulk chemical transfer, blending, and repackaging plant from 1952 to 1992. During its operation, Spartan handled a variety of chemicals, including aromatic solvents, naphthas, alcohols, ketones, ethers, chlorinated solvents, and lacquer thinners. The corporation filed bankruptcy in 1992, and the property has been vacant since that time. There are no other known responsible parties.

The Michigan Department of Natural Resources (MDNR) reported that prior to 1963, Spartan discharged its wastewater to the groundwater. Groundwater contamination was detected in December 1975 during dewatering operations at an adjacent facility. The discharge from the operations contained various solvents. At that time, Spartan was the only known handler of solvents in that area. The contamination consisted of Volatile Organic Compounds (VOCs), such as toluene, benzene, ethylbenzene, and xylenes. Various ketones and alcohols have also been detected in the groundwater. The MDNR also reported that three minor chemical spills occurred before 1963, as documented by plant personnel.

Figure 1.



SPARTAN CHEMICAL COMPANY SUPERFUND SITE

SITE LOCATION

- INTERSTATE HIGHWAYS
- U.S. HIGHWAYS
- STATE HIGHWAYS
- OTHER MAJOR ROADS
- MINOR ROADS
- TWO-TRACK ROADS
- AIRPORTS
- GRASS AIRSTRIPS
- RAILROADS
- ABANDONED RAILROADS
- RIVERS AND STREAMS
- INTERMITTENT STREAMS
- POLITICAL BOUNDARIES
- SUPERFUND SITE

N

MILES

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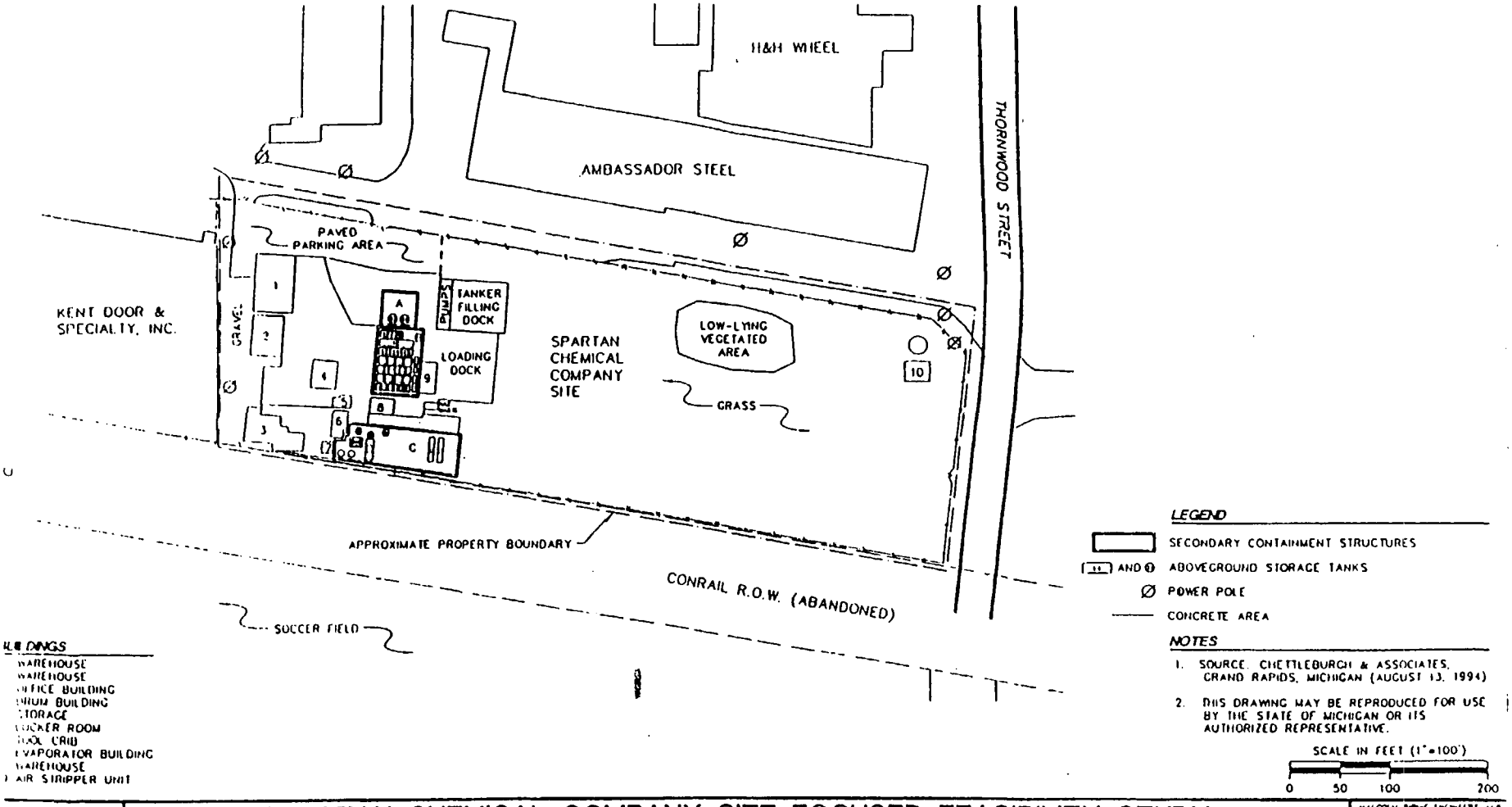
Michigan Department of Public Health

Base map information provided by Michigan Department of Natural Resources, MIRIS Program

12/16/92



WOOLM PIRNIE

SPARTAN CHEMICAL COMPANY SITE FOCUSED FEASIBILITY STUDY

WYOMING, MICHIGAN
SITE MAP

FIGURE 2

On September 8, 1983, Spartan was added to the National Priorities List of Superfund sites. This list is made up of hazardous waste sites throughout the country that are eligible for further study and remediation under the federal Superfund program.

In May 1992, the United States Environmental Protection Agency (EPA) conducted a site assessment to determine the need for an emergency response action at the site. The principle focus of the assessment was to determine if there were any threats to human health or the environment from soil contamination and any onsite containers or tanks at the site. The findings of the assessment did not support the need for an emergency removal action.

In June 1993 an Interim Action Record of Decision (ROD) was issued for remediation of the groundwater. Spartan owners had installed and started operation of a groundwater treatment system in 1988 as a result of an agreement between the state and the owners. This treatment system was shut down in January 1993 due to concerns with continued discharge to the city of Wyoming wastewater treatment plant. The interim action included an evaluation of the effectiveness and ability of the existing groundwater treatment system to remediate the groundwater and of discharge options available for the treated groundwater. It included startup of the system after any necessary system modifications had been completed. The ROD also stated that additional investigation would be necessary to better characterize the site, with a focus on identifying source areas. The need for this additional work resulted in the initiation of the site Remedial Investigation/ Feasibility Study (RI/FS) in 1994. After review of the preliminary RI data, it was determined that the design modifications should be placed on hold pending completion of the site RI/FS. It became apparent that significant modifications to the treatment system would be necessary to effectively remove and treat the contaminated groundwater, above and beyond the scope of the interim action as specified in the June 1993 ROD. It is anticipated that the additional groundwater investigation will be completed in two to three years.

Between 1994 and 1996, RI activities were completed by a state contractor. A RI report was finalized in October 1996 that summarizes the investigation activities and the nature and extent of contamination. It also presents an assessment of the potential risk associated with exposure to the contamination. A focused FS report was initiated in 1996 and finalized in October 1997. This document includes an evaluation of remedial alternatives for cleanup of the VOC-contaminated soil. An addendum to the FS will be completed for the groundwater and any other identified soil contamination, if necessary. The generation of that document will depend on the completion of the additional investigation, as noted above.

C. COMMUNITY PARTICIPATION *(See Glossary for definitions of terms used in this section)*

The Responsiveness Summary (Appendix B) discusses the involvement of the community during the RI/FS and remedy selection process, and shows that the public participation requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 1980 PL 96-510, Sections 113(k)(2)(i-v) and 117 have been met at this site. The decision is based on the Administrative Record in the Information Repository for Spartan, which is located at the city of Wyoming Public Library.

D. SUMMARY OF SITE CONDITIONS

The RI report dated October 1996 documents the results of the RI at the site. This summary focuses on soil conditions and the extent of VOC contamination in soil, since this is what is addressed by the interim action. For additional details concerning site conditions, please refer to the complete report.

Soil Investigation

During the RI, 52 soil borings were drilled to the water table to evaluate the nature and extent of the contamination in the unsaturated zone beneath known or suspected source areas. In addition, five surface soil samples were taken, independent of the subsurface boring locations, to evaluate contamination in the upper six inches of soil.

Geology

The boring logs taken from the site show that the unconsolidated material from the ground surface, to depths ranging from 17 to 95 feet below the ground surface, is comprised of sand and gravel, with a grain size classification ranging from fine sand to coarse gravel. Zones of gravel, and sand mixed with gravel, are interbedded throughout the sand. The confining layer beneath the site ranges from 80 to 90 feet below the source area, with dramatic rises in the confining layer topography hydraulically downgradient and adjacent to the source area. Additional investigation will be necessary to better define the configuration of the confining layer and the effect on contaminant migration.

Analytical Results

Soil samples collected during the RI were analyzed for VOCs by the Michigan Department of Environmental Quality (MDEQ) mobile laboratory. Approximately 20 percent of the samples were also submitted to Contract Laboratory Program (CLP) laboratories for confirmation of the VOC results obtained by the mobile laboratory and for base neutral/acid extractables, pesticide/polychlorinated biphenyls, and inorganic compound analyses. A comparison of the VOC data from the mobile and CLP laboratories indicates that, in general, the mobile laboratory identified more compounds. The detection limits reported by the mobile laboratory were lower than those reported

by the CLP laboratories. A review of the data showed that in most cases the data from both laboratories were similar, with no one laboratory reporting consistently higher concentrations than the other. Therefore, the VOC data from the mobile laboratory was used interchangeably with the CLP data.

The area where soil concentrations exceed the residential cleanup criteria protective of groundwater is primarily located on the southern portion of the site. Table 1 presents the maximum concentrations of VOCs detected in site soils. The shaded area in Figure 3 indicates the area of soil contamination. The estimated area of soil contamination is 59,400 square feet, of which 52,723 square feet is on-site, and 6,677 square feet is off-site. The depth to groundwater varies in this area due to site topography and geology, therefore, an average depth to groundwater of 15 feet was assumed for the volume calculations. Using this figure, the volume of soils requiring remediation is 33,000 cubic yards, with 29,290 on-site, and 3,710 off-site.

Source of Contamination

One purpose of the RI was to determine the source of groundwater contamination. A single source has not been identified, rather it appears that there are several sources of contamination. Likely sources include the former underground storage tanks, the above ground tanks, and the loading dock area where chemical spills reportedly occurred.

E. SUMMARY OF RISK *(See Glossary for definitions of terms used in this section)*

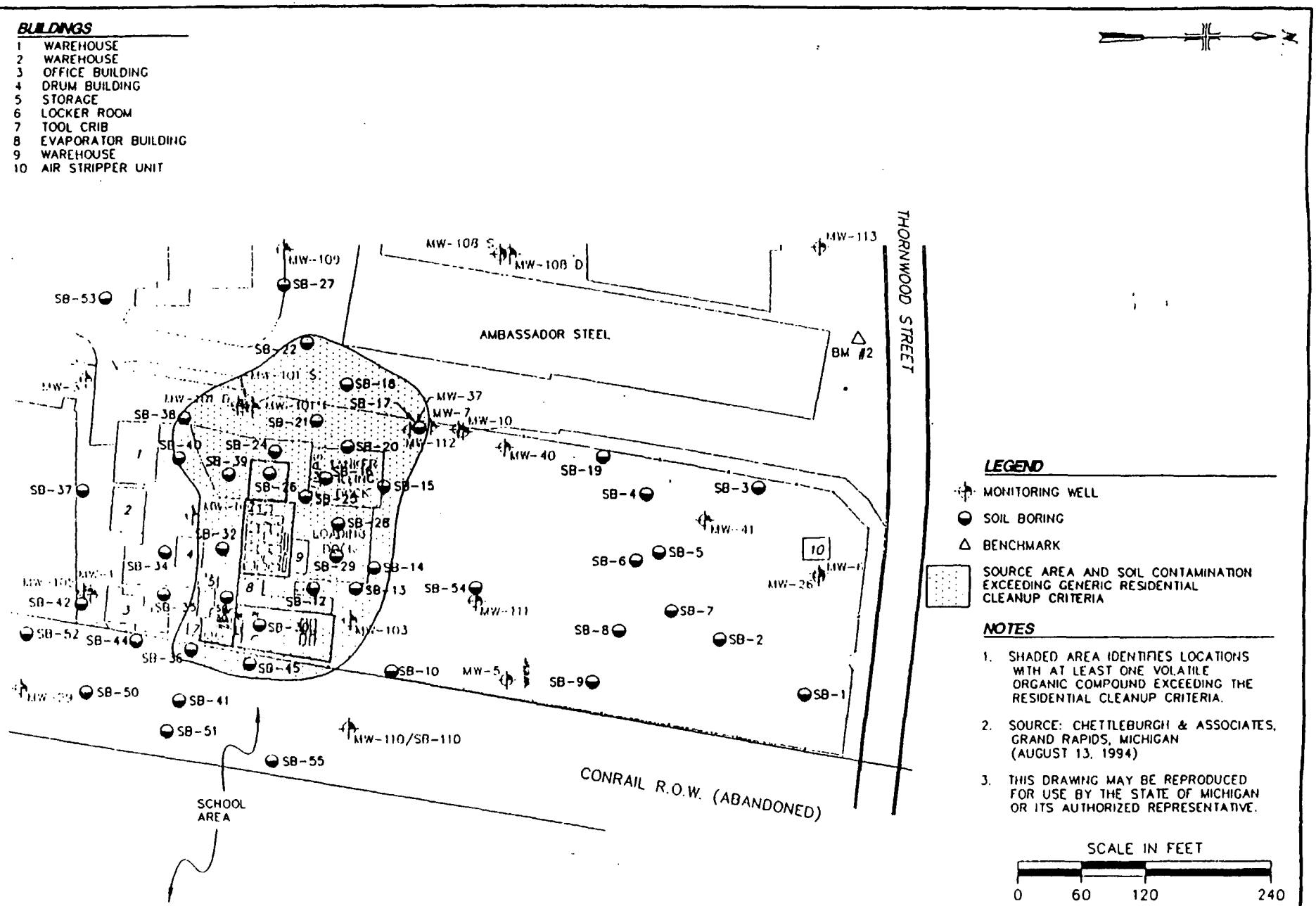
This section presents an assessment of potential human health risks associated with exposure to contaminants found in the soil at Spartan. Risks associated with exposure to contaminants in groundwater are not discussed in this interim action ROD, because the interim action is for remediation of the soils, not groundwater. However, it is important to point out that a primary reason for conducting a remediation of the soils is to reduce contaminant migration to groundwater. Several exposure scenarios for the groundwater that were evaluated in the site risk assessment resulted in unacceptable risk. Furthermore, several contaminants in the groundwater were detected at concentrations above federal Maximum Contaminant Levels and Part 201 residential drinking water values in an aquifer designated as a drinking water resource. For more detailed information on the risks associated with exposure to the contaminated groundwater, refer to Volume II of the RI report.

The objectives of the risk assessment were to provide an analysis of baseline risks in the absence of any actions to control or mitigate site contamination and to assist in determining the need for and extent of remediation. The evaluation compared contaminant levels at the site with state and federal standards, considered the manner in which people could be exposed to the contaminants, and estimated whether the contaminants could pose a threat to human health and the environment. The risk assessment determines actual or potential carcinogenic risks and/or toxic effects the

Table 1. Maximum concentrations of VOC contaminants in soil and the Part 201 residential cleanup criteria[1].

Compound	Maximum Concentration in ug/kg[2]	State Generic Residential Cleanup Criteria[3] ug/kg
Acetone	44,000	15,000
Benzene	8,400	100
Chlorobenzene	15,000	2,000
cis-1,2-Dichloroethene (1,2-DCE)	24,000	1,400
Ethylbenzene	450,000	1,500
2-Hexanone	39,000	20,000
Methylene chloride	3,400	100
Styrene	3,900,000	2,700
Tetrachloroethene (PCE)	1,000,000	100
Toluene	3,300,000	16,000
1,1,1-Trichloroethane (1,1,1-TCA)	190,000	4,000
Trichloroethene (TCE)	460,000	100
1,3,5-Trimethylbenzene	240,000	460
1,2,4-Trimethylbenzene	920,000	5,100
Vinyl chloride	46	40
Xylenes (total)	4,000,000	5,600

[1] Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
[2] ug/kg = micrograms per kilogram
[3] Drinking water protection criteria.
Note: Site risks due to ingestion of, and dermal contact with, soils would be addressed by remediation to the generic residential cleanup criteria. Also, high detection limits were reported by the laboratory for samples with high concentrations. This means that there are likely other compounds in the soils that were not detected that could be above their respective cleanup criteria. This will be addressed during verification of soil remediation sampling.



MALCOLM PIRNIE

SPARTAN CHEMICAL COMPANY SITE

WYOMING, MICHIGAN

EXTENT OF SOIL VOC CONTAMINATION

MALCOLM PIRNIE ENGINEERS, LLP
EAST LANSING, MICHIGAN

FIGURE 3

chemical contaminants at the site pose under current and future land-use assumptions using a four step process. The four step process includes: hazard identification, exposure assessment, toxicity assessment, and risk characterization.

1. HAZARD IDENTIFICATION

During hazard identification, relevant site data are compiled to identify chemicals of potential concern. The concentrations of contamination found in soil at the site can be found in Chapter 5 of the RI report. The chemicals of potential concern detected in soil are listed in Table 2. Primary chemicals of concern include sixteen VOCs, twenty inorganics, and cyanide. Due to the nature of this site, it is anticipated that once background concentrations or leachate analyses are completed, the inorganics will no longer be chemicals of potential concern in the soil. However, if this is not the case, the need to conduct an additional Remedial Action (RA) to address the inorganic contamination will be evaluated.

2. EXPOSURE ASSESSMENT

The objective of the exposure assessment is to estimate the type and magnitude of human exposure to the chemicals of potential concern that are present at, or migrating from, the site. Actual or potential chemical release pathways are evaluated, and potentially exposed populations and exposure pathways are identified. The risk assessment examined potential pathways of concern to human health under both current and future land-use scenarios for the immediate site property and surrounding area. To differentiate between potential chemical exposures, the site was divided into four separate areas. The areas include the concrete area on Spartan property, the grass area on Spartan property, the surrounding industrial area, and the school area. The following major pathways were selected for detailed evaluation under the current-use and future-use conditions:

- Current preadolescent exposed to surface soil in the school area.
- Current adolescent exposed to surface soil in the grass area (i.e., trespassing).
- Current site worker exposed to surface soils in the industrial area.
- Future site worker exposed to surface soils in the concrete or grass areas.
- Future adult residential use (exposed to soils in the concrete, grass, industrial, or school areas, to groundwater, and to intrusion of chemicals from soil and groundwater through a basement).
- Future child residential use with the same exposures as noted above.
- Future construction worker exposed to soils in the concrete, grass, industrial, or school areas.

TABLE 2
COMPOUNDS OF CONCERN
SPARTAN CHEMICAL COMPANY SITE FEASIBILITY STUDY

Soil	Groundwater
VOCs	
Tetrachloroethene	Tetrachloroethene
cis-1,2-Dichloroethene	1,2-Dichloroethene (total)
Ethylbenzene	Ethylbenzene
Methylene chloride	1,1,1-Trichloroethane
1,1,1-Trichloroethane	Trichloroethene
Trichloroethene	1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene	Toluene
1,2,4-Trimethylbenzene	Xylenes
Toluene	Styrene
Xylenes	Acetone
Styrene	2-Hexanone
Acetone	Benzene
2-Hexanone	Chlorobenzene
Benzene	Vinyl Chloride
Chlorobenzene	Methylene Chloride
Vinyl Chloride	1,1 Dichloroethane
	4-Methyl-2-Pentanone
	2-Butanone
	Chloroethane
	Chloroform
	1,2 Dichloroethane
	Ethyl acetate
	1,1 Dichloroethene
BNAs	
	4-Methylphenol
	Naphthalene
Pesticides/PCBs	
Inorganic Compounds	
Aluminum	Aluminum
Antimony	Antimony
Arsenic	Barium
Barium	Cadmium
Beryllium	Chromium
Cadmium	Cobalt
Chromium	Iron
Cobalt	Lead
Copper	Manganese
Iron	Sodium
Lead	Thallium
Magnesium	Zinc
Manganese	Cyanide
Mercury	
Nickel	
Selenium	
Silver	
Thallium	
Vanadium	
Zinc	
Cyanide	

The concentrations of each compound listed exceed the Generic Residential Cleanup Criteria in greater than 5% of the samples.

3. TOXICITY ASSESSMENT

In the toxicity assessment, toxicity data for each of the chemicals of potential concern is summarized. The purpose of the toxicity assessment is to characterize the relationship between the magnitude of exposure and the potential that an adverse effect will occur. The potential health effects for the identified chemicals of concern at Spartan are discussed in Section 7.3 of Volume II of the RI report. Additional information can be found in Appendix J of the same report.

4. RISK CHARACTERIZATION

For each potential human receptor, site-specific contaminants from all relevant routes of exposure were evaluated. Both noncarcinogenic health risk effects and carcinogenic health risks were estimated. This section will focus on exposure to contaminated soils only. Human health risks are quantified by calculating the noncarcinogenic and carcinogenic risk factors for the chemicals detected at the site. For noncarcinogenic health effects, the NCP states that acceptable exposure levels shall represent concentration levels to which the human population, including sensitive subgroups, may be exposed without adverse effect during a lifetime or part of a lifetime, incorporating a margin of safety. In practice, the EPA defines this as both hazard quotients for individual chemicals, and hazard indices (HI) for multiple chemicals, that must be less than or equal to 1.0 to be considered an acceptable risk. For known or suspected cancer causing chemicals (carcinogens), the NCP states that the acceptable risk range is generally between one additional case of cancer for every 10,000 ($1x10^{-4}$) to 1,000,000 ($1x10^{-6}$) people exposed. The MDEQ manages cancer risk to no more than one additional case of cancer for every 100,000 ($1x10^{-5}$) people exposed to a chemical.

a. Noncarcinogenic Health Risks

The current scenario indicates there are no unacceptable risks due to exposure to site contaminants under the current site uses, taking into consideration the school to the east of the Spartan property and the existing industrial/commercial area to the west.

For the future scenario, the site presents a public health concern if the Spartan property were to become a residential property. Potential risks to an adult resident would be from dermal contact with contaminants in the soil found in the concrete area (HI=2). The primary noncarcinogenic risk for a future child resident would be due to ingestion of soils in the concrete area (HI=4), dermal contact with soil in the concrete area (HI=3), ingestion of soil in the school area (HI=2), and dermal contact with soil in the school

area (HI=2). The main contaminants contributing to the risk vary somewhat depending on the specific exposure route, but includes PCE, TCE, toluene, arsenic, and aluminum.

The final scenario evaluated was a construction worker in the site area. Noncarcinogenic risk exceeding the acceptable level would be from inhalation of respirable particulate matter from soils in the school area due to manganese (HI=2). Since this potential risk only slightly exceeds the risk level and is based on only limited data, additional sampling will be conducted for further evaluation.

b. Carcinogenic Health Risks

For the current scenarios, even though the calculated cancer risk is within the risk range specified in the NCP, it is slightly above the state risk range of 1 additional cancer case in 100,000. This potential risk is due to ingestion of surface soil from samples taken on the school property near the Spartan fence, resulting in a risk of 2 in 100,000, primarily due to the presence of PCE and arsenic. Dermal contact with surface soils in the same area, results in a risk of 5 in 100,000. This calculated risk is primarily due to the presence of PCE and beryllium in the soils.

For the future residential scenarios, the state acceptable risk level of 1 excess cancer case in 100,000 would be exceeded for ingestion of soil in the concrete area, dermal contact with soil in the concrete area, ingestion of soil in the industrial area, ingestion of soil in the school area, and dermal contact with soil in the school area by an adult resident. The state risk level of 1 excess cancer case in 100,000 would be exceeded for ingestion of soils in the concrete area ($8x10^{-5}$), dermal contact with soils in the concrete area ($5x10^{-5}$), ingestion of soils in the industrial area ($4x10^{-5}$), ingestion of soils in the school area ($7x10^{-5}$), and dermal contact with soils in the school area ($3x10^{-5}$) by a child resident.

No other exposure pathways evaluated resulted in unacceptable risk. The risks that were reported are based on long-term exposure and actual ingestion of, or contact with, the contaminated soil. This means that remediation of the contaminated soil is warranted to prevent this long-term exposure.

A quantitative ecological risk assessment was not conducted for this site, due to the location and nature of the site. No surface water is currently affected or threatened by the contamination, nor are there any other current environmental issues, other than protection of the groundwater aquifer as a resource.

A more detailed analysis of site risk can be found in Volume II of the RI report.

F. RATIONALE FOR ACTION AND SCOPE OF THE SELECTED REMEDY

This ROD addresses an interim remedy for VOC contamination in soil at the Spartan site under CERCLA. The selected remedy will achieve soil residential cleanup criteria protective of groundwater as a drinking water source under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). There is a potential for unacceptable concentrations of contaminants found in the soils to pose a threat of exposure as detailed in the above section. The contaminant concentrations in soil also continue to act as a source of groundwater contamination. By eliminating the source area, migration to groundwater should be greatly minimized. This action will also achieve significant risk reduction quickly, while a final remedial solution is being developed. This interim action will be consistent with any planned future actions.

G. SOIL ALTERNATIVES (*See Glossary for definitions of terms used in this section)*

Based on the results of the RI, the MDEQ conducted a focused FS on the contaminated soils. Other than the no action alternative, to be considered, an alternative had to prevent exposure to contaminated soils through ingestion, dermal contact, and inhalation of soil particulates. The alternative also had to meet chemical-specific concentration requirements for the soil or effectively eliminate pathways of exposure (e.g., containment of contaminated soils). The chemical-specific cleanup goals for the soil are the state generic residential cleanup criteria protective of groundwater as a drinking water source generated pursuant to Part 201 of the NREPA.

Presumptive Remedy Approach for Determining the Soil RA Alternatives

To expedite remedy selection at similar types of sites, the EPA recommends the use of presumptive remedies. They are based on common categories of sites, historical patterns of remedy selection at other Superfund sites with similar contaminant types, and the EPA's evaluation of past performance data of various technologies used at these sites. The presumptive remedy approach eliminates the need to identify and screen multiple potential treatment technologies. The EPA already conducted this step on a generic basis in the document *Feasibility Study Analysis for CERCLA Sites with VOCs in Soils*. The EPA recommends the Soil Vapor Extraction (SVE) technology as the preferred presumptive remedy for sites where VOCs are present in soil and treatment is warranted. Thermal desorption and incineration may be selected as presumptive remedies where site conditions indicate that SVE is not appropriate. Based on the results of a SVE pilot test and site conditions, the MDEQ has determined that SVE is appropriate for this site. Therefore, no evaluation was done of thermal desorption or incineration, as allowed by EPA guidance. By proceeding with selection of a presumptive remedy, the alternative development process has been greatly simplified and streamlined.

DESCRIPTION OF ALTERNATIVES

The NCP requires that the alternatives evaluated include a no action response, to use as a baseline if no action at the site is taken. Therefore, for addressing the VOC-contaminated soils at this site the two alternatives evaluated in the FS were:

Alternative 1: No action

No response action is taken at the site; therefore, there are no Capital or Operation & Maintenance (O & M) costs associated with this alternative.

Alternative 2: Treatment of VOC- contaminated soil by SVE

SVE requires the installation of screened extraction wells in the unsaturated soil of the contaminated zone to remove the vapors in the soil column. Buried PVC piping will be installed to convey the extracted vapors from the SVE wells to the above ground treatment equipment. The SVE equipment will likely include an 80-gallon knockout tank, vacuum pump, and all above ground piping, valves, fittings, monitoring devices, and appurtenances necessary to make the system function properly. The offgas from the SVE system would be treated by thermal oxidation. The use of SVE reduces the risks associated with exposure to the contaminated soil and eliminates the soil as an ongoing source of groundwater contamination. A pilot test was conducted at the Spartan site in 1994 to assess the applicability of the SVE technology, and results were favorable.

Based on the SVE pilot test, it is estimated that a total of five SVE wells will be required to remediate the soil contaminated with VOCs. Two of the wells that were used during the pilot test could be used for full scale implementation of this remedy. The time to complete the soil remediation has been estimated at between one and three years. The schedule for groundwater remediation could impact this estimate. If the groundwater goes untreated, the soil in the capillary fringe could be recontaminated by fluctuating groundwater levels.

Following completion of the soil treatment by SVE, confirmation soil sampling and/or leachate analyses will be done to ensure that the cleanup goals have been achieved.

The estimated capital cost for this alternative is $872,000, with an annual O & M cost of $130,000. The present worth cost, which takes into account the total duration of the remediation, is estimated at between $995,000 if the remedy is completed in one year, to $1,225,000 if it is completed in three years. Based on site information and the SVE pilot test, it is predicted that the remediation will be completed in three years or less.

H. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The relative performance of each remedial alternative was evaluated in the FS using the nine criteria set forth in the NCP. The nine criteria can be divided into three general

categories: Threshold Criteria, Primary Balancing Criteria, and Modifying Criteria. The evaluation compares Alternative 1, no action, with Alternative 2, Treatment of VOC-contaminated soil by SVE.

Threshold Criteria

The following two threshold criteria, overall protection of human health and the environment, and compliance with Applicable or Relevant and Appropriate Requirements (ARARs) are criteria that must be met in order for an alternative to be selected.

1. Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether a remedy eliminates, reduces, or controls threats to human health and the environment.

Alternative 1 does not eliminate, reduce, or control existing risks to human health or potential environmental receptors from contaminants at this site. No protection is provided. Conversely, Alternative 2 would provide protection of human health and the environment by reducing the concentration of and eliminating the potential for unacceptable exposure to VOCs in soil. It would also reduce the concentrations of contaminants migrating into the groundwater.

2. Compliance with ARARs

This criterion evaluates whether an alternative meets ARARs set forth in federal, or more stringent state, environmental standards pertaining to the site or proposed actions.

Alternative 1 would not comply with ARARs, since no action would be taken to reduce or contain the contaminants in the soil that are above acceptable concentrations pursuant to Part 201 of the NREPA. Under Alternative 2, cleanup of VOCs in soils to generic residential cleanup criteria protective of groundwater as a drinking water source, would result in compliance with chemical-specific ARARs. Alternative 2 will also comply with other ARARs that are applicable to the actual implementation of SVE, including the Michigan Air Pollution Control Rules
(PA 451, Part 55) and fugitive dust control requirements (40 CFR 51).

Because Alternative 1 did not achieve the first two primary criteria discussed above, it was not evaluated for the remaining criteria.

Primary Balancing Criteria

3. Long-Term Effectiveness and Permanence

This criterion refers to expected residual risk and the ability of an alternative to maintain reliable protection of human health and the environment over time once cleanup levels have been met.

Alternative 2 is a well-established technology to effectively remove VOCs from contaminated soils. A pilot scale test of the technology at the site further evaluated its effectiveness, and provided confirmation that the technology is appropriate for the conditions at this site. The generic residential soil cleanup criteria protective of groundwater as a drinking water source, which is pursuant to Part 201 of the NREPA, will be achieved for VOCs in soil. For soil, the SVE technology represents a permanent solution to the VOC contamination.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion evaluates treatment technology performance in the reduction of chemical toxicity, mobility, or volume. This criterion addresses the statutory preference for selecting remedial alternatives which include, as a principal element, treatment that permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants.

Alternative 2 significantly reduces the toxicity, mobility, and volume of VOC contamination through in-situ treatment of the impacted soils. Remediation of the source area soils mitigates this source of ongoing groundwater contamination. Thermal treatment of the off-gas from the SVE process results in destruction of the extracted contaminants to acceptable air quality standards.

5. Short-Term Effectiveness

Short-term effectiveness considers the time to reach cleanup objectives and the risks an alternative may pose to site workers, the community, and the environment during remedy implementation until cleanup goals are achieved.

Due to the complexity and concentration of site contaminants, it is difficult to estimate the time frame for remediation. However, the SVE process generally takes about one to three years to achieve cleanup goals. The SVE technology does not present substantive risks to on-site workers or to the community because minimal disturbance of the contaminated subsurface soils is required to install the SVE system. Treatment of the off-gases will be incorporated into the design to reduce air emissions from the treatment system to acceptable levels. It will take one construction season to implement this remedy.

6. Implementability

This criterion addresses the technical and administrative feasibility of implementing an alternative, and the availability of various services and materials required for its implementation.

Implementation of Alternative 2 would present few, if any, administrative or technical difficulties. Necessary equipment for SVE is readily available, and the pilot test provided valuable information on what is necessary to implement SVE at this particular site. Off-site disposal of contaminated soil would not be an issue, which simplifies implementation of this alternative.

7. Cost

This criterion compares the capital and present worth costs of implementing an alternative at the site.

Alternative 2 has an estimated capital cost of $872,000 and an annual O&M cost of $130,000. The present worth cost is estimated at between $995,000 and $1,225,000, depending on the time to reach cleanup criteria being one year or three years, respectively.

Modifying Criteria

8. Support Agency Acceptance

The EPA is in agreement with the selection of Alternative 2 for addressing VOC contamination in the soil at the Spartan site. Alternative 2, the only alternative carried through the detailed analysis, is EPA's presumptive remedy for soils contaminated with VOCs.

9. Community Acceptance

A Proposed Plan was released for public comment for 30 days. Comments and responses to those comments are described in the Responsiveness Summary, which is in Appendix B. The public did not express concern with implementation of SVE for remediation of VOCs in the soil. There were concerns noted on how long it is taking to remediate this site and the associated cost.

I. THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA and the NCP nine criteria, the state of Michigan and the EPA, have determined that Alternative 2 is the most appropriate remedy for addressing the VOC-contaminated soil at the Spartan site. The

components of the selected remedy are treatment of the VOCs in soil using SVE, with treatment of the off-gases to achieve acceptable air quality standards.

This remedy is selected because of its ability to protect human health and the environment from exposure to VOC-contaminated soil, provides permanent treatment, and is able to meet ARARs. Alternative 2 will also reduce contaminant migration from the soil to groundwater. The goal of the treatment is to remediate soils to the state generic residential cleanup criteria using the soil criteria protective of groundwater as a drinking water source. By achieving these cleanup criteria, the unacceptable risks due to ingestion of, and dermal contact with, the VOC- contaminated soil will be eliminated.

The soils remedy will cost an estimated $872,000, with $130,000 for annual O & M costs.

J. STATUTORY DETERMINATIONS *(See Glossary for definitions of terms used in this section)*

The EPA's primary responsibility at Superfund sites is to undertake RAs that protect human health and the environment. Section 121 of the CERCLA has established several statutory requirements and preferences. These include the requirement that the selected remedy, when completed, must comply with ARARs imposed by federal and state environmental laws, unless the invocation of a waiver is justified. The selected remedy must also provide overall effectiveness appropriate to its costs, and use permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable. Finally, the statute establishes a preference for remedies which employ treatment that significantly reduces the toxicity, mobility, or volume of contaminants.

1. Protection of Human Health and the Environment

Implementation of the selected interim action for remediation of the VOC-contaminated soil will protect human health and the environment by reducing the risk of exposure to hazardous substances present in the soil to acceptable risk levels.

2. Compliance with ARARs

The selected interim action will comply with all identified federal ARARs, and with those state requirements which are more stringent. See Appendix B of the FS report for a complete list of federal and state ARARs. Below is a discussion of the key ARARs for the selected remedy.

Part 201 of the NREPA incorporates the former Michigan Environmental Response Act, 1982 PA 307, as amended, and establishes soil cleanup criteria

to protect groundwater, as well as direct contact criteria, which consider long-term, systemic exposure from ingestion of, and dermal contact with, contaminated soil. The SVE treatment process is expected to reduce VOC-contaminant concentrations in soil to at or below the soil residential cleanup criteria protective of groundwater as a drinking water source. These criteria are generated pursuant to Part 201 of the NREPA.

Rules generated by Part 55, Air Pollution Control, of the NREPA will determine the requirements to be met for discharge of the off-gases and pretreatment requirements. The off-gas will likely be treated by either catalytic oxidation or incineration before discharge to the atmosphere.

3. Cost Effectiveness

Cost effectiveness compares the effectiveness of an alternative in proportion to its cost of implementation.

The selected remedy for this site is cost effective because it provides the greatest overall effectiveness proportionate to its costs.

4. Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

The implementation of SVE as an interim action will permanently address VOC contamination in the soil, by extraction of the VOCs for above-ground treatment and discharge of the treated vapors to the atmosphere.

5. Preference for Treatment as a Principal Element

The statutory preference for treatment of the hazardous substances present at the site as a principal element is satisfied, for this interim action.

K. SUMMARY

The selected remedy is the preferred alternative, as presented in the October 1997 Proposed Plan. It will satisfy the statutory requirements established in Section 121 of the CERCLA, as amended by Superfund Amendments and Reauthorization Act, to protect human health and the environment, will comply with ARARs, will provide overall effectiveness appropriate to its costs, and will use permanent solutions and alternate treatment technologies to the maximum extent practicable.

APPENDIX A

GLOSSARY

Administrative Record
A file which contains all information used by the lead agency to make its decision on the selection of a response action under CERCLA. This file is available for public review.

Applicable or Relevant and Appropriate Requirements (ARARs)
Section 121(d) of the CERCLA requires that RAs legally meet ARARs of other environmental laws. Legally "applicable" requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site. "Relevant and appropriate" requirements are those requirements that, while not legally applicable to the RA, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the RA.

Nonpromulgated advisories or guidance documents issued by federal or state governments ("to-be-considered or TBCs") do not have the status of ARARs; however, where no ARARs exist, or for some reason may not be sufficiently protective, nonpromulgated advisories or guidance documents may be considered in determining the necessary level of clean up for protection of human health and the environment.

Aquifer
An underground waterbearing formation composed of sand, soil, porous rock, or gravel that can store and supply groundwater to wells and springs. Most aquifers in the United States are within 1,000 feet of the earth's surface.

Risk Assessment
The risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these releases. The risk assessment assumes no corrective action will take place and no site-use restrictions or institutional controls such as fencing, groundwater use restrictions, or construction restrictions will be imposed. There are four steps in the risk assessment process: data collection and analysis; exposure assessment; toxicity assessment; and risk characterization.

Cleanup
Actions taken to deal with a release or threatened release of hazardous substances that could affect public health and/or the environment. The term "cleanup" is used broadly to describe phases of responses, such as the *Remedial Design* or *Remedial Action* (see separate entries).

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (also known as "Superfund")
A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA) to investigate and clean up abandoned and uncontrolled hazardous waste sites. The act created a tax placed on chemical and petroleum industries that provides revenues to a trust fund. The fund is used when those responsible for contamination at Superfund sites cannot be found, or cannot perform or pay for the cleanup work.

Contaminants of Concern
Any of a number of organic compounds or inorganic substances that were detected at a concentration near or above the current regulatory standard for that particular substance. The material would be "of concern" because if the concentration exceeds the regulatory limit, it could be a potential risk to human health or the environment.

Feasibility Study (FS)
Process of evaluating alternative methods for cleaning up a site. Generally, it is performed at the conclusion of the *Remedial Investigation (see separate entry).*

Groundwater
Water found beneath the earth's surface that fills pores between materials, such as sand, soil, or gravel. In aquifers, groundwater occurs in sufficient quantities that it can be used for drinking water, irrigation, and other purposes.

Hazard Index (HI)
The HI, an expression of noncarcinogenic toxic effects, measures whether a person may be exposed to adverse levels of noncarcinogens. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across multiple media. The HI for noncarcinogenic health risks is the sum of all contaminants for a given scenario. Any HI value greater than 1.0 suggests that a noncarcinogen potentially presents an unacceptable health risk.

Hazardous Substance
Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive.

Information Repository
A file containing historical and current information, technical reports, and reference documents regarding a Superfund site. It is usually located in a public building that is convenient for local residents, such as a public school, city hall, or library.

National Contingency Plan (NCP)
The NCP provides the organizational structure and establishes procedures for responding to discharges and releases of hazardous substances, pollutants, and contaminants.

National Priorities List (NPL)
The NPL is a published list of hazardous waste sites in the United States that are eligible for extensive cleanup action under the Superfund program.

Operation and Maintenance (O&M)
O & M activities are conducted at a site after a RA has been completed to ensure that the cleanup or containment system continues to function properly.

Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended
Formerly known as Act 307, the Michigan Environmental Response Act. This part of Act 451 provides for environmental remediation.

Parts Per Billion (ppb)/Parts Per Million (ppm)
Units of measurement commonly used to express low concentrations of contaminants. For example, a drop of contaminant mixed in a competition-size pool would represent about 1 ppb of the contaminant.

Presumptive Remedy
A preferred technology for common categories of sites, based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation. The purpose of the presumptive remedy process is to facilitate and expedite the remedy selection process.

Record of Decision (ROD)
A public document that explains the cleanup method that will be used at a Superfund site. The ROD is based on technical data gathered and analyses performed during the *Remedial Investigation* and *Feasibility Study* (see separate entries), as well as public comments and community concerns.

Remedial Action (RA)
The RA phase is the actual construction or implementation of the cleanup method. It follows the *Remedial Design* (see separate entry) of the selected cleanup alternative at a Superfund site.

Remedial Design (RD)
The RD is an engineering phase during which technical drawings and specifications are developed for the selected cleanup remedy that will be implemented during the subsequent *Remedial Action* phase (see separate entry) at a Superfund site.

Remedial Investigation (RI)
The RI is an analysis phase, during which an investigation is conducted into the nature and extent of the contamination on site. During the RI, data is collected through sampling and monitoring to characterize the site. It generally is performed prior to the *Feasibility Study* (see separate entry). Ultimately, the information gathered will help to evaluate cleanup alternatives.

Remedial Investigation/Feasibility Study (RI/FS)
The RI and FS are typically referred to together as they are usually performed in direct or overlapping sequence. The RI portion of the study examines the nature and extent of the contamination; the FS considers and evaluates different methods to address or resolve the contamination problems or conditions found during the RI.

Responsiveness Summary
A summary of oral and/or written public comments received during a public comment period on key documents prepared by the EPA or state agency and the agency's responses to those comments. A responsiveness summary is required to accompany a *Record of Decision* (see separate entry) at Superfund sites.

Soil Vapor Extraction (SVE)
A common treatment technology used to remove VOCs from within the soil unsaturated zone. Air is injected into the contaminated zone, and then extracted with the contaminants for above-ground treatment, if necessary to meet discharge requirements. This technology is the presumptive remedy for treatment of VOCs in soil.

Superfund
The common name used for the *Comprehensive Environmental Response, Compensation, and Liability Act* (see separate entry).

Superfund Amendments and Reauthorization Act (SARA)
Amendments to CERCLA enacted on October 17, 1986.

Volatile Organic Compounds (VOCs)
An organic (carbon containing) compound that evaporates (volatilizes) readily at room temperature. Examples include perchloroethylene, trichloroethylene, vinyl chloride, benzene, ethylbenzene, toluene, and xylenes.

Comment 1: How did this ever happen that a high toxic facility was allowed to be so close to a residential area and a school? How many families are affected? Who had oversight of that company and what is the company's liability?

Response 1: In the 1950s when Spartan started operation and the surrounding area was being developed, the risks associated with an operation such as Spartan was unrecognized. According to the risk assessment for this site, there are no current risks associated with exposure to the site contaminants. The majority of the soil contamination is within the fenced site boundary, and the groundwater that is contaminated is not being used for drinking water. However, when the future use of the Spartan property and potential future exposures are examined, there is the potential for exposures to the contamination if it is left untreated. Oversight of the company over the years have varied and were the responsibility of different entities, depending on the aspect of the company under evaluation. Both state and local regulations have come into play over the years. State environmental regulations in the 1950s were not the same as regulations are today. Spartan Chemical owners and operators are liable for the contamination, however, since bankruptcy was filed by Spartan Chemical, there is not a viable party to pursue for payment of the investigation and cleanup of this site. As a result, these activities are being funded by the Superfund program.

Comment 2: A resident expressed concern with the potential of children being exposed to contamination in the soil while playing on the soccer field.

Response 2: Nine soil samples were collected in the soccer playing field area and the abandoned railroad right-of-way between the school grounds and Spartan Chemical. Three of the samples, all from the area of the unfenced boundary between the school grounds and the right-of-way, contained arsenic or manganese at concentrations above the MDEQ generic residential cleanup criteria. The arsenic concentration in one sample from the right-of-way also exceeded the MDEQ generic industrial cleanup criteria.

The likelihood that an exposure will cause illness depends on the amount of chemical present, how long the exposure lasts, how often the exposure occurs, and personal variability. The Michigan Department of Community Health (MDCH) has evaluated the data and information from the investigation of the school grounds and right-of-way. Using conservative assumptions to estimate the exposure parameters, the MDCH concluded that no one is likely to be exposed to enough of the contaminants to suffer adverse health effects.

Comment 3: What about chemicals in the air and what will happen during the cleanup process? Won't the chemicals be disturbed?

Response 3: As part of the RI, air sampling was done around the perimeter of the Spartan property, and on the property itself, to determine if contaminants were being released to the air. No contamination was detected. Generally, with a site that is well-vegetated or covered in concrete, such as Spartan, chemicals in the soil do not become airborne, unless disturbed. One major advantage to the SVE process is that during construction, minimal disturbance of contaminated soil will be necessary. Wells will be installed for injection of air and extraction of the contaminated soil vapors for treatment. Trenching to install pipes that transfer the contaminants from the wells in the ground, to the treatment building will also be necessary. Otherwise, the contaminated soil will be left in place for treatment. Air sampling will be done throughout this process to ensure that necessary precautions are taken that will ensure that contaminants above air quality standards do not go beyond the property boundary.

Comment 4: Will the SVE be done over the whole property, including Ambassador Steel, or just in the heavy area and where will the treatment building be located?

Response 4: The SVE will be done over the entire area of soil contamination that exceeds residential cleanup criteria for VOCs established pursuant to Part 201 of the NREPA. This will include a small area that extends off the Spartan Chemical property towards the Ambassador Steel building. Most of the contamination in the vicinity of the Ambassador Steel building is groundwater contamination and will be addressed separately.

Comment 5: An area resident expressed concern with what is coming out of the stack of the existing air stripper due to breathing problems.

Response 5: The air stripper has not been in operation since January 1993. Any breathing problems due to odors being detected now must be from another source.

Comment 6: Will there be any digging or trucking of material from the site, and where would trucks access the site?

Response 6: It would be necessary to do some digging or trenching to install pipes, as described above in Response 3. Various materials would need to be trucked into the site, including construction materials for the treatment building, piping, and other components of the treatment system. Truck access routes to the site will be determined during the design stage of this project which will be conducted during 1998, and possibly into 1999. The concern with truck traffic being allowed down Thornwood Street is noted. Every attempt will be made to address this concern during the design process.

Comment 7: During 1992, when the EPA did an assessment to determine the need for an emergency action, why was one not conducted?

Response 7: The results of the assessment did not support the need for an emergency action at this site. There is not an imminent health threat associated with this site, however, it has been determined that cleanup of the site is warranted, as described in the Proposed Plan and ROD.

Comment 8: Explain indemnification.

Response 8: Indemnification is the process of protecting against damage, loss, or injury, or compensation for such damage, loss, or injury. In this case, it would involve protection of the city of Wyoming wastewater treatment plant personnel against liability for any damage, loss, or injury.

Comment 9: Is Lamar Park contaminated, including the lake in the park, and how often are the monitoring wells checked?

Response 9: Contamination has not been detected in Lamar Park. The lake in the park was sampled in the 1980s, and no contamination was found. As a precaution, monitoring wells are located at the entrance of the park to monitor the groundwater contamination. If contamination is detected, action will be evaluated to ensure that contamination does not result in unacceptable levels of contamination reaching the lake. Currently, the monitoring wells are not sampled on a regular basis. The last time they were sampled was in 1995. Additional groundwater investigation, including monitoring well sampling, is planned for 1998.

Comment 10: Was Spartan Chemical considered negligent or were there not enough environmental standards at that time to really take care of the problem?

Response 10: The complete enforcement history of Spartan Chemical has not been documented. However, there are records of chemical spills occurring at the site during operation. It is not documented how the spills that were reported by plant personnel in the 1960s were addressed. Spills that were reported in the 1990s were addressed by Spartan, and enforcement actions were not being pursued against Spartan specifically related to these spills. However, in 1984, Spartan Chemical signed a consent order with the MDNR to investigate and clean up the contaminated groundwater.

Comment 11: What is involved with SVE to bring the toxic vapors and chemicals up and will it have a high stack?

Response 11: The SVE process extracts the vapors from the ground by a form of vacuum pumping, and the use of pipes to collect the vapors in the building for

treatment before release to the atmosphere. The height of the stack will be determined during the design phase.

APPENDIX B

RESPONSIVENESS SUMMARY

Introduction

The public participation requirements of CERCLA Sections 113(k)(2)(i-v) and 117 must be met during the remedy selection process. Section 113(k)(2)(B)(iv) and 117(b) requires the EPA to respond "...to each of the significant comments, criticisms, and new data submitted in written or oral presentations." on a proposed plan for an RA. This Responsiveness Summary addresses any concerns expressed by the public, potentially responsible parties, and governmental bodies in written and oral comments received by the state during the public comment period regarding the proposed interim action for the Spartan site.

Background

The MDEQ issued Bulletins #1 and #2 to the public in February 1993 and July 1993, respectively, which focused on a groundwater interim action at the site. Bulletins #3 and #4 were sent out in January 1994 and August 1994, respectively, on the initiation of the RI/FS for the site, and site update information with regard to the groundwater interim action. Bulletin #5 released in September 1995 presented results from Phase I of the RI and plans for a Phase II RI. The MDEQ also hosted public meetings on December 17, 1992, August 25, 1994, and September 19, 1995, to keep the public updated throughout the RI/FS process.

The RI report was finalized and released for public review in October 1996. The FS report and the Interim Action Proposed Plan for the Spartan site were released to the public for review in October 1997. An information repository was established at the city of Wyoming Public Library, 3350 Michael Street, Wyoming, Michigan. The Administrative Record was made available to the public at the Superfund Section, Environmental Response Division (ERD), MDEQ, 301 South Capitol Avenue, Lansing, Michigan, and at the information repository.

A public meeting was held on October 14, 1997, to discuss the FS and the Interim Action Proposed Plan. At this meeting a representative from the MDEQ answered questions about the site and the remedial alternatives under consideration. Formal oral comments on the Proposed Plan were documented by a court reporter. A verbatim transcript of this public meeting was placed in the information repository and Administrative Record and written comments were also accepted. The meeting was attended by approximately 15 persons, including local residents and business owners, and city of Wyoming and Michigan Department of Community Health representatives.

The FS and Interim Action Proposed Plan were available for public comments from October 8, 1997, through November 8, 1997. Comments received during the public comment period and the MDEQ's responses to those comments are included in this Responsiveness Summary. An advertisement announcing the availability of the Proposed Plan and start of the comment period was published in the *Wyoming Advance* and the *Grand Rapids Press*. In addition, copies of the Proposed Plan were mailed to all persons on the site mailing list and general mailing list for all Superfund sites. Over 450 copies of the Proposed Plan were mailed.

The MDEQ received several oral comments during the October 14, 1997, public meeting and one written comment letter during the comment period. A summary of significant comments on the Proposed Plan follow.

Summary of Significant Comments

Written comments:
One letter was received from an adjacent property owner. His issues will be responded to separately as follows.

Comment 1: The Proposed Plan mailing was not received until the day after the public meeting.

Response 1: It is unfortunate that the mailing did not make it out to everyone on the mailing list before the public meeting. Internal review of the draft Proposed Plan resulted in an unexpected delay in mailing of the document to the public. If any comments had been received after the public comment period, we would have considered them during the decision process. The MDEQ did not receive any late comments or any requests to extend the public comment period.

Comment 2: The personnel at Calvin Christian Junior High School, Ambassador Steel, and Kent Door should have input into this cleanup problem, since they are all adjacent to the Spartan site.

Response 2: The Superfund process allows anyone to be involved, including adjacent property owners. Throughout the process several public meetings were held and mailings sent to keep interested individuals, including the above, updated on the progress at the site. The state exceeded the minimum requirements for public participation throughout the RI/FS process. The state project manager has also been accessible to address any questions or concerns throughout the process. No indication was ever made to the MDEQ advising them that the three entities listed above desired more involvement.

Comment 3: Spartan is an eyesore and constant drain on the Thornwood Industrial area.

Response 3: We can not argue that Spartan Chemical is an eyesore. We are attempting to remediate the contamination under the limits of the Superfund program to assist with the return of this property to the taxbase.

Comment 4: Nothing has been done in twenty-two years (since the problem was identified), and nothing will happen in the next twenty-two years. Remove the complex, clean the dirt in the tank storage area the best you can, and sell the property. The MDEQ or EPA should remove all tanks and level the remaining dilapidated structures.

Response 4: The frustration expressed with the length of time that it is taking to address the contamination is noted. A significant amount of time has been spent investigating the nature and extent of the contamination. Very high concentrations of several different contaminants exist in a complex mixture at this site. Characterization of the site is necessary to be able to design a remediation system that will be effective. Unfortunately, neither the MDEQ nor the EPA has the authority to remove all the tanks or level the existing structures because these actions would not contribute to cleanup of site contamination. The property had been abandoned as part of the bankruptcy settlement, and will likely not revert back to the state as part of the tax reversion process, since a third party is paying the back taxes and now has an interest in the property.

Comment 5. It is tough to justify a million dollar plus expense on a problem that has been around for over forty years. This is a waste of taxpayer dollars. Everyone is using municipal, not well water.

Response 5: The Superfund process includes a risk assessment that evaluates the risk associated with potential exposures to both the contaminated groundwater and the soil. Based on the results of this risk assessment, there is the potential for unacceptable exposure to occur other than by drinking the contaminated water. Unacceptable risk from potential exposure includes dermal contact with, and ingestion of, contaminated soil; and ingestion, inhalation, and dermal contact with contaminants in the groundwater.

Comment 6. Once the site has been leveled and cleaned, sell the property for warehouse space or light industrial so employees can be hired, taxes can be paid, and the world will go on. This problem was identified over twenty years ago, yet nothing has been done. In most countries that is beyond the statute of limitations.

Response 6: As noted above the state does not have ownership of the property, hence does not have the authority to sell the property. It is possible that the party with an interest in the property has plans for reuse. The statute of limitations does not apply to sites of environmental contamination.

Comment 7. Spartan spent over a million dollars on their groundwater treatment system from 1988-1993. This was supervised by the MDNR, and shut down by the city of Wyoming. How many millions of dollars are going to be spent on a forty year-old problem with no direction?

Response 7: It is noted that cleanup of hazardous waste sites is expensive. The reason that the treatment system had to be shut down was unavoidable. When Spartan went bankrupt, the state assumed operation of the treatment system. The state approached the city of Wyoming to transfer the service agreement, which allowed discharge of the treated water from the treatment system to the sanitary sewer, from Spartan to the state. Due to the issues and legalities associated with accepting this type of wastestream, the city required that the state indemnify the city as part of the agreement. As a state government, we could not legally indemnify the city, and could not reach an agreement without the indemnification language. Therefore, the treatment system had to be shut down. A state project manager has been assigned to this site throughout the Superfund process to ensure that the Superfund and state processes are properly followed. The state project manager has coordinated the RI/FS activities with both oversight and approval by the EPA, which is resulting in decisions to clean up the site.

Comment 8. There is no sure fix or solution sponsored by the MDEQ and EPA, only time and money. If the city of Wyoming residents and general taxpayers knew the whole story, there would be some very tricky questions that could not be answered.

Response 8: The SVE treatment will be a permanent solution to VOC contamination identified in the soil. Groundwater technologies appropriate for the site are still under evaluation, due to the complexity of the contamination. All cost information is available, and no information is being withheld from the public.

Oral comments from October 14, 1997 public comment period:
During the oral public comment period, no one at the meeting objected to the proposed alternative. The public comments consisted of questions about potential health effects, the proposed remedy, and about the site in general. Concerns were expressed due to the proximity of the site to a residential area and school.

APPENDIX C

REVISED March 1998

ADMINISTRATIVE RECORD INDEX
SPARTAN CHEMICAL COMPANY SITE
WYOMING, MICHIGAN

Document Title	Author	Recipient	Date	Location
Installation of Ground Water Observation Wells	STS Consultants	MDNR	1/9/81	Administrative Record
Hydrogeo. Investigation	STS Consultants	MDNR	12/81	Available upon Request
Hydrogeo. Investigation Proposed Work Plan	Prein & Newhof	MDNR	6/22/84	Administrative Record
Hydrogeo. Study - Preliminary Remedial Action Master Plan	Prein & Newhof	MDNR	10/85	Administrative Record
Work Plan for Groundwater Purging and Treatment system	Prein & Newhof	MDNR	12/10/85	Administrative Record
Letter from EDI to Spartan Chemical	EDI Engineering & Science	Spartan Chemical	6/3/86	Administrative Record
Phase I Remedial Action Plan	EDI Engineering & Science	MDNR	1/87	Administrative Record
Work Plan on Demo. of Treatability of Discharge at Wyoming POTW	EDI Engineering & Science	MDNR	3/27/87	Administrative Record
MDNR Review of Work Plan on Demo. of Treatability of Discharge at Wyoming POTW	MDNR	EDI Engineering & Science	3/27/87	Administrative Record
Letter re: Demo. of Treatability of Discharge at Wyoming POTW	EDI Engineering & Science	MDNR	4/7/87	Administrative Record
Demo. on Treatability of Proposed Spartan Chemical Discharge	EDI Engineering & Science	MDNR	5/6/87	Administrative Record
Approval Letter Re: Discharge to POTW	MDNR	EDI Engineering & Science	5/18/87	Administrative Record

REVISED March 1998

ADMINISTRATIVE RECORD INDEX
SPARTAN CHEMICAL COMPANY SITE
WYOMING, MICHIGAN

Document Title	Author	Recipient	Date	Location
Letter from EDI to MDNR (re: purge well 2)	EDI Engineering & Science	MDNR	7/24/87	Administrative Record
Letter from EDI to Litwack & Litwack (re:purge well 2)	EDI Engineering & Science	Litwack & Litwack	8/19/88	Administrative Record
Letter from EDI to MDNR (re:purge well 2)	EDI Engineering & Science	MDNR	8/26/88	Administrative Record
Letter from Litwack & Litwack to EDI (re: purge well 2)	Litwack & Litwack	EDI Engineering & Science	8/29/88	Administrative Record
Groundwater Monitoring Program Work Plan	EDI Engineering & Science	MDNR	10/28/88	Administrative Record
Groundwater Monitoring Report	EDI Engineering & Science	MDNR	2/2/89	Administrative Record
Preliminary Health Assessment	MDPH/ATSDR	The Public	3/89	Administrative Record
Groundwater Monitoring Report	EDI Engineering & Science	MDNR	4/21/89	Administrative Record
Letter from EDI to MDNR (re:purge well 2)	EDI Engineering & Science	MDNR	9/12/89	Administrative Record
Groundwater Monitoring Report	EDI Engineering & Science	MDNR	11/14/89	Administrative Record
Letter from EDI to Spartan Chemical (re: purge well 2)	EDI Engineering & Science	Spartan Chemical	11/22/89	Administrative Record
Letter from Spartan Chemical to EDI (re: purge well 2)	Spartan Chemical	EDI Engineering & Science	3/1/90	Administrative Record

REVISED March 1998

ADMINISTRATIVE RECORD INDEX
SPARTAN CHEMICAL COMPANY SITE
WYOMING, MICHIGAN

Document Title	Author	Recipient	Date	Location
Letter from WW Engineering & Science to Spartan Chemical (re: purge well 2)	WW Engineering & Science	Spartan Chemical	3/15/90	Administrative Record
Groundwater Monitoring Report	WW Engineering & Science	MDNR	11/19/90	Administrative Record
Letter to the City of Wyoming re: sanitary service agreement	WW Engineering & Science	City of Wyoming	5/30/91	Administrative Record
Groundwater Monitoring Report	WW Engineering & Science	MDNR	6/18/92	Administrative Record
Site Assessment Report	Ecology & Environment	EPA	9/4/92	Administrative Record
Final Remedial Investigation/Feasibility Study Summary Document	MDNR	The Public	10/92	Administrative Record
Groundwater Monitoring Report	WW Engineering & Science	MDNR	11/4/92	Administrative Record
Proposed Plan for Interim Remedial Action (Groundwater)	MDNR	The Public	11/92	Administrative Record
Public Notice for Interim Groundwater Cleanup Public Comment Period and for 12/17/92 Public Meeting	MDNR	The Public	11/92	Administrative Record
Public Meeting Transcript	Transcribed by O'Brien & Bails	MDNR	11/17/92	Administrative Record
Air testing results	Jim Bedford, MDPH	Spartan Chemical Files	2/3/93	Administrative Record
Interim Action Record of Decision for Groundwater with Responsiveness Summary	MDNR	EPA and the Public	6/30/93	Administrative Record

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WYOMING, MICHIGAN

Document Title	Author	Recipient	Date	Location
Groundwater Monitoring Report	WW Engineering & Science	MDNR	6/7/93	Administrative Record
Groundwater Monitoring Report	WW Engineering & Science	MDNR	12/3/93	Administrative Record
Field Sampling Plan (Groundwater only for 1994)	Eder Associates	MDNR	3/16/94	Administrative Record
Interim Groundwater Monitoring Program - QAPP	Eder Associates	MDNR	3/16/94	MDNR Lansing Office (See Contact Box)
RI/FS Work Plan	CCJM	MDNR	8/94	Administrative Record
RI/FS Work Plan (supplement to CCJM's Plan)	Malcolm Pirnie	MDNR	8/26/94	Administrative Record
RI/FS Data Package	CCJM	MDNR	3/95	Replaced by the RI Report, which is in the Administrative Record.
Explanation of Significant Differences Document	MDNR	EPA and the Public	7/95	Administrative Record
Work Plan Addendum for Phase II RI/FS	Malcolm Pirnie	MDEQ	9/95	Administrative Record
Quality Assurance Project Plan Addendum for Phase II RI/FS	Malcolm Pirnie	MDEQ	9/95	Administrative Record
RI Report Volumes I and II	Malcolm Pirnie	MDEQ	10/96	Administrative Record
Letter on Risk Assessment	Malcolm Pirnie	MDEQ	12/12/96	Administrative Record
Focused Feasibility Study Report	Malcolm Pirnie	MDEQ	10/3/97	Administrative Record

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Proposed Plan for an Interim Action	MDEQ	Public	10/97	Administrative Record
Supplemental Fact Sheet to the Proposed Plan for an Interim Action	MDEQ	Public	10/97	Administrative Record
Letter on Risk Assessment	Malcolm Pirnie	MDEQ	10/20/97	Administrative Record
EPA GUIDANCE:				
Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites with Volatile Organic Compounds in Soils	EPA	Various	9/93	Administrative Record
Presumptive Remedies: Policy and Procedures	EPA	Various	9/93	Administrative Record
Feasibility Study Analysis for CERCLA Sites with Volatile Organic Compounds in Soils	EPA	Various	1993	Available for review upon request

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For additional information contact:

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Lansing, MI 48909
517-373-4110

MDEQ: Michigan Department of Environmental Quality (formerly part of the MDNR)
MDNR: Michigan Department of Natural Resources
MDPH: Michigan Department of Public Health
ATSDR: Agency for Toxic Substances and Disease Registry
RI/FS: Remedial Investigation/Feasibility Study
EPA: U.S. Environmental Protection Agency

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