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Environmental Protection
Agency

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EPA/ROD/R03-89/067
March 1989

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Superfund Record of Decision:

M.W. Manufacturing, PA

50272-101

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The M.W. Manufacturing site is a former copper recovery facility located in Montour County, Pennsylvania, two miles north of Danville. The Pennsylvania Department of Transportation (PennDOT) maintains a storage area immediately north of the site, and farmlands and wooded lots are adjacent to the site on the west and south. Mauses Creek flows in a southerly direction past the site. Several private residences, motels, gas stations, restaurants, and a Head Start school are located just north of the PennDOT storage area and rely on private ground water wells for drinking water. M.W. Manufacturing was engaged in secondary copper recovery from scrap wire, using both mechanical and chemical processes. Granular carbon wastes generated by the chemical process was dumped onsite, and spent solvents and acids were allegedly disposed of onsite. In 1972, M.W. Manufacturing filed for bankruptcy and the Philadelphia National Bank acquired the property. Warehouse 81 Inc. acquired the site in 1976, and subsequently formed a limited partnership with Domino Salvage, Inc. to recover wire at the site using mechanical recovery only. The initial remedial investigation revealed several areas posing potential threats to public health: the carbon waste pile, four wire-fluff waste piles, a surface impoundment, buried lagoon and contaminated soils, drums and storage tanks. This remedial action addresses the
(See Attached Sheet)

17. Document Analysis a. Descriptors

Record of Decision - M.W. Manufacturing, PA
First Remedial Action
Contaminated Media: soil
Key Contaminants: VOCs (PCE, TCE), Organics (PCBs), metals (lead)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

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16. Abstract (continued)

concerns for direct contact with and migration to ground water of contaminants from the carbon waste pile. The remaining areas are the subject of a long-term remedial investigation and feasibility study. The primary contaminants of concern affecting the soil are VOCs including PCE and TCE; organics including PCBs; and metals including lead.

The selected remedial action for this site includes excavating the carbon waste pile (approximately 875 yd3 of contaminated waste and contaminated underlying soils) and transporting the waste offsite to an incinerator facility and disposing of the ash in an offsite RCRA hazardous waste landfill. The estimated capital cost for this remedial action is $2,061,000. Since onsite remediation activities are anticipated to require less than one year, there are no O & M costs.

RECORD OF DECISION

DECLARATION

Site Name and Location

M.W. Manufacturing Superfund Site
Danville, Pennsylvania

Statement of Basis and Purpose

This decision document presents the selected remedial action for the M.W. Manufacturing Site in Danville, Pennsylvania, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and is consistent, to the extent practicable, with the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR Part 300.

This decision is based upon the contents of the administrative record for the M.W. Manufacturing Site. (Index attached)

The Commonwealth of Pennsylvania concurs with the selected remedy. A copy of their letter of concurrence is attached.

Description of the Remedy

This initial operable unit addresses the source of the contamination by remediation of the "carbon waste" pile. The function of this operable unit is to remove the carbon waste pile as a threat to human health and as a source of continued ground water contamination.

The major components of the selected remedy include:

- Excavation of approximately 875 cubic yards of contaminated waste and contaminated underlying soils. Incineration of the wastes and soils in an off-site RCRA permitted incinerator.

- Disposal of incinerator ash in a RCRA permitted hazardous waste landfill.

The on going remedial investigation and feasibility study will identify the risks associated with the remaining portions of the site (lagoons, tanks, soils, other waste piles, groundwater) and will evaluate appropriate remedial alternatives for each.

Declaration

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Stanley L. Laskowski
Acting Regional Administrator

3-31-89
Date

I. Site Location Description

The 15-acre M.W. Manufacturing Site is located in Montour County, Pennsylvania 2 miles north of Danville, 700 feet west of State Route 54, and about 1/2 mile south of Interstate 80 (see Figure 1 for the site location map). The site is located on the Riverside USGS quadrangle map. The Pennsylvania Department of Transportation (PennDOT) maintains a storage area immediately north of the site. Farmlands and wooded lots are adjacent to the site on the west and south. Mauses Creek flows in a southerly direction past the site on the east side of Route 54.

Mausdale, a residential area with approximately 24 homes, is located approximately 1/4 mile southeast of the site, and Danville (estimated population 5,200) is located 2 miles south. At the intersection of Routes 54 and I-80, there are a number of private residences, three motels, three gas stations, and several restaurants. These properties, as well as a Head Start school located just north of the PennDOT storage area, rely upon private ground water wells for drinking water supplies.

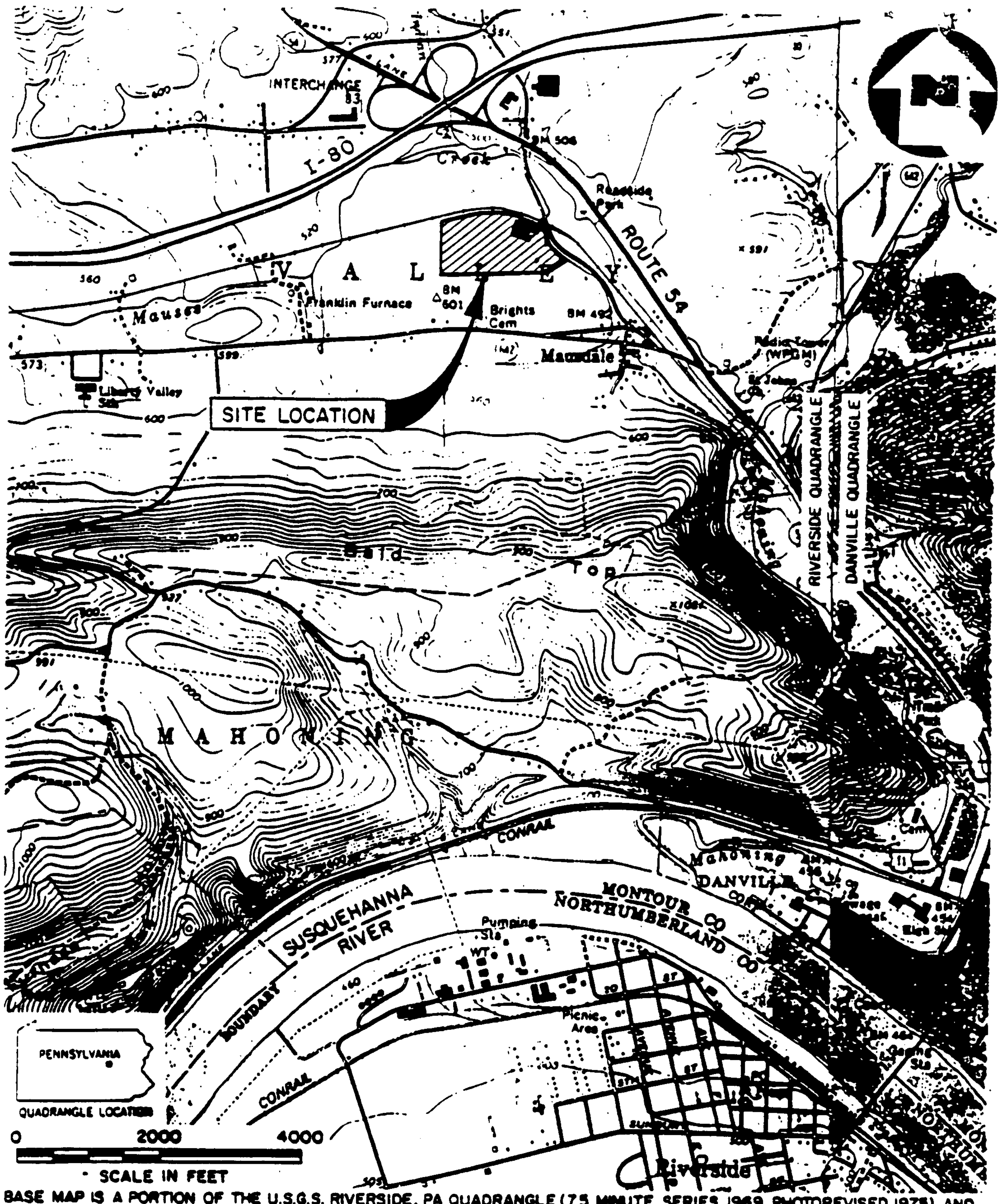
A September 6, 1984, the EPA evaluation of this site determined a Hazardous Ranking System (HRS) score of 46.44 (overall) based on a 79.59 ground water score and a 10.91 surface water score. The site was placed on the National Priorities List (NPL) on October 1, 1984.

II Site History

The site is at present relatively inactive, in part due to legal actions of the Pennsylvania Department of Environmental Resources (PADER). PADER records indicate that Mr. Allan Levin of Doylestown, Pennsylvania, proprietor of M.W. Manufacturing Corporation, owned the property from about 1966 to 1972. M.W. Manufacturing was engaged in secondary copper recovery from scrap wire, using both mechanical and chemical processes until it ceased operations. In 1972, M.W. Manufacturing filed for protection under Chapter 11 of Bankruptcy Laws, and the Philadelphia National Bank acquired the property.

Warehouse 81 Inc. acquired the site in 1976. Subsequently, Warehouse 81, Inc. and Domino Salvage, Inc. formed a limited partnership to recover wire at the site. Records indicate that the only activities conducted by the Warehouse 81/Domino Salvage partnership were mechanical recovery operations. While the mechanical process generated the largest waste piles (the fluff material), the chemical process generated the largest potential for environmental impact (the carbon waste material, the lagoons, and the contaminated soil). The chemical process used by M.W. Manufacturing Corporation, as described in the EPA Field Investigation Team (FIT) Report (June 1985), the Dunn Geoscience Report (March 1983), and the PADER Solid Waste Water Quality and Air Quality files, is summarized below.

M.W. Manufacturing Corporation used a hot oil bath to melt the plastic insulation away from the metal in the scrap wire. The oil bath was hot enough to decompose the PVC plastic insulation into carbon (which separated



BASE MAP IS A PORTION OF THE U.S.G.S. RIVERSIDE, PA QUADRANGLE (7.5 MINUTE SERIES, 1969, PHOTOREVISED 1975) AND THE DANVILLE, PA QUADRANGLE (7.5 MINUTE SERIES, 1969, PHOTOREVISED 1977). CONTOUR INTERVAL 20 FEET.

FIGURE 1

LOCATION MAP
MW MANUFACTURING SITE, MONTOUR CO., PA

NUS CORPORATION

as a granular black material) and hydrogen and chlorine which were released as hydrochloric acid (HCl) vapor. The high temperature also enhanced the dissolution of lead, zinc, and copper (lead-zinc solder coating on copper wire) from the metal wire. These metals were concentrated either in the oil or in the carbon waste. Chlorinated solvents trichloroethene (TCE) or tetrachloroethene (PCE) were then used to remove the residual oil from the separated copper. These inorganic and organic contaminants have been identified in the carbon waste pile. (Refer to Figure 2 for Site layout)

The granular carbon waste material was dumped onsite in a pile about 200 feet west of the main plant. This pile appears as a black, stained area on historical aerial photographs. Spent solvents (degreasers) with associated oil were also allegedly dumped on site. The HCl generated was apparently condensed and recovered as a by-product and may have been dumped onsite or stored in a 10,000-gallon hydrochloric acid storage tank onsite.

III. Community Relations History

Most of the residents who were interviewed in the Danville and Valley Township areas said that they first became aware of the problem at the M.W. Manufacturing Site in March 1986. At that time, EPA discovered lead contamination in a well serving a Head Start school near the site. EPA noted the discovery in a news release which was carried in the local papers. In addition, EPA hosted a public meeting on March 11, 1986, to discuss the water situation with officials and parents. Approximately 50 people attended the meeting. EPA supplied the school with bottled water until later samples revealed safe levels of lead in the well water. The original levels have never been observed since then and EPA believes that any lead in the original sample may have been from lead solder in the plumbing. All later samples, taken after the water had been run for a few minutes to flush the lines, have not shown any lead. Interest in the site is limited to local officials and a few residents living on, or in proximity to it. Of greater importance to most residents and officials is a long-standing sewage problem that sometimes affects local wells. The sewage problem and lack of a municipal sewage treatment system caused many of the restaurants and motels near the site to install elaborate water purification systems and to regularly test their water supply for a wide variety of undesirable substances. The existence of these safeguards prior to the discovery that M.W. Manufacturing had contaminated the local ground water contributed to reducing fear and concern about the site on the part of local hotel and restaurant owners and employees who comprise a large segment of the local business community.

The proposed plan was placed in the designated information repository (the Thomas Beaver Library, Danville, Pa.) on February 24,1989. Concurrently, a public comment period was announced in a newspaper advertisement which ran until March 27,1989. A public meeting was held on February 28, 1989, to present the proposed plan and preferred alternative for remediating the carbon waste pile. Approximately twenty citizens attended as well as local township and county officials and the media. Response to community concerns is addressed in the Responsiveness Summary which is included as part of this Record of Decision (ROD).

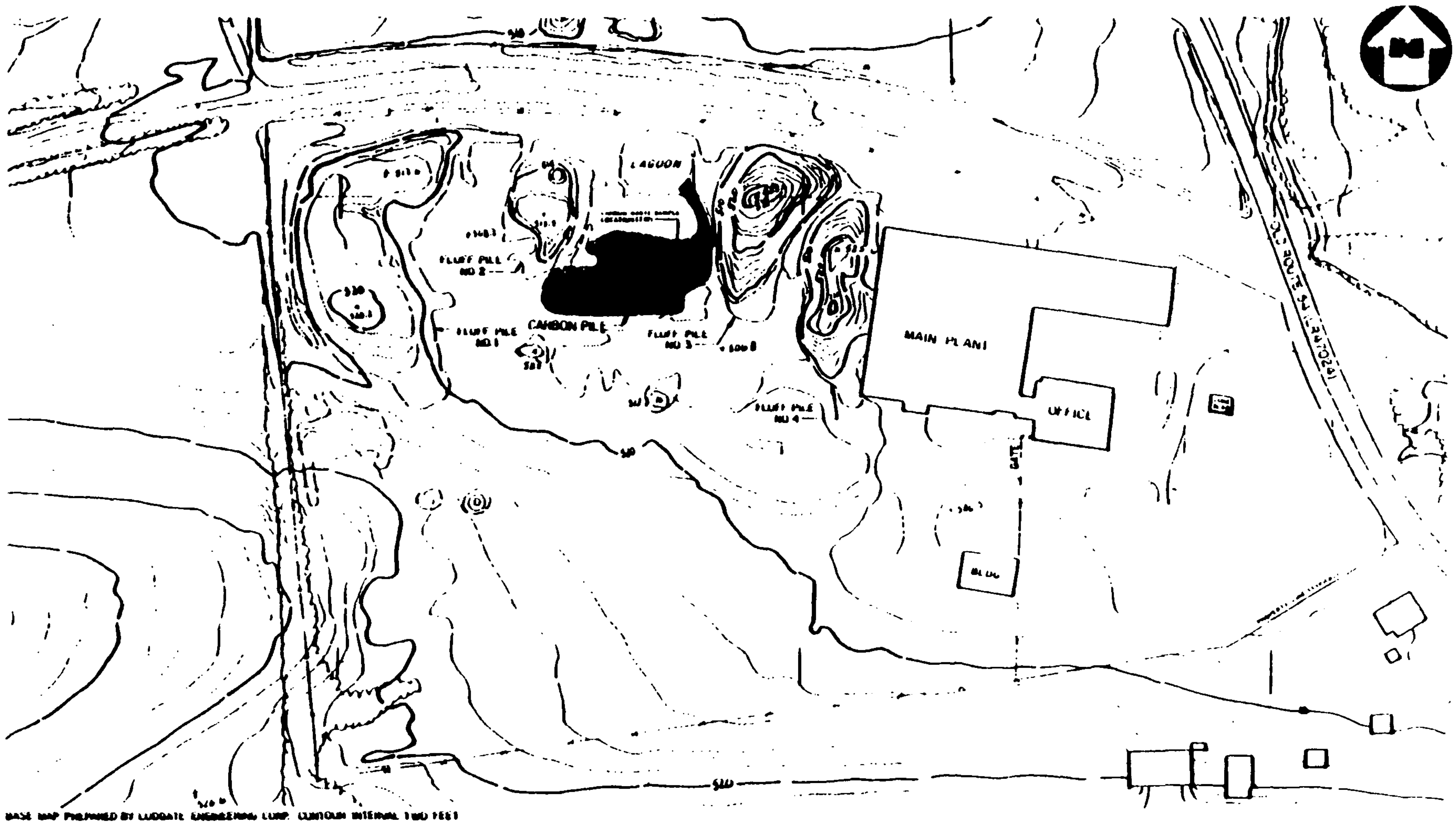


FIGURE 2

GENERAL ARRANGEMENT
MW MANUFACTURING SITE, VALLEY TOWNSHIP, PA

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IV. Scope and Role of Response Action Within the Site Strategy

The initial remedial field investigations revealed wide-spread contamination of the M.W. Manufacturing Site that will require a long-term Remedial Investigation (RI) and Feasibility Study (FS). In addition to the carbon waste the Site poses potential threats to human health and the environment from the following areas: four wire-fluff waste piles, a surface impoundment, a buried lagoon, contaminated soils, drums and storage tanks.

However, the carbon waste pile was shown to be a relatively well-defined contaminant source, unique from other source areas in size, composition, and contaminant concentrations. These characteristics make it both possible and desirable to undertake interim remedial actions to address this waste pile, prior to implementing other remedial actions for the remainder of the site. This response action is consistent with Section 300.68 (c) of the National Contingency Plan (NCP). This initial operable unit is being implemented to protect public health and the environment by preventing direct contact with contaminated waste and reducing further migration of contaminants into the groundwater. The operable unit addresses only the carbon waste pile. The USEPA and PADER feel that direct contact with the contaminated waste and migration of contaminants into the ground water are the major concerns posed by this site. This operable unit was initiated to deal with these concerns. It is fully consistent with all future site work.

V. Nature and Extent of Contamination

Eleven samples, including one duplicate, were collected from the carbon waste pile during the field investigation. These samples were analyzed for the full Target Compound List (TCL) as specified in the EPA Contract Lab Program Statement of Work. Table 1 is a summary of the validated analytical results.

The table presents a list of all the organic contaminants detected and includes both carcinogenic and noncarcinogenic compounds. In addition to the organics, the levels of lead and copper are greatly elevated in these samples, and were therefore included in this table. The range of concentrations at which each compound was detected, the number of samples in which it was detected, and the average concentrations are presented. An arithmetic average was used to generate typical contaminant concentrations in the carbon waste pile. Many of the contaminants were found in every sample, so the use of an arithmetic average was felt to be representative. As the table shows, tetrachloroethene, trichloroethene,

TABLE 1

SUMMARY OF CHEMICAL ANALYTICAL DATA
CARBON WASTE PILE
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

Contaminant	Range of Positive Detections (mg/kg)	No. of Positive Detections/ No. of Samples	Average Concentration* (mg/kg)
acetone	4.6 - 48	4/11	10.78
ethylbenzene	1.7	1/11	0.15
toluene	6.3 - 86	5/11	11.0
total xylenes	3.2 - 8.0	3/11	1.44
tetrachloroethene	110 - 14,000	11/11	5,500
trichloroethene	4.8 - 180	9/11	27.05
1,2-dichloroethene	19	1/11	1.73
1,1,2,2-tetrachloroethane	1.7 - 170	3/11	24.7
1,1,2-trichloroethane	7.3 - 510	11/11	215.75
methylene chloride	1.7 - 83	11/11	20.49
chloroform	1.2	1/11	0.109
carbon tetrachloride	36	1/11	3.27
bis(2-ethylhexyl)phthalate	320 - 70,000	11/11	9,354
di-n-butyl phthalate	27 - 1,700	9/11	315
benzoic acid	19	1/11	1.72
total PCBs	1.04-54.16	11/11	7.60
copper	6,390 - 69,100	11/11	32,660
lead	9,450 - 29,600	11/11	17,100

* Averages are arithmetic averages calculated using nondetections as zero.

methylene chloride, and 1,1,2,2-tetrachloroethane are the most prevalent volatile organic contaminants detected in the carbon waste. The total concentration of all volatile organics was as high as 14,697.2 mg/kg (1.47 percent) in one sample. It is believed that the presence of these compounds in the carbon waste is due to the use of a solvent bath in the hot-oil stripping process.

Sampling of onsite monitoring wells revealed the presence of significant levels of all of the above compounds in the ground water, though the methylene chloride is questionable because of blank contamination.

Bis(2-ethylhexyl)phthalate (DEHP), a common plasticizer, was detected in all samples at concentrations between 320 and 70,000 mg/kg. The average concentration was slightly less than 1 percent. DEHP and di-n-butyl phthalate were the only base/neutral extractables found in the carbon waste, except for one detection of benzoic acid. However, because the laboratories that analyzed the samples did not conform to accepted quality control standards, the positive detections in this sample package were identified as being estimated, and the rest of the package was rejected. For lack of any other analyses, the estimated results are used in the analysis of alternatives.

PCBs were detected in every sample collected from the carbon waste pile. PCBs were present in the carbon waste samples at an average concentration of 7.60 mg/kg. These possibly carcinogenic compounds were likely present in the hot oil bath.

The eleven waste samples were also analyzed for dioxins which may have been created when the PCB-laden waste oils were subjected to high temperatures. Based on the validated analytical results, dioxin (2,3,7,8-TCDD equivalent) was not found in any of the 11 samples.

Finally, lead and copper were found in all samples at very high concentrations. For example, copper concentrations ranged from 6,390 mg/kg to 69,100 mg/kg, with an average concentration of 32,660 mg/kg (3.27 percent). Lead was found at concentrations between 9,450 and 29,600 mg/kg, with an average concentration of 17,100 mg/kg (1.71 percent). Average concentrations for copper and lead in soils throughout the eastern U.S. are 22 mg/kg, and 17 mg/kg, respectively.

Based upon current site conditions, the potential exposure pathways associated with contamination from the carbon waste pile are 1) direct contact with the contaminated waste, 2) inhalation of contaminated dusts; 3) inhalation of the volatilized organics from the waste pile and 4) ingestion of contaminated dusts.

VI. Summary of Site Risks

Utilizing data generated during the on going RI, a Risk Assessment was conducted to evaluate the potential impact to human health which may result from the highly contaminated carbon waste pile.

In order to assess public health risks, three major aspects of chemical contamination and environmental rate and transport must be considered: (1) contaminants with toxic characteristics must be present, and must be released by either natural processes or human action; (2) an actual or potential exposure pathway must be present; and (3) human receptors must be present. Risk is a function of both toxicity and exposure; without any one of the above factors, there will be no risk. This risk assessment estimates the potential for human health risks at the site by combining information on the toxicity of the chemicals found onsite with site-specific estimates of exposures.

Table 1 summarized the chemical analytical results for the samples collected from the carbon waste pile. Of the organics detected, only benzoic acid has no health-based standards or criteria. Other contaminants that were not included as indicator chemicals for the risk assessment were acetone, ethylbenzene, xylenes, 1,2-dichloroethene, chloroform, and carbon tetrachloride, primarily because of their less frequent occurrence and lower concentrations.

Of the inorganics detected at the site, lead and copper have been retained as indicator chemicals. Although chromium and antimony appear to be elevated at this site, lead and copper will drive the risk and the remediation because of their overwhelmingly greater concentrations in the carbon waste.

Toxic effects considered include noncarcinogenic (toxic) and carcinogenic health effects and environmental effects. Toxicological endpoints, routes of exposure, and doses in humans and/or animal studies are discussed for noncarcinogenic compounds.

The available toxicological information indicates that several of the indicator chemicals have both noncarcinogenic and carcinogenic health effects in humans and/or in experimental animals. Although the indicator chemicals may cause adverse health and environmental impacts, dose-response relationships and the potential for exposure must be evaluated before the risks to receptors can be determined. Dose-response relationships correlate the magnitude of the dose with the probability for toxic effects, as discussed in the following section.

An important component of the risk assessment process is the relationship between the dose of a compound (amount to which an individual or population is exposed) and the potential for adverse health effects resulting from exposure to that dose. Dose-response relationships provide a means by which potential public health impacts may be evaluated. The published information on doses and responses is used in conjunction with information on the nature and magnitude of human exposure in order to develop an estimate of health risks. Standard reference doses (RFDs) and/or carcinogenic potency factors (CPFs) have been developed for many of the chemicals on the target compound list.

Values of available regulatory standards, reference doses, and CPFs are presented in Table 2. Table 2 presents values both for chemicals that are known or suspected human carcinogens and for chemicals having noncarcinogenic effects. All available toxicity information is included in this table. Most of the data are from IRIS, EPA's computerized toxicological data base. However, if a parameter s not currently available in IRIS, previously published values from other EPA sources are used.

The IRIS file indicates that it is inappropriate to develop an RFD for lead and that the CPF for tetrachloroethene has been suspended. However, in order not to leave a significant gap in the risk assessment, older published values for these parameters are used. Expected doses of the indicator chemicals are presented later in this section.

Three actual exposure routes have been identified for contact with the contaminants in the carbon waste pile. The first is the routine contact with the waste materials by the onsite residents, which consists of dermal contact with the waste, accidental ingestion of contaminated dusts, and inhalation of indoor and outdoor dust. The second is inhalation of volatilized contaminants from the waste material for the site residents and employees. The third is the accidental contact with the waste materials by site employees or trespassers which consists of dermal contact and accidental ingestion.

Carcinogenic risks can be estimated by combining information in the dose-response assessment (carcinogenic potency factors) with an estimate of the individual intakes (doses) of a contaminant by a receptor. These risks are expressed as numbers of excess cancer deaths expected to occur in an exposed population. EPA policy requires that Superfund sites be cleaned so that this excess risk falls between 1 per 10,000 and 1 per 10,000,000 (normally stated as $1x10^{-4}$ and $1x10^{-7}$) depending onsite conditions, feasibility of cleanup, costs, expected future use and other factors. Barring any mitigation from any of these factors, EPA's normal cleanup goal is 1 per 1,000,000 ($1x10^{-6}$) excess cancer risk.

TABLE 2

REGULATORY REQUIREMENTS AND DOSE-RESPONSE PARAMETERS FOR INDICATOR CHEMICALS
CARBON WASTE PILE
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

Chemical	Safe Drinking Water Act (1)(2)(5)		Reference Dose (mg/kg-day) (2)(4)		Ambient Water Quality Criteria (μg/l) (3)		Health Advisory (2)(4) (mg/l)	Carcinogenic Potency Factor (2) (4) (mg/kg/day)$^{-1}$		EPA Weight of Evidence (2)(4)
	MCL (mg/l)	MCLG (mg/l)	Oral	Inhalation	Adjusted for Drinking Water only	10^{-6} Risk		Oral	Inhalation	
acetone			0.1	3.0						
ethylbenzene		0.68	0.1		2,400		1-day/child: 32 10-day/child: 3.2 Long-term/child: 1 Long-term/adult: 3.4 Lifetime/adult: 0.68			D
toluene		2	0.30	1.5	15,000		1-day/child: 18 10-day/child: 6 Lifetime/adult: 10.8			
total xylenes		0.44	2.0	0.44			1-day/child: 12 10-day/child: 7.8 Long-term/child: 7.8 Long-term/adult: 27.3 Lifetime/adult: 2.2			
1,1,2,2-tetrachloroethane						0.17		0.2	0.2	C
1,1,2-trichloroethane			0.20			0.6		5.7×10^{-2}	5.7×10^{-2}	C
tetrachloroethene		0	0.02			0.88	1-day/child: 2.0 10-day/child: 2.0 Long-term/child: 1.4 Long-term/adult: 5.0	5.1×10^{-2}	3.3×10^{-3}	B2
trichloroethene	0.005	0				2.8		1.1×10^{-2}	1.3×10^{-2}	B2

TABLE 2
REGULATORY REQUIREMENTS AND DOSE-RESPONSE PARAMETERS FOR INDICATOR CHEMICALS
CARBON WASTE PILE
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA
PAGE TWO

Chemical	Safe Drinking Water Act (1)(2)(5)		Reference Dose (mg/kg-day(2)(4)		Ambient Water Quality Criteria (µg/l) (3)		Health Advisory (2)(4) (mg/l)	Carcinogenic Potency Factor (2)(4) $(mg/kg/day)^{-1}$		EPA Weight of Evidence (2)(4)
	MCL (mg/l)	MCLG (mg/l)	Oral	Inhalation	Adjusted for Drinking Water only	10^{-6} Risk		Oral	Inhalation	
1,2-dichloroethene		0.07					1-day/child: 2.72 10-day/child: 1 Long-term/child: 1 Long-term/adult: 3.5 Lifetime/adult: 0.35			
chloroform	0.10*		0.01			0.19		6.1×10^{-3}	8.1×10^{-2}	B2
methylene chloride			0.06			0.19	1-day/child: 13.3 10-day/child: 1.5	7.5×10^{-3}	1.4×10^{-2}	B2
carbon tetrachloride	0.005	0	7.0×10^{-4}			0.42	1-day/child: 4.0 10-day/child: 0.16 Long-term/child: 0.071 Long-term/adult: 0.25	1.3×10^{-1}	1.3×10^{-1}	B2
bis(2-ethylhexyl) phthalate			0.02		21,000			1.4×10^{-2}		B2
di-n-butyl phthalate			0.01		44,000					
PCB (all isomers)		0				0.0126		7.00		B2

TABLE 2
REGULATORY REQUIREMENTS AND DOSE-RESPONSE PARAMETERS FOR INDICATOR CHEMICALS
CARBON WASTE PILE
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA
PAGE THREE

Chemical	Safe Drinking Water Act (1)(2)(5)		Reference Dose (mg/kg-day)(2)(4)		Ambient Water Quality Criteria (µg/l) (3)		Health Advisory (2)(4) (mg/l)	Carcinogenic Potency Factor (2)(4) (mg/kg/day)⁻¹		EPA Weight of (2)(4)
	MCL (mg/l)	MCLG (mg/l)	Oral	Inhalation	Adjusted for Drinking Water only	10^{-6} Risk		Oral	Inhalation	
copper	1.3	1.3	0.037	0.01	1,000					
lead	0.005	0	$1.4x10^{-3}$		50		Long-term/child: 20µg/day Long-term/adult: 20µg/day Lifetime/adult: 20µg/day			

References:

(1) EPA, November 13, 1985.
(2) EPA, November 16, 1987.
(3) EPA, October 1986.
(4) EPA Integrated Risk Information System (IRIS).
(5) EPA, August 18, 1988.

* Interim MCL for total trihalomethanes
A Known human carcinogen
B1/B2 Probable human carcinogen
C Possible human carcinogen
D Not classifiable

Table 3 presents a summary of the potential carcinogenic risks resulting from the exposure routes. This total potential risk is the mathematical summation of the individual risks posed by the chemicals identified in Table 2. The risk is primarily due to the accidental ingestion of and dermal contact with tetrachloroethene, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, bis(2-ethylhexyl)- phthalate, and PCBs. PCBs are present at low concentrations, but their high CPF results in high risks. The other major contributors to risk via these exposure routes are trichloroethene and methylene chloride.

The risks associated with regular, daily inhalation of contaminants volatilizing from the carbon waste pile are several orders of magnitude lower than those estimated for physical contact with the materials. However, the risks for both site employees and residents exceed $1x10^{-6}$, using the average waste concentrations and exposure durations of 8 and 24 hours/day, respectively. The primary contributors to this risk are 1,1,2-trichloroethane and tetrachloroethene, which were the volatile organics found at the highest concentrations, and methylene chloride. Other carcinogens contributing to the total risk are trichloroethene and 1,1,2-trichloroethane. The total potential carcinogenic risks resulting from accidental dermal contact or ingestion by site employees or trespassers are lower than those resulting from the other exposure routes. For example, the potential risk from dermal contact with the carbon waste by employees is $5.3x10^{-6}$ at the average contaminant concentrations, and accidental ingestion results in a potential risk of $2.1x10^{-5}$.

Potential health risks resulting from exposure to noncarcinogenic compounds are estimated by comparing an annual daily dose to an acceptable level such as a Reference Dose (RFD). If the sum of these ratios, known as the Hazard Index, exceeds unity, there is a potential for noncarcinogenic health risks (EPA, September 24, 1986). The Hazard Index is not a mathematical prediction of the severity of toxic effects; it is simply a numerical indicator of the transition from acceptable to unacceptable levels. Table 4 is a summary of the total Hazard Indices resulting from exposures to the carbon waste pile.

Accidental ingestion, inhalation and dermal contact with the waste materials on a routine basis by an adult will result in a potential total Hazard Index of 138 using average contaminant concentrations. Lead is the most significant hazard under this exposure scenario, followed by copper, tetrachloroethene, and bis(2-ethylhexyl)phthalate. Accidental ingestion by both trespassers and site employees can also result in a significant Hazard Index (approaching or exceeding unity). The other exposure routes examined for the site do not present a significant noncarcinogenic health risk. The carcinogenic risks resulting from physical contact with the contaminants in the carbon waste pile greatly exceed the range generally considered to be acceptable, that is, between

TABLE 3

POTENTIAL CARCINOGENIC RISKS
CARBON WASTE PILE
MW MANUFACTURING SITE
MONTOUR COUNTY, PENNSYLVANIA

Exposure Route/Receptor	Total Potential Carcinogenic Risk *	
	Average Waste Concentrations	Maximum Waste Concentrations
Volatile Emissions - employees - residents	 3.4×10^{-5} 6.0×10^{-4}	 1.0×10^{-4} 1.8×10^{-3}
Routine Contact - residents (adults)	Approaches 1.0	Approaches 1.0
Dermal Contact - employees - trespassers	 5.3×10^{-6} 5.7×10^{-7}	 1.6×10^{-5} 1.8×10^{-6}
Accidental Ingestion - employees - trespassers	 2.1×10^{-5} 2.2×10^{-6}	 7.0×10^{-5} 7.6×10^{-6}

* This is the mathematical summation of the individual risks posed by all of the chemicals identified in Table 2.

TABLE 4

TOTAL POTENTIAL HAZARD INDICES
CARBON WASTE PILE
MW MANUFACTURING SITE
MONTOUR COUNTY, PENNSYLVANIA

Exposure Route/Receptor	Total Potential Hazard Index	
	Average Waste Concentrations	Maximum Waste Concentrations
Volatile Emissions		
- employees	$1.4x10^{-5}$	$1.1x10^{-4}$
- residents	$1.5x10^{-4}$	$1.1x10^{-3}$
Routine Contact - residents (adults)	138	273
Dermal Contact		
- employees	$3.0x10^{-2}$	$1.4x10^{-1}$
- trespassers	$1.6x10^{-2}$	$7.7x10^{-2}$
Accidental Ingestion		
- employees	$1.3x10^{-2}$	$3.8x10^{-2}$
- trespassers	$7.7x10^{-1}$	1.53

* This is the mathematical sum of the annual daily dose/the reference dose for all of the chemicals identified in Table 2.

$1x10^{-4}$ and $1x10^{-7}$. The carcinogenic risks associated with the regular inhalation of contaminants volatilizing from the carbon waste pile fall into the upper end of the "acceptable" range. These results indicate the need for remedial action of the carbon waste pile.

Based on the results of this risk assessment, it is evident that it is necessary to propose remedial actions for the carbon waste pile in order to reduce the incremental cancer risk level and to avoid the occurrence of noncarcinogenic health effects. The waste presents a high carcinogenic and noncarcinogenic risk to site residents and employees under several of the proposed exposure scenarios.

The potential risks resulting from the routine dermal contact, inhalation, and ingestion exposures were the highest of all exposure routes examined. Therefore, this exposure route was selected for the determination of action levels. If the residual risk is acceptable via this exposure route, it will also be acceptable via all others.

Two sets of action levels were developed. One total carcinogenic risk goal was set at $1x10^{-4}$ and the second was set at $1x10^{-6}$. Action levels for noncarcinogens were set to meet a total Hazard Index of unity, and, therefore, only one action level is needed for each noncarcinogenic indicator compound.

Table 5 presents the concentrations of carcinogens required to meet the total 10^{-4} and 10^{-6} risk goals. The table shows that to meet a $1x10^{-6}$ risk goal, the concentrations of all the indicator compounds will be significantly below detection limits. The action levels for individual carcinogens under the $1x10^{-4}$ risk goal are less than 2 ug/kg. These action levels apply to only the waste material itself — action levels for the subsurface soils that do not contain any visible traces of the carbon waste will be addressed in the Feasibility Study for the rest of the site.

VII. ALTERNATIVE ANALYSIS

Each of the following alternatives, with the exception of Alternative 1, consist of excavating the approximately 636 cubic yard carbon waste pile plus an additional 239 cubic yards of soil which contains carbon waste in visible quantities.

Alternative 1 - No Action

This alternative is considered in the detailed analysis to provide a baseline to which the other remedial alternatives can be compared. This alternative involves taking no action at the M.W. Manufacturing Site to remove, remediate, or contain the contaminated carbon waste pile. Institutional controls, such as deed restrictions, are not applicable to the purpose of this analysis and will be addressed in the ongoing RI/FS for the rest of the site.

Index to Administrative Record

1. Site Inspection of Domino Salvage
   NUS Corporation June 14, 1985

2. Revised Final Community Relations Plan
   EBASCO Services Inc. November 11, 1988

3. Final Feasibility Study, M W Manufacturing Site
   NUS Corporation February, 1989

4. Proposed Plan, M W Manufacturing,
   Montour County, Pennsylvania

PENNSYLVANIA
DER

Deputy Secretary for
Environmental Protection

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Post Office Box 2063
Harrisburg, Pennsylvania 17120

March 30, 1989

(717) 787-5028

Mr. Stephen R. Wassersug, Director
Hazardous Waste Management Division
EPA Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: Letter of Concurrence
M. W. Manufacturing Superfund Site, Record of Decision (ROD)

Dear Mr. Wassersug:

The Record of Decision for the initial operable unit which addresses the main source of the contamination by remediation of the carbon waste pile at the M. W. Manufacturing site has been reviewed by the Department.

The major components of the selected source control remedy include:

* Excavation of approximately 875 cubic yards of contaminated waste and contaminated underlying soils and incineration in an off-site RCRA approved incinerator.

* Disposal of incinerator ash in a RCRA permitted hazardous waste landfill.

I hereby concur with the EPA's proposed remedy with the following conditions:

* The Department will be given the opportunity to concur with decisions related to the overall Remedial Investigation and Feasibility Study to identify the extent of, and future potential for, groundwater contamination and remaining sources of that contamination, and evaluate appropriate remedial alternatives to assure compliance with DER cleanup ARARs and design specific ARARs.

* EPA will assure that the Department is provided an opportunity to fully participate in any negotiations with responsible parties.

* The Department will reserve our right and responsibility to take independent enforcement actions pursuant to state law.

* This concurrence with the selected remedial action is not intended to provide any assurances pursuant to SARA Section 104(c)(3).

Thank you for the opportunity to concur with this EPA Record of Decision. If you have questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Mark M. McClellan
Deputy Secretary
Environmental Protection

Comment: One written comment was received during the comment period. The Board of Supervisors of Valley Township recommended that EPA continue to monitor wells that are within the area of the site on a regular basis. Further, the Board of Supervisors stated their belief that funds should be made available to provide a public source of water to the area near and surrounding the site to eliminate the threat of drinking contaminated ground water.

Response: EPA is conducting further investigation of the ground water at the site. This study will include at least one more round of well sampling to define the extent of contamination and to insure that no public wells have been contaminated. EPA sees no reason to install a public water supply system at this time, as no contamination has been observed off-site. Future remedial activities may include some sort of ground water clean up which may make such a public water supply unnecessary.

Monitoring on a routine basis will be done by the Commonwealth of Pennsylvania as part of scheduled operation and maintenance activities which will take place after all remedial activities have been completed.

EPA Response: This approach could be taken, but the EPA prefers other engineering methods to address and remediate contamination other than the excavation of soil. This contamination will be addressed with the remainder of the site other than the carbon waste pile. At such time, the public will have another opportunity to comment on the additional remedial alternatives that will be proposed.

Comment: One resident asked the EPA to identify the solvents at the site, and to state whether chlorinated solvents are present.

EPA Response: Solvents at the site include trichloroethylene, tetrachloroethylene, and other solvents such as benzene and vinyl chloride.

F. Off-Site Monitoring and Contamination

Comment: An individual commented that he believed the sampling of off-site air would reveal the presence of asbestos stemming from the site, and that this would conflict with School District requirements for asbestos-free air.

EPA Response: No comment.

Comment: A resident asked whether the Remedial Investigation would move off-site if heavy metals were found at great depths.

EPA Response: This is not the focus of the current study. If heavy metals were found, EPA would conduct additional studies of contamination.

Comment: Several participants asked about the monitoring of groundwater taking place and the off-site migration of contamination via groundwater.

EPA Response: The EPA established thirteen wells on-site and one well off-site, and also analyzed numerous existing residential wells. Groundwater under the site is contaminated. However, evidence does not indicate that the plume of contamination has migrated off-site thus far.

Comment: One participant disagreed with this assessment due to the presence of lead in wells at the day-care center. He surmised that there had not yet been adequate rain to force the plume to the schools in the area. Another individual asked whether the wells at the day-care center would continue to be monitored.

EPA Response: The EPA has not been able to duplicate this result and considers it anomalous. The wells at the day-care center were tested as recently as August 1988. EPA intends to conduct one more round of private well samples (including the day-care center) as part of the design of the remedial action. This will assure that contamination has not moved off-site in the period since the previous sampling. Any long term monitoring will be conducted by Pennsylvania Department of Environmental Resources (PADER) as part of the operation and maintenance program after completion of the site remediation.

Comment: A member of the community expressed concern regarding the impact of contamination on wells at some distance from the site.

EPA Response: If the next round of sampling shows that contamination has moved off-site, the EPA may need to test additional off-site wells; however, it is not clear at this time whether sampling of this type is necessary.

Comment: Participants at the meeting inquired about the locations of the off-site sampling of wells, and about sampling activities at several restaurants.

EPA Response: Off-site sampling concentrated on residential wells where the safety of children could be jeopardized. The majority of the residences where sampling took place are located south of the site in Mausdale, in addition to residences along State Route 54 and the day-care center. Sampling did not take place at the restaurants in proximity to the site.

Comment: A member of the audience indicated that the wells at McDonald's Restaurant have been monitored by its owners every six months. Tests did not show the presence of hazardous chemicals. The water is treated there, but it is not treated for the presence of chemicals.

EPA Response: No comment.

Comment: An individual asked the direction of flow of the groundwater plume.

EPA Response: Most of the groundwater is flowing to the east. A portion may be flowing to the northeast.

Comment: One person wanted to know if background wells could be tested for chlorides to help indicate the presence of contaminants.

EPA Response: Such tests could be performed. However, the results of these tests may be misleading because there are naturally occurring chlorides in the area.

PRPs associated with the MW Manufacturing Site have declined to participate. However, their lack of participation does not stop the cleanup process. The EPA's enforcement branch pursues the PRPs to recover the cost of EPA's work at the site.

Comment: An individual inquired as to whether the current owners are considered PRPs even if they did not dump wastes, and therefore, did not contribute to the wastes on the site.

EPA Response: The enforcement branch of the EPA determines who constitutes a PRP. The PRP can include the current owner.

C. Remedial Alternatives

Comment: An individual asked if the same amount of soil will be removed in each alternative.

EPA Response: The same amount of soil is excavated in each proposed alternative.

Comment: An individual wanted to know if the EPA returns and monitors the soil one year following remediation. This citizen expressed concern that not all contaminants will be removed and that some may migrate to greater depths or off-site.

EPA Response: In the preferred Alternative 7, the EPA would not return to monitor soil for carbon wastes. The subsequent phases of this RI/FS would address the cleanup of the soil. It is possible that some contamination would be missed, however, all Superfund sites remain eligible for additional cleanup.

Comment: A resident of Valley Township inquired as to the nearest locations of landfills and incinerators authorized to accept hazardous wastes.

EPA Response: Incinerators are located in New Jersey, Ohio and Alabama. Landfills are located in North Carolina and Ohio. There are no appropriate locations in Pennsylvania.

D. Carbon Waste Pile

Comment: An individual asked if this proposed remedial action pertains to all materials on the site.

EPA Response: This remedial action pertains only to the carbon waste pile. Remedial alternatives for other waste on the site have not yet been developed.

Comment: More than one resident inquired as to the reason for addressing only the carbon waste pile. The concerns pertained to whether the area would be recontaminated with the fluff waste pile after removing only the carbon waste pile.

EPA Response: The EPA is addressing only the carbon waste pile at the present time due to its hazardousness and the associated threats to public health. The EPA considers contaminants in the carbon waste pile to be at levels 10,000 times greater than any other wastes associated with the site.

Comment: An individual asked about the time frame for the removal of the carbon waste pile.

EPA Response: The EPA anticipates completing the removal within six months.

Comment: A follow-up question pertained to whether solvents are continuing to leach from the carbon waste pile.

EPA Response: The EPA believes that leaching of contaminants continues to occur. Therefore, the EPA prefers to prevent this leaching of contaminants as soon as possible, either through covering the waste with an impermeable membrane or by removing it from the site completely. Both techniques would prevent the transport of additional contaminants into the soil and groundwater.

E. Fluff Waste Pile and Other On-Site Waste

Comment: Several individuals asked about whether the EPA considers the fluff pile hazardous, specifically whether it had been analyzed for asbestos particles, and whether airborne contaminants pose a fire hazard.

EPA Response: The results of the investigation of the fluff pile and its fire hazards have not yet been completely analyzed. The investigation did not look specifically for asbestos. The fluff pile contains paper and plastics, which may pose a fire hazard. The fluff pile also contains solvents and copper wire. EPA toxicologists are willing to work with the community to address hazards to the local population resulting from any potential fluff pile fire.

Comment: An individual asked if the EPA is prepared to excavate soil to the level of the water table to address completely any contamination of wells.

RESPONSIVENESS SUMMARY

This section documents the issues and concerns the local community expressed during the public comment period and the EPA's responses to those concerns. These views and opinions have been considered by the EPA in the final decision-making process regarding the selected remedial alternative. Approximately 30 people participated in the public meeting, including Montour County and Valley Township officials, interested citizens, and members of the media. Questions and comments lasted approximately 45 minutes following presentations by EPA officials. These comments fall into the following categories of concern:

A. Superfund process

B. Potentially responsible parties (PRPs)

C. Remedial alternatives

D. Carbon waste pile

E. Fluff waste pile and other on-site waste

F. Off-site monitoring and contamination

A. Superfund Process

<u>Comment</u>: A county official commented on the lengthiness of the Superfund investigation process. Montour County and Valley Township are eager to have the Superfund process for the site completed so that the property can be returned to the tax rolls and utilized for industrial purposes. The official inquired as to the reason for the current availability of funds authorizing cleanup.

<u>EPA Response</u>: The Superfund investigation process was delayed because the Superfund program ran out of funds. When Congress reauthorized the Superfund program, through the 1986 Superfund Amendments and Reauthorization Act (SARA), the program had the authority and funds to move forward with cleanup.

<u>Comment</u>: A county official asked whether Superfund could run out of funds in the middle of the cleanup process.

EPA Response: All funds requested thus far for the MW Manufacturing Site have been approved. EPA expects the Superfund program to proceed for a number of years. The environmental concerns of the American public and the associated political pressure should continue to make this program operative and keep these funds available.

Comment: An individual inquired as to the time frame for the entire investigation and cleanup.

EPA Response: The following information is based on EPA's experience at other Superfund sites. After the public meeting, a 30-day period is set aside for public comments. EPA prepares a Record of Decision (ROD) (a document outlining EPA's preferred remedial alternative) on the carbon waste pile, which constitutes the first component of the investigation at the MW Manufacturing site. The ROD incorporates public comments on the proposed alternatives. Then the EPA proceeds to the remedial design phase, which takes place over a three to four month period. Following the remedial design, contractors bid on the work. Therefore, removal should take place by the end of the summer. The schedule can be delayed by 60 days if the parties responsible for contamination (PRPs) negotiate with the EPA in good faith for their role in the cost of cleanup.

The second phase of the work addresses contamination other than the carbon pile at the MW Manufacturing site, including the fluff pile, groundwater and soil contamination. The following schedule with regard to the second phase of activities is tentative. If the Feasibility Study (FS) for other parts of the site is completed during the summer of 1989, remedial alternatives should be proposed by late summer/early fall of 1989. A ROD could be signed by September 1989. The remedial design for the site would take approximately one year to complete, and would be overseen by the US Army Corps of Engineers. If the design is completed by the autumn of 1990, construction could begin by the spring of 1991.

B. Potentially Responsible Parties (PRPs)

Comment: An individual inquired about the EPA's efforts to identify the parties responsible for contamination, and to secure their cooperation with the remedial program or their reimbursement of costs.

EPA Response: The EPA Enforcement Division investigates the PRPs associated with a Superfund site. The Enforcement Division gives them an opportunity to participate in the remedial investigation and cleanup. At this point, the

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The U.S. EPA believes that the selected alternative is the most appropriate solution for remediating the carbon waste pile at the M.W. Manufacturing Site. As the contaminated waste will be excavated and removed from the site, this represents the maximum extent to which permanent solutions can be utilized. The waste will be treated (incinerated) at an offsite facility which also represents a permanent solution.

Preference for Treatment as a Principal Element

The statutory preference for permanent treatment is satisfied as the selected remedy calls for removal and offsite treatment of the carbon waste.

Alternative 2 would not provide a permanent remedial solution to the waste pile. With respect to the M.W. Manufacturing Site, Alternatives 3, 4, 6, and 7, offer permanent overall protection to the community by ultimately removing the carbon waste material from the site. The permanence of protection provided by Alternative 5 is dependent on the long-term reliability of the solidified waste which is unknown and must be evaluated through treatability studies.

Community Acceptance

A public meeting was held for the Site on February 28, 1989. No adverse comments were received at the meeting or during the following 30-day comment period. In general, the community is happy to see remediation starting at the site.

State Acceptance

The Commonwealth of Pennsylvania, through its Department of Environmental Resources (DER), concurs with the selected remedy.

IX. Selected Alternative

After careful consideration of the proposed remedial alternatives with regard to the criteria specified above, EPA's selected alternative for addressing the carbon waste pile is Alternative 7: Excavation,Offsite Incineration, and Disposal of Incinerator Ash in an Offsite RCRA Landfill. This alternative would permanently reduce the on site mobility, toxicity and volume of the carbon waste so as to eliminate the threat to public health from direct contact with waste. Off site, the toxicity and volume of the waste would be reduced by incineration and the mobility of the residual toxic components in the ash would be limited by their deposition in a secure RCRA permitted landfill.

By removal of the waste from the site, the potential for further ground water contamination from the waste would be eliminated.

X. Statutory Determinations

The selected remedy is protective of human health and the environment, attains all applicable, or relevant and appropriate requirements for this operable unit, is cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, and satisfies the preference for treatment as a principal element.

Attainment of the Applicable or Relevant or Appropriate Requirements

The selected alternative will be consistent with those ARARs identified for this site:

- RCRA Subtitle C, Hazardous Waste Management Requirements, 40 CFR 264, which govern the transportation, treatment, storage and disposal of hazardous wastes.(applicable) The treatment will be conducted in a RCRA permitted facility in compliance with all applicable regulations.

- RCRA Subtitle C, Land Disposal Restrictions, 40 CFR 268, which regulate the land disposal of hazardous waste.(applicable) For this F001 spent solvent waste, the treatment method (incineration) will achieve the treatment standards specified in Subpart 268.41.

- OSHA Requirements (29 CFR 1910, 1926 and 1904) which provide occupational safety & health requirements applicable to workers engaged in onsite field activities.(applicable) All remedial contractors employed during this action will be required to certify that they comply with all OSHA requirements.

- Clean Air Act, 40 CFR 50, National Ambient Air Quality Standards (NAAQS). (applicable) This action will cause no violation of the NAAQS due to fugitive dust generated during construction activities.

- Clean Air Act, 40 CFR 52, State Implementation Plans for National Ambient Air Quality Standards.(applicable) Fugitive dust emmissions generated during construction activities will comply with fugitive dust regulations in the Federally approved State Implementation Plan for the Commonwealth of Pennsylvania. Also, the incinerator will comply with the State Implementation Plan for the State in which it is located.

- Pennsylvania Solid Waste Disposal Regulation, PA Code Title 25, Chapter 75, Subchapter D, which govern the transportation, treatment, storage and disposal of hazardous waste. (applicable) Transportation and storage of wastes during this action will comply with these regulations.

Cost-Effectiveness

This alternative affords a high degree of overall effectiveness in not only protecting the onsite residents as well as any future site visitor from direct contact with the carbon waste pile, but also in reducing future contamination migrating to the ground water. The U.S. EPA believes that the costs of the selected remedy are proportionate to the overall effectiveness it affords such that it represents a reasonable value for the money.

TABLE 7

SUMMARY OF COSTS
ALTERNATIVES 1 THROUGH 7
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

Alternate No.	Capital Cost* ($)
1	----
2	78,000
3	372,000
4 Baseline	1,397,000
4 Low Range	831,000
4 High Range	2,299,000
5 Baseline	1,659,000
5 Low Range	1,093,000
5 High Range	2,556,000
6	4,757,000
7	2,061,000

* There are no O&M costs associated with these alternatives since all periods of remediation are anticipated to require significantly less than 1 year of onsite activities. Other long term O&M costs including monitoring will be addressed in the forthcoming overall site RI/FS. As a result, present worth costs are equivalent to capital costs.

Reduction of Toxicity, Mobility, or Volume

Alternative 2, Interim Capping, would not reduce the toxicity of volume of the carbon waste but would provide some reduction in the mobility of contaminants in the carbon pile by minimizing migration of water through the waste.

With respect to the M.W. Manufacturing Site, Alternative 3, 4, 6, and 7 would reduce the overall toxicity and volume of contamination at the site by completely removing the carbon waste pile from the site. Alternatives 4 and 5 would reduce the toxicity by removing a percentage of the organic contaminants from the waste. Alternative 5 would reduce the mobility of inorganic contaminants in the waste through onsite solidification, whereas Alternatives 3, 4, 6, and 7 would reduce the mobility of contaminants, or residual contaminants remaining after treatment, by placing the waste or waste residuals in an offsite RCRA hazardous waste landfill. Alternatives 6 and 7, which include incineration, offer the greatest reduction in toxicity and volume, because all of the organic contaminants would be permanently destroyed along with approximately 80 percent of the carbon waste.

Implementability

The technologies proposed for all alternatives are, in general, demonstrated and commercially available. With Alternatives 4 and 5, however, treatability studies would be needed to determine the overall implementability and operating conditions of the solvent extraction process. With respect to ease of implementability, Alternatives 2, 3, and 7 would be the most readily implementable because these alternative do not involve the mobilization, operation, and demobilization of onsite treatment systems.

Cost

The total estimated costs of the remedial alternatives are summarized in Table 7. Since onsite remediation activities are anticipated to require less than one year, there are no O&M costs. Other long-term O&M considerations, including monitoring, will be included in the overall site RI/FS.

Compliance with ARARs

Alternative 1 (no action) has no ARARs. Alternatives 2, and 4 through 7 would comply with all ARARs. Alternative 3 would not comply with the RCRA Land Disposal treatment standards for spent solvent waste.

Overall Protection of Human Health and the Environment

With the exception of Alternative 1, No Action, all alternatives would achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile and would decrease the current migration of contaminants into the environment.

TABLE 6

SUMMARY MATRIX FOR DETAILED EVALUATION OF ALTERNATIVES
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

Remedial Alternatives						
No. 1 No Action	No. 2 Interim Capping	No. 3 Excavation/Offsite Disposal in Hazardous Waste Landfill	No. 4 Excavation/Onsite Solvent Extraction/ Offsite Disposal in Hazardous Waste Landfill	No. 5 Excavation/Onsite Solvent Extraction/ Onsite Solidification/ Onsite Disposal in Nonhazardous Landfill	No. 6 Excavation/Onsite Incineration/Offsite Disposal of Ash in Hazardous Waste Landfill	No. 7 Excavation/Offsite Incineration/Offsite Disposal of Ash in Hazardous Waste Landfill

COMPLIANCE WITH ARARs (CONTINUED)

		RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities.	RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities.	RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities.	RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities. RCRA incinerator regulations.	RCRA regulations and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities. RCRA incinerator regulations.

OVERALL PROTECTION OF PUBLIC HEALTH AND THE ENVIRONMENT

TABLE 6

SUMMARY MATRIX FOR DETAILED EVALUATION OF ALTERNATIVES
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

Remedial Alternatives						
No. 1 No Action	No. 2 Interim Capping	No. 3 Excavation/Offsite Disposal in Hazardous Waste Landfill	No. 4 Excavation/Onsite Solvent Extraction/ Offsite Disposal in Hazardous Waste Landfill	No. 5 Excavation/Onsite Solvent Extraction/ Onsite Solidification/ Onsite Disposal in Nonhazardous Landfill	No. 6 Excavation/Onsite Incineration/Offsite Disposal of Ash in Hazardous Waste Landfill	No. 7 Excavation/Offsite Incineration/Offsite Disposal of Ash in Hazardous Waste Landfill

COMPLIANCE WITH ARARs

Not Applicable	Fugitive emissions during remediation ● Clean Air Act ● Pennsylvania Air Pollution Regulations Worker protection during remediation ● OSHA (29 CFR Parts 1910, 1926, and 1904)	Fugitive emissions during remediation ● Clean Air Act ● Pennsylvania Air Pollution Regulations Worker protection during remediation ● OSHA (29 CFR Parts 1910, 1926, and 1904) Transportation of hazardous waste offsite ● RCRA hazardous waste generator and transporter regulations. ● Pennsylvania hazardous waste generator and transporter regulations. ● Federal and state DOT transportation regulations	Fugitive emissions during remediation ● Clean Air Act ● Pennsylvania Air Pollution Regulations Worker protection during remediation ● OSHA (29 CFR Parts 1910, 1926, and 1904) Transportation of hazardous waste offsite ● RCRA hazardous waste generator and transporter regulations. ● Pennsylvania hazardous waste generator and transporter regulations. ● Federal and state DOT transportation regulations	Fugitive emissions during remediation ● Clean Air Act ● Pennsylvania Air Pollution Regulations Worker protection during remediation ● OSHA (29 CFR Parts 1910, 1926, and 1904) Transportation of hazardous waste offsite ● RCRA hazardous waste generator and transporter regulations. ● Pennsylvania hazardous waste generator and transporter regulations. ● Federal and state DOT transportation regulations	Fugitive emissions during remediation ● Clean Air Act ● Pennsylvania Air Pollution Regulations Worker protection during remediation ● OSHA (29 CFR Parts 1910, 1926, and 1904) Transportation of hazardous waste offsite ● RCRA hazardous waste generator and transporter regulations. ● Pennsylvania hazardous waste generator and transporter regulations. ● Federal and state DOT transportation regulations	Fugitive emissions during remediation ● Clean Air Act ● Pennsylvania Air Pollution Regulations Worker protection during remediation ● OSHA (29 CFR Parts 1910, 1926, and 1904) Transportation of hazardous waste offsite ● RCRA hazardous waste generator and transporter regulations. ● Pennsylvania hazardous waste generator and transporter regulations. ● Federal and state DOT transportation regulations

TABLE 6

SUMMARY MATRIX FOR DETAILED EVALUATION OF ALTERNATIVES
MW MANUFACTURING SITE, MONTOUR COUNTY, PENNSYLVANIA

Remedial Alternatives						
No. 1 No Action	No. 2 Interim Capping	No. 3 Excavation/Offsite Disposal in Hazardous Waste Landfill	No. 4 Excavation/Onsite Solvent Extraction/ Offsite Disposal in Hazardous Waste Landfill	No. 5 Excavation/Onsite Solvent Extraction/ Onsite Solidification/ Onsite Disposal in Nonhazardous Landfill	No. 6 Excavation/Onsite Incineration/Offsite Disposal of Ash in Hazardous Waste Landfill	No. 7 Excavation/Offsite Incineration/Offsite Disposal of Ash in Hazardous Waste Landfill
COMPLIANCE WITH ARARs (CONTINUED)						
			Onsite surface water discharge ● Clean Water Act NPDES discharge regulations ● Pennsylvania NPDES discharge regulations	Onsite surface water discharge ● Clean Water Act NPDES discharge regulations ● Pennsylvania NPDES discharge regulations	Onsite surface water discharge ● Clean Water Act NPDES discharge regulations ● Pennsylvania NPDES discharge regulations	
		RCRA land disposal regulations ● Does not comply with BDAT treatment standards for spent solvents.	RCRA land disposal regulations ● May comply with BDAT treatment standards for spent solvents.	RCRA land disposal regulations ● May comply with BDAT treatment standards for spent solvents. ● Requires treated waste to be delisted as a RCRA hazardous waste. Pennsylvania solid waste disposal regulations ● May require a waiver of this ARAR	RCRA land disposal regulations ● Complies with BDAT treatment standards for spent solvents.	RCRA land disposal regulations ● Complies with BDAT treatment standards for spent solvents

Compliance with ARARs

This alternative would comply with all ARARs. See Table 6 for a summary of significant ARARs.

Overall Protection of Human Health and the Environment

This alternative would achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile and would provide a permanent remedial solution to the waste pile with respect to the M.W. Manufacturing Site. Since the organics are destroyed and the ash taken offsite, this material would no longer continue to contaminate the groundwater.

VIII. COMPARISON AMONG ALTERNATIVES

The remedial alternatives analyzed in detail in Section VII are compared against each other in this section. The nine evaluation criteria used in Section VII will be used for the comparison.

Short-term Effectiveness

With the exception of Alternative 1, No Action, all remedial alternatives would provide protection of public health from exposure to the carbon waste pile in the short-term. Alternative 2, Interim Capping, could be implemented in the shortest time period, approximately one to two weeks after the start of onsite remediation activities. Alternatives 4 and 5 would require the longest periods of time to implement due to the need for treatability studies. Once onsite action begins, all alternatives could be implemented in a short amount of time (less than six months) due to the relatively small quantity of carbon waste material.

Long-term Effectiveness

With respect to long-term reliability, Alternatives 2 and 5 present the greatest uncertainty. The resistance of the temporary cap to physical and chemical degradation is not expected to exceed more than two years. The long-term reliability of the solidification of this hazardous waste has not been proven and must be evaluated through treatability studies. Alternatives 6 and 7, which include incineration, provide the maximum long term effectiveness because all of the organic contaminants would be permanently destroyed along with approximately 80 percent of the carbon waste. Alternatives 3 and 4, which would ultimately remove the carbon waste material from the M.W. Manufacturing Site and place the waste in a RCRA hazardous waste landfill, would also be effective in the long term but not as effective as Alternatives 6 and 7 due to the volume reduction and destruction of the organics achieved by the incineration process.

a RCRA hazardous waste landfill. This alternative would protect the public health from exposure to the carbon waste by destroying the carbon waste and contaminants and then removing the residual ash from the site.

Short-term Effectiveness

This alternative would remove all risks posed by the organic compounds because they would be destroyed by incineration. Metals would remain in the residual ash which would be hauled offsite for disposal. This action would protect the public health from exposure to the metals in the ash.

Long-term Effectiveness

There would be no remaining long-term risks associated with this alternative and no long-term management, operation, or maintenance requirements, because the carbon waste pile would be incinerated in a short time period and the ash completely removed from the site.

Reduction of Toxicity, Mobility, or Volume

With respect to the M.W. Manufacturing Site, incineration of the carbon waste followed by complete removal of the ash from the site is a permanent remedial action which reduces the overall toxicity and volume of contamination at the site. All of the organic contaminants in the carbon waste would be destroyed to the risk-based remedial action levels and the carbon waste volume would be reduced by approximately 80 percent.

Residuals remaining after implementation of this alternative include the incinerator ash, (approximately 130 tons), decontamination fluids, and the waste water from air pollution controls. The ash would be hauled offsite for disposal in a RCRA hazardous waste landfill and the waste waters would be taken offsite for treatment.

Implementability

The technologies proposed for excavation, incineration, and offsite landfilling are demonstrated and commercially available. A clean area, large enough to fit two to three tractor trailers, is required to set up the incinerator and material handling equipment. The incinerator will require an auxiliary fuel source, potable water, and possibly electricity.

Cost

The estimated cost of this potential remedial alternative totals $4,757,000. Since onsite remediation activities are anticipated to require less than one year, there are no O&M costs.

Compliance with ARARs

This alternative will comply with all ARARs. See Table 6 for a summary of significant ARARs.

Overall Protection of Human Health and the Environment

This alternative would achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile and would provide a permanent remedial solution to the waste pile with respect to the M.W. Manufacturing Site. Since the organics are destroyed and the ash taken offsite, the materials would no longer continue to contaminate the groundwater.

Alternative 7 - Excavation,Offsite Incineration, and Offsite Disposal Of Ash In Hazardous Waste Landfill

This alternative involves excavating the carbon waste pile, transporting the waste offsite to an incinerator facility, and then disposing the ash in an offsite RCRA hazardous waste landfill. This alternative would protect the public health from exposure to the carbon waste by removing the waste from the site and then destroying a significant percentage of the carbon waste and contaminants by incineration.

Short-term Effectiveness

Protection of public health from exposure to the carbon waste pile would be achieved upon removal of the entire carbon waste pile.

Long-term Effectiveness

There would be no remaining long-term risks associated with this alternative and no long-term management, operation, or maintenance requirements, because the carbon waste pile would be completely removed from the site.

Reduction of Toxicity, Mobility, or Volume

Removal of the carbon waste from the site followed by incineration of the waste is a permanent remedial action which reduces the overall toxicity and volume of contamination at the site. All of the organic contaminants in the carbon waste would be destroyed to the risk-based remedial action levels and the carbon waste volume would be reduced by approximately 80 percent.

Implementability

The technologies proposed for excavation, incineration, and offsite landfilling are demonstrated and commercially available.

Cost

The estimated cost for this potential remedial alternative totals $2,061,000. Since onsite remediation activities are anticipated to require less than one year, there are no O&M costs.

Overall Protection of Human Health and Environment

This alternative would achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile and would provide a permanent remedial solution to the waste pile with respect to the M.W. Manufacturing Site. Since the wastes have been removed from the site they would no longer continue to contaminate the groundwater.

Alternative 5 - Excavation,Onsite Solvent Extraction, Onsite solidification, and Onsite Disposal In Nonhazardous Landfill

This alternative involves: excavating the carbon waste pile; treating the waste onsite using a solvent extraction technology to remove organic contaminants; stabilizing/solidifying the solvent extracted waste using a cement/pozzolan-based technology to immobilize heavy metal contaminants; and then disposing the solidified waste onsite in a nonhazardous landfill. This alternative would protect the public health from exposure to the carbon waste by treating/solidifying the waste to remove and immobilize contaminants so that the waste could be delisted as a RCRA hazardous waste and then placing the treated waste in an underground, nonhazardous type landfill.

Short-term effectiveness

Protection of public health from exposure to the carbon waste pile would be achieved upon onsite disposal of the treated/solidified carbon waste material.

Long-term Effectiveness

The long-term reliability of solidification technology is unknown. Environmental forces such as precipitation (which is slightly acidic) infiltration, freezing/thawing, and wetting/drying due to ground water contact may cause the solidified material to lose its structural integrity over time, allowing contaminants to become more mobile. Leaching tests and compressive strength tests will be conducted during the treatability study to determine the integrity of the solid end product. Because wastes are being left onsite, the mandatory 5-year review would be triggered. Operation and maintenance activities would be necessary to ensure the future integrity of the landfill cover.

Reduction of Toxicity, Mobility, or Volume

Solvent extraction would not reduce the overall volume of the carbon waste, and although the process would reduce the toxicity of waste by removing a percentage of organic contaminants, the waste would remain highly toxic due primarily to the presence of high levels of lead.

Solidification of the waste would increase the volume of the waste by as much as 100 percent, but would significantly reduce the mobility of the heavy metal contaminants in the waste.

Implementability

The technologies proposed for excavation, material handling, and onsite landfilling are demonstrated and commercially available. The solvent extraction and solidification processes have been demonstrated for contaminated soils and sludges. Therefore, treatability studies would be needed to determine the overall implementability and operating conditions of the extraction and solidification processes used on the carbon waste.

Cost

The cost variability of this alternative is mainly dependent on the type of solvent extraction process used and the mobilization/demobilization costs for the process. The corresponding low range, baseline, and high range total cost estimates for this alternative (including solvent extraction, solidification, and disposal are shown below:

Low Range	$1,093,000
Baseline	$1,659,000
High Range	$2,556,000

Compliance with ARARs

It is anticipated that the combination of solvent extraction and solidification will allow the treated waste to be delisted as a RCRA hazardous waste.

There are no location specific ARARs associated with this remedial alternative. See Table 6 for a summary of significant ARARs.

Overall Protection of Human Health and the Environment

This alternative would achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile. The permanence of this alternative is dependent on the long-term reliability of the solidified waste which is unknown at this time.

<u>Alternative 6 - Excavation,Onsite Incineration, and Offsite Disposal Of Ash In Hazardous Waste Landfill</u>

This alternative involves excavating the carbon waste pile, incinerating the waste onsite, and then transporting the ash for offsite disposal at

Alternative 3 - Excavation and Offsite Disposal In Hazardous Waste Landfill

This alternative involves excavating the carbon waste pile (approximately 636 cubic yards of carbon and 239 cubic yards of underlying soil) and transporting it offsite for disposal in a RCRA hazardous waste landfill.

This alternative was analyzed in the Focused Feasibility Study. This waste has been determined to be an F001 spent-solvent waste, subject to the RCRA Land Disposal Regulations and, as such, cannot be diposed of in a hazardous waste landfill without prior treatment. This alternative, therefore, does not comply with ARARs and no waiver is justifiable. No further discussion of it will take place.

Alternative 4 - Excavation,Onsite Solvent Extraction, and Offsite Disposal In Hazardous Waste Landfill

This alternative involves excavating the carbon waste pile, treating the waste onsite using a solvent extraction technology, and then transporting it offsite for disposal in a RCRA hazardous waste landfill. This alternative would protect the public health from exposure to the carbon waste by treating the waste and then removing the waste pile from the site.

Short-term Effectiveness

Protection of public health from exposure to the carbon waste pile would be achieved upon removal of the entire carbon waste pile from the M.W. Manufacturing Site.

Long-term Effectiveness

There would be no remaining long-term risks associated with this alternative and no long-term management, operation, or maintenance requirements, because the carbon waste pile would be treated in a short time period and then completely removed from the site.

Reduction of Toxicity, Mobility, or Volume

With respect to the M.W. Manufacturing Site, solvent extraction treatment followed by complete removal of the carbon waste pile from the site is a permanent remedial action which reduces the overall toxicity and volume of contamination at the site.

Solvent extraction would not reduce the overall volume of the carbon waste and although the process would reduce the toxicity of the waste by removing a percentage of organic contaminants, the waste would remain highly toxic due primarily to the presence of high levels of lead. Disposal of the waste in an offsite, RCRA hazardous waste landfill would significantly reduce the mobility of contaminants in the waste by placing the waste in a double-lined, multi-layer, capped landfill with a leachate detection and collection/treatment system.

Implementability

The technologies proposed for excavation, material handling, and offsite landfilling are demonstrated and commercially available although the number of RCRA permitted landfills is limited. Solvent extraction processes have been demonstrated for many contaminated soils and sludges. Therefore, treatability studies would be needed to determine the overall implementability and operating conditions of the extraction process used on the carbon waste.

Cost

The costs of this alternative are mainly dependent on the type of solvent extraction process used and the mobilization/demobilization costs for this process.

The corresponding low range, baseline, and high range cost estimates for this alternative, based on three different commercially available solvent extraction processes, are shown below:

Low Range	$831,000
Baseline	$1,397,000
High Range	$2,299,000

Compliance with ARARs

It is expected that the onsite solvent extraction treatment process would treat the carbon waste to the Best Demonstrated Available Technology (BDAT) treatment standards for spent solvents, which would allow the waste to comply with the RCRA land disposal regulations (40 CFR Part 268).

There are no location-specific ARARs associated with this remedial alternative. See Table 6 for a summary of significant ARARs.

Short-term Effectiveness

This alternative provides no short-term protection of public health from exposure to the carbon waste pile.

Long-term Effectiveness

This alternative does not provide any reduction in the magnitude of existing or future health risks associated with the carbon waste pile.

Reduction of Toxicity, Mobility, or Volume

This alternative does not reduce the toxicity, mobility, or volume of contaminants in the carbon waste pile.

Implementability

There are no implementability considerations associated with this alternative.

Cost

There are no capital or operating costs associated with this alternative.

Compliance with ARARs

There are no ARARs directly associated with No Action.

Overall Protection of Human Health and the Environment.

This alternative would not achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile. Additionally, contaminants would likely continue migrating into the groundwater.

Alternative 2 - Interim Capping

This alternative involves the installation of a low permeability, synthetic membrane cap over the carbon waste pile to provide an interim measure of protection until the total site remediation is evaluated in the complete RI/FS and subsequently implemented. A 3-inch layer of soil would be placed between the membrane and the waste to prevent degradation of the membrane by the solvents.

Short term Effectiveness

Protection of public health from exposure to the carbon waste pile would immediately be achieved upon installation of the synthetic cap. In addition, the cap would reduce contaminant migration from the carbon waste pile into underlying soil and groundwater.

Long-term Effectiveness

This alternative is not considered effective in the long term since the membrane will degrade and the system integrity will be affected by erosion, weathering, and general degradation. The cap would not be designed for long-term effectiveness as the objective is immediate protection.

Reduction of Toxicity, Mobility, or Volume

This alternative would not reduce the toxicity or volume of contaminants in the carbon waste pile or the volume of carbon material itself and does not provide permanent, irreversible treatment of the carbon waste pile. This alternative would provide some reduction in the mobility of contaminants in the carbon pile by minimizing migration of water through the waste. The soil layer between the synthetic cap and the waste would increase the quantity of contaminated material to be remediated by approximately 13 percent.

Implementability

The technologies proposed for capping are all demonstrated and commercially available.

Cost

The estimated cost for this potential remedial alternative totals $78,000. Since onsite remediation activities are anticipated to require significantly less than one year, there are no O & M costs.

Compliance with ARARs

RCRA closure requirements (40 CFR Parts 264.228, 264.258, and 264.310) are applicable and Pennsylvania closure requirements (PA Code, Title 25, Chapter 75, Subchapters C and D) are relevant and appropriate. However, because the cap is designed as an interim remedy, these ARARs will not be met at this time. They will be complied with at the close of remedial activities at the site.

There are no location-specific ARARs associated with this remedial alternative. See Table 6 for a summary of significant ARARs.

Overall Protection of Human Health and the Environment

This alternative would achieve the remedial action objective of protecting the public health from exposure risks (ingestion, inhalation, and dermal contact) associated with the carbon waste pile but would not provide a permanent remedial solution to the waste pile. This alternative would provide an additional benefit of controlling the continuing ground water degradation resulting from this material.

TABLE 5

RISK-BASED ACTION LEVELS
CARBON WASTE PILE
MW MANUFACTURING SITE
MONTOUR COUNTY, PENNSYLVANIA

Contaminant	Concentration for 10^{-6} Risk (mg/kg)	Concentration for 10^{-4} Risk (mg/kg)
toluene	*	*
tetrachloroethene	$1x10^{-6}$	$5x10^{-4}$
trichloroethene	$1x10^{-5}$	$1x10^{-3}$
1,1,2,2-tetrachloroethane	$1x10^{-6}$	$1x10^{-4}$
1,1,2-trichloroethane	$1x10^{-6}$	$5x10^{-4}$
methylene chloride	$1x10^{-5}$	$1x10^{-3}$
bis(2-ethylhexyl)phthalate	$1x10^{-4}$	$2x10^{-3}$
di-n-butyl phthalate	200**	200**
copper	800**	800**

* No action level required for this contaminant based on maximum concentrations detected on site.

** Action level for this noncarcinogen based on total Hazard Index ≤ 1.0.