STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 2109

Caribe General Electric Products Plant

Patillas, PR

(Signed in July 1990)

Facility/Unit Type: Former electrochemical products manufacturing and assembling
Contaminants: VOCs, heavy metals
Media: Soil, ground water
Remedy: Stabilization and excavation of contaminated soil with off-site disposal, regrading and filling with clean fill and seed

FACILITY DESCRIPTION

On December 30, 1988, EPA and Caribe General Electric Products Plant of Patillas, PR (GE/ Patillas) entered into an Administrative Order on Consent (Consent Order) pursuant to RCRA Section 3008(h). Under the terms of the Consent Order, GE/ Patillas was required to conduct the following: 1) an RFI to determine the nature and extent of on-site and off-site contamination from its Patillas facility; 2) a CMS to evaluate appropriate remediation procedures and technologies to address the contamination; and 3) a CMI to implement the selected remedy. To date, an RFI for soil and ground-water contamination has been completed. EPA has approved the RFI report and requested that source control be applied. A revised draft CMS Workplan is due in January 1993. The Statement of Basis applies to on-going source controls for contaminated soils at the site.

From 1974 to 1987, the GE, Patillas facility manufactured and assembled electrochemical products in a building that General Electric (GE) leased from PRIDCO. Since 1987, the building has remained empty except for storage of bulk materials by GE. During its occupancy, GE constructed a French Sump unit, which consisted of a rubble-filled hole twelve feet deep and ten feet in diameter. Until 1980, waste streams generated at the facility were discharged to the unit.

The RFA lists six (6) SWMUs and two (2) Areas of Concern (AOCs) at the facility. Two (2) SWMUs (sludge drying beds) are regulated units and are currently in their last quarter of ground-water monitoring in an attempt to clean close the units. Two (2) hazardous waste storage area SWMUs, formally regulated units, have been closed subject to clean closure requirements.

The French Sump unit is the main area of environmental concern at the site and is the only SWMU that has required further investigation. Although soil contamination has been remediated, a contaminated ground-water plume emanates from the French Sump. During the RFI, sediment and surface water samples taken from March 1989 to November 1990 indicated that the plume had not affected these media. However, a secondary drinking water well located 300 yards down-gradient of the facility has been closed because of chlorinated solvent contamination, wastes are believed to have been placed in the French Sump. To date, GE has investigated the full extent of the plume.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentation* (ppm)	Action Level (ppm)	Cleanup Goal (ppm)	Point of Compliance
soil	Not given	1,1-Dichloroethane	ND			N/A
		1,1-Dichloroethene	ND			
		1,1,1-Trichloroethane	ND	700	700	
		Tetrachloroethane	ND	30	30	
		Toluene	38	2,000	2,000	
		Xylenes	29	20,000	20,000	
		Phenol	ND	5,000	5,000	
		Arsenic	ND	8	8	
		Cadmium	ND	4	4	
		Chromium	ND			
		Chromium (VI)	ND	40	40	
		Copper	ND			
		Lead	ND			
		Nickel	ND	200	200	
		Zinc	ND			
		Cyanide	ND	200	200	

ND Indicates concentration was in the non-detectable range.
* Maximum Concentration after Remediation

Aquifer tests indicate that the uppermost aquifer behaves uniformly and has no laterally continuous unit which restricts the flow and contaminant migration to deeper zones of the aquifer. As a result, chlorinated organic contamination is present throughout the aquifer, but is more concentrated in the upper zones. One permanent stream is located about 0.5 miles down-gradient of the facility and an intermittent stream is located directly across PR Route 3 from the facility. Both streams flow south into the Caribbean Sea.

EXPOSURE PATHWAYS

To date, monitoring indicates that drinking water supplies down-gradient of the site remain safe for human consumption. However, workers at a Puerto Rico Aqueduct and Sewer Authority (PRASA) plant located directly across PR Route 3 may be exposed to chlorinated organic constituents through volatilization of ground water migrating underneath the plant. Therefore, potential exposure pathways of contamination are ingestion of ground water and inhalation of volatized contaminants in ground water.

SELECTED REMEDY

In August 1990, EPA approved GE/ Patillas' plan to remove and stabilize the source of contamination and any contaminated soils adjacent to the French Sump. In October 1990, GE successfully excavated, stabilized, drummed, transported, and properly disposed of the wastes and contaminated soils that remained within and adjacent to the French Sump. Soil sampling data taken after the remediation efforts revealed that soil contamination no longer was present within or near the French Sump. Once this was determined, the area was regraded with clean fill and seeded. The capital cost of this remedy is approximately $100,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Public participation was not addressed because the plan was considered initially to be an interim corrective measure.

NEXT STEPS

By January 1993, GE will submit a revision to the draft CMS Workplan which will evaluate alternatives for remediating the contaminated ground water migrating from the site. Once this CMS Workplan is completed, another remedy will be selected and implemented with an additional SB, subject to public notice and participation.

KEY WORDS
soil, ground water; ingestion, inhalation; VOCs, heavy metals; stabilization, excavation, off-site disposal, filling

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American Cyanamid

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# (last 4 #s)

American Cyanamid Company

Bridgewater, NJ
(Signed November 1992)

Facility/Unit Type:	**Pharmaceutical manufacturing**
Contaminants:	**Acetone; Benzene; Ethylbenzene; Toluene; Chlorobenzene; Methylene Chloride; Total Xylenes; 1,2-Dichlorobenzene; 2-Methylnaphthalene; Naphthalene; 1,2,4-Trichlorobenzene; Arsenic; Cadmium; Chromium; Lead**
Media:	**Sediments, soils, surface water associated with impoundments**
Remedy:	**Solidification and excavation of impoundment wastes, on-site consolidation into a RCRA-permitted impoundment**

FACILITY DESCRIPTION

In May 1988, the New Jersey Department of Environmental Protection and Energy (NJDEPE) and American Cyanamid Company (Cyanamid) entered into an Administrative Consent Order (ACO) pursuant to Section 3008(h) of RCRA. Under the order, Cyanamid is required to address 16 on-site impoundments, contaminated soils, and ground water at their Bound Brook facility. Surface impoundments and contaminated soils are the primary focus of remedial investigations and the main source of ground-water contamination.

Cyanamid's 575-acre Bound Brook facility has been in operation for 75 years manufacturing rubber chemicals, pharmaceuticals, dyes, pigments, chemical intermediates, and petroleum-based products. Currently, Cyanamid manufactures pharmaceuticals.

In 1981, preliminary investigations verified that approximately one-half of the facility never supported manufacturing, waste storage, or waste disposal activities. Contamination sources are confined to the main plant area and on-site waste storage impoundments. Of the 27 on-site impoundments, 16 were contributing to ground-water contamination. The remaining 11 impoundments have been closed with NJDEPE approval or are being closed under RCRA closure procedures.

In December 1982, the entire Cyanamid facility was placed on the NPL. A New Jersey Pollutant Discharge Elimination System Permit was issued, which requires Cyanamid to conduct extensive ground-water monitoring and to continue pumping bedrock production wells to contain the ground-water contamination on site. EPA issued a HSWA permit in December in conjunction with an operating permit issued by NJDEPE, which constitute the RCRA permit for the facility.

There are two ground-water aquifer systems which underlie the site: a shallow overburden aquifer system that flows south towards the Raritan River and a deeper, semi-confined bedrock aquifer system that flows north towards ground-water pumping wells. Ground water that is not captured by the NJPDES pumping system flows into the Raritan River. A study concluded that contamination from the Cyanamid facility did not effect the Raritan River or Cuckolds Brook.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Range of Concentration	Action Level	Cleanup Goal	Point of Compliance
sediments, soils, and surface water	181,800 cubic yards	Total VOCs	1 to 5,500 ppm			
		Acetone				
		Benzene				
		Ethylbenzene				
		Toluene				
		Chlorobenzene				
		Methylene Chloride				
		Total Xylenes				
		Total Semi-VOCs	95 to 10,000 ppm			
		1,2-Dichlorobenzene				
		2-Methylnaphthalene				
		Naphthalene				
		1,2,4-Trichlorobenzene				
		Acenaphthalene				
		Benzo(a)Anthracene				
		Flourene				
		Total Inorganics	1 to 301,000 ppm			
		Arsenic				
		Cadmium				
		Chromium				
		Lead				
		Copper				
		Mercury				
		Nickel				
		Zinc				
		Calcium				
		Iron				
		Magnesium				

EXPOSURE PATHWAYS

Exposure to contaminated ground water was not identified as a potential exposure pathway because Cyanamid is pumping 650,000 gallons of contaminated ground water per day, which effectively contains the contamination on site. A baseline exposure assessment evaluated potential exposure scenarios and identified the following significant pathways: (1) ingestion, dermal contact, or inhalation of contaminated soil particulates; (2) ingestion, dermal contact, or inhalation of particulates associated with impoundment solids; and, (3) inhalation of organic vapors form water cover of impoundment waste. However, the impoundments are a continuous source of ground-water contamination which could present a threat to human health and the environment, if not controlled by in-place remediation efforts.

SELECTED REMEDY

Due to practical limitations, the 16 impoundments cannot be remediated concurrently. Therefore, the impoundments have been divided into three groups according to waste type, nature of contamination, and geographic location on the site. The Statement of Basis only addresses corrective action for Group I impoundments, which contain sludges from on-site waste-water

treatment operations and chemical constituents. The selected remedy for Group I impoundments consists of excavating the contents of the impoundments, treating the waste materials through solidification, and consolidating the treated waste into Impoundment 8, an on-site RCRA-permitted impoundment. Solidification will chemically bind the inorganic constituents into a matrix preventing migration and indirectly reducing the toxicity of the sludge. Impoundment 8 is triple-lined and has a leachate detection/collection system and a ground water monitoring system. Measures will be taken to promote the natural vegetation of each impoundment. Volatile emissions will be collected and treated by carbon absorption, if necessary.

The selected remedy will achieve greater overall protection of human health and the environment by eliminating exposure pathways through removal, treatment and consolidation of the contaminated source material. Solidification provides equal protection of public health and the environment in a shorter time frame at significantly less cost. The total cost for the selected remedy is $13,600,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

Biological treatment was considered for treatment of Group I, but could not be initiated due to the inordinate amount of equalization and dilution required to initiate biotreatment. Thermal treatment was considered for one impoundment in Group I, but the predominantly inorganic makeup of the impoundment made thermal treatment impractical.

PUBLIC PARTICIPATION

NJDEPE and EPA plan to conduct public participation activities, including establishing a public comment period and holding a public meeting to respond to community concerns about the corrective action taken at the site.

NEXT STEPS

Due to the complex nature of contamination at the site, the operable unit approach was adopted to allow for the development of more efficient, timely, and complete remediation programs by dividing the cleanup into discrete, more manageable units. Plans for the remaining two impoundment groups will be submitted later. These actions will be followed by remedial studies addressing the soils and ground water at the site.

KEY WORDS
sediments, soils, surface water; ingestion, dermal contact, inhalation; VOCs, Semi-VOCs, Inorganics; solidification, excavation, on-site consolidation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 6276

Bell Aerospace Textron

Wheatfield, NY

(Signed September 11, 1992)

Facility/Unit Type:	**Aerospace/defense hardware and systems manufacturing and testing**
Contaminants:	**Trichloroethylene (TCE); Vinyl Chloride; 1,1,1-Trichloroethane (1,1,1-TCA); Total VOCs; Acetone; Chloromethane; 1,2-Dichloroethene (1,2,-DCE); Chloroform; Methylene Chloride; Benzene; 1,1-Dichloroethane (1,1,-DCA); Carbon Disulfide**
Media:	**Ground water**
Remedy:	**Pump and treat for off-site contamination, Control/containment and on-site water treatment for on-site contamination**

FACILITY DESCRIPTION

EPA issued a Corrective Action Permit to Bell Aerospace Textron (BAT) pursuant to Section 3004(u) of RCRA. The permit required BAT to complete an on-site and off-site investigation to determine the nature and extent of contamination from a number of SWMUs located within BAT's Wheatfield Facility and to conduct a CMS to evaluate cleanup alternatives.

The Wheatfield Facility is located adjacent to the Niagara Falls International Airport, near the western boundary of the town of Wheatfield. The facility was used to research, develop, test, and manufacture defense-oriented hardware and systems. Thirty-six SWMUs have been identified at the facility, twenty of which were used to manage hazardous waste.

The SWMU of primary concern is a 100-foot by 60-foot area in the northeast corner of the facility that was used from 1948 until 1984 as a surface impoundment to collect wastewater from rocket engine test firings, storm water run-off, cooling water, and coal gasification wastes. The area was filled with compacted clay in the 1980s after the liquid and sludge were removed. Contaminated soil has also been removed from other SWMUs at the facility.

surface impoundment

The facility is underlain by a highly fractured rock matrix with uniform coerce sand and gravel seams. The formation is conducive to ground-water flow with an estimated transport velocity between 0.02 ft/day to 0.2 ft/day. Some of the ground water discharges to Bergholtz Creek located 0.25 miles to the south of the facility.

BAT conducted an RFI and a CMS which involved taking samples of the ground water, the soil at various SWMUs, and the stream water and sediment at Bergholtz Creek. The sampling revealed surface-water contamination, potential soil contamination, and an extensive plume of contaminated ground water emanating from the area of the former surface impoundment. that has reached off-site into a residential area.

The facility has divided its cleanup efforts into two phases and is addressing the off-site plume first. BAT has been targeted for full remediation in the Niagara River Toxics Management Plan. Studies have reported BAT as one of the largest contributors of toxic loadings to the Niagara River.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ug/l)	Action Level	Cleanup Goal (ug/l)	Point of Compliance
ground water		1,1,1-TCA	51,000.00		5	
		TCE	1,100,000.00		5	
		Total VOC	2,551,000.00		100	
		Acetone	17,000.00		50	
		Chloromethane	4,800.00		5	
		1,2-DCE	28,000.00		5	
		Chloroform	580.00		50	
		Methylene Chloride	1,500,000.00		5	
		Benzene	2.00		ND	
		1,1,-DCA	16.00		5	
		Carbon Disulfide	250.00		50	
		Vinyl Chloride	160.00		2	

ND Indicates that contaminant will be cleaned up to the point of no detection.

EXPOSURE PATHWAYS

Actual or threatened releases of hazardous constituents from the facility, if not addressed, may present a current or potential threat to human health and the environment. The plume of contaminated ground water emanating from the area of the former surface impoundment extends about 5000 feet to the southeast of the point of origin and is about 3500 feet wide. The plume has migrated into a residential area and allegedly contaminated five private wells, one of which is used as a drinking water supply. BAT has decommissioned 21 private wells in the area. In addition, water and sediment samples at Bergholtz Creek have revealed elevated levels of contaminants. The creek receives ground-water discharge from the BAT facility.

SELECTED REMEDY

Six ground-water extraction wells located in a north to south line within the contaminated plume, but not within the facility or site grounds will recover the contaminated ground water and pump it via a pipe to the Niagara Waste Water Treatment Plant. Periodic field and laboratory analysis of the extracted ground water will be taken to check the performance of the system and to verify treatment standards.

Within facility grounds, a series of ground-water extraction wells will be set up to capture dissolved phase contaminants and contain the DNAPL product through hydraulics. The captured ground water will be pumped to an on-site treatment plant consisting of a phase separator, filter, air stripper, thermal oxidizer, and neutralization tank. The treated water will then be discharged to a POTW.

INNOVATIVE TECHNOLOGIES CONSIDERED

Innovative technologies evaluated were biological treatment, thermal destruction (fluidized beds), and in-situ treatment (bioreclamation, aeration, permeable treatment beds, chemical reaction).

PUBLIC PARTICIPATION

Public participation has taken place only for the proposed off-site remedy. The public comment period extended from September 18, 1991 through November 4, 1991. A public meeting was held on October 2, 1991 in Niagara Falls, and a public hearing was held on October 23, 1991 in Wheatfield. BAT submit-

ted a large number of comments challenging the statutory and regulatory authority of a number of the provisions in the permit, and objecting to the terms and language used in the permit. EPA responded to all of the comments, which led to very minor changes.

NEXT STEPS

The CMI approved for on-site remediation is projected for June 1993 and the remediation is scheduled to be operational by January of 1994. Physical containment (through slurry walls, tile drains, grout curtains and intersecting piles) of the contaminated ground water located on-site is retained for consideration if hydraulic control is not achieved with the off-site extraction wells.

KEY WORDS
ground water; ingestion, dermal contact; VOCs; filtration, air stripping, phase separation, thermal oxidation, NAPL, DNAPL pesticides, neutralization, POTW

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION I
ID# 4705

International Business Machines Corporation

Essex Junction, VT
(signed in August 1992)

Facility/Unit Type:	**Electronics Manufacturer**
Contaminants:	**Tetrachloroethylene (PCE), Trichloroethylene (TCE), Dichloroethylene (DCE), Acetone, Ethyl Benzene, Butyl Acetate, Xylene, Toluene, Dioxin-related compounds, Isopropyl alcohol (IPA)**
Media:	**Ground water, soil**
Remedy:	**Extracting, and applying air injection, carbon adsorption, and ozonation to ground water; applying in-situ vacuum extraction and air injection to contaminated soils; chemical removal and extraction**

FACILITY DESCRIPTION

In September 1986, EPA issued a HSWA Corrective Action Permit to International Business Machine Corporation (IBM) pursuant to 3004(u) of RCRA. The permit required IBM to complete an on-site and off-site investigation to determine the nature and extent of contamination from twenty-two (22) Solid Waste Management Units (SWMUs) at the Essex Junction, Vermont facility in an RFI and to conduct a CMS to evaluate cleanup alternatives.

The 735-acre facility is divided by the Winooski River and is surrounded primarily by residential land. The facility was first used by IBM in 1958 to construct wire contact relays, then was used to manufacture silicon-based memory chips and microprocessors for computers. Most manufacturing activity, ranging from chemical storage to chip assembly, takes place within the 240-acre portion of the facility on the Essex Junction-side of the Winooski River.

IBM conducted field investigations to determine if releases to the environment had occurred. Based on the field results, it was determined that releases from fourteen (14) of the twenty-two (22) SWMUs had occurred. The SWMUs of concern include an industrial waste sludge landfill located in the northwestern corner of the facility; a 1981 constructed chemical distribution center and a tank farm located in the northeastern corner of the facility; an older chemical distribution center located directly below the center; the main semiconductor chip manufacturing area; an old solvent storage area located near the center of the facility; and a fire training area located near the Winooski River.

The geology beneath the facility consists of alluvial sands and some construction fill, up to 15 feet thick, which lies over a discontinuous lacustrine silt and clay layer. This lacustrine silt and clay layer slopes north to south and is 0 to 30 feet thick. The lacustrine layer lies over a 5 to 20 foot stream sorted glacial till deposit and over a 50 to 185 foot unsorted basal till deposit. A large bowl shaped mass of fractured bedrock is under the basal till deposit. Where there is no lacustrine layer, the alluvial/fill layer is not saturated with groundwater and the reworked till layer contains the uppermost aquifer. Where the alluvial/fill is saturated with groundwater, it is the most permeable layer beneath the facility. Otherwise, the bedrock aquifer is the most permeable aquifer and the reworked till deposit is the second most permeable glacial aquifer.

IBM has already completed extensive

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level	Cleanup Goal*	Point of Compliance
ground water	N/A	PCE	95,000	5 ppb	5 ppb	within source area capture zone and throughout each area of attainment
		TCE	63,000	5 ppb	5 ppb	
		DCE	760	680 ppb	680 ppb	
		Xylene	130,000	100 ppb	100 ppb	
		Ethylbenzene	17,000	not given	not given	
		Toluene	20	not given	not given	
		Freon 113	12,000	"		
soil	N/A	Xylene	2,700,000	"	100 ppm (1) 8 ppm (2)	
		Ethylbenzene	550,000	"	30 ppm (1) 13.6 ppm (2)	

* Cleanup Goals vary according to the location on the property.
(1) Building 963- Southeast Corner
(2) Building 963 Courtyard

SELECTED REMEDY

The table below summaries the selected remedies for each area of concern at the facility.

Facility Area	Media	Remedy Description
1. Landfill Area	ground water	Maintain existing fence. Maintain existing clay cap while extending the extraction trench to ensure complete capture of contaminated ground-water. Use carbon adsorption and ozonation to remove and destroy groundwater contaminants.
2. Chemical Distribution Center Compliance Area	soil	Install a vacuum extraction /air injection system to remove the organic contaminants trapped in soil. Install either a extraction trench or a series of ground-water wells to supplement this corrective measure.
	ground water	Use the extraction trench to collect contaminated ground-water in the alluvial/fill aquifer. Use carbon adsorption and ozonation to remove and destroy grounwater contaminants.

Facility Area	Media	Remedy Description
3. Building 900 Compliance Area	soil	Use same soil remedy as described for Facility Area #2.
	ground water	Use carbon adsorption and ozonation to remove and destroy groundwater contaminants. Discharge treated ground-water to the Winooski River pursuant to NPDES permit.
4. Building 963 Compliance Area	ground water	Use the same groundwater remedy as described for Facility Area #3. Use existing plus 8 additional separate phase extraction wells to remove separate phase PCE from the reworked till aquifer. Use an extraction well to remove the shallow separate phase xylene from the groundwater. Once removed, xylene will be sent to the CDC storage. The waste material will be sent off-site to a permitted facility for incineration.
5. Building 970 Compliance Area	ground water	Maintain groundwater monitoring to ensure that concentration of the groundwater contaminants does not increase over time.
6. Fire training Compliance Area	soil	Conduct a risk assessment on the residual soil at the conclusion of the corrective measures to address the groundwater contamination for this area.
	ground water	Use same groundwater remedy as described for Facility Area #3.

cleanup activities at the Essex Junction facility under the authority and review of the Vermont Agency of Environmental Conservation. The cleanup activities to date have included removing and treating contaminated overburden and bedrock ground water with extraction trenches and extraction wells in these areas: the sludge landfill, the chemical distribution center, and the main manufacturing areas. An underground storage tank has been removed from the old solvent storage area, a clay cap has been place over the old sludge landfill area, and contaminated soils at the facility have been removed.

The estimated capital and O&M costs to implement the remedy is approximately 1.31 million and 250,000 per year.

EXPOSURE PATHWAYS

The ground water is the primary impacted medium at the facility with ingestion being the main exposure pathway .

INNOVATIVE TECHNOLOGIES CONSIDERED

The following innovative technologies were considered, but not included in the selected remedy: in-situ soil washing and thermal soil aeration.

PUBLIC PARTICIPATION

The public comment period on EPA's proposed remedy extended from August 24, 1992 through October 8, 1992. A public meeting was held on September 23, 1992. The meeting was attended by over 30 people, including representatives from EPA, the Vermont Department of Environmental Conservation, and members of the media, and citizens.

NEXT STEPS

EPA will monitor closely the progress of corrective measures at the IBM facility. EPA will continue to monitor IBM's compliance with permit conditions.

KEY WORDS
ground water, soil; ingestion; VOCs; extraction trench, carbon adsorption, ozonation, in-situ vacuum extraction, institutional controls, chemical removal and off-site incineration

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION #
ID# (last 4 #s)

COMPANY NAME

City, State
(Date signed)

Facility/Unit Type: **Facility type**
Contaminants: **list all know contaminants**
Media: **list all media of contaminants**
Remedy: **list selected remedy**

FACILITY DESCRIPTION

- Authority used to compel corrective action (§3008(h), §3004(u,v), §7003, §106, letter of agreement, voluntary without oversight, state authority)
- Facility type (generator, storage, treatment, disposal, permitted, interim status)
- Depth to ground water and use of ground water
- Proximity to nearest surface water and use of surface water
- Surrounding land use
- Previous corrective action activities/interim measures/stabilization techniques
- Climate--annual precipitation (optional).

EXPOSURE PATHWAYS

- Nearest human receptors
- Explain exposure pathways
- Sensitive environmental/endangered species.

CONTAMINATION DETECTED AND CLEANUP GOALS

(Supply information for all media to which there has been a release)

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal**	Point of Compliance
ground water soil * soil gas air surface water		List major contaminants present in each media (include non-RCRA Hazardous Waste.			If cleanup goals are different for off-site media, list them separately.	Define point of compliance (e.g., edge of regulated unit or corrective action management unit, specific drinking water or monitoring well, facility boundary, etc).

* Detected off site (note if applicable)

**Specify basis for cleanup goal (e.g., MCL, 10^{-6} risk)

SELECTED REMEDY

- Brief description of remedy (be as specific as possible)
- Basis for remedy selection
- Remedy proposed by o/o if different than remedy proposed by EPA
- Type of remedy (interim/stabilization, final)
- Cost (present a total cost-present worth cost incorporating capital cost and O&M. Include capital cost/ year and O&M/year if available. Indicate the number of years projected for each cost)
- Implementation schedule /time frame for the cleanup
- Waste management practices for treated media (e.g., handling of onsite treatment residues)
- Site conditions not addressed by the remedy.

INNOVATIVE TECHNOLOGIES CONSIDERED

- List innovative technologies considered.

PUBLIC PARTICIPATION

- State whether a public meeting was held
- Include approximate number in attendance
- Number of comments received
- Major issues identified by the public (optional).

NEXT STEPS

- Next step(s) to implement remedy selection (new order, modify existing order, permit modification
- Next step(s) to address any portion of the facility not addressed by the selected remedy
- Method(s) used/to be used to determine whether cleanup goals have been achieved.

KEY WORDS

- Selected key words

CONTACT

- Name
- Address
- Phone number

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 6241

CECOS Scrapyard Remediation

Niagara Falls, NY
(Signed in September 1991)

Facility/Unit Type: Industrial salvage and recycling facility
Contaminants: Polychlorinated biphenyls (PCBs), Hexachlorobenzene, Lead, and Arsenic
Media: Soils
Remedy: Excavation, off-site disposal, capping

FACILITY DESCRIPTION

EPA issued a HSWA Corrective Action Permit to CECOS pursuant to Section 3004(u) of RCRA. The permit required CECOS to complete an on-site and off-site investigation to determine the nature and extent of contamination from a SWMU, the CECOS Scrapyard, located at the Niagara Falls Facility, and to conduct a CMS and prepare a CMI Report to evaluate cleanup alternatives.

The Scrapyard covers a 10-acre parcel of land along the northwest boundary of the Niagara Falls Facility. The area of the SWMU was used to purify cobalt and vanadium in the early 1900s, to produce ammonium paratungstate in the 1950s and 1960s, and for scrap metal shearing operations in the 1970s to 1985. The site was never used for the storage or management of hazardous wastes. No industrial operations have taken place at the site since 1985.

The Scrapyard is underlain by a 2 to 11 foot thick layer of fill consisting of slag, sand, gravel, lime, wood, silty clay, and brick fragments. Under the fill lies a 0 to 7 foot thick layer of natural sediments and then a 135 foot thick layer of bedrock. The ground water below the SWMU has three flow zones designated as top-of-clay, top-of-rock, and bedrock. There is no evidence of ground-water contamination due to past activities at the Scrapyard.

Sampling investigations conducted from 1985 to 1991 revealed the presence of PCBs, hexachlorobenzene, phenolics, polynuclear aromatics, iron, cobalt, lead and arsenic in the soil around the site. Other than one sample registering slightly above water quality standards for PCB content, no contaminants above detection levels were found in surface water or sediments taken from two drainage ditches which receive runoff from the Scrapyard.

EXPOSURE PATHWAYS

There is potential for exposure via contact with residual contaminated soils and air exposure. There are no potential health effects associated with the groundwater, surface water and surface water sediment pathways.

SELECTED REMEDY

The selected remedy includes excavation of fill/soil with PCB concentrations greater than 25 ppm, hexachlorobenzene concentrations greater than 10 ppm, lead concentrations greater than 500 ppm, or arsenic concentrations greater than 50 ppm. Contaminated fill/soil will be

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal	Point of Compliance
soil	not given	PCB Aroclor 1260	59	not given	not given	
		PCBs (total)	690		25 ppm	90-170-1
		Phenolics (total)	23		not given	90-170-2
		Phenol	1.6		"	86-103-2
		Acenaphthene	6.7		"	
		Anthracene	16		"	Dup-11
		Benzo(a)anthracene	47		"	RB63-I
		Benzo(a)pyrene	44		"	
		Benzo(a)fluoranthene	68		"	
		Benzo(g,h,f)perylene	24		"	
		Bis(2-ethylhexyl)phthalate	300		"	
		Chrysene	40		"	
		Dibenzo(a,h)anthracene	9.4		"	
		Di-n-butylphthalate	0.62		"	
		Di-n-octylphthalate	0.34		"	
		Fluoranthene	110		"	
		Fluorene	15		10 ppm	
		Hexachlorobenzene	96		not given	
		Indeno(1,2,3-cd)pyrene	19		"	
		Naphthalene	7.3		"	
		Phenanthrene	56		"	
		Pyrene	85		"	
		Antimony	27		"	
		Arsenic	99		50 ppm	
		Barium	890		not given	
		Cadmium	42		"	
		Chromium	2,900		"	
		Cobalt	60,500		"	
		Copper	9,800		"	
		Iron	440,000		"	
		Lead	4,205		500 ppm	
		Mercury	61		not given	
		Nickel	270		"	

disposed of at an off-site permitted hazardous waste landfill. After removal of all of the contaminated fill/soil, sampling verification will be conducted, a cover consisting of a 24-inch clay layer, a 24-inch soil layer and a 6 inch layer of topsoil will be placed over the site.

Upon completion of the cover, a post-remedial groundwater, maintenance and inspection program will be required throughout the minimum 30-year post-closure period.

Total estimated capital costs and annual O&M for the remedy are $6,000,000 and $3,962,707, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

Excavation and Incineration/Thermal Treatment, and Excavation and soil washing.

PUBLIC PARTICIPATION

The public comment period began on May 29, 1991 and closed on July 15, 1991. No written comments were received. A public meeting was held on April 30, 1991. Persons attending the meeting questioned whether dioxins were present at the Scrapyard and the route of trucks carrying the contaminated soil. Past uses of the site indicate no dioxins are likely to be at the site and the trucks will use Niagara Falls Boulevard.

NEXT STEPS

CECOS will conduct routine inspection and maintenance of the final cover, and conduct sampling and evaluation of the ground water in the vicinity of the Scrapyard. This corrective action is related only to the remediation of the Scrapyard. Investigation and evaluation of releases at other SWMUs, including a site-wide evaluation, are ongoing and will be the subject of future public review and permit actions.

KEY WORDS
capping, dermal contact; inorganics, heavy metals; excavation, off-site disposal, filling, soil, surface water, sediments; VOCs, PCBs, organics

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 7788

Channel Master
Division of Avnet, Inc.
Ellenville, NY
(Signed April 17, 1991)

Facility/Unit Type:	**Former television antenna manufacturer**
Contaminants:	**1,1,1-Trichloroethane (1,1,1-TCA); 1,1-dichloroethane (1,1-DCA); 1,1-Dichloroethylene (1,1-DCE); Trans 1,2-Dichloroethylene (trans 1,2-DCE); VOCs; Heavy metals**
Media:	**Ground water**
Remedy:	**Ground-water pump and treat with packed column air stripper**

FACILITY DESCRIPTION

In 1990, EPA issued a HSWA permit to Channel Master pursuant to Section 3004(u) of RCRA. The permit required Channel Master to conduct an RFI. Channel Master manufactured television antennas and related accessory items including mounting hardware, transmission cable and installation kits until operations ceased in 1984 when Channel Master moved its operations to North Carolina. In December 1984, Channel Master sold the main plant property to Imperial Shrade Company. At the time of the sale, Channel Master agreed to be responsible for any corrective action at the site related to its past operations. The land use surrounding the facility is commercial, light industrial, and residential. Manufacturing processes generated hazardous wastes that were stored on-site in containers and a surface impoundment.

At the time of the sale of the property, Channel Master closed the container storage area and the chemical treatment system SWMUs through cleaning and dismantling. In 1985, the solvent storage tank was removed. In 1986, Channel Master closed the surface impoundment. Recent data indicate the presence of slightly elevated levels of arsenic and lead in two downgradient monitoring wells. A ground-water program has been implemented to monitor the contaminants. In 1986, Channel Master commenced a groundwater pump and treat interim corrective measure to remediate contamination beneath the plant building.

Ground water beneath the facility generally flows to the east. The average depth to groundwater is approximately 10 feet. The topography of the site is fairly level, sloping towards Sandburg Creek, to the east. The Fantine Kill Creek is located to the south of the facility. The underlying geologic materials consist of glacial outwash sands covered by lacustrine deposits.

During facility closure activities at the Channel Master facility, ground-water contamination was found beneath the main plant building in an area where process wastewaters were believed to have

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Est. Vol.	Contaminant	Maximum Concentration (ppb)	Action Level	Cleanup Goal (ppb) [A]	Point of Compliance**
ground water	not given	Benzene	1,200*	ND [B]	non-detectable [B]	BH-16, BH-11B
		Chlorobenzene	840	5.0	5.0	
		Chloroform	6,000	100.0 [A]	100.0 [A]	
		1,2-Dichlorobenzene	2.6	5.0	5.0	
		1,3-Dichlorobenzene	1,800	5.0	5.0	
		1,1-DCA	3,200	5.0	5.0	
		1,2-DCA	14,000	5.0	5.0	
		1,1-DCE	17,000	5.0	5.0	
		trans 1,2-DCE	134	5.0	5.0	
		Methylene Chloroide	830,000	5.0	5.0	
		1,1,2,2-PCA	1.0	5.0	5.0	
		Toluene	8,100	5.0	5.0	
		1,1,1-TCA	900,000	5.0	5.0	
		TCE	3.0	5.0	5.0	
		Bis(2-ethylhexyl) phthalate	6.2*	50.0	50.0	
		Naphthalene	3.6*	50.0	50.0	
		Pentachlorophenol	77*	5.0	5.0	
		4,4-DDE	4.7	ND [B]	non-detectable [B]	
		Arsenic	9*	25.0	25.0	
		Barium	117*	1,000.0	1,000.0	
		Mercury	0.27	2.0	2.0	
		Silver	9.4*	50.0	50.0	

(A) The total concentration of all organic constituents, excluding pesticides, herbicides, vinyl chloride, and trihalomethanes, shall not exceed 100.0 ug/l.

(B) The concentration shall not be at or above the method detection limit established by Method 8020.

(C) Total concentration of all trihalomethanes not to exceed 100.

(D) The concentration shall not be at or above the method detection limit established by Method 8080.

* Indicates an estimated value.

** A point of compliance for the plume area has not been officially established because the downgradient limit of a waste management area has not been defined. Corrective Measures Performance monitoring program requirements normally applied to point of compliance wells will be satisfied through sampling of wells BH-16 and BH-11B.

been released from the plant sewer system. Channel Master conducted an RFI and found that groundwater contamination was limited to a 10,000 square foot area of the water table aquifer beneath an area of the plant building where solvents were used.

Nine SWMUs have been identified at the facility. The SWMUs identified include a surface impoundment; chemical treatment system; former location of solvent storage tank; container storage area; process waste/stormwater sewers; oil collection sumps; sluice box and wet well for surface impoundment; drainage ditch; and release area at the process sewer beneath the plant building.

EXPOSURE PATHWAYS

Contaminant pathways that may impact human health or the environment are somewhat limited. The town is on a public water supply system, and all withdrawal wells and reservoir are upgradient from the facility. Potential receptor of contamination would most likely be Sandburg

Creek, resulting from contaminated ground water being transported through the aquifer. Sandburg Creek is classified by the State of New York as a surface water used for recreation and fishing.

SELECTED REMEDY

The selected remedy will utilize existing ground-water pump and treat system and ground-water monitoring program to remediate the ground-water contamination beneath the main plant building. Treatment will be accomplished with air stripping to remove VOCs from the ground water.

The remedy selected will use proven technologies and protect human health and the environment.

Treated ground water will be discharged to Sandburg Creek, pursuant to a New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System Permit. NYSDEC issued an air permit to Channel Master for the construction and operation of the air stripper.

The installation cost of the stripping tower was $55,000. Channel Master has estimated that the cost (in 1991 dollars) for groundwater corrective action sampling, analysis and reporting for the five year period (1991-1996) would total approximately $315,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA and NYSDEC issued a joint public notice regarding the EPA Hazardous and Solid Waste Amendments (HSWA) permit and State Hazardous Waste Management post-closure permit, respectively. The public comment period extended from March 9, 1990 to April 17, 1990. EPA received two sets of written comments on the HSWA permit. The comments were not significant and did not result in changes to the original proposed corrective measure. EPA responded to all comments on the HSWA permit in the Response to Comments.

NEXT STEPS

The former location of the solvent storage tank was an addtional study area investigated as part of the permit. In addition, the permit requires implementation of a RFI for the soils beneath the building when the release area at the process sewer beneath the plant building becomes accessible for investigation.

KEY WORDS
ground water; ingestion, dermal contact; VOCs; air stripping,

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# (last 4 #s)

General Electric Company
Waterford, NY

Facility/Unit Type: Manufacturing of silicone products
Contaminants: 1,2-trans-dichloroethylene, trichloroethylene, vinyl chloride, benzene
Media: Ground water
Remedy: Ground wate[illegible]n and treat with two packed column air strippers.

FACILITY DESCRIPTION

On May 26, 1989, EPA is[illegible] General Electric Company ([illegible] HSWA. The permit require[illegible] corrective action measures [illegible] site. This summary addresses correc[illegible] measures for Landfill 1.

GE-Waterford is a silicone production facility located on the west bank of the Hud[illegible] River in the Town of Waterford. The facility covers 790 acres and contains 80 identified active and inactive Solid Waste Management Units (SWMUs). The SWMUs include 31 tank areas, 6 landfills, 5 surface impoundments, 3 incinerators, 1 wastewater treatment plant (WWTP), and a number of drum storage areas, container accumulation storage areas, process sewers, and miscellaneous units. A number of the units are regulated under RCRA, including three of the landfills (Landfills 1, 3, and 6), the surface impoundments, and the incinerators.

Ground water at the facility flows through layers of glacial till and bedrock toward the Hudson River to the east. The geology of Landfill 1 includes a complex sequence of glacial and lacustrine deposits. The primary aquifer is limited to glacial deposits overlying a shale bedrock with a thin, discontinuous veneer of till. The glacial deposits consist of interlayered sand and silts, and clay. Bedrock [illegible]ydraulic [illegible] sec, wh[illegible] the [illegible] is less than 0.00001 cm/ [illegible]he top of the bedrock is [illegible] aquifer.

[illegible]ave been in [illegible]nd 4 since [illegible]cn [illegible]y wells [illegible]nding

[illegible] releases of hazardous constitu[illegible]e facility, if not addressed, may prese[illegible]rrent or potential threat to human healt[illegible] and the environment. Releases from the landfills and many of the manufacturing areas have resulted in widespread ground water contamination. The hazardous waste constituents present in the ground water have most likely migrated in the direction of the ground water flow towards the Hudson River. There is also potential for surface water contamination from other areas of the facility that are currently under remediation. Air releases would be limited to the operations of the WWTP and soil excavations.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup* Goal	Point of Compliance
ground water		1,2 -Trans-Dichloroethane	35,900		5.0	
		Vinyl Chloride	2,389		2.0	
		Dichloromethane	2,010		5.0	
		Methylene Chloride	1,370		5.0	
		Trichloroethylene	902		5.0	
		Acetone	723		50.0	
		Toluene	275		5.0	
		Benzene	103		ND**	
		Ethylbenzene	97		5.0	
		1,1,1-Trichloroethane	78.3		5.0	
		Chlorobenzene	19.2		5.0	
		Tetrachloroethylene	18.9		5.0	

* The total concentration of all organic constituents, excluding pesticides, herbicides, vinyl chloride, and trihalomethanes, shall not exceed 100.0 ug/l.

** Non detectable - The concentration shall not be at or above the method detection limit established by Method 8020.

SELECTED REMEDY

The selected corrective measure for Landfill 1 is to pump and treat the ground water. The corrective measure will involve 2 recovery wells located downgradient of the landfill and 16 monitoring wells located upgradient, within, and downgradient of the landfill. The extracted ground water will be treated in two air stripping columns. The treated ground water will then be discharged to the WWTP by means of piping connected to the Landfill 6 leachate collection system. GE has been issued a permit for the construction and operation of the WWTP and the discharge of the treated ground water to the Hudson River.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period extended from October 9, 1992 through November 25, 1992. EPA received one set of written comments from GE that resulted in minor changes to the original proposed corrective measure. The modifications dealt with specifying where at the facility post-closure care must be performed and when treatment start-up analysis must be submitted.

NEXT STEPS

Evaluate the recovery efficiency of the two recovery wells and take water-level measurements using the existing monitoring wells for capture zone analysis.

KEY WORDS
ground water, ingestion, organics, pesticides, vinyl chloride, trihalomethanes, air stripping

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 3039

International Business Machines Corporation

Endicott, NY
(signed in January 1992)

Facility/Unit Type:	**Manufacturing of electronic components**
Contaminants:	**Chlorinated hydrocarbons**
Media:	**Ground water**
Remedy:	**Ground water pump and treat with gravity separation, air stripping, biological treatment, filtration and carbon adsorption.**

FACILITY DESCRIPTION

EPA and the New York State Department of Environmental Conservation (NYSDEC) issued a HSWA permit and State Hazardous Waste Management Operating permit to the International Business Machines Corporation (IBM). The permits formalize the investigations conducted by IBM and ensure that the corrective measures program will be conducted according to regulations.

The Systems Technology Division of IBM is located on a 200-acre manufacturing complex that currently produces electrical components including circuit boards, metalized ceramic substrates, and semi-conductors. Facility operations use various chemicals as raw materials and aids in processing and manufacturing the electrical components.

In the late 1970s, IBM began a voluntary site-wide subsurface and ground water investigation and remediation program. The sources of groundwater contamination include an accidental spill of approximately 4,200 gallons of methyl chloroform and other unknown sources. The groundwater contamination at the facility represents releases from past IBM operations and operations from unidentified companies.

Materials underlying the facility consist of fill and glacial deposits underlain by siltstone and shale bedrock. Upper and lower aquifers are separated by an aquitard consisting of silt, clay and very fine sand. Regional ground water flows to the southwest towards the Susquehanna River.

The main potable water well field for the City of Endicott is located approximately 2,500 feet downgradient from the edge of the contaminant plume. The well field supplies drinking water for approximately 20,000 people. The corrective measures program has been developed to control, clean up, and monitor the ground water. The two major components of the program are the on-site recovery system and the off-s. interceptor system.

Several solid waste management units have been closed in accordance with State-approved closure plans.

EXPOSURE PATHWAYS

Contaminated ground water presents minimal risk to humans as ground water is captured, treated, and monitored.

SELECTED REMEDY

The selected remedy consists of pumping and treating of contaminated ground water via a series of ground water recovery and interceptor systems that redirect contaminated ground water to IBM's Organic Treatment Facility (OTF) which consists of gravity separation, air stripping, biological treatment, filtration and carbon adsorption. The pump and treat system consists of six on-site recovery wells and eight off-site recovery wells that are used for ground water control, recovery, and treatment. IBM has implemented a corrective action ground-water monitoring program that consists of 77 monitoring wells, 8 points of com-

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Concentration Detected (ug/l)*	Action Level	Cleanup Goal (ug/l)	Point of Compliance
ground water	Not given	Benzene	100	Not given	0.7	**
		Chlorobenzene	NA		5.0	EN-54
		Chloroethane	420		5.0	EN-79
		Chloroform	170		7.0	EN-84
		1,2-Dichlorobenzene	NA		5.0	EN-89
		1,3-Dichlorobenzene	NA		5.0	EN-93
		1,4-Dichlorobenzene	NA		5.0	EN-97
		Dichlorodifluoromethane	NA		5.0	EN-103
		1,1-Dichloroethane	1600		5.0	EN-105
		1,1-Dichloroethylene	1800		5.0	
		1,2-Dichloroethylene (total)	4300		5.0	
		Dichloromethane	180		5.0	
		1,1,1,2-Tetrachloroethane	NA		5.0	
		Tetrachloroethylene	100		5.0	
		1,1,1-Trichloroethane	820		5.0	
		Trichloroethylene	4400		5.0	
		1,1,2-Trichloro-1,2,2-triflouroethane (Freon 113)	34000		5.0	
		Trichlorofluoromethane	NA		5.0	
		Vinyl Chloride	230		2.0	
		Xylenes	NA		5.0	
		Arsenic	NA		25.0	
		Chromium	NA		50.0	

NA Not Available.

* 1988 ground water data.

** A point of compliance for the plume area has not been established as defined under 40 CFR §264.95, since there is no downgradient limit of a waste management area. Monitoring program requirements that normally apply to the point of compliance shall be satisfied by sampling selected wells for Appendix IX of 40 CFR Part 264 constituents on an annual basis.

pliance wells, 164 hydraulic effectiveness monitoring wells, 11 contaminant reduction monitoring wells, and 6 upgradient monitoring wells. These wells are monitored quarterly to ensure that the contaminant plume does not pose a threat to the City of Endicott's drinking water supply.

The selected remedy uses proven technologies, protects human health and the environment, poses no undue financial burden on IBM, and allows continuous plant operation.

The estimated capital and O&M costs for this remedy is not available.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Public notice was jointly issued by EPA and NYSDEC in accordance with the respective facility permit requirements. The public comment period began on September 25, 1991 and ended on November 12, 1991. EPA received minor written comments on the HSWA permit that did not result in changes to

the original permit.

NEXT STEPS

IBM will continue to implement the ground water monitoring program and the corrective measures program until the cleanup goals are attained. The permit requires IBM to conduct an evaluation of all constructed structures to determine if any structures are acting as conduits for contaminant migration or are affecting ground water flow.

KEY WORDS
ground water; ingestion; chlorinated hydrocarbons; gravity separation, air stripping, biological treatment, filtration, carbon adsorption

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XEROX

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 0324

Xerox Corporation-Salt Road Complex

Webster, New York
Signed July 30, 1993

Facility/Unit Type:	**Manufacturing of xerographic copiers and printing machines and associated supplies**
Contaminants:	**toluene, trichloroethylene, 1,1,1-trichloroethane, tetrachloroethylene, 1,2-dichloroethylene, vinyl chloride,**
Media:	**Ground water, soil**
Remedy:	**Ground-water pumping and treatment using onsite chemical oxidation and air stripping, bedrock blasting to enhance permeability, and institutional controls.**

FACILITY DESCRIPTION

On April 18, 1988, the Xerox Corporation and the EPA entered into an Administrative Consent Order pursuant to Section 3008(h) of RCRA which required Xerox to complete an RFI to determine the nature and extent of contamination at the Salt Road Complex and to conduct a CMS to evaluate cleanup alternatives.

The 400-acre Xerox Corporation Salt Road Complex site is a xerographic copier and printing machine manufacturing site located in Webster, New York. The Complex includes the portion of Building 224 that contains the developer operation, the portion of Building 225 that formerly contained the steel-shot reclamation operation, and the contaminated portions of contiguous or associated properties, including property owned by Xerox east of Salt Road.

Hydrogeologic and soil investigations undertaken by Xerox have resulted in the delineation of subsurface conditions and the extent of contamination at the Salt Road Complex in both soil and ground water. Overburden thickness typically ranges from about 2 to 17 feet and averages less than 5 feet. A broad, shallow bedrock ridge is present in the Complex below the overburden and appears to influence ground-water flow conditions in the vicinity. Due to the shallow nature of the surface soil, the majority of the contamination occurs in bedrock and is transported by ground-water flow mechanisms below the bedrock/soil interface.

Ground-water contamination seems to have resulted from a supplies manufacturing process and from spillage from two underground toluene spill tanks in the 224/225 courtyard. Xerox removed the tanks and contaminated soil from the site after the contamination was detected in 1982. Based on available data, ground-water contamination at the facility is contained within the confines of the lands owned by the Xerox Corporation. The soils in the courtyard area at the facility were the only onsite soils exposed directly to contaminants as a result of a release from an underground spill containment tank. Other soils may have been contaminated as a result of contact with contaminated ground water or due to the volatilization of contaminants from ground water underlying the soil.

As part of the previous interim remedial measures at the site, by 1986 Xerox had connected all residents of the surrounding area who had previously relied on well water to the public water supply. The corporation acquired four dwellings and 81.4 acres of land in transactions between 1986 and 1991 in order to expedite contaminant investigation and remediation. Xerox also undertook soil remediation measures in the courtyard of buildings 223 and 224 by excavating a total of approximately 959 cubic yards of soil for disposal at permitted landfill facilities between 1984 and 1986 . The excavated areas were then filled with rounded gravel. Ground-water extraction as an interim remedial measure began in 1986 with the installation of recovery wells 1, 2, 3, and 4. This system has since been expanded to

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level (µg/l)	Cleanup Goal* (µg/l)	Point of Compliance
ground water		trichloroethene	390,000		5.0	
		1,2-DCA	36,000		5.0	
		toluene	56,000		5.0	
		1,1,1-TCA	4,700		5.0	
		1,1-DCE	3,000		5.0	
		tetrachloroethylene	2,100		5.0	
		vinyl chloride	2,800		2.0	
		1,1-DCE	60		5.0	
		1,2-DCA	270		5.0	
		chloroform	5,900		7.0	
		chloroethane	130		5.0	
		benzene	10		0.7	
		carbon tetrachloride	60		5.0	
		bromodichloromethane	3.0		7.0	
		ethylbenzene	12		5.0	
		1,1,2-TCA	1,300		5.0	
soil	5050 cy	tetrachloroethylene	121mg/kg**	14 mg/kg		

*Cleanup goals based on NY State MCLs
**Located 2 ft. below ground surface

include a total of 16 pumping wells and 122 monitoring wells as well as an iron pretreatment unit.

EXPOSURE PATHWAYS

The potential exposure pathways for ground-water contamination include migration into drinking water wells, basements, and surface streams. The primary exposure route through which humans may encounter contaminants in the soil is by incidental ingestion. Compounds in soil may also be available for human contact/exposure following intermedia transfer from soil to ground water.

SELECTED REMEDY

The proposed final corrective measure for this site includes continuing the ground-water recovery program already in operation; enhancing the permeability of the bedrock by blasting in order to increase the capture zones and recovery rates of five surrounding recovery wells; treating contaminated ground water using the existing peroxide ultraviolet oxidation process, treating the effluent from the oxidation system using air strippers; and discharging residual ground water into a storm sewer in accordance with Xerox's State Pollutant Discharge Elimination System permit. Discharge from the recovery and treatment system will be sampled and analyzed on a regular basis as required by Village of Webster Publicly Owned Treatment Works (POTW) to monitor actual discharge concentrations. Leachate generated by storm water infiltration into contaminated soil is within the zone of capture of the ground-water pumping system. The need for any additional corrective measures for soil at the site will be evaluated once the ground water has been remediated. In addition, institutional controls in the form of deed restrictions on future area use, fencing and public access will be implemented at the site to ensure that these areas are left undisturbed.

The annual operations and maintenance cost of this ground-water remedial action is $400,000. The cost of the overall remediation program is $10.5 million to date.

INNOVATIVE TECHNOLOGIES CONSIDERED

In situ bioremediation was examined as a method for remediating contaminated soil and ground water. The technology was deemed ineffective at this particular site due to the presence of low conductivity

soil and fractured bedrock flow regimes. For the bioremediation technique to be fully effective, soil and aquifer material must be porous and have a resident bacterial population.

PUBLIC PARTICIPATION

A public comment period was held from July 30, 1993 to September 14, 1993. Because EPA did not receive any comments during this period, no changes were made to the proposed final remedial measure.

NEXT STEPS

The selected remedial measure is currently being implemented and has proven to be effective in controlling the plume and is protective of human health and the environment. The need for additional remediation of contaminated soils will not be evaluated until the ground water has been remediated. If residual contaminants are detected in these soils following ground-water remediation, Xerox will review the need for remediation of these soils based on standards in effect at that time with the EPA and NYSDEC.

KEYWORDS

Ground water, soil; ingestion (soil, gw); VOCs, TCE, toluene; air stripping, innovative technology, institutional controls, offsite discharge, Publicly Owned Treatment Works (POTW)

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NORTHEAST

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 0109

Northeast Environmental Services

Lenox, New York
Signed September 30, 1993

Facility/Unit Type:	**Commercial hazardous waste management facility**
Contaminants:	**Toluene, vinyl chloride, 1,1-dichloroethene, 1,1-dichloroethane (DCA), ethyl benzene, 1,1,1-trichloroethane (TCA), and xylenes**
Media:	**Ground water**
Remedy:	**Ground-water treatment using a single recovery well to remove contaminated ground water, air stripping, and liquid phase carbon adsorption followed by offsite discharge of treated effluent and offsite disposal of spent carbon**

FACILITY DESCRIPTION

On September 27, 1991, EPA issued a final permit to Northeast Environmental Services (NES), pursuant to HSWA, which contained conditions for investigating and remediating past releases at the facility. In conjunction, the New York State Department of Conservation (NYSDEC) issued a permit under Part 373 of the New York State Environmental Conservation Law for the treatment and storage of hazardous waste. These two permits identified 12 solid waste management units and discussed the proposed ground-water remediation corrective measures.

The 3.6-acre NES site is a commercial hazardous waste management facility located in Lenox, Madison County, New York. The facility accepts hazardous waste from offsite for storage and treatment prior to shipping in its licensed transport vehicles to authorized hazardous waste management facilities for further treatment or disposal. The facility's processing operations include decanting, neutralizing, recontainerizing, or blending of solids/sludges, wastewaters, and waste fuels. Prior to current operations, the facility was owned by the Haz-O-Waste Corporation. Operations began at the site on August 31, 1976. NES has owned and operated the facility since September 1986.

The southern 1.4 acres of the facility are developed, while the remaining 2.2 acres consist of agricultural land. The site is also surrounded to the northwest and east by agricultural land, and to the south by the old Erie Canal. The nearest population centers are a half-mile to the east in the Village of Wampsville (pop. 569), and one mile west in the Village of Canastota (pop. 4,733). The nearest residential community, a trailer park whose drinking water needs are met by private wells, is located approximately 3/4 of a mile northwest of the facility, which is in the general direction of ground water flow.

The site is uniformly underlain by a silty fine sand unit approximately 30 feet thick, which is underlain by a compact silt layer a few feet thick. Ground water is very shallow in the upper fine sand unit, varying from a few feet in depth to even above ground level during the spring snow melt. The contaminant plume has been relatively stable in terms of shape, constituents, and concentrations for several years due to a series of shallow drainage ditches surrounding the facility and an upward gradient across the silt layer which appear to prevent contaminated ground water from migrating offsite and downward, respectively.

Hazardous wastes handled by NES at this site include industrial solvents, ink and paint residues, acids, caustics, lab chemicals, and bleach. Contamination at the facility is said to be due to the long-term operation of the site, lack of engineered structures to provide secondary containment, and inadequate waste management practices. In order to mitigate the potential release of these contaminants into the environment, a series of engineering controls have been implemented since February 1987 which have included protective coatings for waste handling areas, secondary containment devices for waste staging

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (liters)	Contaminant	Maximum Concentration (µg/l)	Action Level (µg/l)	Cleanup Goals * (µg/l)	Point of Compliance
ground water	8,170,970 (total)	vinyl chloride	2,800	2	2	
		toluene	17,580	5	5	
		1,1-dichloroethene	2,970	5	5	
		1,1-DCA	487	5	5	
		ethyl benzene	302	5	5	
		1,1,1-TCA	100	5	5	
		xylene	1,608	5	5	

* Based on Safe Water Drinking Act MCLs

areas, the installation of a truck unloading pad and roof, and aqueous treatment upgrades.

EXPOSURE PATHWAYS

The most likely pathway for an impact to the environment would have been a release from a spill which may have migrated to the surface or ground water. In addition, humans could be exposed through the ingestion of contaminated ground or surface water.

SELECTED REMEDY

The selected remedy for this site includes installing a single recovery well to pump contaminated ground water and treatment using air stripping followed by liquid phase carbon adsorption. Treated effluent will be discharged to a tributary of Dutch Settlement Creek. Spent carbon will be disposed of offsite. The total capital and start-up costs are approximately $53,000, while operation and maintenance costs for the first year are approximately $95,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

Both in situ and reactor bioremediation were considered for hazardous waste treatment. In situ bioremediation involves the microbial degradation of contaminants within the soil/water matrix. Bioremediation in reactors would consist of either mobile or fixed tank units into which contaminated ground water would be pumped. These methods were not selected primarily because the microorganisms do not react well to rapid changes of contaminants, total load, or flow rates. In addition, the inconsistent presence of high toxicity contaminants in the ground water can quickly destroy the biomass.

PUBLIC PARTICIPATION

A public notice of the permits containing the corrective measures was issued July 19, 1991. There were no comments received on the EPA or NYSDEC permits. In addition a supplemental fact sheet and administrative record were made available to the public from August 18 to September 17, 1993. No comments were received during the specified period.

NEXT STEPS

The specified corrective measures for groundwater contamination are currently being implemented. Remedial action for soil contamination will be examined at a later date.

KEY WORDS
Ground water, VOCs, DCA, toluene, xylenes, air stripping, carbon adsorption, extraction, bioremediation (considered), offsite discharge, offsite disposal, onsite treatment

CONTACT
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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 0109

Northeast Environmental Services

Lenox, New York
Signed September 30, 1993

Facility/Unit Type:	**Commercial hazardous waste management facility**
Contaminants:	**Toluene, vinyl chloride, 1,1-dichloroethene, 1,1-dichloroethane (DCA), ethyl benzene, 1,1,1-trichloroethane (TCA), and xylenes**
Media:	**Ground water**
Remedy:	**Ground-water treatment using a single recovery well to remove contaminated ground water, air stripping, and liquid phase carbon adsorption followed by offsite discharge of treated effluent and offsite disposal of spent carbon**

FACILITY DESCRIPTION

On September 27, 1991, EPA issued a final permit to Northeast Environmental Services (NES), pursuant to HSWA, which contained conditions for investigating and remediating past releases at the facility. In conjunction, the New York State Department of Conservation (NYSDEC) issued a permit under Part 373 of the New York State Environmental Conservation Law for the treatment and storage of hazardous waste. These two permits identified 12 solid waste management units and discussed the proposed ground-water remediation corrective measures.

The 3.6-acre NES site is a commercial hazardous waste management facility located in Lenox, Madison County, New York. The facility accepts hazardous waste from offsite for storage and treatment prior to shipping in its licensed transport vehicles to authorized hazardous waste management facilities for further treatment or disposal. The facility's processing operations include decanting, neutralizing, recontainerizing, or blending of solids/sludges, wastewaters, and waste fuels. Prior to current operations, the facility was owned by the Haz-O-Waste Corporation. Operations began at the site on August 31, 1976. NES has owned and operated the facility since September 1986.

The southern 1.4 acres of the facility are developed, while the remaining 2.2 acres consist of agricultural land. The site is also surrounded to the northwest and east by agricultural land, and to the south by the old Erie Canal. The nearest population centers are a half-mile to the east in the Village of Wampsville (pop. 569), and one mile west in the Village of Canasto[illegible] 3). The nearest residenti[illegible] park whose drinking water n[illegible] lls, is located approxin[illegible] vest of the facility, which is i[illegible] ground water flow.

The sit[illegible] y a silty fine sand unit app[illegible] vhich is underlain by a [illegible] eet thick. Ground water i[illegible] ne upper fine sand unit, varying fro[illegible] w feet in depth to even above ground level during the spring snow melt. The contaminant plume has been relatively stable in terms of shape, constituents, and concentrations for several years due to a series of shallow drainage ditches surrounding the facility and an upward gradient across the silt layer which appear to prevent contaminated ground water from migrating offsite and downward, respectively.

Hazardous wastes handled by NES at this site include industrial solvents, ink and paint residues, acids, caustics, lab chemicals, and bleach. Contamination at the facility is said to be due to the long-term operation of the site, lack of engineered structures to provide secondary containment, and inadequate waste management practices. In order to mitigate the potential release of these contaminants into the environment, a series of engineering controls have been implemented since February 1987 which have included protective coatings for waste handling areas, secondary containment devices for waste staging

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (liters)	Contaminant	Maximum Concentration (µg/l)	Action Level (µg/l)	Cleanup Goals * (µg/l)	Point of Compliance
ground water	8 [illegible]970 ([illegible])	vinyl chloride	2,800	2	2	
		toluene	17,580	5	5	
		1,1-dichloroethene	2,970	5	5	
		1,1-DCA	487	5	5	
		ethyl benzene	302	5	5	
		1,1,1-TCA	100	5	5	
		xylene	1,608	5	5	

* Based on Safe Water Drinking Act MCLs

areas, the installation of a truck unloading pad and roof, and aqueous treatment upgrades.

EXPOSURE PATHWAYS

The most l[illegible]ely pathway for an impact to the environment would have been a release from a spill which may have migrated to the surface or ground water. In addition, humans could be exposed through the ingestion of contaminated ground or surface water.

SELECTED REMEDY

The selected remedy for this site includes installing a single recovery well to pump contaminated ground water and treatment using air stripping followed by liquid phase carbon adsorption. Treated effluent will be discharged to a tributary of Dutch Settlement Creek. Spent carbon will be disposed of offsite. T[illegible]ral capital and start-up costs are approximately $53,000, while operation and maintenance costs for the first year are approximately $95,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

Both in situ and reactor bioremediation were considered for hazardous waste treatment. In situ bioremediation involves the microbial degradation of contaminants within the soil/water matrix. Bioremediation in reactors would consist of either mobile or fixed tank units into which contaminated ground water would be pumped. These methods were not selected primarily because the microorganisms do not react well to rapid changes of contaminants, total load, or flow rates. In addition, the inconsistent presence of high toxicity contaminants in the ground water can quickly destroy the biomass.

PUBLIC PARTICIPATION

A public notice of the permits containing the corrective measures was issued July 19, 1991. There were no comments received on the EPA or NYSDEC permits. In addition a supplemental fact sheet and administrative record were made available to the public from August 18 to September 17, 1993. No comments were received during the specified period.

NEXT STEPS

The specified corrective measures for groundwater contamination are currently being implemented. Remedial action for soil contamination will be examined at a later date.

KEY WORDS
Ground water, VOCs, DCA, toluene, xylenes, air stripping, carbon adsorption, extraction, bioremediation (considered), offsite discharge, offsite disposal, onsite treatment

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ABEX

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 0976

Abex Friction Products

Winchester, Virginia
Signed September 23, 1994

Facility/Unit Type:	**Manufacturing of brake linings**
Contaminants:	**Chromium, lead, mercury, 1,1,1-trichloroethane**
Media:	**Soil**
Remedy:	**Paving, institutional controls**

FACILITY DESCRIPTION

On August 4, 1986, a RCRA facility permit was issued to Abex Friction Products (Abex) requiring soil sampling adjacent to the Drum Storage Area. In accordance with 40 CFR §127.7, a Statement of Basis has been prepared explaining the corrective measures that have been selected by the U.S. Environmental Protection Agency (EPA) as well as to provide information on the modification of the EPA portion of the full RCRA permit.

The Abex Friction Products site is a brake-lining manufacturing facility located in Winchester, Virginia. The site is zoned Intensive Industrial by the City of Winchester. Currently, the land immediately north and northeast of the facility is vacant. Southeast of Abex is a light industrial area, and to the west there is a residential and public use area. The future zoning plan for Winchester calls for the vacant area north and northeast of Abex to be used for light industry. The facility is located between two surface water drainages: Buffalo Lick Run and Abrams Creek.

The soils underlying the facility are predominantly silty clays containing weathered limestone fragments near the bedrock contact. Surface water occurs at the site as precipitation runoff only. This is handled by onsite drainage ditches and collection areas. All onsite drainage is directed into the surface impoundments and appears to be maintained in good condition. There are three separate areas of ground-water occurrence at the site. The site is underlain by a perched soil aquifer, a shallow bedrock aquifer, and a deep bedrock aquifer; the lowermost of which is significant regional water supply source. There are seven wells located within 1.5 miles of the facility. Two of these are the Abex production well and a deep monitoring well while the other five are private or community supply wells. The most vulnerable well is a single-family domestic supply well located downgradient of the site. The local ground-water discharge area is Abrams Creek, located approximately 1500 feet northeast of the site.

Before the storage of hazardous material was discontinued in 1986, Abex temporarily stored drums at an asphalt-paved Drum Storage Area. Following the issuance of the full RCRA permit in August 1986, Abex submitted the Soil Sampling Plan in October to determine if hazardous wastes had occurred. EPA approved the plan in May 1991 and preliminary soil samples were taken in June, 1991.

Between October 1986 and June 1991, Abex removed all visually stained soil from the Drum Storage Area, and constructed a concrete containment pad and a collection sump.

In February 1992, EPA determined that additional soil sampling was necessary to confirm previous results. In November, a second round of samples was taken from the Drum Storage Area. Using data from this round of samples, EPA determined that further corrective measures were necessary. Preliminary soil investigation found chromium, lead, mercury, and 1,1,1-trichloroethane located zero to three feet below the two- to four-foot thick clean backfill layer.

The hydrogeologic data currently available suggests that the ground water is vulnerable to contamination by the plant SWMUs. Presently, Abex is conducting a ground-water Quality Assessment Plan to verify

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (yd^3)	Contaminant	Maximum Concentration (mg/kg)	Action Level	Cleanup Goals	Point of Compliance
soil	185	chromium lead mercury 1,1,1-trichloroethane	766 5,800 1.10 1.07			

the presence of contamination and to locate its source.

The draft permit modification also formally defers the ground-water remedial investigations of the four surface impoundments and the landfill to the Virginia Department of Environmental Quality (VDEQ). The Corrective Action permit issued in 1986 required a ground-water assessment investigation for four of the facility's surface impoundments and a closed landfill (all interim status RCRA units). These units were included in the permit because the State could not require ground-water cleanup at the time of issuance. After the permit was issued, Abex submitted a post-closure permit application to the State. The VDEQ then assumed technical direction for the ground-water investigation and is planning to issue a post-closure permit for the surface impoundments and landfill.

EXPOSURE PATHWAYS

Both lead and chromium were detected at levels above EPA health-based concentrations. The primary exposure pathway of concern for these contaminants is ingestion of contaminated soil.

The most likely receptors would be workers involved in the maintenance or repair of a discharge pipe that runs between the drum storage pad and the fence line. However, because any exposure to dust and soil would be of limited duration, it was determined that the levels of lead and chromium in the soil pose no potential threat to human health. In addition, the potential to leach to ground water is limited because lead and chromium adsorb to soils strongly and are not very mobile.

SELECTED REMEDY

The selected remedy consists of constructing an asphaltic concrete cap to limit potential infiltration into the Drum Storage Area, promote stormwater runoff, and eliminate the potential for direct contact with the soil; quarterly inspections and periodic maintenance of the cap; posting and updating signs to prevent digging in the area around the cap; records of these corrective actions in the deed to inform any future purchaser that the contaminated soil remains in place; and submitting a survey plat to both the local zoning authority and EPA to indicate the location and dimensions of the Drum Storage Area and the contaminated soil. Abex will also demonstrate financial assurance to EPA for implementing the corrective measures before the final modified permit is issued. EPA is confident that these measures will reduce the potential for release of contaminants from the soil into ground water, soil adjacent to the contaminated soil, or surface water. The total cost of this selected remedy is $5,000, with an annual O&M of $500 per year.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period was held from August 3 until September 19, 1994. No comments were received regarding the draft permit modification.

NEXT STEPS

The final permit modification becomes effective immediately upon issuance on September 28, 1994 and will expire on July 15, 1996. The final decision will be incorporated into the Administrative Record.

KEYWORDS	CONTACT
Soil; ingestion (soil); VOCs, heavy metals (chromium, mercury, lead); capping, institutional controls (deed)	Attn: Wanda Martinez (3HW52) U.S. EPA Region III 841 Chestnut Building Philadelphia, PA 19107 (215) 597-3658

ALLIED SIGNAL

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 6711

Allied Signal Inc. Baltimore Works Facility

Baltimore, MD
April 21, 1991

Facility/Unit Type:	**Chromium chemical manufacturing facility**
Contaminants:	**Chromium; Polynuclear Aromatic Hydrocarbons (PAHs)**
Media:	**Surface soil; ground water, and surface water**
Remedy:	**Hydraulic barrier, ground-water maintenance system, multimedia cap, outboard embankment; monitoring for ground water, surface water, sediment, benthic organisms, and air at the Former Manufacturing Area; layered soil cap at the Southeast Quadrant; clearing and resampling at the off-site areas; excavation and proper disposal at Wills Street**

FACILITY DESCRIPTION

On September 29, 1989, EPA, the State of Maryland Department of the Environment (MDE) and Allied-Signal Inc. Baltimore Works Facility (Allied) entered into a Consent Decree pursuant to Sections 3008(h) and 7003 of RCRA. Under the terms of this Consent Decree, Allied was required to investigate the nature and extent of contamination at the facility, to submit reports on these investigations, and submit a Corrective Measures Implementation Program Plan (CMIPP).

Allied is a 20-acre facility that manufactured chromium chemicals for approximately 140 years under successive ownership. Operations ceased in 1985.

The surrounding land use includes industrial, residential, and commercial districts in the vicinity. The site is located between Baltimore's downtown business district and the Fells Point section of the city. The facility is surrounded by water to the east, west, and south. This body of water is used for recreational and commercial boating traffic to and from Baltimore's Inner Harbor.

Contamination has been identified in four areas at the facility: the former manufacturing area, the southeast quadrant of the facility, neighboring contiguous properties, and neighboring non-contiguous properties. Elevated levels of chromium and PAHs have been detected in soils both on- and off-site.

The shallow aquifer (0-20 feet below the ground surface) and deep aquifer (23-70 feet below ground surface) are contaminated with chromium, with the highest concentrations near the former manufacturing area. Chromium in the deep aquifer has migrated approximately 2,750 feet off-site along the top of the bedrock. EPA has not identified any users of the deep aquifer for drinking water.

EXPOSURE PATHWAYS

EPA and MDE have identified exposure pathways through inhalation, dermal contact, and ingestion of the contaminated soil and surface water in the four areas of the corrective action. The nearest current human receptors are employees of neighboring industrial facilities, persons who reside near the facility, and persons who fish off the docks adjacent to the facility.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
ground water					
shallow	chromium	14,500 mg/l[1]	*		Barrier wall and
deep (on-site)	chromium	8,000 mg/l			bedrock
deep (off-site)	chromium	1,600 mg/l[2]			
surface water	chromium (total)	3170 ppb		50 ppb	Outside barrier wall[3]
soil	hexavalent chromium	94 mg/kg	10 ppm	10.0 ppm	SE Quadrant
	benzo(A)anthracene	16 mg/kg	0.8 ppm	0.8 ppm	Neighboring
	benzoflouranthenes	29 mg/kg	1.8 ppm	1.8 ppm	properties
	indeno-(1,2,-CD)-pyrene	11 mg/kg	0.5 ppm	0.5 ppm	

1 Detected in shallow ground water beneath the Former Manufacturing Area

2 Detected in the deep aquifer under Patapsco River.

3 Must meet EPA marine water quality standards for 4 consecutive days per month.

* The action level for ground water is to maintain an inward hydraulic gradient of 0.01 foot from the outside to the inside of the containment structure.

SELECTED REMEDY

The table below summarizes the selected remedies for each area of concern at the facility.

Facility Area	Media	Remedy Description
Former Manufacturing Area	soil ground water surface water	Install a deep hydraulic barrier to minimize the quantity of water withdrawn to maintain the inward hydraulic gradient and to minimize direct contact of contaminated soils and ground water with surface water. Construct an enhanced bulkhead (outboard embankment) and the area to prevent the collapse of chromium-contaminated soil into the harbor. Install a ground-water withdrawal system to prevent migration beyond the containment structure by maintaining an inward hydraulic gradient. Perpetual surface- and ground-water monitoring surrounding the containment structure.

Facility Area	Media	Remedy Description
Former Manufacturing Area (cont'd)	soil ground water surface water	Install a multi-media cap to prevent future exposure to the contaminated soil and to reduce leachate.
Southeast Quadrant	soil	Place a layered soil cap to prevent upward migration of the remaining chromium and PAHs in the soil and potential exposure to the chromium.
Offsite areas to the east of the facility, neighboring non-contiguous properties	soil	Areas will be cleared and resampled. If resampling reveals that soil exceeds the PAH action levels, they will be covered with 2 feet of clean soil; concentration of chromium reduced to 10 ppm in unsaturated soils.
Neighboring contiguous properties	soil	Excavation of saturated and unsaturated chromium-contaminated soil and proper disposal

Contaminated soils which could leach unacceptable levels of chromium have been removed from the Southeast Quadrant and disposed of at an appropriate off-site landfill. Extracted ground water will either be treated on-site and discharged into the harbor or the City's public treatment works, or it will be removed and transported by tanker truck to an off-site disposal facility.

The corrective measures are expected to minimize the future release of contaminants into the air, surface soil, ground water, and surface water. Surface water will be monitored to ensure that concentrations of chromium do not exceed the 50 ppb standard established in the consent decree. In addition, ground-water quality monitoring and biological and sediment sampling will be conducted. EPA and MDE believe that these corrective measures will offer a final remedy to the contamination.

The total cost of the corrective action is estimated to be approximately $97 million.

As a result of the salinity of the ground water underlying the facility, the State of Maryland has determined that the ground water is not a drinking water source. Therefore, no cleanup goal has been established for the ground water.

PUBLIC PARTICIPATION

EPA and MDE invited public comment of the corrective measures from August 26, 1991 to September 16, 1991 and from September 18, 1991 through November 12, 1991. A public meeting was held on October 28, 1991. EPA and MDE also conducted several interviews with interested local officials, residents, and business owners in the community. The Agencies received 120 comments from the general public, the State of New Jersey, the City of Baltimore, and Allied. The comments on the Statement of Basis are summarized below:

- The State of New Jersey questioned the implementability and effectiveness of the hydraulic barrier and expressed concern regarding the risk assessment.

- The City of Baltimore expressed concern about the future use of the site, and risks created during the remedy implementation. City officials asked that Allied submit copies of all documents to the City.

- Comments from the general public focused on off-site contamination, the frequency of off-site monitoring, health effects caused by exposure to chromium, and future land use.

NEXT STEPS

Design approval and implementation.

KEY WORDS

ground water, surface water, soil; ingestion, dermal contact, inhalation; PAHs, chromium; capping, hydraulic containment, monitoring

CONTACT

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region III
ID# 1223

AMP GLEN ROCK FACILITY

Glen Rock, Pennsylvania
(signed February 19, 1991)

Facility/Unit Type: **Materials and plastics manufacturer**
Contaminants: **TCE; 1, 1, 1-TCA; 1, 1, 2-TCA**
Media: **Soil, ground water**
Remedy: **Ground water pump and treat by using air stripping towers and bedrock flushing**

FACILITY DESCRIPTION

On January 4, 1989, EPA and AMP Glen Rock (AMP) entered into a Consent Order pursuant to Section 3008(h) of RCRA to perform onsite and offsite investigation of the nature and extent of release of hazardous wastes. EPA and AMP entered into a second Consent Order on January 22, 1991. Under the terms of this Consent Order, AMP was required to implement the remedy selected in the Record of Decision dated January 21, 1991. In addition, the facility has agreed to prepare and adopt a waste minimization plan.

The 20-acre facility began operation in 1959. It currently manufactures plastic electrical connector holdings for use in the computer, telephone, and automotive industries and conducts research and development of adhesives and lubricants.

The facility is underlain by a single bedrock aquifer consisting of fine-grained albite and chlorite-enriched schist. Ground water flows to the south and southeast.

Surrounding land use is primarily rural. A trailer park is located adjacent to the site.

Sampling of the facility's wells in 1984 revealed contamination of ground water and surficial soils with VOCs. In September of 1984, AMP initiated pumping of ground water and treatment using air stripping towers.

In 1983 and 1984, AMP supplied bottled water to employees because of complaints about well water taste. In 1984, a nearby trailer park also received bottled water in response to detection of contamination in a backup water supply well.

EXPOSURE PATHWAYS

The primary exposure pathway that threatens human health and safety is ingestion of contaminated ground water. The employees at the facility are at the greatest risk. Hydrogeologic surveys indicate that principal wells at the nearby trailer park are hydraulically upgradient of the facility.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal (ppb)	Point of Compliance
ground water	Not provided	TCE* 1,1,1-TCA* 1,1,2-TCA**	4000 ppb***	Not provided	5 200 .6	The following ground water wells: R-5 MW-4L AMP Well-3 MW-10 Larkin Field Well

* Cleanup goal represents an MCL

** Cleanup goal based on risk level of 10^{-6}; since detection limit is 1 ppb, compliance concentration will be equal to "less than" the reportable detection limit.

*** Maximum concentration for total VOCs .

SELECTED REMEDY

The selected corrective measure consists of continuing the ongoing pumping and treatment of ground water using eight recovery wells and a dual air stripping tower. The selected remedy also includes installation of a subsoil/bedrock flushing trench consisting of a perforated piping system that saturates the subsoil/ bedrock by gravity drainage, thereby transporting contaminants into the ground water for recovery and treatment.

The corrective measure was selected by EPA because it will effectively and reliably reduce the toxicity, mobility, and volume of contamination. The selected corrective measure is a cost-effective permanent solution that will use an innovative and alternative technology to attain long and short term remediation. This remedy minimizes environmental degradation and protects human health and the environment.

The total estimated capital and annual O&M costs associated with the corrective measures are $78,000 and $108,700 per year, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

- Vacuum extraction
- Bioreclamation

PUBLIC PARTICIPATION

On July 30, 1990, a 30-day public comment period was announced in local newspaper. EPA did not receive any comments from the public.

NEXT STEPS

AMP will submit an assessment report every 2 years (effective January 1991) until cleanup goals are attained. EPA is concerned that an additional source of VOC contamination may still exist onsite. EPA will require AMP to conduct an additional RCRA Facility Investigation (RFI) to investigate the possible existence of another source of VOCs if the concentrations of VOCs in ground water at well R-5 do not decrease to less than 2000 ppb after 2 years of pumping and treatment.

KEY WORDS
ground water; soil; ingestion; VOCs; TCE; TCA; on-site treatment, off-site treatment, air stripping.

CONTACT
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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 9285

American Nickeloid Company

Walnutport, PA
(Signed June 30, 1992)

Facility/Unit Type:	**Metal plating facility**
Contaminants:	**Hexavalent Chromium (VI), Trivalent Chromium (III), Copper, Nickel, Zinc, Ethylbenzene, 4-Methyl-2-Pentanone, Carbon Tetrachloride, Naphtha**
Media:	**Soil, ground water, surface water**
Remedy:	**Pump and treat ground water recovery system; soil excavation and possible in-situ treatment; trench excavation with surface water skimming**

FACILITY DESCRIPTION

On May 25, 1989, EPA and American Nickeloid Company (ANC), entered into a consent agreement pursuant to Section 3008(h) of RCRA. The agreement required ANC to conduct an investigation to determine the nature and extent of contamination at its Walnutport, PA facility and to conduct a study evaluating various cleanup alternatives. ANC completed its investigation and submitted to EPA an RFI and CMS which evaluated a variety of corrective measure alternatives to address contamination in three areas: the Surface Impoundment Area, the Chrome-Plating Area, and the Former Naphtha Storage Tank Area. A fourth area, the Swale Area, may require additional information gathering and/or corrective measures.

ANC operates a specialty metals plating facility involving sheet coil coating and finishing. The facility has been in operation since 1923 and includes an active steel plating plant and several former surface impoundments (Surface Impoundment Area) separated by a swampy wooded area (the Swale Area). The facility is bordered on the west by the Lehigh Canal, adjacent to the Lehigh River; the southern portion of the plant is bordered by residential property; and the northern portion of the facility is bordered by meadows and woods. Residents in the vicinity of the facility use municipal water supplies. The Walnutport Authority operates a public drinking water supply well 900 feet south of the ANC facility which is used infrequently to supplement water supplies.

The facility is situated on what was a poorly drained swamp area until the property was drained for construction of the manufacturing facility in 1921. The facility is underlain by a shallow bedrock zone beneath the Surface Impoundment Area and a deeper bedrock aquifer beneath the plant. Regional ground-water flow is west toward the Lehigh River; however, in the shallow zone of the aquifer, ground-water flow is north toward the Swale Area. Both the Lehigh Canal and Lehigh River serve as ground-water discharge areas for the aquifers. The low-lying Swale Area contains water year-round and is probably typical of site conditions prior to development. The Swale is a likely discharge point for groundwater upgradient of the facility.

In 1985, a lined surface impoundment was taken out of service pursuant to a closure plan approved by the Pennsylvania Department of Environmental Resources (PADER) on July 12, 1985. A ground-water recovery and treatment system has been in operation at the Surface Impoundment Area since February 1985 under the supervision of PADER. In July 1987, chrome contamination was discovered beneath the floor of the plant in the Chrome-Plating Area.

Contamination was traced to historic spills and leaks from the chromium electroplating operations. During the RFI, contamination associated with the Former Naphtha Storage Tank Area was discovered. In January 1991, an additional contamination source was discovered when an underground fuel tank was removed. Two monitoring wells and one recovery well were installed pursuant to PADER requirements in conjunction with EPA activity at the facility.

EXPOSURE PATHWAYS

Contaminated ground water is a principal threat at the facility because of its migration to the Lehigh River and Canal and the potential for ingestion of contaminants via the consumption of ground water from public water-supply wells. Other exposure pathways include inhalation and dermal contact. The nearest potential receptors include workers, trespassers, and nearby residents.

PUBLIC PARTICIPATION

The public comment period on EPA's proposed remedy extended from May 11, 1992 to June 10, 1992. Approximately 30 people attended a public meeting on May 25, 1992. EPA received five comments from the public. The comments included questions about the extent of ground-water contamination, health and safety issues associated with drilling monitoring wells, and disruptions to the neighborhood during cleanup activities. EPA received seven comments from ANC which addressed expanding ground-water treatment, technical practicability of source removal, the points of compliance, media cleanup standards, and an RFI summary.

SELECTED REMEDY

See table 1.2

INNOVATIVE TECHNOLOGIES CONSIDERED

In-situ bioremediation was considered as a corrective action for the Former Naphtha Storage Area.

NEXT STEPS

The history and distribution of contamination at the ANC facility is complex. As a result, EPA will require a phased remediation approach commencing with the implementation of expanded groundwater recovery at the Surface Impoundment Area and the Chrome-Plating Area. The second phase will involve addressing residual contamination associated with the Chrome Plating Area and the Former Naphtha Storage Tank Area in an attempt to accelerate remediation of groundwater and residual soil contamination. An expanded assessment of the distribution of contamination in soils, surface water, and ground water and its ecological effects will be conducted at the Swale Area.

The final selected remedy will be implemented either through a Corrective Measure Implementation Consent Order or Unilateral Order.

KEY WORDS
ground water, soil, surface water; ingestion, inhalation, dermal contact; heavy metals; excavation, in-situ treatment, institutional controls, off-site disposal

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CONTAMINATION DETECTED AND CLEANUP GOALS

Facility Area	Media	Est. Vol.	Contaminant	Max. Conc.	Action Level	Cleanup Goal	Point of Compliance***
Surface Impoundment Area	ground water	>.6 gpm	Total Chromium Copper Nickel Zinc	2200 ppb <1.3 ppm <0.7 ppm <7.0 ppm	100 ppb* 1400 ppb** 730 ppb** 7.0 ppm**	100 ppb* 1400 ppb** 730 ppb** 7.0 ppm**	MW-B-2, 3, 6, 7D MW-B-3, 6 MW-B-3, 6
	soil	un-known	Total Chromium Copper Nickel	2045 ppm	not given	not given 2900mg/kg** 1600 mg/kg**	
Chrome-Plating Area	ground water	>5 gpm	Total Chromium Chromium VI Copper Nickel Zinc	11.1 ppm 3690 ppm 16.5 ppm 25.3 ppm 0.048 ppm	100 ppb* 180 ppb** 1400 ppb** 730 ppb** 7.0 ppm**	100 ppb* 180 ppb** 1400 ppb** 730 ppb** 7.0 ppm**	MW-5D, PPW, P-1, 13 MW-5D, PPW MW-5D, PPW
	soil	un-known	Total Chromium Chromium VI Copper Nickel	not given " " "	not given 390 mg/kg** 2900 mg/kg** 1600 mg/kg**	not given 390 mg/kg** 2900 mg/kg** 1600 mg/kg**	
Former Naphtha StorageTank Area	ground water	un-known	Ethylbenzene 4-Methyl-2-Pentanone Carbon Tetrachloride	1.6 ppm 6.2 ppm 0.31 ppm	700 ppb* 1800 ppb** 5 ppb*	700 ppb* 1800 ppb** 5 ppb*	MW6-S, MW6-D MW6-S, MW6-D MW6-S, MW6-D
	soil	un-known	Ethylbenzene Carbon Tetrachloride	not given "	7800 mg/kg** 13 mg/kg**	7800 mg/kg** 13 mg/kg**	
Swale Area		un-known	Total Chromium Copper Nickel Zinc	0.15 ppm <1.3 ppm <7.0 ppm	100 ppb* 1400 ppb** 730 ppb ** 7.0 ppm*	100 ppb* 1400 ppb** 730 ppb ** 7.0 ppm*	

* Cleanup goal is a Maximum Contaminant Level that is federally enforceable under the Safe Drinking Water Act.

** Risk-based screening level provided by Region III.

*** MW- Monitoring Well
P- Piezometer
PPW- Plant Production Well

SELECTED REMEDY

The remedies selected were assembled into a variety of Corrective Measure Alternatives to address soil/unsaturated surfical materials and groundwater. The table below summarizes the selected remedies for each area of concern at the facility.

TABLE 1.2

Facility Area	Media	Remedy Description	Cost	
			Capital	O&M
Surface Impoundment Area	ground water	Continued recovery of groundwater from existing wells. Recovered groundwater will be treated by chemical reduction, precipation and polishing and/or non-chemical reduction and ion-exchange in a waste water treatment system.	*$1,400,000	419,000
	soils	Do not require additional Corrective Measures other than limiting access. EPA will defer to PADER regarding RCRA closure requirements.	$25,000	none
Chrome-Plating Area	ground water	Will be recovered in a phased manner from both shallow and deep bedrock aquifer zones. Recovery rates will be adjusted depending on system data collected during implementation. Treated water will be reused on-site and discharged to the Lehigh River via NPDES outfall. Treatment residues will be managed in compliance with waste management standards.	*$1,052,000	304,000
	soils	Will be excavated and disposed of off-site unless technically impracticable. In such case, chemical treatment and/or source stabilization would likely be required. Area will be covered with concrete and floor will be coated with chromium resistant material after soil remediation.	$818,330 to $1,034,310	undefined
Former Naphtha Storage Tank Area	ground water	Will be treated by excavating a trench and skimming contaminants off standing water. Ground water recovery system will be installed and will use granular activated carbon to treat ground water.	$160,000	$34,000
	soils	Do not require additional Corrective Measures other than institutional controls (monitoring existing wells, etc.).	$25,000	none
Swale Area		An expanded ecological assessment will be performed to determine the effectiveness of the Swale Area to retain contaminants and to further assess the potential impact of such contaminants.	N/A	N/A

* These cost estimates include the construction of a complete new wastewater treatment plant.

FINAL

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region III
ID# 1223

AMP GLEN ROCK FACILITY

Glen Rock, Pennsylvania
(signed February 19, 1991)

Facility/Unit Type: Materials and plastics manufacturer
Contaminants: TCE; 1, 1, 1-TCA; 1, 1, 2-TCA
Media: Soil, ground water
Remedy: Ground water pump and treat by using air stripping towers and bedrock flushing

FACILITY DESCRIPTION

On January 4, 1989, EPA and AMP Glen Rock (AMP) entered into a Consent Order pursuant to Section 3008(h) of RCRA to perform onsite and offsite investigation of the nature and extent of release of hazardous wastes. EPA and AMP entered into a second Consent Order on January 22, 1991. Under the terms of this Consent Order, AMP was required to implement the remedy selected in the Record of Decision dated January 21, 1991. In addition, the facility has agreed to prepare and adopt a waste minimization plan.

The 20-acre facility began operation in 1959. It currently manufactures plastic electrical connector holdings for use in the computer, telephone, and automotive industries and conducts research and development of adhesives and lubricants.

The facility is underlain by a single bedrock aquifer consisting of fine-grained albite and chlorite-enriched schist. Ground water flows to the south and southeast.

Surrounding land use is primarily rural. A trailer park is located adjacent to the site.

Sampling of the facility's wells in 1984 revealed contamination of ground water and surficial soils with VOCs. In September of 1984, AMP initiated pumping of ground water and treatment using air stripping towers.

In 1983 and 1984, AMP supplied bottled water to employees because of complaints about well water taste. In 1984, a nearby trailer park also received bottled water in response to detection of contamination in a backup water supply well.

EXPOSURE PATHWAYS

The primary exposure pathway that threatens human health and safety is ingestion of contaminated ground water. The employees at the facility are at the greatest risk. Hydrogeologic surveys indicate that principal wells at the nearby trailer park are hydraulically upgradient of the facility.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Est. Volume	Contaminants	Maximum Concentration	Action Level	Cleanup Goal (ppb)	Point of Compliance
ground water	Not provided	TCE 1,1,1-TCA 1,1,2-TCA	4000 ppb***	Not provided	5* 200* .6**	The following ground water wells: R-5 MW-4L AMP Well-3 MW-10 Larkin Field Well

* Cleanup goal represents an MCL

** Cleanup goal based on risk level of 10^{-4}; since detection limit is 1 ppb, compliance concentration will be equal to "less than" the reportable detection limit.

*** Maximum concentration for total VOCs.

SELECTED REMEDY

The selected corrective measure consists of continuing the ongoing pumping and treatment of ground water using eight recovery wells and a dual air stripping tower. The selected remedy also includes installation of a subsoil/bedrock flushing trench consisting of a perforated piping system that saturates the subsoil/ bedrock by gravity drainage, thereby transporting contaminants into the ground water for recovery and treatment.

The corrective measure was selected by EPA because it will effectively and reliably reduce the toxicity, mobility, and volume of contamination. The selected corrective measure is a cost-effective permanent solution that will use an innovative and alternative technology to attain long and short term remediation. This remedy minimizes environmental degradation and protects human health and the environment.

The total estimated capital and annual O&M costs associated with the corrective measures are $78,000 and $108,700 per year, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

- Vacuum extraction
- Bioreclamation

PUBLIC PARTICIPATION

On July 30, 1990, a 30-day public comment period was announced in local newspaper. EPA did not receive any comments from the public.

NEXT STEPS

AMP will submit an assessment report every 2 years (effective January 1991) until cleanup goals are attained. EPA is concerned that an additional source of VOC contamination may still exist onsite. EPA will require AMP to conduct an additional RCRA Facility Investigation (RFI) to investigate the possible existence of another source of VOCs if the concentrations of VOCs in ground water at well R-5 do not decrease to less than 2000 ppb after 2 years of pumping and treatment.

KEY WORDS

ground water; soil; ingestion; VOCs; TCE; TCA; on-site treatment, off-site treatment, air stripping.

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final

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS
SUMMARY COVER SHEET

FACILITY: APPALACHIAN TIMBER SERVICES, INC. REGION: III

The following information was not available in the material provided for this summary:

- CONTAMINATION DETECTED AND CLEANUP GOALS
  - Maximum concentration (groundwater)
  - Action levels

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID # 1958
WVD063461958

Appalachian Timber Services, Inc.

Sutton, West Virginia
(Signed August 9, 1996)

Facility/Unit Type:	**Wood treatment**
Contaminants:	**Arsenic, Benzo(a)anthracene, Benzo(a)pyrene, Naphthalene, Anthracene, Carbazole, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Fluoranthene, Pyrene, Benzene, Toluene, Ethylbenzene, Xylene, and Chromium**
Media:	**Soil, Groundwater, Sediment, and Surface water**
Remedy:	**Install drip pads, conduct bioremediation, excavate soil, construct an asphalt cap, install additional groundwater monitoring wells, perform ecological impact studies, continue current pump and treat system, and comply with groundwater clean-up standards**

FACILITY DESCRIPTION

EPA and the Appalachian Timber Services, Inc. (ATS) entered into an Administrative Consent Order on December 29, 1991 pursuant to Section 3008(h) of RCRA. ATS is located in Sutton, Braxton County, West Virginia and is approximately 15 acres in size. The facility is adjacent to the Elk River and immediately downstream from the Sutton Dam.

ATS was constructed in 1971 and began wood treating operations on February 1, 1972. Approximately ten years earlier, a portion of AST's land was used as a landfill for municipal and household waste refuse. Currently, the facility consists of approximately 9,000 square feet of enclosed single-story structures including: wood treatment buildings, a raw materials storage building, a maintenance shop, a boilerhouse, a saw mill, and an office building. The remaining areas of the facility are used for the storage of raw materials and treated wood.

According to the 1990 Census report of the U.S. Bureau of the Census, in 1990 Sutton, West Virginia had a population of 939 people and 262 housing units. Sutton is a rural area with a racially homogeneous population that is relatively young in age. Approximately 60 percent of the residents are less than 44 years of age.

The facility is located on flood plain alluvium which is no longer within the 100-year flood plain due to the construction of the Sutton Dam. The top layer consists of two to three feet of gravel fill. Beneath the gravel fill is a alluvial layer consisting of brown sandy silt with few distinct strata changes to a depth of about 20 feet. The total thickness of the alluvial layer in the Sutton area ranges from approximately 10 to 40 feet, the average being approximately 30 feet. After the alluvial layer, there is the upper bedrock unit which underlies the facility and is most likely sandstone. This sandstone is generally 30 to 50 feet thick and is a medium-hard, medium-grained, well-cemented, micaceous sandstone. The uppermost aquifer under the facility is a typical river valley alluvial aquifer. Groundwater beneath the facility generally flows from south to north toward the Elk river; however, slight variation in groundwater flow direction exist across the site.

There is one drinking water well within one mile of the facility; however, it is located southeast and upgradient from the facility. In addition, there are three public water supply intakes located on the Elk River within 10 miles of the facility. The three public water supply intakes are as follows: the Flatwoods-Canoe Run Public Service District located approximately 0.2 miles upstream from the facility; the West Virginia-American Water Company Sutton intake, which was closed in mid-1994, is located approximately 0.2 miles downstream from the facility; and the West Virginia-American Water Gassaway plant located approximately seven miles

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	MCL Action Level	MCL Cleanup Goal (ppb)	Point of Compliance
Soil	7,200 cubic yards	Arsenic Benzo(a)-anthracene Benzo(a)pyrene	5.29E+02 1.81E+03 2.59E+01	Not given	33 ppm 7.8 ppm 0.78 ppm	Media clean-up standards
Groundwater	4.2 million cubic feet (or 31 million gallons)	Naphthalene Anthracene Carbazole Indeno(1,2,3-cd)pyrene Dibenz(a,h) anthracene Benzo(a)-anthracene Chrysene Benzo(b) fluoranthene Benzo(k) fluoranthene Benzo(a)pyrene Fluoranthene Pyrene Benzene Toluene Ethylbenzene Xylene Chromium	Not given	Not given	1,500 11,000 3.4 0.2 0.2 0.2 9.2 0.2 0.92 0.2 1,500 1,100 5.0 1,000 700 10,000 50 100	Entire aquifer
Sediment	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Surface water	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

downstream from the facility.

ATS treated wood with creosote or CCA in wood treatment cylinders until July 1993. ATS ceased the CCA wood treatment portion of its operations at this time. ATS operated an unlined lagoon for collection of contaminated water produced as a result of wood treatment operations until 1979. The lagoon was closed in 1979 under a pre-RCRA closure plan. Sludge contained in the lagoon was removed as part of the closure plan and placed in the Clay Encapsulated Disposal Area on the northeast corner of the property. ATS replaced the lagoon with a clay-lined evaporation spray pond. From 1980 to 1985, wastewater was treated in a creosote separator tank and the treated effluent from the tank was discharged to the spray pond.

On June 15, 1984, the West Virginia Department of Environmental Protection (WVDEP) investigated ATS in response to two complaints which stated that an oily sheen was observed on the bank of the Elk River immediately adjacent to the facility. Although no sheen was observed during the inspection, WVDEP documented the presence of a creosote-like material seeping into the river adjacent to the facility during another inspection conducted on July 31, 1984. EPA later confirmed the seepage and WVDEP request the facility to install booms on the river to prevent the creosote-like material from

migrating further down the river. ATS installed the booms and constructed an interceptor trench next to the river in order to prevent contaminated groundwater from entering the river. In 1985, the spray pond was replaced with a complete wastewater treatment/recycle system. In early 1988, ATS installed groundwater monitoring wells in order to study the groundwater conditions at the facility. The study concluded that groundwater contamination had occurred at ATS and that the sources of contamination were the spray pond and the old closed unlined lagoon. The groundwater was contaminated with creosote compounds which were found both as a separate dense immiscible phase, and as a dissolved phase plume. The plume was defined both vertically and horizontally as part of the assessment. On December 15, 1989, WVDEP issued a post-closure permit for the spray pond requiring ATS to monitor the level of contamination in the groundwater and to recover and treat the contaminated groundwater in the vicinity of the closed spray pond.

Pursuant to the 1991 consent order, the RCRA Facility Investigation (RFI) investigated three solid waste management units (SWMUs) for releases of hazardous waste and hazardous constituents and evaluated site-specific conditions and characteristics that could affect potential contaminant migration. The three SWMUs investigated were the Clay Encapsulated Disposal Area, Tram Track Area, and Treated Wood Storage Area. During the RFI, two additional areas (Debris Burning Pile and Potential Additional Waste Management Unit) were added to the investigation.

Based on the finding of the RFI, EPA determined that the soils beneath the Tram Track Area, Treated Wood Storage Area, and Debris Burning Pile have been contaminated by creosote and/or CCA constituents associated with wood treating operations. The Tram Track Area and Treated Wood Storage Area appear to be the sources of contamination found in sediments and surface water on-site and at one sample point in the Elk River. Soil from beneath the Debris Burning Pile may also be contributing to the on-site and Elk River sediment and surface water contamination. The groundwater investigation conducted as part of the RFI focused specifically on the Clay Encapsulated Disposal Area. The RFI required the installation of a monitoring well down gradient of the disposal area, and sampling of the well for hazardous constituents. Groundwater sampling results from this well did not indicate the presence of any creosote compounds or volatile organic compounds. After the installation of this monitoring well, it was determined that groundwater flows in both a northern and eastern direction in the vicinity of the Clay Encapsulated Disposal Area. While this well is located north of the Clay Encapsulated Disposal Area, there is no well on the eastern side of the unit. Approximately 4.2 million cubic feet (or 31 million gallons) of groundwater was contaminated. The contaminated area was equal to 500 x 400 x 21 feet deep. Also, approximately 7,200 cubic yards of soil was contaminated.

The groundwater plume that exists at the facility has been characterized by installation of the monitoring wells in the alluvial aquifer. Analysis of the samples taken from the two deep bedrock monitoring wells demonstrated that the contamination is confined vertically to the alluvial aquifer, and that the upper bedrock aquifer is not contaminated. The contaminants of concern include the following: arsenic, benzo(a)anthracene, benzo(a)pyrene, naphthalene, anthracene, carbazole, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, fluoranthene, pyrene, benzene, toluene, ethylbenzene, xylene, and chromium.

Pursuant the consent order, ATS was required to continue the groundwater pumping and treatment activities and to install two recovery wells near the Elk River as interim measures.

EXPOSURE PATHWAYS

Soil and groundwater are identified as the exposure pathways via ingestion, inhalation, and dermal contact. Individuals in close proximity of the ATS site include neighboring residents and employees. Approximately 100 people are located withing a one-half mile radius of the facility. There are no schools or retirement centers within this area. ATS employs 50 people, many of whom are resident of Sutton. These individuals are full-time employees, and most of their work is performed outdoors.

There is little or no vegetation in the immediate vicinity of the Treated Wood Storage and Tram Track Areas. Wildlife does not currently inhabit these areas, and is unlikely to do so in the future. Wildlife is, therefore, not considered a potential receptor. Fish populations in the Elk River

are also not considered a potential receptor because of the following reasons: low or non-detectable concentration in surface water and sediment, fish migration patterns, and concentration dilution. However, the U.S. Fish and Wildlife Service identified 14 species of freshwater mussels that were not originally included in the RFI that need to evaluated.

SELECTED REMEDY

The selected remedy for the groundwater and soil consists of the following: 1) prevent further creosote contamination from the wood treating operations by installing drip pads at the opening of the wood treating cylinders in accordance with the provisions of West Virginia Code of State Regulation, Title 47- Series 35, Section 7; 2) perform in-situ land treatment (bioremediation) on creosote-contamination soil at the facility, including conducting a bench-scale test to evaluate the waste media and optimum operation conditions; soil areas that do not meet clean-up standards after bioremediation will be capped with asphalt; 3) excavate or asphalt cap CCA contaminated areas which exceed the media cleanup standards; 4) restrict the facility deed to require future land owners to maintain the asphalt cap and limit future land use of the property to industrial uses; 5) install an additional monitoring well on the east side of the existing Clay Encapsulated Disposal Area, to provide sufficient groundwater monitoring coverage for this unit; 6) perform additional ecological impact studies of contaminated media on additional identified endangered species; 7) continue implementation of the current pump and treat system; and 8) comply with groundwater clean-up standards for the facility. The capital cost associated with the selected remedy is $600,000 and the annual operational and maintenance cost is $100,000. The drip pad cost is an additional capital cost of $160,000 and an additional annual operational and maintenance cost of $200,000. Therefore, the total present worth of the selected remedy is $1,060,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

The other innovative technology considered as a potential corrective measure was soiling washing. Soil washing is a water-based process for mechanically scrubbing excavated soils suspending the contaminants in the wash solution or by concentrating them into a smaller volume of soil through particle size separation techniques. This corrective measure alternative was not selected. In-situ bioremediation, which was selected as the final remedy, is also an innovative technology.

PUBLIC PARTICIPATION

A thirty-day public comment period was held from August 16 to September 17, 1996. On August 16, 1996, EPA placed an announcement in the *Braxton Democrat* and *Citizens' News* to notify the public of the preferred corrective measure alternative and of the location of the Administrative Record. All of the comments received were reviewed and considered by EPA during the selection of the final corrective measure. Comments received did not propose additional corrective measure alternatives and did not suggest the need to change EPA's preferred corrective measure. In addition, comments did not propose additional alternatives that had not been previously considered in the Corrective Measure Study.

NEXT STEPS

Implementation of the selective corrective measures at ATS.

KEY WORDS:
groundwater, soil, surface water, sediment; ingestion, inhalation, dermal contact; arsenic, benzo(a)anthracene, benzo(a)pyrene, naphthalene, anthracene, carbazole, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, fluoranthene, pyrene, benzene, toluene, ethylbenzene, xylene, and chromium, creosote, CCA, volatile organic compounds; bioremediation, excavation, capping, in-situ treatment, groundwater monitoring, ecological impact studies, innovative technology considered: soil washing; innovative technology selected: in-situ bioremediation; interim remedy.

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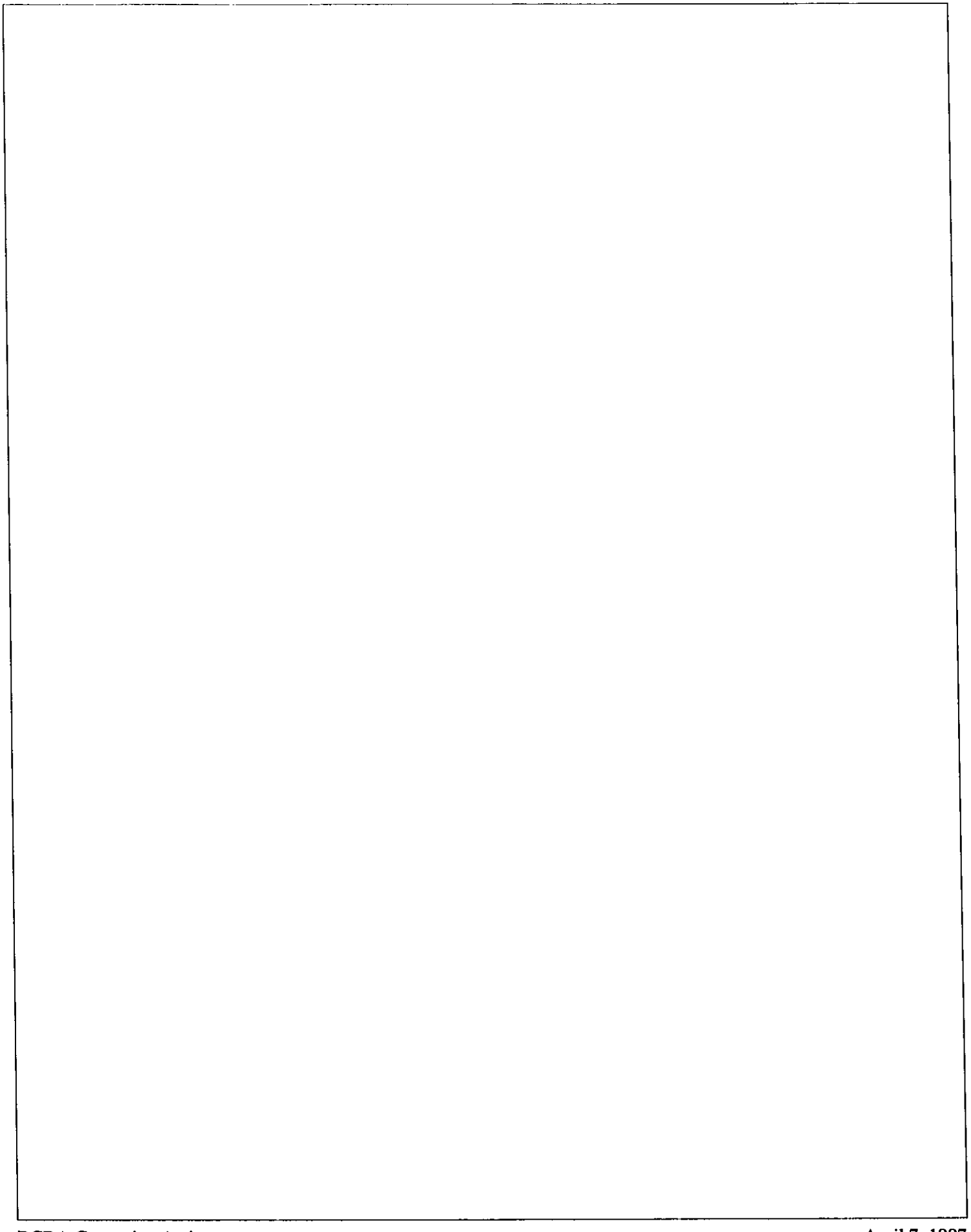

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 0993

AT&T Microelectronics

Richmond, VA
(Signed June 28, 1991)

Facility/Unit Type:	**Electronics manufacturer**
Contaminants:	**1,1,1-Trichloroethane (1,1,1-TCA), Methylene Chloride (MEC), 1,1-Dichloroethane (1,1-DCA), 1,1-Dichloroethene (1,1-DCE)**
Media:	**Soil, ground water, surface water**
Remedy:	**Pumping and treating ground water with air stripping and granular activated carbon filters**

FACILITY DESCRIPTION

On September 15, 1989, EPA and AT&T Technologies, Inc., now known as AT&T Microelectronics (AT&T), entered into a Consent Order pursuant to Section 3008(h) of RCRA. The agreement required AT&T to complete an on-site and off-site investigation to determine the nature and extent of contamination from the Richmond Works facility and to conduct a study to evaluate cleanup alternatives.

The facility covers approximately 120 acres in a mixed residential, commercial, and industrial area. AT&T produces printed circuit boards with manufacturing processes including electroless/electroplating, etching, and coating. Solvents used in manufacturing are stored at an on-site tank farm and collected in a solvent recovery area.

The facility is underlain by two water bearing zones. The upper aquifer is approximately 15-30 feet below ground surface. This zone is not used as a water supply. A 200 foot thick clay layer separates the upper and lower aquifers. The deeper aquifer is part of a productive aquifer in the Patuxent formation, and is used as a municipal water supply. Contamination from the facility operations has impacted the upper aquifer, but has not impacted the lower aquifer.

Ground water from the facility discharges into Gillie Creek. Gillie Creek flows generally from east to west away from the site. An intermittent seep is located in the sidewall of a natural drainage way to Gillie Creek that receives storm water runoff from the facility.

AT&T has completed Phases I, II, and III of its Hydrogeologic Investigation, which included the installation of 35 on-site and 2 off-site ground-water monitoring wells. EPA approved AT&T's Phase I, II, and III Hydrogeologic Investigation as the equivalent of an RFI/CMS.

EXPOSURE PATHWAYS

Actual or threatened releases of hazardous constituents from the facility, if not addressed, may present a current or potential threat to human health and the environment. The area adjacent to Gillie Creek has been designated as wetlands. The investigation revealed that this sensitive environment has not been adversely affected by activity at the facility.

PUBLIC PARTICIPATION

The public comment period on EPA's proposed remedy extended from May 28, 1991 to June 26, 1991. Approximately 10 people,

NEXT STEPS

If after 5 years of ground-water pumping and treatment, concentrations of TCA, DCE, MEC, and DCA in ground water have reached an equilibrium above the cleanup goals, AT&T may petition EPA to revise the cleanup goals. In the event that EPA requires AT&T to perform additional studies and/or modifications to the selected remedy, EPA will provide an opportunity for public comment prior to the initiation of changes to the existing remedy.

KEY WORDS

ground water, surface water, soil; ingestion; 1,1-DCA, 1,1,1-TCA, 1,1-DCE, MEC; air stripping, carbon absorption, reinjection, monitoring

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 7853

COOPER INDUSTRIES, INC.

Earlysville, VA
(August 20, 1991)

Facility/Unit Type:	**Electronics distribution equipment manufacturing facility**
Contaminants:	**PCE, TCE, 1,2-DCE, chloroform**
Media:	***Ground water***
Remedy:	**Ground water pumping and treatment using activated sludge alternative water supply**

FACILITY DESCRIPTION

In 1982, Cooper Industries, Inc. (Cooper) purchased the electrical distribution equipment manufacturing facility which has operated since 1962. The facility is located in the rural community of Earlysville, 7 miles north of Charlottesville, VA. The manufacturing process includes stamping, grinding, welding, painting and plating operations, which generate hazardous wastes such as wastewater sludges from the electroplating and painting operations. In addition, Cooper used tetrachloroethylene (PCE) in its parts deburring machine and demister.

Cooper discovered volatile organic compounds (VOCs) in on-site water supply wells in September 1984 and began treating water from these wells with granular activated carbon (GAC) units on September 13, 1984.

On March 9, 1990, EPA issued a Unilateral Administrative Order pursuant to Section 3008(h) of RCRA to Cooper. The order required Cooper to complete an RFI to determine the nature and extent of contamination at the Earlysville facility and to conduct a CMS to evaluate cleanup alternatives.

Two hydrogeologic units, residum-saprolite and granitic bedrock, occur at the facility. These units are in hydraulic communication and respond as one unit. Ground water generally occurs between 15 to 35 feet below grade. Shallow ground water flow is somewhat radial except at the northern portion of the facility where flow is to the southwest towards Camp Faith Creek and its tributaries. Most deep ground water flow is from the ground-water divide toward on-site active production wells, Camp Faith Creek, and its tributary stream channels. Camp Faith Creek acts as a hydraulic boundary, preventing contamination migration across the creek.

Vertical hydraulic gradients are generally downward near the main plant building. There is an upward vertical gradient near Camp Faith Lake, which effectively limits the extent of ground water impacted within the bedrock aquifer beneath the lake.

Cooper has conducted extensive stabilization activities. In addition, Cooper has closed seventeen SWMUs in accordance with State approved closure plans.

Cooper is currently treating ground water from the class II B aquifer beneath the facility. Thirty-two monitoring wells at EPA-approved locations have been sampled over the past 3 years. Contaminants have not migrated outside of the facility boundaries. Investigations have not revealed significant soil contamination and no contaminants have been detected in surface water, sediments, and air.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level (ppb)	Cleanup Goal (ppb)**	Point of Compliance
ground water	9,200 gal/day	TCE	320	5	5	Wells 23d, WS#4, and CMA#5
		PCE	2700	5	5	
		1,2-DCE	350	70	70	
		chloroform	500	100	100	
		1,1,1-TCA*	15	200	200	

* Contaminant has been detected off-site, but has not been used at facility.

** Cleanup goal is based on EPA Maximum Contaminant Levels for drinking water that are established by the Safe Drinking Water Act.

EXPOSURE PATHWAYS

The current risk to humans presented by the contaminated ground water at the facility is zero, as the ground water is treated and monitored. The RFI concluded that there is no current exposure of potential off-site receptors to contaminated ground water. In addition, the ongoing ground-water recovery system is reducing the potential risk.

A baseline risk assessment for groundwater was conducted at the facility. The risk assessment evaluated potential risk given no action at the facility based on "worst case" exposure scenarios.

SELECTED REMEDY

The selected remedy includes continued pumping and treatment of ground water with inclusion of an additional recovery well in the center of the on-site plume. An alternative on-site potable water supply system will be provided. Potable water will be supplied by increasing the pumping rate on a contaminant-free water supply well. Recovered ground water will continue to be treated by the facility's biologically activated sludge wastewater treatment system.

The selected remedy uses proven technologies, protects human health and the environment, does not pose an undue financial burden on Cooper, and allows continuous plant operation. Total estimated capital costs and annual O&M for the remedy are $1,215,000 and $80,000, respectively. EPA believes that this corrective measure can effectively remediate the entire on-site ground-water contaminant plume.

INNOVATIVE TECHNOLOGIES CONSIDERED

Biologically activated sludge treatment of waste-water.

PUBLIC PARTICIPATION

Twenty -five people attended a public meeting on September 13, 1991. EPA established a public comment period from August 14, 1991 to September 13, 1991. Citizens expressed concern about potential migration of contamination or other ground-water impacts to the Graemont subdivision, the effect of the treatment plant effluent on Camp Faith Creek, the duration of the cleanup, monitoring progress, potential future contamination, and testing of private wells. Participants objected to the timing of the public meeting which was held on the last day of the public comment period.

NEXT STEPS

The selected remedy is expected to effectively remediate the on-site ground-water plume. Ground water extraction is expected to continue for 10-15 years with continued monitoring for a minimum of 5 years after cessation of the extraction program. Due to the high concentration of VOCs in the ground water, a chemical equilibrium or steady-state concentration of these constituents may be reached after lengthy and extensive treatment. If the steady-state concentration exceeds the required cleanup standard, EPA or Cooper, by petition, may modify the selected Corrective Measure and require the implementation of alternative technologies.

KEY WORDS
ground water; ingestion; PCE, TCE, DCE; alternative water supply, biological treatment, filtration

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# not given

Dixon Wearever Inc.

Deer Lake, PA
(Signed September 30, 1992)

Facility/Unit Type:	**Manufacturer**
Contaminants:	**Arsenic; Tetrachloroethylene (PCE); 1,1-Dichloroethane (1,1-DCA); 1,1-Dichloroethene (1,1-DCE); 1,2-Dichlorethylene (1,2-DCE); Trichloroethylene (TCE)**
Media:	**Ground water, soil**
Remedy:	**Pumping and treating ground water with air stripping, removal of contaminated soil**

FACILITY DESCRIPTION

On August 29, 1988, EPA and Dixon Wearever Incorporated (Dixon) entered into a Consent Order pursuant to Section 3008(h) of RCRA. The agreement required Dixon to complete an on-site and off-site investigation to determine the nature and extent of contamination and to conduct a CMS to evaluate cleanup alternatives.

The facility is located in Schuylkill County, PA. Dixon purchased the facility in 1984. Operations at the facility have centered around the manufacture and assembly of writing instruments, such as pencils, ball point and fountain pens, and felt-tip markers. Two evaporation lagoons at the site were used to treat and store ink and metal sludge.

Beneath the facility there are three zones of permeability that generally flow to the east: a shallow unconfined zone extending approximately 100 feet below the ground surface; a lower-permeability intermediate zone extends from approximately 100 to 150 feet below the ground surface; and a third deeper zone extends from 150 to 400 feet below the ground surface and yields water which is used as an on-site drinking water and production water supply source.

Areas of concern included two evaporation lagoons used to treat and store ink and metal sludge, a wastewater effluent lagoon, a gravity sand oil trap, a drum storage area, three on-site disposal areas used to dispose of burned and unused pen parts, and an inactive 20,000 gallon underground fuel oil storage tank.

Dixon completed the RFI and the CMS in 1992. In addition, Dixon has already completed extensive stabilization activities pursuant to a closure plan approved by the Pennsylvania Department of Environmental Resources (PADER), which included closing two concrete-lined evaporation lagoons by removing the sludge, backfilling and capping the area. Contaminated ground water from the lagoon area has been withdrawn from a single production well, treated with air stripping, then stored for on-site use. Dixon also removed the underground storage tank, contaminated soil in the area of the tank, and contaminated soil in the area of the three disposal sites. The excavated oil-contaminated soil is being stored on-site pending corrective action. Other excavated soils were removed to an off-site disposal facility.

EXPOSURE PATHWAYS

Ground water is the primary impacted medium at the facility with ingestion being the main exposure pathway evaluated. The ground-water contamination is found primarily within the facility property boundaries due to the existing recovery system. Atmospheric dispersion modeling was performed to assess potential risk from VOC emissions from the air stripper.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance ***
ground water	not given	1,1-DCA	4.39 ppm	810 ppb	810 ppb*	On-site wells 1,2,3,5,8,9,10, and production well
		1,1-DCE	3.16 ppm	7 ppb	7 ppb**	
		PCE	not given	5 ppb	5 ppb**	
		TCE	24.30 ppm	5 ppb	5 ppb**	
		1,1,1-TCA	57.30 ppm	200 ppb	200 ppb**	
		1,2-DCE	10 ppb	70 ppb	70 ppb**	
soil	not given	Arsenic	37.0 ppm	1.6 ppm	not given	

* Cleanup goal is based on the 10-6 cancer risk level.
** Cleanup goal is a Maximum Contaminant Level that is federally enforceable under the Safe Drinking Water Act.
*** Off-site compliance will be determined during the implementation of the corrective measure.

SELECTED REMEDY

The selected Corrective Measure for the contaminated ground water at the Deer Lake facility is continuation of the ongoing ground-water recovery system utilizing air stripping. In addition to the one ground-water recovery well currently used, an additional pumping well will be placed near the downgradient property boundary to provide a "flushing" effect in the aquifer. The treated ground water will be transferred into a storage tank for on-site use and excess water will be discharged into the storm system. The treated water will be discharged to a public sewer system after an NPDES permit is obtained. The capital and present value O&M costs for the remediation are $3,000 and $9,700, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

None

PUBLIC PARTICIPATION

The public comment period on EPA's proposed remedy extended from August 17, 1992 to September 16, 1992. A public meeting was held on August 10, 1992. The meeting was attended by approximately twenty (20) people including representatives from EPA, Dixon, Deer Lake Borough Council, and concerned citizens. The comments addressed residential well testing, ground-water flow, and the contaminants found in the ground water. Other comments from citizens dealt the possibility of the contaminated groundwater spreading to nearby residential wells and specifics of the chosen remedy and its implementation schedule. Dixon submitted a number of comments that challenged EPA's decision to require an additional ground-water pumping well, indicating the additional well was not necessary and would cause more harm than good. The proposed remedy was not changed due to any of the comments.

NEXT STEPS

Oil-contaminated soil from the vicinity of the removed underground tank is being stored on-site pending corrective action.

KEY WORDS
ground water, soil; ingestion; VOCs, arsenic; air stripping, off-site disposal, excavation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 6903

General Electric Company

Lancaster, PA
(Signed September 30, 1993)

Facility/Unit Type:	**Electronics manufacturer**
Contaminants:	**Trichloroethene (TCE); 1,2-Dichloroethylene (DCE); 1,1,1-Trichloroethane (1,1,1-TCA); 1,1-Dichloroethylene (1,1-DCE); Ethylbenzene; Chloroform; Methylene Chloride; Toluene; Vinyl Chloride; Cadmium; Tetrachlorothene (PCE)**
Media:	**Ground water**
Remedy:	**Pump and treat with air stripping and granular activated carbon (GAC) filters**

FACILITY DESCRIPTION

On December 16, 1988, EPA and the General Electric Company (GE) entered into a Consent Order pursuant to Section 3008(h) of RCRA. The agreement required GE to complete an investigation of the nature and extent of contamination from the Lancaster, PA facility in an RFI and to conduct a CMS to evaluate cleanup alternatives.

The facility is located on the northeastern edge of the city of Lancaster. Two limestone quarries (the upper quarry and lower lagoon) were operated in the early 1900s on the property. In 1942, buildings were constructed on the site by the U.S. Navy for the manufacture of electron tubes. RCA purchased the site in 1946 for the manufacturing of television tubes, electro-optics devices and solid state system products. GE purchased the site in 1986. The upper quarry and lower lagoon received electroplating wastewater sludge (RCRA hazardous waste F006) containing cadmium.

One hydrogeologic unit, epicarstic carbonate bedrock, exists at the GE facility. The ground water occurs in the bedrock rather than the overlying soil. The upper portion of the ground water generally follows the topography. Ground water recharge occurs principally along the uplands with discharge to the local stream channels or to recovery wells located at the facility. Ground water flow is to the east.

GE has completed the RFI and submitted a CMS to EPA for approval. Twenty-eight on-site monitoring wells and five off-site and downgradient wells have been installed. GE has conducted extensive stabilization activities pursuant to a closure plan approved by the state agency Pennsylvania Department Environmental Resources (PADER), which included closing the upper quarry and the lower lagoon by capping both units after moving the sludge from the quarry to the lagoon. Ground water collected from on-site recovery wells and springs is routed through an air stripping tower for removal of the VOCs. The treated water is discharged to the sanitary sewer system under an Industrial Wastewater Discharge Permit. The horizontal and vertical extent of ground-water contamination from the facility is well defined and primarily within the plant property boundaries. The ground-water contamination area is strongly influenced by the ongoing recovery system and no longer migrating off-site due to the recovery program.

EXPOSURE PATHWAYS

Actual or threatened releases of hazardous constituents from the facility, if not addressed, may present a current or potential threat to human health and the environment. Ground water is the only affected medium at this facility with ingestion being the main exposure pathway evaluated. There is no risk to facility personnel or potential off-site receptors under current conditions. Under the potential "worst-case" scenario of an individual living a lifetime at the facility and using water from the most contaminated areas, the lifetime cancer risk was 1.00.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level (ppb)	Cleanup Goal (ppb)	Points of Compliance
ground water	~150 gallon per minute groundwater recovery rate	TCE	13,000	5	5	Recovery Wells 7d and 12d at upper quarry, Recovery Well AW-4 and spring 1 at lower lagoon, off-site monitoring well GW-9008
		1,2-DCE	17,000	100	100	
		1,1,1-TCA	45	200	200	
		1,1-DCE	50	7	7	
		Ethylbenzene	50	*	N/A	
		Chloroform	300	*	N/A	
		Methylene Chloride	20	*	N/A	
		Toluene	310	*	N/A	
		Vinyl Chloride	500	2	2	
		Cadmium	110	5	5	
		PCE	not	5	5	
		Benzene	given	5	5	

* These contituents are below their respective MCLs. Therefore no action levels were specified.

x 10^{-2}, primarily due to vinyl chloride and 1,2-DCE

SELECTED REMEDY

The selected remedy is continuation of the ongoing ground-water recovery program. The ground water will continue to be treated by air stripping and the VOC vapors emitted by the air stripper will be collected by two GAC units. An active gas collection system will be installed to prevent the transfer of contaminants from the air stripper to the atmosphere. The treated ground water will continue to go to a POTW.

The selected remedy represents proven technologies, protects human health and the environment, and can effectively be employed to remediate the on-site contaminant plume and will prevent the emission of VOCs to the atmosphere. The capital and O&M costs for the corrective action are $700,000 and $200,000, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period extended from August 28, 1992 through September 27, 1992. A public meeting was held on September 9, 1992. No comments were received during the thirty-day comment period. The comments presented at the public meeting dealt with clarification of the proposed remedy. The proposed remedy was not altered due to public comments or the public meeting.

NEXT STEPS

If EPA determines that the selected Corrective Measure is either not effective or the rate of ground-water remediation is too slow (only sight decreases in the levels of ground-water contaminants is evidenced over a five year period) then EPA may reevaluate the continued implementation of the selected Corrective Measure, and modify the Corrective Measure selected. Information will be provided to the public throughout the CMI process to determine if specific community concerns arise.

KEY WORDS

ground water; ingestion; VOCs, heavy metals, cadmium; air stripping, carbon absorption, filtration, POTW

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 2622

General Electric Glass Plant

Bridgeville, PA

(Signed September 30, 1992)

Facility/Unit Type:	**Industrial landfill**
Contaminants:	**Lead, cadmium, inorganic constituents**
Media:	**Soil, ground water, surface water, sediments**
Remedy:	**Institutional controls, security fence, concrete/asphalt cap, sheet pile wall, and recovery trench**

FACILITY DESCRIPTION

In October 1990, EPA issued a Corrective Action Permit to General Electric (GE) pursuant to Section 3004(u) of RCRA. The permit required GE to complete an on-site and off-site investigation to determine the nature and extent of contamination from a Solid Waste Management Unit (SWMU) located within the GE Bridgeville Glass Plant, and to conduct a CMS to evaluate cleanup alternatives.

The plant covers approximately 10 acres and is bordered on the north and south by railroad companies. GE manufactures leaded glass tubing used in the manufacture of light bulbs. The SWMU addressed in the permit is a 3.6 acre landfill which was used between 1919 and 1979 to dispose of waste associated with the glass tubing manufacturing operations, including: lead oxide, bag house dust, furnace refracturing bricks, cinders, ash from a coal fire boiler, and other debris. The western side of the landfill is bordered by Chartiers Creek and the plant is to the east.

The landfill contains two water-bearing units within the surficial aquifer at the site. The first unit is mounded above the alluvium due to a retarding interface between the landfill and the alluvium. The second unit is beneath the landfill and consists of a fine-grained alluvium followed by a soil stratum interpreted to be residual soil. The second unit acts as a single hydrogeologic unit. Inorganic constituents were detected in both of the water bearing units in excess of EPA's Maximum Contaminant Levels (MCLs) for primary drinking water. Both water bearing units are supected to discharge into Chartiers Creek.

GE conducted a voluntary environmental assessment form 1985 to 1988. The assessment involved establishing a number of monitoring wells around the site, sampling the creek water, and sampling stream sediment. GE also conducted a CMS to identify alternative corrective measures for the landfill and to fill gaps from the earlier studies. Analysis of the landfill materials using the TCLP revealed lead and cadmium contamination. Sediment samples form Chartiers Creek had elevated lead levels.

EXPOSURE PATHWAYS

Actual or threatened releases of hazardous constituents from the facility, if not addressed, may present a current or potential threat to human health and the environment. The exposure pathways from the landfill include human consumption of fish from Chartiers Creek, direct human contact with the fill materials during construction and/ or utility maintenance activities, surface erosion of the fill area entering Chartiers Creek impacting fish and aquatic life, and ground water discharges into Chartiers Creek impacting fish and aquatic life.

SELECTED REMEDY

A security fence has been placed around the site to prohibit unauthorized access. A concrete/ asphalt cap will be placed over the unit to provide

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal**	Point of Compliance
ground water	not given	Lead	10 ppm	0.05 ppm	0.05 ppm	Within facility bounderies
		Cadmium	ppm	0.005 ppm	0.005 ppm	
		Arsenic	... ppm	0.05 ppm	0.05 ppm	
		Barium	3.6 ppm	1.0 ppm	1.0 ppm	
		Chromium	.45 ppm	0.05 ppm	0.05 ppm	
		Selenium	.013 ppm	0.05 ppm	0.05 ppm	
		Silver	.05 ppm	0.05 ppm	0.05 ppm	
		Thallium	.80 ppm	0.001 ppm	0.001 ppm	
sediment(3)	N/A	N/A				
soil (1)	53,000 cubic yards	Lead	850 mg/l (2)	5.0 mg/l	N/A	
		Cadmium	2.4 mg/l (2)	1.0 mg/l	N/A	
sediments	not given	Lead	not given	not given	not given	
		Cadmium	"	"	"	

(1) Fill Area
(2) Based on TCLP results of fill area
(3) The facility will conduct investigations to determine whether surface water has been impacted by the fill area.
** Cleanup goals is the Maximum Contaminant Level (MCL) or background.

surface containment. A sheet pile wall will be placed between Chartiers Creek and the landfill to stop erosion of the landfill material into the creek. A recovery trench will be placed between the landfill and creek to collect ground water coming from the landfill. Monitoring of ground water, creek water, and creek sediment will be conducted extensively to detect any potential migration of hazardous constituents.

The corrective measures should control further release of any hazardous waste and hazardous constituents from the landfill which exceed current MCLs and should achieve long-term protection of the community and environment.

The capital and O&M costs for this remedy are $1,130,000 and $77,000 per year, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

On August 6, 1992, a forty-five (45) day public comment period was announced in a local newspaper. A public hearing was held on September 19, 1992. A number of comments were submitted by General Electric, the Pennsylvania Department of Environmental Resources (PADER), the Allegheny County Health Department, and concerned citizens. The comments addressed the proposed remedies, the proposed ground water and creek monitoring requirements, the proposed remedy schedule, the public notice that took place, and other issues. GE and PADER also commented on specific permit language and provisions. EPA responded to all relevant

KEY WORDS
ground water, soil, surface water, soil; ingestion, dermal contact; lead, inorganics; capping containment, institutional controls, monitoring

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comments and amended some parts of the permit. It was also noted that the landfill is a corrective action SWMU and not a RCRA regulated unit and is thus not subject to 40 CFR Part 264 requirements.

NEXT STEPS

Continued monitoring of ground water, surface water, and sediments will be used to assess the effectiveness of the remedy.

FINAL

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region III
ID# 2573

INTERNATIONAL BUSINESS MACHINES

Manassas, Virginia
(signed July 25, 1990)

Facility/Unit Type:	**Electronics manufacturer**
Contaminants:	**PCE; TCE; 1, 1, 1-TCA; trans 1, 2-DCE**
Media:	**Soil, ground water**
Remedy:	**Ground water pump and treat with granular activated carbon filtering system, in-situ soil vapor extraction**

FACILITY DESCRIPTION

On March 1, 1989, EPA and IBM entered into a Consent Order pursuant to Section 3008(h) of RCRA. Under the terms of the Consent Order, IBM was required to complete onsite and offsite investigations of the nature and extent of contamination from the facility and conduct a corrective measures study (CMS).

The principal activities at the 600-acre IBM facility are semiconductor design and the manufacturing and development of electronic defense systems. IBM began operations at the facility in 1969.

The ground water flows through a single bedrock aquifer consisting of interbedded red siltstone and sandstone. Ground water movement at the site is to the northeast. Prince William County draws some of its water supply from wells in this aquifer. Initial investigations in 1978 revealed VOCs in on-site soils and in ground water.

The Occoquan Reservoir is approximately 5 miles west of the facility. The reservoir is hydraulically upgradient of the facility, and is not affected by site contaminants.

The IBM facility is within the city of Manassas, Virginia. The surrounding land use includes residential and commercial development as well as undeveloped woodlands.

IBM initiated the following interim actions: soil treatment to raise pH to immobilize fluoride; soil excavation; removal of a 10,000-gallon waste solvent tank and two 20,000-gallon waste acid tanks; closure of underground tanks; and pumping and treatment of ground water from two onsite wells. IBM provided municipal water hookups to residences using contaminated wells and assisted the Prince William County Service Authority in installing a ground water treatment system for a public water supply well with a high PCE concentration.

EXPOSURE PATHWAYS

Public health is threatened by human exposure to contaminants in the ground water transported through the underlying aquifer to water supply wells.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Est. Vol.	Contaminant	Maximum Concentration	PRG	Cleanup Goal	Point of Compliance
ground water	Not provided	PCE*	10 ppm**	3.5 ppb	0.67 ug/l***	Well PW-07
		TCE*		N/A	3 ug/l***	Well PW-07
		PCE		N/A	5 ug/l****	Ground water
		TCE		N/A	5 ug/l	wells:
		trans 1,2-DCE*		N/A	70 ug/l	D-28
		1,1,1-TCA		N/A	200 ug/l	D-29
						OF-34
soil		PCE	Not provided	N/A	Not provided	
		TCE	Not provided	N/A	Not provided	
		trans 1,2-DCE	Not provided	N/A	Not provided	

* Detected off site
** Maximum total VOC concentration
*** Based on 10^{-6} cancer risk-based level
**** Based on MCLs

SELECTED REMEDY

The selected corrective measure consists of continued pumping of ground water from two onsite and two offsite wells and treatment with granular activated carbon units. Soil and bedrock will be remediated with a pilot vapor extraction system and an associated gas-phase treatment and monitoring system in the unsaturated zone.

The selected corrective measure is an effective and reliable method that will reduce the toxicity, mobility, and volume of contamination. This alternative is a cost-effective permanent solution that uses innovative technologies to attain long and short term remediation.

The annual costs associated with the corrective measures are as follows:

	Capital	O&M/year
Pump and treat	$1,665,400	$ 709,700
Pilot vapor extraction	$ 146,000	$ 354,000
TOTAL	$1,811,400	$1,063,700

After completion of the pilot vapor extraction project the first year, the O&M cost will revert to $709,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

- Gas-phase treatment and monitoring system

PUBLIC PARTICIPATION

A public notice soliciting public comments on the proposed remedy appeared in the Washington Post on March 21, 1990 and in the Springfield Journal on March 28, 1990. The public comment period was effective for 30 days after the respective public notices.

EPA received two comments regarding the IBM facility. The comments reflected the following three issues of public concern:

- Adverse effect on property values
- Impact on surrounding woodlands
- Impact on public safety.

NEXT STEPS

EPA and IBM will negotiate a second §3008(h) consent order requiring IBM to implement the selected remedy

KEY WORDS
ground water; soil; ingestion; VOCs; PCE; TCE; TCA; DCE; on-site treatment; off-site disposal of residuals; pilot vapor extraction; filtration; excavation.

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CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
ground water	Not provided	PCE*	10 ppm**	3.5 ppb	0.67 ug/l***	Well PW-07
		TCE*		N/A	3 ug/l***	Well PW-07
		PCE		N/A	5 ug/l****	Ground water
		TCE		N/A	5 ug/l	wells:
		trans 1,2-DCE*		N/A	70 ug/l	D-28
		1,1,1-TCA		N/A	200 ug/l	D-29
						OF-34
soil		PCE	Not provided	N/A	Not provided	
		TCE	Not provided	N/A	Not provided	
		trans 1,2-DCE	Not provided	N/A	Not provided	

* Detected off site
** Maximum total VOC concentration
*** Based on 10^{-6} cancer risk-based level
**** Based on MCLs

SELECTED REMEDY

The selected corrective measure consists of continued pumping of ground water from two onsite and two offsite wells and treatment with granular activated carbon units. Soil and bedrock will be remediated with a pilot vapor extraction system and an associated gas-phase treatment and monitoring system in the unsaturated zone.

The selected corrective measure is an effective and reliable method that will reduce the toxicity, mobility, and volume of contamination. This alternative is a cost-effective permanent solutions that uses innovative technologies to attain long and short term remediation.

The annual costs associated with the corrective measures are as follows:

	Capital	O&M
Pump and treat	$1,665,400	$ 709,700
Pilot vapor extraction	$ 146,000	$ 354,000
TOTAL	$1,811,400	$1,063,700

After completion of the pilot vapor extraction project the first year, the O&M cost will revert to $709,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

- Gas-phase treatment and monitoring system

PUBLIC PARTICIPATION

A public notice soliciting public comments on the proposed remedy appeared in the Washington Post on March 21, 1990 and in the Springfield Journal on March 28, 1990. The public comment period was effective for 30 days after the respective public notices.

EPA received two comments regarding the IBM facility. The comments reflected the following three issues of public concern:

- Adverse effect on property values
- Impact on surrounding woodlands
- Impact on public safety.

NEXT STEPS

EPA and IBM will negotiate a second §3008(h) consent order requiring IBM to implement the selected remedy.

KEY WORDS

ground water; soil; ingestion; VOCs; PCE; TCE; TCA; DCE; on-site treatment; off-site disposal of residuals; pilot vapor extraction; filtration; excavation.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region III
ID# (~~last 4 digits~~) 2573

INTERNATIONAL BUSINESS MACHINES

Manassas, Virginia
(signed July 25, 1990)

Facility/Unit Type:	**Electronics manufacturer**
Contaminants:	**PCE; TCE; 1, 1, 1-TCA; trans 1, 2-DCE**
Media:	**Soil, ground water**
Remedy:	**Ground water pump and treat with granular activated carbon filtering system, in-situ soil vapor extraction**

FACILITY DESCRIPTION

On March 1, 1989, EPA and IBM entered into a Consent Order pursuant to Section 3008(h) of RCRA. Under the terms of the Consent Order, IBM was required to complete onsite and offsite investigations of the nature and extent of contamination from the facility and conduct a corrective measures study (CMS).

The principal activities at the 600-acre IBM facility are semiconductor design and the manufacturing and development of electronic defense systems. IBM began operations at the facility in 1969.

The ground water flows through a single bedrock aquifer consisting of interbedded red siltstone and sandstone. Ground water movement at the site is to the northeast. Prince William County draws some of its water supply from wells in this aquifer. Initial investigations in 1978 revealed VOCs in on-site soils and in ground water.

The Occoquan Reservoir is approximately 5 miles west of the facility. The reservoir is hydraulically upgradient of the facility, and is not affected by site contaminants.

The IBM facility is within the city of Manassas, Virginia. The surrounding land use includes residential and commercial development as well as undeveloped woodlands.

IBM initiated the following interim actions: soil treatment to raise pH to immobilize fluoride; soil excavation; removal of a 10,000-gallon waste solvent tank and two 20,000-gallon waste acid tanks; closure of underground tanks; and pumping and treatment of ground water from two onsite wells. IBM provided municipal water hookups to residences using contaminated wells and assisted the Prince William County Service Authority in installing a ground water treatment system for a public water supply well with a high PCE concentration.

EXPOSURE PATHWAYS

Public health is threatened by human exposure to contaminants in the ground water transported through the underlying aquifer to water supply wells.

NGK

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# (last 4 #s)
0136

NGK Metals Corporation

Muhlenberg, PA
(Signed September 30, 1992)

Facility/Unit Type:	**Beryllium and alloy production**
Contaminants:	**Beryllium, Hexavalent Chromium (VI), Total Chromium, Cadmium, Copper, 1,1-Dichloroethylene (1,1-DCE), Flouride, Trichloroethylene (TCE)**
Media:	**Air, ground water, sediments, soil, surface water**
Remedy:	**Institutional controls; ground-water pumping and treatment; capping; run-on/run-off controls**

FACILITY DESCRIPTION

On August 29, 1988, EPA and NGK Metals Corporation (NGK) entered into a Consent Order pursuant to Section 3008(h) of RCRA, which required NGK to conduct an RFI and CMS to determine the nature and extent of contamination at its facility in Muhlenberg Township, PA. On November 23, 1991, EPA conditionally approved the RFI pending a further study on contaminant leaching, which was approved on April 3, 1992. NGK submitted the CMS and a Human Health and Ecological Assessment (HHEA) on June 11, 1992. In addition, EPA conducted assessments of the human health and ecological effects of the facility in June 1992.

Since 1986, NGK has owned and operated the 65-acre facility located in an industrial area and surrounded by residential areas. Currently, the facility is regulated as a hazardous waste generator. Air emissions at NGK, which primarily consist of beryllium and chromium, are regulated under the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Historically, industrial activities involved the production of beryllium salts and various shapes of beryllium products and alloys. Industrial by-products and process wastes were discarded in on-site SWMUs, which are the principal source of ground-water contamination. In addition, NGK has operated an on-site non-hazardous residual waste landfill permitted by PADER since 1979.

Ground water flows through two zones, a local shallow aquifer zone and a deep bedrock aquifer zone. Within the local shallow zone (0-100 feet), ground water flows to the west with components flowing towards the northeast in the northern portion of the facility. Deep ground water flows west-southwest.

Laurel Run is adjacent to the facility and flows south-southwest towards the Schuylkill River. Surface water drainage flows into the Water Street storm sewer system which discharges into Laurel Run. The creek supports a variety of aquatic insects and fish.

In 1979, a ground-water monitoring network was installed to detect contaminants associated with NGK's non-hazardous landfill. The network indicated the presence of beryllium and chromium in the ground water. Contamination of soil and ground water occurred as a result of storage of process materials, process waste, and wastewater treatment residues in unlined lagoons and waste piles prior to the passage of RCRA. In February 1988, EPA completed an RFA, which revealed that the primary drinking water standards were exceeded for chromium and fluoride. In addition, surface soil discoloration indicated that further on-site soil evaluation was required.

December 18, 1992

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal (1) (ppm)	Point of Compliance**
air	ambient	Beryllium Chromium	0.00079* 0.00616*	not given	0.001* 0.0002*	ambient air
ground water	100,000 gpd	Beryllium Chromium VI Total Chromium Copper 1,1-DCE Flouride TCE	0.553 1.3 1.69 0.275 0.0253 128.0 0.0087	not given " " " 0.007 4.0 0.005	0.004 0.1 0.1 1.3 0.007 4.0 0.005	Shallow Wells: 8A, 9A, 14A, 15A, 16A Deep Wells: 12B, 13B all on-site wells
soil (2)	54 acre ft	Beryllium Cadmium Total Chromium Copper Flouride	945 60.1 227 4,910 140	not given	0.67 510 5,100 38,000 61,000	area capped
surface water (Laurel Run)	under study	Beryllium Total Chromium Copper Flouride	0.0011 0.0418 0.0418 0.87	not given	0.004 0.1 1.3 4.0	Off-site Wells: MW-24, MW-25, MW-26, BP-1, LR-6, OS-1, OS- 2, Reading Crest
sediments (Laurel Run)	under study	Beryllium Total Chromium Copper Flouride	1.77 10.0 163.0 12.5	not given	0.67 5,100 38,000 61,000	under study

(1) These risk-based concentrations in soil were derived assuming incidental ingestion in an occupational setting, and correspond to the concentration associted with either a 10^{-6} carcinogenic risk or the threshold level for other adverse health effects.

(2) Soil data are from Disposal Area Drain Field samples.

* ug/m³

** MW- Monitoring Well
LR- Laurel Run
BP- Berks Products Quarry
OS- Off-site

EXPOSURE PATHWAYS

Exposure pathways to contamination include ingestion by on-site workers and absorption by aquatic life in Laurel Run. Although ground water is not used for human consumption on-site, the exposure scenario was used for assessment purposes. The risk is primarily based on potential ingestion of 1,1-DCE in ground water and inhalation of beryllium in soils by workers on-site. Off-site health risks are associated with potential ingestion of 1,1-DCE, flouride, and hexavalent chromium in ground water. Laurel Run is reportedly void of live fish, aquatic insects and organic matter below the facility's NPDES discharge point. EPA concluded in its HHEA that the aquatic life in Laurel Run is under ~~environmental~~ stress. However, no endangered or threatened species reside within a half-mile radius of the facility.

SELECTED REMEDY

The selected remedy will address the contaminated soils and ground water at the facility by relocating an on-site non-hazardous waste pile to

provide proper drainage, covering SWMUs with an impermeable asphalt-geotechnical cap for source control, and constructing interceptor swales for run-on/run-off control, and pump ~~and treat~~ contaminated ground water. Institutional controls will limit access to the facility and prevent future exposure to the contamination through site security and deed restrictions that limit future land uses. Ground water will be treated with a granular activated carbon (GAC) recovery system. Treated wastewater will be discharged to Laurel Run, the Schuylkill River, or the City of Reading sanitary sewer system in accordance with the Clean Water Act and a NPDES permit.

The selected remedy will protect human health and the environment because the sources of contamination and ground water will be contained and remediated. The future use of the facility will be limited to industrial scenarios, and activities involving ground water or source areas, particularly excavation, will be subject to EPA review and approval.

NGK proposed the following modifications to the selected remedy: utilizing one SWMU as a storm retention pond by installing a permeable geotechnical membrane for drainage, allowing ground-water recovery technologies other than GAC, using treated ground water in manufacturing processes, and deleting the required additional ecological investigation of Laurel Run. EPA did not accept NGK's proposed changes.

The approximate collective cost of EPA's selected remedy will be $3,679,000 in capital costs and $157,000 in annual O&M costs. The selected ground-water pump and treat system will operate for an estimated 15 to 30 years.

Muds, soils, and water from the drilling operations may have to be collected, contained, and treated to prevent release of the contaminants to the environment. Treated ground water would be discharged in accordance with the Clean Water Act. Source areas will be maintained through periodic maintenance of the soil cap and interceptor swales.

Additional remedial activities may be required in the Laurel Run stream area pending the results of the expanded ecological investigation.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Thirty-five people attended a public meeting held on July 22, 1992. The public comment period on EPA's proposed remedy extended from July 24, 1992 to September 5, 1992. EPA received 123 comments. Residents were concerned about contaminated water from specific wells or areas, potential health effects in the community, risks from air contamination, and the potential for contamination at the facility to affect Lake Ontelaunee(the public drinking water supply for the City of Reading). Residents expressed concern about the ability of NGK's contractor to perform an impartial assessment because an employee had previously worked for NGK. In addition, NGK recommended several changes to the SB and the selected remedy. ~~The selected remedy remained essentially unchanged.~~

NEXT STEPS

EPA will negotiate an administrative order which will require NGK to implement the selected remedy, which may require additional corrective action pursuant to the ecological investigation of Laurel Run. To ensure that media cleanup standards continue to be maintained, the aquifer will be monitored annually at those recovery wells where pumping has ceased for five consecutive years.

KEY WORDS

air, ground water, sediments, soil, surface water; ingestion; VOCs, heavy metals; capping, carbon absorption, excavation, institutional controls, monitoring, off-site discharge, relocation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region III
ID# 1223

ROHM AND HAAS DELAWARE VALLEY INC. BRISTOL LANDFILL

Bristol, Pennsylvania
(signed December 31, 1991)

Facility/Unit Type: **Industrial landfill for active plastics and emulsions manufacturing plant**
Contaminants: **VOC, heavy metals**
Media: **Ground water, surface water, soil**
Remedy: **RCRA cap and cut-off wall, diversion trench**

FACILITY DESCRIPTION

In February 1989, EPA and Rohm and Haas Delaware Valley Inc. (Rohm and Haas) entered into a Consent Order pursuant to Section 3008(h) of RCRA. Under the terms of the Consent Order, Rohm and Haas was required to complete a corrective measures study (CMS) and propose several corrective measures alternatives (CMAs) to EPA.

The 800-acre facility is an active manufacturing plant that has been in operation since 1917, producing a variety of compounds. The corrective action addresses a 60-acre industrial landfill which was used from approximately 1952 to 1975. There are three landfill areas. Landfill Area A covers approximately 38 acres and was in use from 1952 to 1975. Portions of Area A are on property owned by the Bristol Township Authority (BTA) and Chemical Properties, Inc. Landfill Areas B and C, approximately 11 and 8 acres, respectively, were in use from 1965 to 1975.

From 1984 to 1991, the depth to ground water ranged from 7.26 feet to 12.79 feet. Ground water flows radially from a potentiometric high on the BTA property adjoining the Rohm and Haas property. Ground water flows east and southeast toward the landfill and north toward Hog Run Creek.

The Delaware River and Hog Run Creek are the two closest bodies of surface water. Hog Run Creek runs directly through the landfill. The Delaware River borders the facility on the east. The Delaware River is used for recreational boating and swimming, fishing, drinking water, and transportation.

No previous corrective actions have been taken at the site.

EXPOSURE PATHWAYS

Exposure pathways of concern are direct contact, ingestion, and inhalation (while swimming) of water and direct contact with surface soil. Potential human receptors include dirt bike riders, landfill workers, residents using the Delaware River as a drinking water supply, local fishermen and their families, and recreational swimmers. The risk assessment results indicated no chronic or acute non-cancer health effects for the exposed population, with the exception of unprotected workers at the BTA facility. These workers could be exposed to unsafe levels of contamination during manual excavation around tanks and pipes.

The cancer risk for a 70-year-old lifetime resident subjected to all exposure pathways was calculated to be $3x10^{-6}$ (3 in 1 million).

Concentrations of bis(2-ethylhexyl) phthalate, manganese and compounds, inorganic mercury, cyclohexadiene, and tetraethyl diphosphoric acid exceed acceptable levels for freshwater aquatic life at a depth of 6 feet in the river. These chemicals pose a potential chronic health effect to aquatic life. Acute health effects, such as death of aquatic life, are not expected to result from releases from the landfill.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal		Point of Compliance
Ground water (enhanced remediation)	Not provided	bis(2-c/h)ether	890 ug/l		150 ug/l		Wells LF-4-21, LF-102-15 Southeast area of Landfill A
		bis(2-e/h)phthalate	1,980 ug/l		50 ug/l		
		cholorobenzene	170 ug/l		15 ug/l		
		1,2 dichlorobenzene	28 ug/l		20 ug/l		
		1,4 dichlorobenzene	61 ug/l		20 ug/l		
		2,4-dimethylphenol	182 ug/l		35 ug/l		
		ethylbenzene	453 ug/l		200 ug/l		
		toluene	940 ug/l		600 ug/l		
		total xylenes	3,000 ug/l		1,200 ug/l		
		total organics	11,194 ug/l				
	11,700 cu	BCEE			3,500 ug/l		
Soil	yds				Micrograms/liter		
					surface water*	ground water**	
Water	Not provided	1, 2-Dichloroethane	Not provided		20,000	0.20	Surface water: points nearest landfill on Delaware River and Hog Run Creek Ground water: northwest edge of landfill and
		1, 1-Dichloroethane			-	0.20	
		Benzene			-	0.62	
		Vinyl Chloride			-	0.014	
		1, 4-Dichlorethane			763	0.75	
		2, 4, 6-Trichlorophenol			970	3.18	
		bis(2-c/e)ether			-	0.03	
		bis(2-c/h)phthalate			3.0	2.50	
		Dibenz(a,h)anthracene			-	0.010	
		Lindane			0.08	0.03	
		Isophorone			-	8.54	
		1, 1-Dichloroethane			-	0.02	
		Chloroform			1,240	0.42	
		Methylene Chloride			-	3.86	
		Tetrachloroethene			840	0.65	
		Trichlorothene			21,900	1.29	
		2, 4-Dichloroethane			365	105	
		2-Chlorophenol			2000	175	
		Boron			-	3,150	
		Chlorobenzene			-	146	
		Ethylbenzene			-	1,795	
		Manganese			-	3,500	
		Naphthalene			620	140	
		Antimony			1,600	14	
		Cadium			1.1	5	
		Cyanide			5.2	200	
		Lead			3.2	5	
		Mercury			0.012	2	
		Nickel			160	100	
		Pentachlorophenol			13	0.71	
		Zinc			110		

* Goals are based on Ambient Water Quality Criteria (AWQC).

** Goals are based on Human Health Criteria.

SELECTED REMEDY

EPA has determined that the subsurface contaminated soil in the Bristol Township Authority portion of Landfill Area A will be moved and consolidated into the Rohm and Haas section of Landfill Area A. This area will be contained with a cap and a slurry wall. A diversion trench also will be constructed to restrict the migration of contaminated ground water. Enhanced remediation will be performed for the southeast area of Area A to reduce the high concentrations of organics in the ground water there. The same remedy of a cap, containment structure, and ground water management will be implemented in Landfill Area B. Landfill Area C, where ground water contamination is not a concern, will be covered with a soil cap. A flood wall will be placed to protect the cap if it remains below the 100-year floodplain after construction.

EPA believes that the selected remedies will attain soil and ground water cleanup standards, will permanently reduce or eliminate further releases of hazardous waste, and will provide for the proper management of the wastes generated during the implementation of the corrective measures.

In reponse to public comment, EPA indicated the cost of the remedy will be from $15 to $35 million.

Additional studies will be completed to identify the need for biological media protection standards. A benchmark biological, chemical, and physical characterization of the existing impacts of contamination will be established to determine the need for mitigation of such impacts. During construction of the selected remedies, the river and creek will be monitored to identify any degradation caused by construction activity.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public meeting was held on September 19, 1991 to discuss the proposed Corrective Measures Alternatives. During the public comment period from August 25, 1991 through September 24, 1991, EPA received 117 comments.

The public comments covered many issues, ranging from general questions about the site to detailed technical inquiries. Major issues raised include:

- The accuracy and completeness of the characterization of site hydrogeology, including a bedrock trough
- The feasibility of grouting the slurry wall in bedrock and the selection of materials for the slurry wall
- The health and safety of residents and workers during construction of the remedy
- Potential air quality impacts of the remedy
- Arrangements for long-term maintenance, monitoring, and oversight of the corrective measures and financial responsibility for these activities.

Some commentors expressed a preference for excavation and removal of contaminated media. Commentors also wanted an opportunity to comment on the remedy design.

NEXT STEPS

There are four additonal study areas that are under investigation as part of the order. These include the trailer staging area, the ammonium sulfate area, the manufacturing area, and the wastewater treatment plant.

Implementation of the selected remedies requires perpetual maintenance. Rohm and Haas has indicated commitment to perform the required perpetual maintenance if the property is ever sold.

KEY WORDS

ground water, soil, surface water; dermal contact, ingestion; VOCs, xylenes, toluene; heavy metals, mercury; cap, hydraulic containment, slurry wall.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 5995

Rohm & Haas

Spring House, Pennsylvania
November 18, 1994

Facility/Unit Type:	**Research facility**
Contaminants:	**Tetrachloroethylene (PCE), trichloroethylene (TCE), 1,2-dichloropropane (1,2-DCP), and total 1,2-dichloroethylene (1,2-DCE)**
Medium:	**Ground water**
Remedy:	***Permit modification including conditions for discontinuation of ground-water recovery and treatment system; continued maintenance of system in case of need to reactivate; and ground-water monitoring.***

FACILITY DESCRIPTION

On September 30, 1992, EPA Region III issued a RCRA Corrective Action Permit to the Rohm & Haas Research Laboratory requiring that the facility conduct quarterly ground-water monitoring and a Corrective Measures Study to identify and evaluate alternatives to address contamination in ground water beneath the facility. Because contamination levels have significantly decreased since the facility initiated its own recovery and treatment program in 1990, EPA has determined that a "Permit Modification for Remedy" is necessary to amend the existing permit and to address any further ground-water contamination at the facility.

The 140-acre Rohm & Haas-Spring House site serves as the company's principal research facility and is located in Spring House, Pennsylvania. The lab is dedicated to small-scale chemical and physical research on existing and potential product lines such as coatings, adhesives, leather, paper, textiles, petroleum, monomers, polymers, resins, agricultural chemicals, and chemical specialties. Typical daily operations include synthesis, application, analysis, and process improvement research.

Most of the contamination is located near buildings 1, 5, and 8A. Buildings 1 and 5 were old drum storage and engine cleaning areas. All releases were from historic practices and accidental spills which resulted in releases to the soil. The contamination near building 8A is from unknown historic practices. The volume of released material is unknown.

The facility is located in a northwestern suburb of Philadelphia. The immediate area is primarily residential and commercial, and there are housing developments within one mile of the site. The North Wales Water Authority (NWWA) has two municipal wells, NWWA 25 and NWWA 13, in the vicinity of the facility. The hazardous constituents found in the ground water beneath the facility have not been detected in either municipal water well. While NWWA 13 is not downgradient and is not affected by the onsite contamination, NWWA 25 is downgradient from the contamination and draws water from both the upper and lower aquifers. However, the pattern of ground-water contamination suggests that there may be a geologic barrier which inhibits migration from the facility to NWWA 25. The exact nature of this barrier has not been determined.

The surface topography slopes gently. There is a watershed divide which runs approximately through the middle of the property. Water drains off the property through ephemeral streams.

There are four basic types of hazardous waste managed at the facility: surplus acquired materials; wastes generated by onsite operations; empty containers, contaminated laboratory utensils, spill residues; and wastes identical to the above which are received from satellite operations. These wastes are generated in the laboratories, stored in permitted container storage areas, and disposed of offsite.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level (µg/l)	Cleanup Goals (µg/l)	Point of Compliance
ground water (8/89)		tetrachloroethylene (PCE)	320		5	
		trichloroethylene (TCE)	16		5	
		1,2-dichloropropane (1,2-DCP)	ND		5	
		total 1,2-dichloroethylene (1,2-DCE) (cis)	13		70	
		total 1,2-dichloroethylene (1,2-DCE) (trans)	ND		100	
ground water (10/93)		tetrachloroethylene (PCE)	38		5	
		trichloroethylene (TCE)	ND		5	
		1,2-dichloropropane (1,2-DCP)	ND		5	
		total 1,2-dichloroethylene (1,2-DCE) (cis)	ND		70	
		total 1,2-dichloroethylene (1,2-DCE) (trans)	ND		100	

Beginning in the mid-1980's, Rohm & Haas initiated voluntary ground-water and soil investigations at the site. Investigations have shown that the two aquifers in the area of ground-water contamination flow to the northeast. The upper semiconfined aquifer is separated from the confined lower aquifer by a dense, unfractured shale which inhibits ground-water flow between the two aquifers. According to these investigations, only the upper aquifer is contaminated.

Based on these results, Rohm & Haas voluntarily developed and initiated a ground-water protection program. Routine ground-water monitoring began in 1989, and the ground-water recovery and treatment that began in 1990 have since resulted in a significant decrease in the levels of hazardous constituents. EPA has determined that the level of contamination is decreasing throughout the facility and is unlikely to migrate beyond facility boundaries.

In 1988, Rohm & Haas submitted a report summarizing soil sampling and removal activities conducted at the site. Soils located near Building 5 were found to be the most contaminated with PCE, TCE, 1,2-DCP, and 1,2-DCE. These soils were determined to be the potential source of contamination in ground water underneath the facility and, in 1986, some of these contaminated soils were removed and the area was capped with asphalt.

In 1986, EPA conducted an RFA, and later in September 1992 issued a Corrective Action Permit. The permit recognized that the voluntary investigations of the SWMUs and AOCs at the site had fulfilled all of the requirements of an RFI. The investigations indicated that a release of hazardous constituents into ground water had occurred. Through the permit, EPA required the facility to keep the ground-water recovery and treatment operating, conduct quarterly ground-water detection monitoring, and to conduct a Corrective Measure Study (CMS) to identify and evaluate alternatives to address the contamination.

The permit required the ground-water detection monitoring program to continue until, based on information submitted in the CMS Final Report and any other relevant data, EPA selected a final corrective measure for the facility and modified the permit to incorporate such corrective measures.

EXPOSURE PATHWAYS

Because the contaminated soil at the facility has been remediated, the only remaining potential threat to human health and the environment is through contact with contaminated ground water. Possible human exposure pathways include contact

through showering with or drinking contaminated ground water. Possible environmental exposure will occur if the ground water enters surface water at a wetland or river. At this time there is no evidence of contaminated ground water in drinking water or surface water outside of the facility boundaries.

SELECTED REMEDY

The selected remedy for this site includes discontinuing the current Ground-Water Recovery and Treatment System and Ground-Water Monitoring Program; keeping the Recovery and Treatment System in good working order so that it may be reactivated within 48 hours of EPA notification or discovery of contamination: and meeting the requirements of the permit modification which include submitting a plan to protect NWWA 25 with an appropriate treatment technology and sampling ground water for PCE, TCE, 1,2-DCP, and 1,2-DCE according to a revised schedule and flow chart. If the concentration of any of the above chemicals exceeds the MCL in three wells located between the area of highest contamination and NWWA 25 (wells K, M, and Y) or ten times the MCL in any other onsite wells, then the second stage of the conditions for remedy will be activated. Phase II consists of reactivating the Ground-Water Recovery and Treatment System as well as sampling wells K, M, Y, and NWWA 25 each month for the above contaminants. Phase III of the plan will be activated within seven calender days of the Permitee's receipt of Phase II monthly sampling analyses if any of the above contaminants is detected above the MCL in NWWA 25. The Permitee shall then implement the approved plan to fit NWWA 25 with an appropriate treatment system and continue operation of the Phase II plan.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public participation period lasted from August 19 until October 13, 1994. On October 4, EPA representatives attended a scheduled meeting of the Rohm & Haas Citizen Advisory Council at the facility to explain and answer questions concerning the provisions of the permit modification. EPA received three comments from Rohm & Haas regarding the construction of a new monitoring well H 20 feet to the north of the existing well H, requesting the modification of the Flow Chart for Remedy, and requesting that the facility be able to use Method 601 instead of Method 624 (GC/MS) to analyze ground-water samples collected at the site. EPA concurred with all requested changes to the permit modification.

NEXT STEPS

Once the facility has met all of these requirements and demonstrated with 95% confidence that no well will exceed the MCL for any of the hazardous constituents and that the ground water at the site is no longer a threat to human health and the environment, the facility may apply to EPA for approval to discontinue all corrective action.

KEYWORDS

Ground water; direct contact, ingestion (gw); VOCs (PCE, TCE, DCE); ground-water monitoring

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION 3
ID# 4463

UNIFORM TUBES, INC.

Trappe, PA
(September 30, 1991)

Facility/Unit Type:	**Metal precision tube manufacturing facility**
Contaminants:	**TCE, TCA, chromium**
Media:	**ground water, surface water**
Remedy:	**ground-water pumping and treating with air stripping and ion exchange; pilot in-situ soil vapor extraction system**

FACILITY DESCRIPTION

Uniform Tubes, Inc. (UTI) operates a 40-acre metal precision tube manufacturing facility in Trappe, PA. The facility consists of two plants constructed in 1964 and 1973. Manufacturing processes at the plants include fabricating, cleaning, annealing, pickling, and tumbling metal parts.

The surrounding land use consists of residential properties, agricultural property, and an auto salvage yard. The facility and surrounding properties are located on former farmland.

The shallow ground-water zone beneath the facility is connected to a deep bedrock aquifer. Public wells connected to the Collegeville-Trappe Joint Water System (CTJWS) and private wells draw water from the deep aquifer. Ground-water flow in the bedrock is controlled by fractures, displays a downward vertical gradient, and generally flows to the north under natural flow conditions.

A small topographic swale runs across the facility into the closest body of surface water, Donny Brook, which is approximately 2,600 feet southeast of the facility. The swale is located adjacent to UTI's waste-water treatment system which at one time consisted of two concrete-lined settling basins. These basins have since been closed under RCRA. Water leaving the site via the swale passes through an on-site sedimentation basin constructed by UTI. Donny Brook discharges to Perkiomen Creek, a tributary of the Schuylkill and Delaware Rivers, approximately two miles from the Facility.

In 1977, ground water beneath the facility was found to contain trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA). The source of this contamination was determined to be three underground solvent storage tanks located beneath the northwest corner of Plant 1. Bottled water was supplied to residents whose wells were affected and who could not be connected to the CTJWS distribution network. In 1978, three underground storage tanks were pumped dry and filled with cement in an attempt to prevent continued volatile organic compound (VOC) contamination. The Pennsylvania Department of Environmental Resources (PADER) required UTI to construct a groundwater remediation system which began continuous operation in April 1978. Prior to 1981, the facility discharged non-contact cooling water into the swale pursuant to a National Pollution Discharge Elimination System permit from PADER. During 1985, UTI began monitoring ground water around the perimeter of the waste-water treatment surface impoundments pursuant to RCRA requirements. In 1986, UTI installed additional monitoring wells and conducted a soil gas survey. This investigation detected TCE, TCA, and chromium contamination near on-site waste-water settling basins. On July 12, 1988, EPA and UTI entered into a Consent Order pursuant to §3008(h) of RCRA which required UTI to investigate the nature and extent of contamination at the facility and propose corrective measures.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal[1]	Point of Compliance
groundwater						Well UTM-1
(onsite)		TCE	216,000 ppb		ppb	Well UTM-14
		TCA	1,800,000 ppb[2]		0 ppb	Well UTM-18
		hex. chromium	600 ppb			Well RCRA-2
		total chromium	1000 ppb		0 ppb	Plant 1 Sump
(offsite)		TCE	30.0 ppb		5 ppb	Well OT-8
		TCA	120.0 ppb		200 ppb	
		total chromium	22.4 ppb		00 ppb	
surface water (offsite)		TCE	17 ppb			
		TCA	13 ppb			
soil						
swale		Total chromium	502,000 ppb			
UTM-19		Total chromium	47,500 ppb			

[1] Cleanup goals are maximum concentration limits (MCLs)

[2] Maximum concentration caused by a pipe leak over the sump. Average concentration for 1988-1990 was 38,000 ppb.

EXPOSURE PATHWAYS

The nearest potential human receptors are individuals who ingest drinking water from public and private wells installed in the deep drinking water aquifer. Workers performing on-site corrective measures may also be exposed by inhaling airborne contaminants. Soil contamination is too deep to threaten human health directly, but may continue to leach contaminants into the ground water.

SELECTED REMEDY

Treatment of contaminated shallow and deep ground water will be accomplished with air-stripping (enhanced volatilization). "Stripped" contaminants will be contained via filtering/treatment unless it is demonstrated that no risk to human health or the environment will occur without such filtering. If necessary, inorganic contamination will be removed by using ion exchange treatment. The treated ground water will be used to flush additional contamination out of a contaminant source area in the vicinity of the drainage swale and former surface impoundments.

Soils located around the former solvent storage tanks will be addressed by implementing a pilot program to determine the feasibility of in-situ soil vapor extraction and/or additional shallow ground-water recovery.

UTI disagreed with EPA's decision to include ion exchange treatment to address chromium contamination in groundwater. UTI believes that chromi contamination which is below MCLs will not be an issue pending a decision regarding reuse of the ground water. EPA has agreed to defer a decision pending reuse resolution and continued monitoring.

EPA will require a phased remediation approach tarting with the implementation of a substantially expanded ground-water recovery system to control migration, and recover and treat contaminants. The second phase will address residual contamination associated with known source areas in an attempt to accelerate remediation of groundwater and residual soil contamination.

The total estimated capital and operation and maintenance (O&M) costs associated with [illegible]

existing and additional recovery wells are estimated to be $439,900 and $311,200/year, respectively. Monitoring costs are expected to decrease after the first 2 years and are projected to drop to $212,300/year. Costs associated with the pilot vapor extraction project are estimated to cost $136,200. O&M for the pilot project is estimated to cost $133,000 for the first year and $108,600 thereafter.

PUBLIC PARTICIPATION

EPA established a 45-day public comment period from August 6, 1991 to September 20, 1991 to solicit comments on the Statement of Basis (SB) for the UTI Facility. Approxmately 40 people attended a public meeting on September 5, 1991. EPA received 31 comments in response to the SB. Public comments addressed a wide range of issues including groundwater depletion of the deep aquifer, the adequacy of the public participation procedures, and risks posed by the facility. UTI submitted comments that expressed disagreement with the selected remedy.

NEXT STEPS

If it is determined by EPA on the basis of the ground water extraction system performance that portions of the aquifer cannot be restored to their beneficial use, all of the following measures involving long-term management may occur indefinitely as a modification of the existing system:

- Implementing engineering controls and containment measures such as physical barriers and/or long-term gradient control systems
- Maintaining or expanding restrictions on access to the aquifer
- Continuing monitoring activities of specified wells
- Re-evaluating remedial technologies for groundwater restoration.

The decision to invoke any or all of these measures may be made at any time by EPA and during a review of corrective measures after five years. It is possible that concentrations of VOCs and chromium in the ground water may reach an equilibrium concentration above the cleanup goals regardless of the pumping and treatment undertaken. UTI may petition EPA to modify the cleanup goal if an equilibrium concentration is achieved for five consecutive years.

ATIVE TECHNOLOGIES CONSIDERED

- In-situ soil vapor extraction.

KEY WORDS
groundwater, surface water, soil; ingestion; TCE, TCA, chromium; air stripping, ion exchange, pilot in-situ treatment, vapor extraction, pilot treatability test

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AIR PRODUCTS

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IV
ID# 5673

Air Products and Chemicals, Inc.

Pace, FL
August 23, 1994

Facility/Unit Type:	**Chemical manufacturing**
Contaminants:	**2,4-dinitrotoluene (DNT), 2,6-DNT**
Media:	**Ground water, soil**
Remedy:	**Ground-water treatment using carbon adsorption and reinjection; soil treatment using bioremediation, soil flushing, capping, and institutional controls**

FACILITY DESCRIPTION

On September 29, 1989, Air Products and Chemicals, Inc. (APCI) was issued a corrective action order pursuant to RCRA §3008(h) to complete a RCRA Facility Investigation (RFI) to determine the nature and extent of any on- or offsite contamination from its Pace, Florida facility.

The 1,450-acre APCI site is an active chemical manufacturing facility located in Pace, Santa Rosa County, Florida. The site has been used since the early 1960's for the manufacture of approximately 40 different products including alkyl amines, ammonia, menthol, nitric acid, and ammonium nitrate fertilizer. The alkyl amines are sold to companies which convert them to water treatment chemicals, pharmaceuticals, pesticides, and other products. The other materials produced by APCI are sold to companies for use as feedstocks to make additional products. The plant was originally owned and operated by Escambia Chemical Company, and was purchased in April, 1969 by APCI.

Operations at the facility are grouped into two areas approximately one mile apart. The complex of plants to the north is known as Plant Area A and those to the south are known as Plant Area B. Dinitrotoluene (DNT) was produced by reacting toluene with a mixture of nitric and sulfuric acids at Plant Area B from 1966 until 1973 when the DNT plant was closed. The soil contamination in Plant Area B is divided into two areas. In the DNT Treatment Area, process equipment washdown and wastewater from the DNT production operation was discharged into the Delta Pond. DNT solids were also burned in this area when the Delta Pond was drained at the time of the DNT Plant's closure. The second area, the Area B Solids Disposal Area, is comprised of two solid waste disposal areas used primarily for the disposal of construction debris, manufacturing equipment, and janitorial wastes. DNT solids were also burned in these areas. The RFI conducted from 1989 through 1991 concluded that DNT contamination exists in both the soil of the Area B Solids Disposal Areas and the Delta Pond Area as well as the ground water beneath Plant Area B.

The site is bordered on the southwest by Escambia Bay, on the south by Cytec Industries, Inc., and on the east, north, and west by the lightly settled residential areas of Floridatown and Pace. The APCI site is composed of heavily wooded and wetlands areas. A portion of the site hs been designated as a bird sanctuary. The land to the west of Area B and to the East of Floridatown is composed largely of wetlands. There are no local downgradient groundwater wells currently being utilized for potable purposes within a one-mile radius of the facility. Drinking water for APCI and Cytec as well as the residents in the surrounding Pace community is supplied by the Pace Water Supply. Each of the Pace Water Supply wells is located more than one mile hydraulically upgradient of the APCI facility. APCI and Cytec use ground-water wells drilled into the aquifers below the site for supplying process water to each of their facilities.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goals	Point of Compliance
ground water		2,4-dinitrotoluene (DNT) 2,6-DNT			0.1 ug/l 0.2 ug/l	onsite wells
soil	5,500 yd^3	2,4-DNT 2,6-DNT			2.34 mg/kg 2.34 mg/kg	outsite deed-restricted area

Ground water in the area surrounding the APCI site is found within three aquifers: the Sand-and-Gravel Aquifer, the upper limestone of the Floridian Aquifer, and the lower limestone of the Floridian Aquifer. The soft and relatively unmineralized water in the Sand-and-Gravel Aquifer is the primary source of drinking water in the area. The aquifer consists of permeable sand, some gravel layers, and discontinuous clay lenses. It extends from the water table to depths of 200 to 1,000 feet below ground surface. Water may occur either under water table conditions or semi-confined by layers or lenses of clay. Recharge to the aquifer is by local rainfall.

The highest point at the facility is approximately 130 feet above sea level. Surface elevations generally decrease moving southwest towards Escambia Bay. Dridgler's Creek lies to the west of the facility. In addition, active wastewater ponds in Plant Area B such as Bio-pond Charlie, Bio-pond Hotel, and Bio-pond Bravo comprise the onsite surface water bodies. Both Dridgler's Creek and the wastewater ponds drain into Escambia Bay.

Surficial soils within the DNT Treatment Area contain elevated amounts of DNT in the area surrounding the former Delta Pond and in isolated pockets to the east of the pond. Small amounts of unburned DNT have also been identified within 10 feet below the surface in thin lenses at the Area B Solids Disposal Areas. Ground water contamination exists within 400 acres of the Sand-and-Gravel Aquifer beneath Plant Area B at depths of up to 200 feet below sea level. The wastewater treatment plant for the facility was installed in Plant Area B. Neutralization (pH adjustment), equalization (flow and concentration adjustment), and biological treatment are performed on facility wastewaters in a series of treatment lagoons whose discharge is regulated by NPDES permit to Escambia Bay.

EXPOSURE PATHWAYS

Exposure pathways which could result in a risk from the DNT contamination include ground water, surface water, and soil. There is no current risk to humans from the contaminated ground water because there is no complete exposure pathway. However, without the use of deed restrictions and proper treatment of the DNT contamination that exists in the soil and ground water, a potential risk of exposure to humans exists in the future should a drinking water well be drilled in an area of contamination.

SELECTED REMEDY

The selected remedial action for this site includes treating ground water in the west, southwest, and central south areas using activated carbon to remove organic contaminants by adsorption; sending spent carbon offsite for regeneration and eventual reuse; treating DNT-contaminated soil in Plant Area B using bioremediation and soil flushing followed by consolidating soils over a double liner system and beneath a multi-media cap, and implementing institutional controls; and containing contaminated soil in the Plant Area B Solids Disposal Areas using a multi-media cap, soil cover, and institutional controls. The capital cost for the selected ground-water remedy is $721,364 with an annual O&M cost of $156,902 for 30 years. The total capital cost for the two soil remedies is $6,875,000 with an annual O&M cost of $156,999. The total cost for the selected corrective measure is $17,014,004 over 30 years.

INNOVATIVE TECHNOLOGIES CONSIDERED

Biological treatment (bioremediation), an innovative cleanup technology that uses bacteria to consume waste and break down organic materials, was considered for the remediation of DNT-contaminated ground water. Bioremediation was selected for the treatment of DNT-contaminated soil in Plant Area B.

PUBLIC PARTICIPATION

A public comment period was held from September 1 through October 17, 1994. No comments were received.

NEXT STEPS

The corrective measure alternatives selected by EPA will be implemented through a Corrective Measure Implementation Consent Order. EPA will review the progress of the Corrective Measure Implementation at the facility in three years and may determine that modifications to the soil flushing corrective measure system are necessary to achieve soil cleanup goals. Following this review, evaluations will be performed in conjunction with the required five-year reviews due to the containment of hazardous substances onsite.

KEYWORDS

Ground water, soil; VOCs; capping, carbon adsorption, innovative technology, bioremediation (considered (gw)) (selected (soil)), reinjection, soil flushing

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McDonnell Douglas

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IV
ID# (last 4 #s)

McDonnell Douglas Astronautics Company

Titusville, Florida

Facility/Unit Type:	**Manufacturing of aeronautical parts**
Contaminants:	**Inorganics**
Media:	**Soil, ground water**
Remedy:	**No further action**

FACILITY DESCRIPTION

The 422.11-acre McDonnell Douglas Astronautics Company (MDAC) site is an aeronautical parts manufacturing facility located at 701 Columbia Boulevard, Titusville, Florida. The facility is composed of eight main buildings and a magazine area in the southwest corner. The U.S. Environmental Protection Agency, Region IV (EPA) issued a five-year Hazardous and Solid Waste Amendment (1984) permit to MDAC on November 30, 1987 to address three solid waste management units (SWMUs).

Solid fuel propellants (EPA hazardous waste number: D003) of various types are generated at the site. Approximately 90 percent of the reactive waste treated is solid propellant of SMAW and Dragoon Missiles. The remaining 10 percent includes miscellaneous unservicable igniters, fuses, Dragon rocket motors, and 9mm spotting rifle cartridges. The solid fuel propellants can be either unconfined or confined. All reactive wastes are treated onsite by burning in open pits on a controlled basis.

The site is divided into three (3) solid waste management units (SWMUs): SWMU-3, composed of two operational ordnance burn pits and a furnace; SWMU-5, the abandoned burn pit; and SWMU-6, which includes several waste piles.

Between 1971 and 1984, McDonnell Douglas operated three burn pits for thermal destruction of ordnance wastes generated on the site. These burn pits have been removed followingthe EPA-approved clean closure plan (1988). In 1984, a new pair of burn pits were built nearby. These burn pits (SWMU-3) are currently operated and monitored under the State permit issued to MDAC on July 30, 1992.

McDonnell Douglas undertook a series of detailed sampling and analysis programs to determine and document potential or actual releases to the environment. As a part of the submittal for these activities, MDAC submitted clean closure plans for SWMU-5 and SWMU-6.

Site closure of the SWMU-5 abandoned burn pits was performed according to an approved closure plan. The closure approval for SWMU-5 was delayed due to the presence of arsenic above the EPA drinking water standard.

EXPOSURE PATHWAYS

There is no potential for exposure via contact with residual contaminated soils. No active water supply wells within 1,000 feet of the facility were identified. Also, there were no known plans to site water supply wells in the area.

There are no known domestic, recreational, agricultural, industrial, or environmental local uses of creek in the area. Human access to the McDonnell Douglas facility is limited by a chain fence and 24-hour guard security. There are no known or documented endangered or threatened species near the facility

SELECTED REMEDY

Condition II.C.I of the permit stipulated that a SWMU can be excluded from the RFI requirements if it can be documented that a release is not probable. Based on analysis of the data summarized below, it is determined that further investigation for the three SWMUs was not required.

After the pits and surrounding soil were removed, in SWMU-5, the facility took a total of seven soil samples from each pit. The data showed that the post-closure samples did not deviate from background samples,

The facility collected and analyzed groundwater samples from ten wells near SWMU-5 and detected an arsenic concentration exceeding the drinking water standard of 0.05 mg/l in wells both upgradient and downgradient from SWMU-5. It was determined that further investigation was warranted even though MDAC reported that arsenic was not a component of material used or handled at the site.

A search of historical land use concluded that the arsenic contamination pre-dated the presnce of the facility and therefore the SWMU. Aerial photographs confirmed that a mature citrus grove where pesticides containing arsenic were used was previously located at this site.

Appropriate State and local agencies have been informed regarding the arsenic contamination in the surficial aquifer linked to past pesticide use.

Since ground water is the primary pathway by which hazardous constituents may enter the environment from the various waste piles located in SWMU-6, five wells (MW-1 through MW-5) were sampled to define background conditions for gorund water. The following conclusions were drawn based on the collected data:

Ground water samples taken at each waste pile did not substantially deviate from background well samples and,therefore, do not indicate that contaminants have been released from SWMU-6. Further investigation is not necessary.

INNOVATIVE TECHNOLOGIES CONSIDERED

No innovative technologies were considered.

PUBLIC PARTICIPATION

As the expiration date of the HSWA permit approached, EPA initiated reissuance procedures. Because the three SWMUs had been investigated and a draft final remedy had been approved during the five years, the permit reissuance also served as the modification for reincorporation of the no further action remedy. A 45-day public notice period was established, but no comments were received. The second HSWA permit was issued on January 15, 1993.

NEXT STEPS

Since the final remedy for the three SWMUs is no further action, there are no planned next steps for this site. However, the HSWA permit is still in effect and if new releases from identified SWMUs or new SWMUs and/or areas of concern (AOCs) are discovered, then further investigation may be necessary.

KEY WORDS
Ground water, soil; no action remedy

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 4618

Union Carbide Caribe, Inc.

Ponce, PR
(Signed September 29, 1988)

Facility/Unit Type: Former petrochemical producer
Contaminants: VOCs
Media: Ground water
Remedy: Solidification/stabilization with on-site landfilling, ground-water recovery

FACILITY DESCRIPTION

In September 1988, EPA issued a RCRA permit to Union Carbide Caribe, Inc. (UCCI) for closure and operation of on-site facilities necessary to support closure and remedial action. Two aeration lagoons associated with the waste water treatment plant (WWTP) and the industrial landfill were permitted. These units are used in support of the closure of the other units and remedial activities. The 32 SMWUs identified in the RFA were included in the 1988 permit. The SWMUs were divided into four groups (Group I, II, III, and IV). This Statement of Basis pertains only to Group I units, which include the North Cooling Water Return Lateral, the dripolene pond, the Industrial Landfill, and the Stormwater Control Pond. The Group I units are adjacent to each other and share the same critical remedial action issues.

The UCCI facility is a 944-acre petrochemical complex located in a semi-rural, industrial area. The facility consists of two principle locations, the Main Plant (Tallaboa Poniente) and the Puntilla. The facility produced olefins such as ethylene, propylene, acetylene, butanols, acetylene black, and bisphenol. UCCI permanently ceased production operations in 1985 and engaged in activities including chemical products distribution and wholesaling, and the operation of its WWTP.

The major hazardous wastes generated in the past consisted of residues from operating units and wastes derived from maintenance-related cleaning of equipment. Most of the waste was utilized as fuel to the boilers. Wastes with poor fuel value were burned in ground burners or sent to primary solid ponds and the WWTP.

Ground water occurs in alluvium under unconfined conditions. The groundwater is nonpotable due to its brackishness. Depth to the ground-water table ranges from three to six feet below ground surface and the direction of flow is generally to the southwest. The Tallaboa Bay is directly south of the plant and received cooling water discharges during plant operation.

UCCI has been investigating ground-water contamination since 1977. The permit formalized

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Average Concentration (ppm)	Action Level (ppm)	Cleanup Goal (ppm)	Point of Compliance***
ground water	not given	Benzene	25	10.000	10.000*	R-1, R-2, R-3, R-6, R-7 and R-8
		Ethylbenzene	100	4.700	4.700	
		Toluene	6.8	10.000	10.000*	
		Naphthalene**	5.2	5.000	5.000	
		Fluoranthene	3.6	0.060	0.060	
		Benzo(a)-anthracene	2.1	0.0350	0.035†	
		Chrysene	2.1	0.100	0.100†	
		Fluorene	3.5	0.120	0.120*	
		Phenanthrene	4.0	0.140	0.140*	
		Acenaphthene	1.80	0.065	0.065*	
		Acenaphthylene	3.00	1.200	1.200*	
		Acetophenone	0.300	0.065	0.065*	
		Pyrene**	19.0	0.022	0.022	
		Styrene**	5.80		†	
		Xylene**	3.90	1.380	1.380	
		4-Nitrophenol**	@		†	
		Anthracene**	10.0	0.280	0.028	
		2-Methyl-naphthalene**	39.0	0.546	0.546	

* Indicates an Alternate Concentration Limit.
** Added Parameters as a Result of Appendix IX Sampling.
*** The compliance point is the edge of the corrective action management unit, which includes a regulated and nonregulated units.
† Indicates Practical Quantifiable Limit.
@ Included in Sampling but not detected.

the investigations performed and ensured that cleanup would be conducted according to regulations. On February 1, 1989, UCCI submitted a CMS and Implementation Report for the Group I SWMUs.

EXPOSURE PATHWAYS

The exposure potential was evaluated for ground water and air emissions. There are no known users of ground water in the industrial complex in which the plant is located. EPA determined that personnel directly involved in remediation possibly could be exposed to elevated levels of contaminants. To address potential exposure, a site health and safety program was implemented, requiring appropriate respiratory and clothing protection.

SELECTED REMEDY

The selected remedy for final disposal of impounded waste is solidification/stabilization and on-site landfilling in the Industrial Landfill. An EPA-approved cover system consisting of a two-foot thick clay barrier and two-foot thick top soil layer will be installed on the landfill material. Subsurface remediation will be achieved with a recovery well system.

The selection of this remedy was supported by laboratory and field testing, which demonstrated that solidification/stabilization would be effective in minimizing leaching of hazardous constituents and that the Industrial Landfill was capable of accepting

the anticipated volume of stabilized waste and contaminated soil. The recovery well system was selected because it will remove contamination and prevent further migration. The remedy uses proven technologies and protects human health and the environment.

The total capital costs associated with the selected remedy is $15.8 million. Stabilization/ solidification and landfilling are projected to be completed in 1.5 to 5 years, while the recovery well system will be completed during the life of permit (30 years).

INNOVATIVE TECHNOLOGIES CONSIDERED

Innovative technologies that were considered, but not included in the selected remedy, were liquid and solid phase biological oxidation, conversion to liquid fuel via extractive distillation, and in-situ stabilization and closure.

PUBLIC PARTICIPATION

EPA established a 45-day public comment period which began on June 17, 1988 and ended on August 3, 1988. A public hearing was conducted on August 3, 1988 to allow the public to address questions and raise concerns. The major comment raised during the public comment period was an objection to one of the alternatives considered for the site cleanup. This alternative involves installing an on-site hazardous waste incinerator to burn the waste generated during the closure and cleanup. This alternative was not selected.

NEXT STEPS

EPA will continue to monitor the ground water recovery system to ensure adequate control and the effectiveness of the ground-water recovery system. Due to the extent of ground-water contamination, the specified clean-up standard may not be achieved for several years. The effectiveness of the contaminant migration control is currently under evaluation and will continue to be monitored. If it is demonstrated that contaminant migration control is ineffective, i.e., incapable of achieving a steady or decreasing concentration of contaminant in the ground water, then alternative technologies will be considered and the permit will be modified to implement the alternative.

KEY WORDS
ground water; ingestion, inhalation, dermal contact; VOCs; stabilization, landfilling, on-site disposal

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID #
PAD 00 30477 92

American Color & Chemical Corporation

Lock Haven, Pennsylvania
Signed September 29, 1995

Facility/Unit Type:	**Manufacturer and distributer of various chemicals and dyes used primarily for the color processing of textiles, fibers, paper products, and plastics**
Contaminants:	**Arsenic, lead, benzo(a)anthracene, benzo(a)fluoranthene, benzo(a)pyrene, benzene, chlorobenzene, methylene chloride, toluene, trichloroethene, bis(2-ethythexyl)phthalate, 4-chloroaniline, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 4-methylphenol, 2-nitroaniline, 4-nitroaniline, nitrobenzene, pentachlorophenol, phenol, aluminum, chromium, copper, mercury**
Media:	**Soil and groundwater**
Remedy:	**Remediate the contaminated soil and construct/modify and implement a groundwater pump and treat system in order to pull back, contain and treat the contaminated groundwater plume**

FACILITY DESCRIPTION

The American Color & Chemical Corporation (ACCC) conducted numerous environmental investigations at the Facility starting in approximately 1980. In September 1991, subsequent to the investigations, ACCC entered into an Administrative Consent Order with EPA. Corrective action measures were evaluated under the Order on September 5, 1991, pursuant to Section 3008(h) of the Resource Conservation and Recovery Act (RCRA), as amended, 42 U.S.C. Section 6928. The lateral and vertical distribution of contaminants for on-site soils and in both on-site and off-site groundwater was determined during the RCRA Facility Investigation. Contaminants of concern (COCs) were identified in both the on-site soil and groundwater. The RCRA Facility Investigation Work plan was approved by EPA on September 22, 1992, a Corrective Measure Study (CMS) was conducted, and a CMS Report was approved on May 31, 1995.

The Facility was ordinally operated by Lock Haven Clay Works, which conducted commercial operations manufacturing clay terra-cotta sewer pipes from 1888 to 1900. From 1900 to 1915 the facility stood idle. Between 1915 and the present the Facility had several different owners including Stanley Aniline Chemical Works, American Airline Products, Koppers Company Incorporated, and ACCC. From 1915 to 1982 these owners manufactured and distributed various chemicals and dyes primarily used for the color processing of textiles, fibers, paper products, and plastics. In 1982 all commercial operations were discontinued. As of 1995, the plant production facilities have been demolished, and all wastewater management surface impoundments have either been closed or are in the process of being closed in accordance with approved Pennsylvania Department of Environmental Protection (PADEP) closure plans.

The ACCC Facility is located in Lock Haven, Clinton County, Pennsylvania, approximately ½-mile north of Bald Eagle Creek and approximately 3/4-mile south of the west branch of the Susquehanna River. The facility is in a mixed industrial and residential area with single and multiple family residences lying primarily to the north and west. The Facility is approximately 38 acres in size and contains one aquifer within its boundaries. Groundwater flow is northeast before changing direction to the southeast. The facility is located within the 100 year floodplain of Bald Eagle Creek and the Susquehanna River. It has been flooded 19 times between 1897 and 1975.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
Surface soil	8,500 cubic yards of soil excavated and 2.5 acres to be capped	Arsenic Lead Benzo(a) anthracene Benzo(b) fluoranthene Benzo(a) pyrene	442 2,430 13 18 14 (mg/kg)	Back-ground or indus-trial risk based	37 1,000 3.9 3.9 .39 (mg/kg)	Media cleanup standards
Groundwater	10,512 million gallons	Benzene Chlorobenzene Methylene Chloride Toluene Trichloroethene Bis(2-ethythexyl) phthalatee 4-Chloroaniline 1,2-Dichlorobenzene 1,4-Dichlorobenzene 4-Methylphenol 2-Nitroaniline 4-Nitroaniline Nitroaniline Pentachlorophenol Phenol Aluminum Arsenic Chromium Copper Lead Mercuryy	2,000 86,000 2,200 2 10,000 45 38 28,000 60,000 2,000 5,300 36,000 3,100 390,000 25 9,500,000 3,760,000 8,790 9,740 611,000 62,200 765 (mg/L)	MCL or risk based level	5 39 4.1 1,000 5 6 150 600 75 180 2.2 110 3.4 1 22,000 37,000 50 100 1,400 15 2 (mg/L)	Throughout the groundwater contamination plume

Regional precipitation averages 38 inches annually. Mean annual temperature is 51.3 degrees Fahrenheit, typically ranging from 30 degrees in January to 84 degrees in July. There are no endangered species or sensitive environments identified at the Facility.

In July 1993, ACCC initiated Interim Measures consisting of a groundwater pump and treat system. The purpose of this measure is to contain and prevent migration of contaminated groundwater from the ACCC Facility. Groundwater is extracted from two on-site wells, RW-1 and RW-2. The groundwater pump and treat system runs approximately eight hours a day, five days a week, during non-freezing weather and works in conjunction with the PADEP-approved sludge treatment system used for the closure of the on-site

surface impoundments. The recovered groundwater is treated for the removal of metals and organics and the treated groundwater is either recycled as process water for the sludge treatment system or discharged to the sanitary sewer.

EXPOSURE PATHWAYS

The potential exposure pathways for industrial workers via soil include ingestion, absorption through dermal contact, and inhalation. Constituents of concern (COCs) found in the soil include arsenic, polynuclear aromatic hydrocarbons (PAHs), 2-nitroaniline, and nitrobenzene. An assessment, which assumes that the site may be developed for residential use in the future although no plans currently exist, suggests exposure pathways via groundwater and soil including ingestion, inhalation, and dermal contact. The COCs found in the groundwater include aluminum, arsenic, chromium, copper, manganese, mercury, and nickel.

SELECTED REMEDY

The selected remedy proposes the ACCC to remediate the contaminated soil and construct/modify and implement a groundwater pump and treat system in order to pull back, contain and treat the contaminated groundwater plume. It involves the following components:

- Excavate unsaturated soils exceeding the established media cleanup standards in SWMUs 12 and 14.
- Place excavated soil from SWMUs 12 and 14 not exceeding PADEP placement criteria in the impoundments in accordance with the PADEP approved closure plan.
- Treat excavated soils from SWMUs 12 and 14 that exceed PADEP placement criteria in the existing on-site sludge treatment system before placement in the impoundments in accordance with the PADEP approved closure plan.
- Backfill excavated areas with clean soil which is compacted, graded, and vegetated to promote drainage in SWMUs 12 and 14.
- Cap soils that exceed the established media cleanup standards in SWMUs 5 and 15 using capping construction specifications described in the PADEP approved closure plan.
- Install new extraction wells and/or use existing wells for use in groundwater pump and treat system.
- Modify the existing Interim Measures groundwater pump and treat system or construct a new groundwater pump and treat system to allow continuous year round operation.
- Continue operations of the existing Interim Measures groundwater pump and treat system until the existing system is modified or a new groundwater pump and treat system is operational.
- Continue discharge of treated groundwater to the sanitary sewer in accordance with acceptable limits required by the City of Lock Haven publicly owned treatment works (POTW) or if POTW use is discontinued, discharge to Bald Eagle Creek in accordance with the Clean Water Act NPDES regulations and requirements.
- Create and impose institutional controls to support operation and maintenance activities that would include cap maintenance, groundwater pump and treat operations, groundwater quality monitoring, and water level monitoring. Require periodic monitoring and reporting of groundwater data to track compliance with established media cleanup standards.

- Properly decommission the existing on-site sludge treatment system when its use is discontinued.

- Evaluate the high concentration of arsenic found at the one location downstream from the ACCC storm water NPDES discharge outfall in Bald Eagle Creek, to determine if there is any risk to human health or the environment.

The total cost, including capital, operation and maintenance costs, for the selected remedy is approximately $9.5 million.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period will last thirty calendar days.

NEXT STEPS

EPA will prepare a Final Decision Document and Response Alternative. Additional public comments on any proposed revised Corrective Measures Alternative will be solicited and a final remedy will be selected. The final corrective measure alternative will be implemented using the available legal authorities, including, but not limited to, RCRA Section 3008(h).

KEY WORDS:
soil, groundwater; dermal contact, ingestion, inhalation; arsenic, lead, benzo(a)anthracene, benzo(a)fluoranthene, benzo(a)pyrene, benzene, chlorobenzene, methylene chloride, toluene, trichloroethene, bis(2-ethythexyl)phthalate, 4-chloroaniline, 1,2-dichlorobenzene, 1,4-dichlorobenzenc, 4-methylphenol, 2-nitroaniline, 4-nitroaniline, nitrobenzene, pentachlorophenol, phenol, aluminum, chromium, copper, mercury; capping, excavation, extraction, filling, institutional controls, groundwater monitoring, offsite discharge, onsite treatment, publicly owned treatment works (POTW), and O&M

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 1705

Atlantic Research Corporation

Gainesville, VA
(Signed September 30, 1991)

Facility/Unit Type:	**Rocket motor production and testing operations**
Contaminants:	**Tetrachloroethene (PCE), 1,1-Dichloroethene (1,1-DCE), 1,1,1-Trichloroethane (1,1,1-TCA), Methyl Chloride (MEC), Trichloroethylene (TCE), Chlorobenzene, Arsenic, Hexavalent Chromium (VI), Lead, Mercury**
Media:	**Ground water, soil, surface water**
Remedy:	**Continued pumping and treating ground water, shredding VOC-contaminated soil with in-situ placement, excavating inorganic-contaminated soil with off-site disposal**

FACILITY DESCRIPTION

On May 25, 1989, EPA and Atlantic Research Corporation (ARC) entered into a Consent Order pursuant to Section 3008(h) of RCRA. The agreement required ARC to complete an on-site and off-site investigation to determine the nature and extent of contamination from the facility and to conduct a study to evaluate cleanup alternatives.

The 420-acre ARC facility began operation in 1951. ARC tests and manufactures rocket motors and gas generators. The facility consists of solid rocket propellant and rocket motor production and testing operations, research laboratories, and design technology areas. ARC has identified itself as a generator of hazardous waste and an owner/operator of a hazardous waste treatment, storage, and disposal facility. In November 1988, the facility submitted a Part B permit application for open burning pits referred to as thermal treatment units, which is currently being processed.

ARC has undertaken several remedial measures to address past disposal and releases of chemical constituents. Two preliminary investigations for volatile organic compounds (VOCs) at the Facility were conducted. The conclusion of the second investigation led to the development of the "Plan of Action for Environmental Investigation and Interim Remedial Action" (POA). The POA was approved by EPA as a equivalent of an RFI report. ARC submitted a CMS report to EPA on April 15, 1991 and also completed a risk assessment. The findings in the reports indicated the presence of VOC contamination in ground water and soils, and metals contamination in soils within a localized area. The majority of the contamination appears confined to shallow soils and ground water, with some surface water contamination.

In October 1991 after the SB was signed, an ARC contractor encountered an odor in the soil. ARC sampled the area in November 1991 and tests results revealed the presence of chlorobenzene in the soil. The newly discovered contamination will be addressed through the selected remedy. EPA has addressed this development and other issues with two Explanations of Significant Differences, which are amendments to the signed Statement of Basis and Response to Comments.

EXPOSURE PATHWAYS

The contaminated groundwater is a potential threat at the site because of the

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal	Point of Compliance
ground water	not given	PCE	.46	5ppb	5 ppb*	72A and 72B; deep wells 13 and 14
		1,1,1-TCA	. 36	2ppb	200 ppb*	
		1,1-DCE	.16	7ppb	7 ppb*	
soil	2,000 cubic yards	PCE[1]	5500	not given	2 ppm**	
		PCE[2]			4 ppm**	
		MEC	.56	not given	0.04 ppm**	
		1,1-DCE	.76	"	0.5 ppm**	
		TCE	1.5	"	0.9 ppm**	
		Chlorobenzene			70 ppm**	
		Arsenic	1240	not given	15 ppm**	
		Chromium VI	2500	"	10 ppm**	
		Lead	10400	"	100 ppm**	
		Mercury	263	"	30 ppm**	

* Cleanup goal is a Maximum Contaminant Level that is federally enforceable under the Safe Drinking Water Act.

** Cleanup goal is based on health based standards.

1 Represents PCE cleanup goal at Building 28.

2 Represents PCE cleanup goal at Building 40.

potential for direct ingestion of contaminants through the facility drinking water wells. The contaminated soil is a potential threat to the on-site workers because of potential contact and ingestion of soil and inhalation of volatilized contaminants. Wetland areas and small streams are the ecosystems most sensitive to continued constituent release.

SELECTED REMEDY

The selected remedy for the remediation of contaminated soil and ground water includes the following actions:

- Excavating about 2,000 cubic yards of VOC-contaminated soil, and a shredding treatment in a closed tank system with in-situ redepositing
- Excavating approximately 20 cubic yards of metals-contaminated soil, disposal at a RCRA hazardous waste landfill, and backfilling excavated area.
- Continue pumping and treating ground water with air strippers and carbon adsorption units to meet discharge permit limitations.

The selected remedy utilizes a combination of proposed measures that were considered for corrective action.

The remedy will achieve substantial and timely risk reduction through treatment of contaminated soil, total excavation of inorganic metals in soil, and pumping and treatment of contaminated ground water. EPA believes that the selected remedy will protect human health and the environment, attain media cleanup standards, control the sources of release, reduce or eliminate further releases, and comply with applicable standards for waste management.

The combined present worth cost of the proposed remedy is $1,282,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA held a public comment period from August 26, 1991 through September 25, 1991. A public meeting was held on September 12, 1991 to address oral comments. The majority of the comments received at the public meeting and in writing were raised by the Vulcan Land Company, owner of the land south of the facility, and by Gainesville Associates, owner of the property on which the facility is located. The Vulcan Land Company made several comments claiming violation of due process by alleged insufficient public participation opportunities and notice. The comments by Gainesville Associates addressed the remediation technologies and long term monitoring plans for the site.

NEXT STEPS

The facility will be thoroughly reviewed as part of EPA's five year monitoring program and, if any new discoveries are made, EPA will address them and re-propose additional work to be performed. Any future remediation will be addressed through separate corrective action.

KEY WORDS
ground water, soil; ingestion, inhalation; VOCs, heavy metals; air stripping, carbon absorption, excavation, filling, off-site disposal

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID #
PAD 00 238 6761

Honeywell Incorporated
Fort Washington, PA
(Signed August 24, 1994)

Facility/Unit Type:	**Electronic control and mechanical valve assembly manufacture**
Contaminants:	**Trichloroethane (TCE), benzene, 1,1-dichloroethane (1,1-DCE), tetrachloroethane (PCE), and vinyl chloride**
Media:	**Groundwater**
Remedy:	**Extract contaminated groundwater and treat on-site**

FACILITY DESCRIPTION

On February 6, 1991, EPA and Honeywell entered into an Administrative Consent Order pursuant to Section 3008(h) of RCRA regarding remediation of contaminated groundwater at the Honeywell Fort Washington, PA facility. In accordance with this order, Honeywell conducted a RCRA Facility Investigation (RFI) that revealed a lateral and vertical distribution of contaminants (dissolved VOCs) in both on- and off-site groundwater. As a result of these findings, Honeywell embarked upon a corrective measure study (CMS) and implemented an interim measures groundwater recovery pump and treat system on October 25, 1993. It consists of two groundwater recovery wells and associated pumps which treat the water using two granular activated carbon (GAC) units to a level acceptable to the Delaware Valley Industrial Sewage Authority (DVISC)-operated sanitary sewer.

Prior to the current agreement with EPA, Honeywell conducted several other investigations of contamination at the facility. In 1986, Honeywell removed ten underground storage tanks (USTs), conducted post-excavation soil sampling at the former UST locations and conducted soil and groundwater sampling in the vicinity of the former (now inactive) wastewater treatment plant (WWTP). The results of the post-excavation soil sampling indicated elevated total petroleum hydrocarbon (TPH) concentrations in the area of UST 4 and elevated concentrations of total VOCs and TPH in the area of UST 8. This contaminated soil (approximately 70 tons) was excavated and disposed of by Honeywell, in accordance with applicable regulations. After the excavation of the contaminated soil, an investigation of groundwater quality was initiated. Soil sampling in the vicinity of the WWTP did not reveal any contamination at a concentration requiring further action.

From 1987 to 1990, Honeywell continued to investigate the impact of contamination at the facility. The investigations concluded that VOCs, primarily TCE, were migrating through the groundwater in a southwesterly direction (the direction of groundwater flow) from the vicinity of the UST 4 and UST 8 areas and the former solvent degreaser pit. Honeywell concluded that the source of VOCs was most likely the UST 8 area and the former solvent degreaser pit because both formerly contained TCE. During these investigations no significant soil contamination was found.

The Honeywell facility is located in Upper Dublin Township, Fort Washington, Montgomery County, Pennsylvania. This is mainly a suburban bedroom community (population 24,000) with the exception of the Fort Washington Office Center which has more than fifty commercial/light industrial tenants. Site relief is approximately 45 feet and the site was significantly regraded during the construction of the facility. The southern portion of the property contains

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	MCL Action Level (ppb)	MCL Cleanup Goal (ppb)	Point of Compliance
Groundwater	Not given	TCE	1000,000	5	5	Throughout the plume
		Benzene	7	5	5	
		1,1-DCE	90	7	7	
		PCE	41	5	5	
		Vinyl chloride	30	2	2	

as much as 12 feet of fill in the former bed of Pine Run Creek. The facility is approximately 67 acres in size. Prior to 1958, portions of the facility property were owned by several individuals and used primarily for agricultural purposes. From 1958 to 1965, the property was owned by Delaware Valley Industrial Properties Inc., and was purchased by Honeywell in 1965. In 1965, Honeywell developed the facility for the manufacture of electronic controls and mechanical valve assemblies. Honeywell sold the facility in 1986 to "1100 Virginia Drive Associates" and continues to lease a portion of the facility, but no longer conducts any manufacturing activities at the facility.

EXPOSURE PATHWAYS

As a result of the interim measure groundwater recovery pump and treat system, EPA has determined that there has been no contamination of off-site domestic wells. Also, the contaminated groundwater is being contained and is not discharging to Pine Run Creek, which has been identified as a potential ecological receptor. EPA has also determined that there are no on-site human receptors because groundwater at the facility is not used for any purposes.

SELECTED REMEDY

EPA has selected a groundwater recovery pump and treatment system that would include:

- Installing two new recovery wells;
- Constructing a new treatment system;
- Running a treatment pilot study to determine which method of treatment would be most effective (air stripping or UV/oxidation);
- Continued operation of the interim measures pump and treat system until the new groundwater pump and treat system is installed and operational;
- During the treatment pilot study, determine if the interim measure recovery wells should be used with the new system or if they should be eliminated;
- Create and impose institutional controls to require periodic monitoring and reporting of groundwater data to track compliance with established media cleanup standards;

- Discharge treated groundwater to Pine Run Creek in accordance with the Clean Water Act National Pollutant Discharge Elimination System regulations or to the sanitary sewer in accordance with acceptable limits required by DVISC.

The cost of this remedy will depend upon the selection of treatment method. For air stripping, the capital cost would be approximately $855,000, the annual operation and maintenance (O&M) cost for year 1 would be approximately $161,300, and the annual O&M cost for years 2 - 30 would be approximately $151,300 annually. For UV/oxidation, the capital cost would be approximately $672,500, the annual O&M cost for year 1 would be approximately $163,800, and the annual O&M cost for years 2 - 30 would be approximately $153,800.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA held a 30-day public comment period that began on August 31, 1994 and ended September 30, 1994. EPA also held a public meeting on August 15, 1994 at the Upper Dublin Township Municipal Building, Fort Washington, PA. EPA placed announcements in a local newspaper notifying the public of the public meeting and location of the Administrative Record. Comments that were received did not result in any significant changes to the permit.

NEXT STEPS

Conduct a treatment pilot study to determine which method of treatment would be most effective (air stripping or UV/oxidation), determine if the interim measure recovery wells should be used with the new system, and continue operation of the interim measures pump and treat system until the new groundwater pump and treat system is installed and operational.

KEYWORDS:
Groundwater; VOCs, TCE, Benzene, 1,1-DCE, PCE, Vinyl Chloride; Air stripping, Containment, Institutional Controls, Monitoring, UV/oxidation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# (last 4 #s)

Merck & Company, Inc.

West Point, Pennsylvania
Signed August 13, 1993

Facility/Unit Type:	**Manufacturing and research of pharmaceuticals**
Contaminants:	**Chloroform, methylene chloride, methyl chloride, tetrachloroethene, trichloroethene, trichlorofluoromethane, vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethene(cis/trans), 1,2-dichloroethane (DCA), 1,1,1-trichloroethane (TCA)**
Media:	**Ground water, soil**
Remedy:	**Pumping and treating contaminated ground water, in situ vapor extraction from unsaturated bedrock (treatment method for vapor residual to be determined)**

FACILITY DESCRIPTION

On January 20, 1989, EPA and Merck & Company entered into an Administrative Consent Order pursuant to Section 7003 of RCRA which required Merck to complete a hydrogeological study to determine the nature and extent of releases of hazardous waste and hazardous waste constituents and to evaluate corrective measure alternatives to address contamination at the facility.

The 400-acre Merck & Company site is a pharmaceutical manufacturing and research facility located 1 mile south of Landsdale, in Upper Gwynedd Township, Montgomery County, Pennsylvania. The land surrounding the site is predominantly residential, with many homes utilizing domestic ground-water wells as a principle source of drinking water. Merck operated a landfill at the facility from the 1950s to 1973 which has not been operational since then. Samples taken from private ground-water wells and soil surrounding the facility indicated the presence of various contaminants, including chloroform, methylene chloride, methyl chloride, tetrachloroethene, trichloroethene, trichlorofluoromethane, vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethene (cis/trans), 1,2-DCA, and 1,1,1-TCA.

Since 1980, Merck has implemented several activities to stabilize contaminated soils and ground water at the facility. These activities included soil excavation at six separate areas; performing in situ vapor extraction from three separate areas; commencement of ground-water pumping and treatment via Granular Activated Carbon (GAC) treatment presently from seven pumping wells; and collection and GAC treatment of ground water from two shallow wells (converted from in situ soil vapor extraction vents) and from two sumps. Contaminants in the unsaturated bedrock are also being remediated in three areas using in situ vapor extraction. In addition, a total of approximately 6,445 cubic yards of contaminated soil has been removed and disposed of offsite in a hazardous waste landfill in accordance with EPA regulations.

There are approximately 59 private wells located within 2,500 feet of the facility which have been periodically tested for contaminants by both Merck and EPA. In addition, there are three streams in which warm-water fishes are present (Wissahickon, Towamencin, and Zacharias Creeks) within a 1-mile radius of the facility. Merck, under an NPDES permit, currently discharges storm water into the Towamencin and Zacharias creeks. Under this permit, Merck is required to test periodically for chloroform and other contaminants. The concentration of chloroform in surface water samples has been lower than the MCL and Aquatic Water Quality Criteria (40 CFR Part 131).

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal* (ppb)	Points of Compliance
ground water		chloroform			100	onsite wells: N1, N20, N24, N17,N16, N25,N28,N85, N8, PW7,PW3, PW9, PW12, PW2, PW13, PW1,PW8, PW11 offsite wells: N4, N1, N3, N10, N13, NWWA7, N12, NWWA 23
		methylene chloride			5.4	
		methyl chloride			1.9	
		tetrachloroethene			5	
		trichloroethene			5	
		trichlorofluoro-methane			1,300	
		vinyl chloride			2	
		1,1-dichloro-ethene			7	
		1,2-dichloro-ethene (cis)			70	
		1,2-dichloro-ethene (trans)			100	
		1,2- DCA			5	
		1,2-TCA			200	

* Based on MCLs or 10^{-6} cancer risk level

EXPOSURE PATHWAYS

The company has identified and investigated a total of 20 Potential Source Areas (PSAs), of which 14 have been designated as known source areas of contamination. These known areas of contamination are: Building 20 Chloroform Tanks and Delivery Valve (PSA 1a); Building 20 Trench (PSA 1b); Industrial Sewer (PSA 1c); Building 69 Chloroform Transfer Station (PSA 2a); Detention Basin No. 2 (PSA 3); Waste Treatment Sludge Lagoons (PSA 4a); Storm Sewer (PSA 4b); Drum Collection Area (PSA 5); Building 9 (PSA 6); Waste-Oil Storage Tank (PSA 7a); Building 28 (PSA 9); Building 20 Drum Storage Area (PSA 10a); Closed Landfill (PSA 11); and N31 Region (PSA 12b). The ground water at the facility poses the greatest risk to human health when exposure occurs through ingestion of ground water or from inhalation of vapors from the ground water. In addition, chemical analyses of the waste material in the landfill indicate the presence of contaminants which make it necessary for the EPA to impose certain restrictions as part of the corrective measure alternatives to prevent future harmful exposures to humans.

SELECTED REMEDY

The selected remedial action for this site includes operating nine ground-water extraction wells and two in situ vapor extraction (ISV) units at the facility. The operation of the ground-water extraction wells will prevent contaminant migration over the entire facility. The contaminated ground water will be treated to meet specific health-based media cleanup standards. The operation of the ISV units will remove contaminants that are trapped within the unsaturated bedrock beneath the facility. A pilot study of the ISV units will be conducted in order to select, subject to EPAs approval, the most efficient operational schedule for the ISV units. The selected remedy also includes placing operational and maintenance restrictions on the former landfill at the facility which will require that the landfill remain non-operational unless written approval is obtained from the EPA prior to reopening and that the existing soil cap and hydraulic systems be maintained. These institutional controls will be implemented in order to prevent potential risks associated with contacting contaminated waste materials as well as the migration of contaminated ground water. In addition, periodic sampling and analysis of ground water collected from the remaining properties within 2,500 feet of the site which currently depend on ground water as their principle source of potable water must be conducted.

This selected remedy has a capital cost of $500,400 and an annual O&M cost of $1,275,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA held a 30-day public comment period which began on August 19, 1993, and extended through September 20, 1993. Comments received by EPA during the period did not propose any additional corrective measure alternatives and did not suggest any need to change EPA's preferred corrective measure. EPA received both verbal and written comments from residents, council members of the North Wales Borough, officials of the North Wales Water Authority, and Merck & Company.

NEXT STEPS

Merck & Company will proceed with the implementation of the pilot study as well as the rest of the selected remedy. Following a 2-year period from the commencement of the pilot study, Merck must submit to EPA a Two Year Evaluation Report which will evaluate the success of the first two years of the operation as a whole as well as the continued operation of the two ISV units. At this time, the EPA will make a decision regarding the operational status of the two ISV units.

KEYWORDS
Ground water, soil; ingestion (gw), inhalation; VOCs, DCA; institutional controls, monitoring (gw), vapor extraction.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID #
FLD 056-921-471

Motorola, Inc.
Fort Lauderdale, FL
Signed March 15, 1996

Facility/Unit Type: Electronics Manufacturer
Contaminants: Cadmium and Chromium
Media: Soil and Groundwater
Remedy: Capping, Natural Attenuation with Groundwater Monitoring and Institutional Controls

FACILITY DESCRIPTION

Motorola owns and operates an 80.1 acre manufacturing facility at 8000 West Sunrise Boulevard, in Broward County, Plantation, Florida. Currently the site is used for manufacture and assembly of electronic components and equipment. The Motorola property is zoned Large Light Industrial (1-L2P). Adjacent properties are zoned for both commercial and residential use.

A RCRA Facility Assessment (RFA) was conducted at Motorola in 1987. Four SWMUs were identified during the RFA: 1) the wastewater treatment system, 2) the RCRA storage facility, 3) the former lagoon area, and 4) a man-made lake. Based on the results of the RFA, an RFI was required at SWMU no. 3, the Former Lagoon Area.

The former lagoon was located southeast of the manufacturing building. Approximately 6,000 gallons per day of pretreated wastewater was discharged to the unlined diked evaporation lagoon for a period of approximately nine years, 1971 to 1980. While in operation, the lagoon handled wastewater from the nickel-cadmium battery manufacturing process, the metal plating process and the crystal manufacturing process. The lagoon was closed in October 1980. The closure consisted of removal of approximately 6.3 million pounds of sludge, soil and water from the former lagoon. The materials were disposed of at the SCA Services landfill in Pinewood, South Carolina. The excavated lagoon was backfilled with road-grade limestone which acted to stabilize the remaining metals in the soil underlying the fill.

Underneath the former lagoon area, soil is impacted to two to three feet. This soil is underlain by a laterally continuous dense limestone stratum. In the site vicinity the unconfined water table aquifer extends to a depth of approximately 200 feet where the strata grades to sediments with a high proportion of low permeability sand and clay. The U.S.G.S. has subdivided the aquifer into an upper surficial zone and a lower surficial zone, based on the influence of the drainage system found throughout Broward County. The rate and direction of flow in the upper surficial zone is dominated by drainage canals. The rate and direction of flow in the lower surficial zone is dominated by the regional flow pattern.

Sampling investigations conducted from 1991 to 1994 revealed the presence of cadmium in the soil and chromium in the groundwater in the vicinity of the former lagoon. Both soil and groundwater contamination are located in the vicinity of the former lagoon and contained within the facility boundary. Contamination above the screening levels was not detected in the surface water or sediment samples taken from the on-site drainage ditch.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Contaminant	Maximum Concentration (ppm)	Unrestricted Use Media Cleanup Standard (ppm)	Health-Based Cleanup Goal	Point of Compliance	Migration/ Attenuation Monitoring
Soil	Cadmium	1770 (0.0 - 0.5') 4190 (2' - 3')	40	480	Not Given	Not Given
Groundwater	Chromium	0.120 (15' depth) 0.470 (25' depth) 0.320 (45' depth)	0.1	11,000	A-25 C-45 K-45 L-75	H-25, O-25 B-35 Q-45, R-45

EXPOSURE PATHWAYS

The RFI found soil contaminated with cadmium and groundwater contaminated with chromium. Based upon unrestricted use, the media cleanup standards would be the same as action levels, 40 mg/kg for cadmium in the soil and 0.100 mg/L for chromium in the groundwater. However, a risk analysis of the current and reasonably anticipated future use of the environmental media in the vicinity of the SWMU indicate limited exposure to the contamination. For current and reasonably anticipated future use, there is potential for exposure to construction workers and on-site employees via incidental ingestion, dermal contact and inhalation of fugitive dust of soils contaminated with cadmium. There is an exposure potential to construction workers via incidental ingestion and dermal contact with groundwater contaminated with chromium during trenching activities.

Because of the limited current and reasonably anticipated future exposure, a conditional remedy has been selected at the facility. A conditional remedy, in essence, delays cleanup to unrestricted use, while addressing current exposure. Thus, the cleanup objectives were established 1) to address the risk from the current and reasonably anticipated future use, as measured by health-based concentrations (HBCs), and 2) prevent long-term exposure. The HBCs are 480 mg/kg for cadmium in soil and 11,000 mg/L for chromium in groundwater. However, it should be noted that the long-term goal for chromium in groundwater is still 0.100 mg/L.

SELECTED REMEDY

The selected remedy includes filling the former lagoon area to grade; installing a compacted limestone subbase over the affected soil; and placing a two-inch asphaltic concrete cap over the subbase. The cap will be used as an additional parking area for the Motorola facility. The parking lot/cap will be constructed such that it is elevated above the existing grade and sloped to the edges. Surface water run-off will then discharge into an onsite stormwater retention pond. The parking lot/cap will serve to limit any further infiltration of rainfall through the residual contaminated soil. Natural attenuation of the groundwater will be utilized. Groundwater monitoring will be initiated to monitor the attenuation and migration of the chromium in the groundwater.

In addition, a deed notification will be placed on the deed for the property indicating the presence of residual contamination and the assumptions of exposure under which this residual contamination does not pose a threat to human health or the environment.

The total estimated capital costs and annual operating and maintenance costs for the remedy are $140,000 and $19,125 for the first year, $14,075 to $23,370 thereafter, respectively.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Public participation has taken place for the selected remedy through publication in a local newspaper of general circulation and broadcast of a 30-second public service announcement. The public comment period extended from January 25, 1996, to March 11, 1996. Comments were not received, nor was a public meeting requested. Therefore there were no changes to the original proposal for the selected remedy.

NEXT STEPS

Due to the nature of the selected remedy, it was determined that the remedy would best be implemented through performance-based standards. Therefore, Corrective Measures Implementation (CMI) work plans and designs will not be submitted. Rather, Motorola will keep EPA informed through progress reports, and demonstrate the effectiveness of the selected remedy through semi-annual and annual corrective action effectiveness reports.

Motorola is obtaining local governmental construction permits for the installation of the parking lot/cap. Within fifteen days of receipt of these permits, Motorola shall provide notification to EPA of receipt of the permits. Implementation of the selected remedy will begin within thirty (30) days of receipt of these permits, and installation of the parking lot/cap should be completed within one-hundred eighty (180) days after initiation. If notification of receipt of the local governmental permits is not received by September 11, 1996, Motorola shall submit documentation demonstrating, to the satisfaction of the Regional Administrator, that despite their best efforts, Motorola has not been able to obtain the local permits. Within sixty (60) days of completion of the parking lot/cap, Motorola shall submit a Construction Completion Report.

As part of the groundwater remediation, groundwater monitoring will be initiated within sixty (60) days of completion of the parking lot/cap, or, if construction of the cap does not begin within thirty (30) days of the permit modification, groundwater monitoring will be initiated by September 11, 1996. Within ninety (90) days of issuance of permit modification, Motorola shall submit a Statistical Analysis Plan for the evaluation of groundwater monitoring data.

Within one hundred twenty (120) days of the permit modification, Motorola shall submit proposed language for the deed notification, notifying interested parties of the presence of residual contamination due to waste management practices at the facility.

KEY WORDS:
groundwater, soil, conditional remedy, health-based concentrations, natural attenuation, cap, chromium, cadmium

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# (last 4 #s)

Superior Tube Company

Evansburg, Pennsylvania
Signed September 30, 1993

Facility/Unit Type:	**Manufacturing of specialty cold drawn precision tubing and tubular parts**
Contaminants:	**Trichloroethylene (TCE), 1,2-dichloroethylene (DCE), vinyl chloride, arsenic, copper, benzo(a)pyrene, cobalt, nickel**
Media:	**Ground water, soil, sediment**
Remedy:	**Ground water treatment using air strippers equipped with GAC emission control devices, in situ vapor extraction, carbon adsorption, excavation of contaminated soil and sediment, ground water monitoring, institutional controls**

FACILITY DESCRIPTION

On July 30, 1990, EPA and Superior Tube Company entered into a Consent Order pursuant to RCRA, which required Superior to conduct an RFI at its facility in Evansburg, and to prepare a CMS in which it proposed and evaluated several corrective measures alternatives for site remediation.

The 96-acre Superior Tube Company site is a precision tubing production facility located in Evansburg, Montgomery County, Pennsylvania. The surrounding land is almost equally divided between residential, industrial, and recreational uses.

In the mid-1970s, Superior began conducting hydrogeologic studies which identified ground water contaminated with TCE in excess of MCLs. Results of regular sampling of domestic wells surrounding the facility prompted Superior to implement remedial actions such as ground-water monitoring, recovery, and treatment. In 1989, EPA conducted a Preliminary Assessment and Site Inspection of the facility, identifying 22 SWMUs and six Areas of Concern (AOCs) in order to track and delineate releases to the environment.

Historically, the natural flow of ground water is in a westward direction beneath the facility toward the Perkiomen Creek. However, due to the ground-water recovery program at Superior which has been in operation for over 12 years, the ground-water flow patterns have changed significantly from the natural gradient. Superior currently operates five ground-water recovery wells and three plant water supply wells at the facility. The current recovery and pumping operation causes ground water to flow toward the facility.

Two public water suppliers obtain drinking water from wells located near Superior. The Evansburg Water Company (EWC) serves approximately 357 persons in the vicinity of the facility. Two of the EWC wells are located 1,500 feet northeast of Superior. A third well is located adjacent to a pumping house approximately 2,000 feet northwest of the facility. Another EWC supply system is located approximately 3 miles north of the facility. The Collegeville-Trappe Joint Water Works serves approximately 5,000 persons in Trappe and Collegeville, and uses ten ground-water supply wells which are located 1 to 3.4 miles west of Superior.

EXPOSURE PATHWAYS

Although ground water is not used for current consumption and soils and sediments are not ingested at this site, the Health and Environmental Assessment was conducted using this conservative approach as a potential exposure scenario. The RFI determined that, under current onsite conditions, the lifetime risk of cancer to workers at the site from incidental ingestion of untreated ground water and contaminated soils and sediments is unacceptable.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal (ppm)	Points of Compliance
ground water		TCE 1,2-DCE vinyl chloride	47,000 ppb		0.005 0.1 0.002	(gw)onsite: MW-2, MW-3, MW-4, MW-6, MW-7, MW-8, MW-10, MW-11, MW-12, MW-20, PW-3D, PW-4, PW-5, PW-7 offsite: EWC wells 101,102, 103, all domestic residential wells in annual monitoring program (soil) Scrap Metal Area, Pipe Storage Area, Outfall 002 Area, Outfall 004 Area, 1291 Degreaser Area
soil/sediment		arsenic copper benzo(a)pyrene			28** 2,900	
sediment		cobalt nickel			33 1,600	

* Ground-water cleanup goals based on SDWA MCLs
** Soil and sediment cleanup goals are background concentrations, or Risk Based Concentrations (RBCs)

The potential non-carcinogenic effects to site workers are also of concern. In addition, concern about offsite migration of contaminated ground water into residential drinking water wells has prompted Superior and EPA to implement remedial actions designed to control the flow and to allow for pumping and treatment of contaminated ground water.

SELECTED REMEDY

The remedial actions selected for this site include the following:

- Excavate contaminated onsite soil and sediment from the Scrap Metal and Pipe Storage Areas, dispose of in a permitted offsite disposal facility, and cap excavated areas with asphalt
- Excavate contaminated sediments in French Run and the unnamed tributary of the Perkiomen Creek, and dispose of contaminated sediments in a permitted offsite disposal facility
- Remove and treat contaminants in soil and fractured rock beneath the 1291 degreaser using in situ vapor extraction on a pilot basis
- Continue to recover TCE-affected ground water using existing Plant Wells 1 and 3 in the South Recovery System Area, and using Monitoring Wells 1, 4, and 5 in the North Recovery System Area
- Continue to treat TCE-affected ground water recovered from North and South Recovery Systems using air stripping retrofit ted with granular activated carbon (GAC) emission control devices
- Initiate recovery of TCE-affected ground water from Monitoring Well 18 (MW-18) in the North Recovery System Area, offsite Monitoring Well 20 (MW-20) north of French Run, and existing Plant Well 3D (PW-3D) in the South Recovery System Area and treat TCE-affected ground water using air stripping with GAC emission control devices
- Continue to discharge treated ground water from the North and South Recovery Systems to an unnamed tributary of the Perkiomen Creek through Outfall 002 and reuse treated ground water to minimize the loss of such water from the regional aquifer as a result of the recovery operation
- Require the following:
  - Conduct onsite and offsite monitoring of hazardous constituents of concern on a regular schedule
  - Maintain the existing security system which

restricts access to the facility at all times
- Limit future land use of the property to an industrial usage
- Prohibit any construction which would interfere with the remedy and/or damage the selected remedial equipment
- Prevent the installation of onsite drinking water wells in areas where the ground water is known to be contaminated, or in areas where the well may cause the migration of contaminated ground water.

- Notify the Lower Providence Township of the area of contaminated ground water associated with the facility.

The estimated capital cost for the selected remedy is $996,960 which includes an annual O & M cost of $254,200.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public comment period was held from July 21, 1993 through August 19, 1993 and a public meeting was held at the Lower Providence Municipal Township Building. The meeting was attended by EPA representatives, area residents, local public officials, local water authority representatives from the Evansburg Water Company, the Collegeville-Trappe Joint Water Works, and representatives of the Superior Tube Company. EPA received several comments with respect to sampling and analysis of offsite residential wells, and the operation and maintenance of in-house carbon filters. As a result of these comments, EPA has expanded the institutional controls component of the selected remedy.

NEXT STEPS

EPA will provide Superior Tube with the opportunity to negotiate an administrative consent order which will require the implementation of the selected remedy. The system's performance will be monitored and adjustments made as warranted by performance data collected during operation. If EPA determines that portions of the aquifer cannot be restored to their beneficial use, modifications may be made for long-term management.

KEYWORDS
Ground water, sediments, soil; ingestion (soil, gw); VOCs, DCE, TCE, inorganics/heavy metals, arsenic; air stripping, capping, excavation, institutional controls, monitoring (GW), offsite discharge, offsite disposal, onsite treatment

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KOPPERS

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IV
ID#: 7535

Koppers/Beazer East

Gainesville, Florida
September 30, 1994

Facility/Unit Type:	**Wood preserver of poles and lumber**
Contaminants:	**Metals, semi-volatiles, volatiles**
Media:	**Soil, ground water, surface water**
Remedy:	**Pump and treat ground water, possible soil excavation**

FACILITY DESCRIPTION

On March 31, 1987, Koppers received the portion of the RCRA permit which covers the 1984 HSWA. The HSWA portion of the RCRA permit became effective one month later. Because remediation of the solid waste management units (SWMUs) is currently being conducted under the oversight of CERCLA, EPA is allowing the facility to submit CERCLA documents as a means of complying with HSWA's corrective action requirements. If at any time EPA determines that remediation of the SWMUs is not proceeding in an acceptable manner, EPA will invoke the full corrective action requirements of HSWA and will require submittal of stand-alone HSWA documents. Overall, of the ten SWMUs identified by RCRA, seven require corrective measures which are covered by a record of decision (ROD) signed September 27, 1990. A Unilateral Administrative Order (UAO) was issued and became effective on March 29, 1991.

The 170-acre Koppers/Beazer East site is an active wood treating facility located in Gainesville, Florida. Atlantic Coast Line Railroad originally operated the plant until they leased the operation to American Lumber and Treating in 1936. In 1954, Koppers Industries, Inc. purchased American Lumber and Treating's stock and, in 1982, Koppers purchased the land. After a series of acquisitions and name changes, the corporate permittees regulated under the RCRA permit are Beazer East, Inc. and Koppers Industries, Inc. (KII). For consistency, this summary will use the name "Koppers" to identify this RCRA site. The Koppers and Cabot facilities are listed jointly on the NPL.

Three different chemicals have been used for wood preserving over the years at the Koppers site: creosote, pentachlorophenol (PCP), and chromated copper arsenate (CCA). Koppers currently only uses CCA. The 1986 visual site investigation (VSI) of the Koppers facility revealed several old surface impoundments and drip tracks associated with the CCA, creosote, and PCP preserving. Ten different SWMUs were identified at the site.

The Koppers facility is bordered on the west and north by residential homes. To the south is a public road which connects local neighborhoods to shopping centers, strip malls, and restaurants. A shopping center, small businesses, a recycling center, and an undeveloped marsh are located on the eastern border of Koppers. Koppers is adjacent to the former Cabot Corporation wood treating and pine tar-rendering facility, which produced charcoal, pine oils, and pine tar. The Cabot operation was discontinued in 1964, and a shopping plaza is now located on a major section of the site.

The NPL site is underlain by several hundred feet of unconsolidated to semiconsolidated marine and nonmarine deposits of sand, clay, marl, gravel, limestone, dolomite and dolomitic limestone. The uppermost units consist of deposits of predominantly fine-grained sand with discontinuous lenses of silty sand and silty clay with a thickness of 20 to 25 feet and increasing clay content with depth. Below the sand unit lies the Hawthorn formation, which is composed of blue green clay with limestone and sand units. The Hawthorn is believed to be between 90 and 150 feet thick. The Floridian aquifer is below the Hawthorn Formation. The depth to the top of the

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goals	Point of Compliance
Ground water		anthracene	17ppb		1,310ppb	within facility boundary
		phenanthrene	280		130	
		acenaphthylene	12		130	
		acenaphthene	540		260	
		fluorene	210		180	
		pyrene	1.1		130	
		naphthalene	2,700		18	
		total potentially carcinogenic PAHs	5		0.003	
		phenol	11,000		2,630	
		pentachlorophenol	120		0.1	
		arsenic	Not avail.		50	
		chromium	0.230		100	
		benzene	N/A		1	
Soil		anthracene	4,900ppm		7,700ppm	at identified unit
		phenanthrene	9,500		770	
		acenaphthylene	75		72.3	
		acenaphthene	3,900		389	
		fluorene	4,500		323	
		pyrene	4,300		673	
		naphthalene	6,200		211	
		potentially carcinogenic PAHs	730		0.59	
		phenol	0.81		4.28	
		pentachlorophenol	140		2.92	
		arsenic	704		27	
		chromium	576		92.7	
		benzene	N/A		N/A	

Floridian at Koppers is approximately 200 to 250 feet.

The water table is approximately three to seven feet below ground surface. There are two general zones within the shallow aquifer which are monitored. Shallow wells are constructed with screens positioned between five to fifteen feet below ground surface. The direction of ground-water flow within this shallow zone conforms with the surface topography. Deeper monitoring wells are screened from 20 to 25 feet below ground surface and immediately above the Hawthorn Formation. Ground-water flow in this deeper portion of the shallow aquifer is to the northeast.

In 1994, Koppers closed its previously RCRA-permitted container storage area which consisted of a small concrete pad used to store a small number of hazardous waste drums.

EXPOSURE PATHWAYS

Three potential human exposure pathways were investigated during the risk assessment (RA): direct contact to workers onsite, direct contact to general public onsite, and potential contact to general public offsite.

The RA determined that compliance with the applicable Occupational Safety and Health Administration (OSHA) regulations would prohibit direct contact to onsite workers. Because the Koppers facility is fenced and has a locked gate, direct contact of the general public with source areas currently in use is expected to be infrequent.

To determine risks offsite, the RA calculated exposure concentrations for direct contact with sediment and soil. Ingestion of aquatic organisms

was determined to be unlikely due to the small size and intermittent flow of the ditch. Exposure concentrations for the possible inhalation of volatiles were also calculated. Although there are currently no users of the shallow aquifer, a hypothetical ground-water use was developed and assessed.

Two potential pathways were identified for environmental exposure: terrestrial and aquatic. Although the potential for adverse effects to individuals inhabiting these sites exists, it is unlikely that these will measurably affect the population because potentially-affected areas are not major sites for reproduction.

SELECTED REMEDY

The 1990 ROD proposes to treat, where feasible, contamination to health-based levels and to prevent exposure to contaminants in areas where treatment is infeasible. The remedies currently listed in the ROD include: 1) excavation and soil washing of contaminated soils from the North and South Lagoon areas (SWMUs 1 and 2), and/or bioremediation and/or solidification/stabilization of residual materials and onsite disposal of treated soils; 2) in-situ bioremediation and institutional controls for process areas, including the former cooling pond (SWMU 9) and Drip Track Areas (SWMUs 5-8); and 3) extraction of contaminated ground water from the shallow aquifer and pretreatment by using two primary granular activated carbon units prior to discharge into the Gainesville Regional Utility (GRU) treatment system.

Soil excavation was originally included in the remedy because it was believed to be an appropriate option for removing the source of ground-water contamination. However, further sampling indicated that dense non-aqueous phase liquids (DNAPLs) are present at depth. This is believed to be the major source of ground-water contamination and not necessarily the contaminated soil in the closed lagoons. Therefore, a different or expanded remedial approach will be necessary. The UAO has been amended to account for this new investigation. The ground-water extraction and treatment systems have been installed and are operational.

INNOVATIVE TECHNOLOGIES CONSIDERED

No innovative technologies have been considered to date; however, the DNAPLs might warrant their consideration.

PUBLIC PARTICIPATION

The public comment period for the ROD for the Koppers/Beazer site began August 8, 1990, and ended September 7, 1990. A public meeting to describe the preferred alternative was held August 14, 1990. On September 27, 1990, the ROD was signed.

The HSWA Modification to incorporate the remedy selected under the 1990 CERCLA ROD was placed on public notice from September 15, 1992 to December 1, 1992. EPA received comments from the facility. On September 30, 1994, EPA issued the HSWA portion of the RCRA permit. Because no petition for review was filed, the HSWA portion of the RCRA permit became effective on October 30, 1994.

NEXT STEPS

It is expected that the 1990 ROD will be amended to address the DNAPLs and contaminated lagoons (i.e., the soil excavation component of the selected remedy). For those units currently covered by the selected remedy, the HSWA portion of the RCRA permit includes a condition which declares that the HSWA selected remedy is that of the 1990 ROD and any amendments to the ROD. Therefore, if the 1990 ROD is amended to address DNAPLs, then the HSWA portion of the RCRA permit will not have to be modified again.

The facility will continue to monitor ground water to determine the effectiveness of the recovery system. After the system has been operational for two years, the facility must analyze its effectiveness

and suggest any modifications. EPA may also require modifications if necessary.

Although the ground-water recovery system is operational, the remedial options for soil have not been initiated because the DNAPL contamination must be reanalyzed. A new feasibility study is currently being developed for Agency review. The ROD is expected to be amended/modified in FY 1995 to incorporate the new remedial system for contaminated soil and DNAPLs.

KEY WORDS

Ground water, soil, surface water; direct contact, ingestion (gw, sw); VOCs, SVOCs, organics, phenols; excavation, extraction, soil washing, monitoring (gw), offsite discharge, publicly-owned treatment works, solidification/ stabilization.

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ashland R V

STATEMENT OF BASIS/ FINAL DECISION AND RESPONSE TO COMMENTS
SUMMARY COVER SHEET

new WP

FACILITY: ASHLAND CHEMICAL COMPANY
Akron, Ohio
ID# OHD 000 723 973

The following information was missing from the materials provided to HAZMED:

- FACILITY DESCRIPTION
  - Authority used to compel corrective action (e.g., RCRA §3008(h), RCRA §3004(u), or State authority)
  - Characterization of hydrogeology
  - Identification of areas causing contamination
- SELECTED REMEDY
  - Total cost of implementation and annual Operation and Maintenance (O&M)
- CONTAMINATION DETECTED AND CLEANUP GOALS
  - Specific information to be included in a Contamination Detected and Cleanup Goals table -- specific media in which a contaminant was contained, estimated volume of the media, contaminant, maximum concentration (ppm), maximum contaminant level (MCL) cleanup goals, MCL action levels (ppm), and point of compliance

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# OHD000723973

Ashland Chemical Company

Akron, Ohio
(Signature Date: August 8, 1988)

Facility/Unit Type:	**Chemical storage, blending, drumming, and distribution facility**
Contaminants:	**Acetone; Benzene; Chloroethane; Chloroform; Hexane; Methylene chloride; Tetrachloroethene; Toluene; Total 1,2-dichloroethene; Trichloroethene; Vinyl chloride; 1,1-dichloroethene; 1,2-dichloroethene; 1,1,1-trichloroethane; 1,1-dichloroethane; 1,1,2-trichloroethane**
Media:	**Soil; Groundwater; Surface water**
Remedy:	**Capping of soil; In situ soil vapor extraction (SVE); Installation of a groundwater barrier; Extraction and treatment of groundwater; Monitoring of surface water and groundwater; Providing and maintaining deed and land use restrictions; Maintaining public access controls**

FACILITY DESCRIPTION

The Ashland Chemical Company facility is located on 4.5 acres in Summit County, Akron, Ohio. The facility's address is: Ashland Chemical Company, Distribution Services Organization, 200 Darrow Road, Akron, Ohio 44312.

The Ashland Chemical Company (Ashland) began operations at this facility in 1978. The facility's operations have included the storage, blending, drumming, and distribution of bulk industrial chemicals and solvents. The site's previous owner operated the facility as a storage warehouse for fatty acids and chemical products since 1950.

Currently, land use in the immediate vicinity of the Ashland facility is industrial. The closest residential properties are located approximately one-quarter mile north of the facility. The facility is bounded on the north by the Central Oil Asphalt Corporation and to the south by the Little Cuyahoga River and a railroad yard.

The Frances Stone Company owns the properties to the east and west of the facility. The Frances Stone Company uses the property to the east of the facility for processing sand and gravel. The property to the west of the facility is vacant and heavily wooded.

The railroad yard on the southern boundary was originally a flood plain of the Little Cuyahoga River. The railroad yard is 15 feet lower in elevation than the facility and represents a discharge boundary for groundwater. Neither the river, nor shallow groundwater, are known to be sources of drinking water for humans.

On August 8, 1988, the U.S. EPA and Ashland entered into a consent decree. The decree required Ashland to conduct corrective action activities which included a RCRA facility Investigation (RFI), a Corrective Measures Study (CMS), and Corrective Measures Implementation (CMI). The interim corrective measures that Ashland has implemented include the following activities:

- Installation of a leachate collection system in 1983 to prevent the migration of contaminated groundwater. The collection system captured and treated the groundwater. However, the current effectiveness of the collection system is unknown.

- Installation of a groundwater recovery and treatment system in 1992 to aid the leachate collection system. The recovery and treatment system extracted groundwater through a series of recovery wells and treated the water on-site before discharging the groundwater, under permit, to Akron's sanitary sewer system.

- Conducting a soil vapor extraction (SVE) system pilot test in 1994 to evaluate the effectiveness of soil remediation.

- Installation of a light non-aqueous phase liquid (LNAPL) continuous operation recovery system in 1995. The system consisted of a lift pump and a skimmer to remove LNAPL and discharge the contents to a 55-gallon drum which is disposed of off-site.

EXPOSURE PATHWAYS

Possible exposure pathways include dermal contact, inhalation, and ingestion. EPA expects future land use at the facility to remain industrial. The exposure pathways presented in the risk assessment and the ecological assessment rely on this expectation of future use.

During the RFI, sampling at the facility found contaminants in the soil, groundwater, and surface water. The level of contamination was high enough to pose an unacceptable risk to human health and the environment if no treatment occurred.

The RFI ecological assessment, finalized in July 1994, identified potential threats to ecological receptors. The threats were to aquatic, terrestrial and benthic organisms from contaminants in surface water.

SELECTED REMEDY

The Final Corrective Measures Report evaluated four possible corrective measures alternatives to remediate the constituents of concern at the facility. EPA selected the second alternative because it offered the best balance of several evaluation criteria.

The evaluation criteria that EPA considered in selecting the remedy included: technical performance capabilities (reliability, implementability, and safety); overall protection of human health and the environment; institutional criteria (i.e., to what extent the alternative addressed applicable standards, regulations, and ordinances); and cost.

The three alternatives that EPA considered, but did not select, are as follows:

- Alternative 1 included capping, limited soil excavation with off-site disposal, SVE, and use of a hydraulic barrier with groundwater pumping and LNAPL removal with skimming and SVE.

- Alternative 3 included capping and air sparge (AS) with SVE and LNAPL removal with skimming and SVE.

- Alternative 4 included excavation with off-site disposal and use of a hydraulic barrier with groundwater pumping and LNAPL removal with skimmers or absorbent pads.

EPA's selected remedy involves the following activities:

- Containment and treatment of the contaminated soils onsite to meet specific performance standards or clean up levels included in the CMI Workplan. Containment of the contaminated soils will be accomplished by capping with a low permeability cover to prevent migration and exposure. The contaminated soils will be treated in situ by SVE.

- Containment and treatment of contaminated groundwater to meet Maximum Contaminant Levels (MCLs). Containment consists of installing a physical barrier to restrict groundwater flow and continuing use of the existing extraction well system.

- Monitoring of surface water. The surface water from the facility's drainage ditch will be monitored to ensure the selected remedy is effective. The Little Cuyahoga River will be monitored ensure that no contamination develops.

- Monitoring of groundwater. The groundwater will be monitored to ensure the selected remedy is effective.

- Providing and maintaining deed and land use restrictions at the facility to ensure that future land use remains industrial.

- Maintaining public access controls at the facility to prevent human exposure to any contaminated soils at the facility.

EPA determined that the cost of implementing the selected remedy would be reasonable in light of the overall treatment goals.

CONTAMINATION DETECTED AND CLEANUP GOALS

Levels of contaminants in shallow groundwater exceed action levels for acetone, benzene, chloroform, 1,1-dichloroethene, total 1,2-dichloroethene, 1,2-dichloroethene, hexane, methylene chloride, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, toluene and vinyl chloride.

Levels of contaminants in the soil exceed action levels for benzene, trichloroethane, and tetrachloroethene.

Levels of contaminants in surface water from the drainage ditch exceed action levels for acetone, chloroethane, methylene chloride, tetrachloroethene, toluene, total 1,2-dichloroethene, vinyl chloride; 1,1-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, and 1,1,2-trichloroethane.

Individual preliminary remediation goals (PRGs) or action levels were calculated for each constituent of concern based on the most stringent promulgated standard and risk-based concentration. Risk-based concentrations were developed by calculating levels of constituents that would result in a cumulative lifetime cancer risk of 1.0E-4 or a cumulative non-cancer hazard index of 1.0. This calculation relies on the assumption that the

potential exposure routes are through future industrial land use, rather than residential use. U.S. EPA has determined that cleaning up the contamination at the facility will reduce the excess lifetime cancer risk posed by the facility to less than 1.0E-4, which is within U.S. EPA's target cancer risk range. A cancer risk of 1.0E-4 represents one new case of cancer in 10,000 exposed individuals. The cleanup will reduce the cumulative non-cancer hazard index to 1.0 or less, meaning long-term exposure to potentially toxic constituents should not result in an adverse health effect.

INNOVATIVE TECHNOLOGIES CONSIDERED

Three of the proposed alternatives considered the use of SVE.

PUBLIC PARTICIPATION

The public comment period was announced through newspaper and radio advertisements. The public comment period ran from October 28, 1997, through December 15, 1997. EPA placed the Statement of Basis and supporting Administrative Record at the public library and at U.S. EPA Region 5 for public comment review.

EPA received one public comment which came from the Greater Akron Audubon Society. The comment focused on the need to incorporate deed and land use restrictions and access controls to ensure that the Little Cuyahoga River remained a safe source of drinking water for animals. The comment supported the proposed corrective action remedy. There were no requests for public meetings.

NEXT STEPS

The selected remedy will be implemented according to the schedule of the Consent Decree, U.S. District Court, Northern District of Ohio, Case No. C87-2662A. The workplan for implementing the final remedy is due on February 13, 1998. During the remedy implementation period, U.S. EPA will provide further information to the public as deemed appropriate and upon request.

KEY WORDS:

soil, groundwater, and surface water; dermal contact, inhalation, ingestion; acetone, benzene, chloroethane, chloroform, hexane, methylene chloride, tetrachloroethene, toluene, total 1,2-dichloroethene, trichloroethene, vinyl chloride; 1,1-dichloroethene, 1,2-dichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1,2-trichloroethane; capping, soil excavation, soil vapor extraction (SVE), hydraulic barriers, pumping, air sparge (AS), extraction well system, deed and land use restrictions, public access controls.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IV
ID # 7451
KYD 981 027 451

Safety-Kleen Corporation
Ashland, Kentucky
(Signed)

Facility/Unit Type: **Distributes/collects cleaning solvents**
Contaminants: **Arsenic, Barium, Chromium, Lead, Mercury, Acetone, Toluene**
Media: **Soil**
Remedy: **No further action**

FACILITY DESCRIPTION

The Ashland, Kentucky Safety-Kleen facility began operation in 1985 on leased property approximately one mile west of the intersection of I-60 and State Route 180. This area was previously used for strip mining. When mining activities ceased, the vacant land was turned into a industrial park in 1980 and the facility structure was constructed in 1982. Prior to Safety-Kleen's occupancy of the facility, the facility was used for heavy equipment storage.

The facility is primarily a local sales/service office and warehouse for Safety-Kleen products. The company leases small parts washing equipment to automotive repair and industrial maintenance shops. Safety-Kleen's contractual agreement with their customers provides regularly scheduled solvent changes and machine maintenance. They also provide a pick-up service for paint and dry cleaning wastes. Safety-Kleen maintains ownership of all solvents.

The 1990 visual site investigation of the Safety-Kleen facility revealed several storage areas, including three drum storage areas for solvent and paint waste, a tank storage area for spent mineral spirits and sediments, a concrete pad, a wet dumpster area for solvent return, and a gravel driveway which was used for truck washing.

Safety-Kleen was issued the Federal portion of its RCRA permit on September 28, 1990. The permit became effective on November 1, 1990.

The geologic unit immediately beneath the Safety-Kleen facility is the Breathitt Formation which is comprised of three cyclothymic zones and two coal beds (the Princess No. 7 and the Princess No. 3 coal beds).

These geologic units have been disturbed by strip mining operations. Mining operations removed the Princess Coal Beds. The present sequence beneath the site may be comprised of a layer of replaced overburden materials derived from the Bearthitt Formation. These materials unconformably overlay the lower portion of the Breathitt Formation.

Groundwater resources in the area are derived from two principal sources. Abundant yields ranging up to 500 gallons per minute can be derived from alluvial sediments along the Ohio River (10 miles north of the facility) with lesser yields approximately 100 gallons per minute obtained from alluvial filled valleys along tributaries of the Ohio River. Most wells are not capable of sustaining domestic use. Depths to groundwater range from 10 to 80 feet.

EXPOSURE PATHWAYS

Soil and groundwater are the two potential pathways for environmental exposure. Safety-Kleen routinely transfers waste mineral spirits and used antifreeze from containers and/or tanks to the storage tanks at the facility. Containerized material stored in the warehouse is stored in the container in which it is received. These wastes and transfers are managed and performed in a manner which nearly eliminates all potential for releases to the environment. Further, results obtained from the Confirmatory Sampling (CS) Report and Phase I of the facilities RCRA RFI Report indicate that no hazardous constituents above action levels were present in soils at the solid waste management units (SWMUs)

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	MCL Action Level (mg/kg)	MCL Cleanup Goal	Point of Compliance
Soil	Not given	Arsenic Barium Chromium Lead Mercury Acetone Toluene	16 210 22 34 0.3 2.3 0.086	23 5,600 400 N/A 20 8,000 20,000	Not given	Not given

examined. However, if a release to the environment were to occur it would most likely be to surface soils located beneath the gravel driveways of the facility. Due to the low level of hazardous constituents found in the soils, it was determined that the need for groundwater evaluations was not necessary.

If a release were to occur, there are three potential human exposure pathways: 1) the general public off site; 2) direct contact to general public on site; and 3) direct contact to workers on site via ingestion.

It is believed that visitor access to the site is rare, and other exposure to the general public off site is unlikely due to the facility structure. The facility is bordered along the front of the property. The remaining area is fenced, with controlled access through three locked gates and one overhead door to the main building. Direct contact to workers on site via ingestion of contaminated groundwater is also unlikely because the facility is served by city water and sanitary sewers.

SELECTED REMEDY

The 1990 RCRA RFA for Safety-Kleen identified 3 of the 7 SWMUs as potential sources of a release to the environment. The SWMUs identified were SWMU 5 (the tank loading/unloading area), SWMU 6 (the truck washing area), and SWMU 7 (the drum storage warehouse). A CS plan and CS report addressing these three SWMUs was prepared and implemented.

In a letter dated September 30, 1992, EPA and Kentucky Department for Environmental Control (KDEP) directed Safety-Kleen Corporation to prepare and RFI workplan to address SWMUs 6 and 7. No further actions were required for SWMU 5.

On October 15, 1992, a spill occurred during the transfer of waste mineral spirits from the tank system to a tanker truck located in the truck loading/unloading area. Approximately 90 gallons of waste mineral spirits were released to the gravel pavement of the facility. An emergency response resulted in the excavation of approximately 70 to 90 cubic yards of contaminated soil and gravel. Safety-Kleen provided written documentation of the emergency response in an October 30, 1992 letter to KDEP. The letter also stated that the spill would be designated as area of concern 1 (AOC1) and that determination of the nature and extent of the contamination would be addressed in the RFI Workplan.

The Phase I sampling required in the RFI Workplan was completed on March 15, 1994. Arsenic, barium, chromium, lead, mercury, acetone, and toluene were detected in soils at the facility.

Sampling results indicated that the upper tolerance level (UTL) for arsenic (9.4 mg/kg) was exceeded in two locations, AOC1 and SWMU 7 both at a concentration of 16 mg/kg. The UTLs for all other detected constituents at the site were not exceeded.

However, the maximum concentration for each contaminate at the Safety-Kleen facility is well below its respective action level as described in the proposed corrective action rule (55 FR 30798, July 1990).

Before determining that no further action was

warranted at the facility, Region IV decided to compare the average concentration of all the constituent to their respective soil screening levels. The intent of this exercise was to compensate for the lack of groundwater data. Soil screening levels were used as a guideline because they take into consideration exposure to soil contaminants via ingestion, inhalation, and migration to groundwater. The concentration for each contaminant at the Safety-Kleen facility was determined to be well below its respective migration to groundwater pathway levels.

Based upon the above results, no further action is required at the facility.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A HSWA Modification to incorporate the "No Further Action" recommendation will be submitted for public comment. If no petition for review is filed by the facility, the Federal portion of the RCRA permit will become effective thirty days after issuance.

NEXT STEPS

The facility will continue to monitor its operations for previously unidentified or newly created SWMUs/AOCs. If new SWMUs/AOCs are discovered/created, the facility will notify EPA.

KEYWORDS:
Groundwater, Soil; Direct Contact, Ingestion; Arsenic, Barium, Chromium, Lead, Mercury, Acetone, Toluene; Dry Cleaning, Mineral Spirits, Spent Immersion, Sediments; Monitoring; No Further Action

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4.2 version

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# (last 4 #s)

CECOS INTERNATIONAL ABER ROAD FACILITY

Williamsburg, OH

Facility/Unit Type:	**Sanitary landfill facility**
Contaminants:	**Acetone, benzene, dichloroethane (DCA), dichloroethylene (DCE), trichloroethylene (TCE)**
Media:	**Ground water**
Remedy:	**Installation of hydraulic gradient control system and slurry wall, ground-water monitoring, onsite collection and treatment of contaminated ground water using air stripping with carbon filtration of air discharges, landfill cap improvements, removal of sanitary landfill pond, installation of subsurface gas monitoring probes, installation of additional leachatecollection wells**

FACILITY DESCRIPTION

In September 1987, CECOS International and EPA entered into an Administrative Consent Order pursuant to §3008 (h) of RCRA. The agreement required CECOS to conduct interim measures (IMs) to mitigate potential threats to human health and the environment; conduct necessary investigations to identify the types, quantities and locations of contaminants at the facility; and develop appropriate measures to address the contamination problems.

The CECOS International Aber Road facility began operations in 1972. CECOS is an sanitary landfill specializing in the disposal of industrial waste. Land use in the area is primarily agricultural, with isolated residences. Between 1987 and 1992, CECOS conducted IMs, an RFI and a CMS of numerous facilities on the site including Cells 1 and 2, the Sanitary Landfill, Firepond 1, Secure Chemical Management Facilities (SCMFs) and the Intermediate Landfill. In 1984, CECOS submitted a RCRA Part B Permit Application which was ultimately denied by EPA in 1988 and consequently CECOS ceased all onsite disposal of wastes in April of 1990. Contaminants found during onsite investigations include acetone, benzene, carbon tetrachloride, chloroethane, dichlorodifluoromethane, DCA, DCE, dichloropropane, tetrachloroethylene, TCA, TCE, trichlorofluoromethane, and vinyl chloride.

Local usage of ground water is limited to a few isolated residential wells and springs. Contaminated ground water in the Upper Sand and 880 Zone Sand layers is located in the vicinity of the Intermediate Landfill, Sanitary Landfill, Cell 1/2, and SCMFs 3 and 4/5. The approximate depth to ground water encountered in the Upper Sand layer is 6 feet while ground water is encountered at 12 feet in the 880 Zone Sand layer.

No remedial measures have been previously conducted at this site.

EXPOSURE PATHWAYS

CECOS International conducted a risk assessment and an ecological assessment of any threats to human health and the environment at four locations at the Aber Road Facility: the Sanitary Landfill, the Sanitary Landfill Pond, Cell 1/2, and Pleasant Run Creek. Contaminated ground water is a principal threat at this facility because of the long term potential for direct ingestion through drinking water wells and surface water supply intakes.

SELECTED REMEDY

The selected remedy for the remediation of contaminated ground water includes the following actions:

- Installation of hydraulic control system consisting of trenches and wells
- Installation of vertical ground-water control barrier consisting of soil-bentonite slurry wall
- Onsite collection and treatment of contaminated ground water

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/l)	Action Level	Cleanup Goal (mg/l)	Point of Compliance
ground water		acetone	318		-	
		benzene	0.024		0.005	
		carbon tetrachloride	0.014		0.005	
		chloroethane	0.014		-	
		dichlorofluoromethane	0.048		-	
		1,1 dichloroethane	2.38		-	
		1,2 dichloroethane	2.11		0.005	
		1,2 dichloroethylene	0.089		0.07	
		1,2 dichloropropane	0.015		0.005	
		tetrachloroethylene	6.22		-	
		1,1,1-trichloroethane	0.109		0.2	
		trichloroethylene	0.411		0.005	
		trichlorofluoromethane	0.030		-	
		vinyl chloride	0.124		0.002	

through air stripping, with carbon filtration of air discharges

- Onsite collection and pretreatment of leachate from all landfill cells prior to offsite disposal
- Installation of additional leachate extraction wells
- Landfill cap improvements
- Removal of sanitary landfill pond
- Installation of subsurface gas monitoring probes
- Implementation of ground-water program to monitor all unconsolidated and bedrock aquifers at the facility.

In addition, the following activities will be performed: active gas collection and treatment at the Sanitary Landfill; installation of methane monitoring probes at the Sanitary Landfill; installation of a leachate collection system at the Sanitary Landfill; draining and backfilling at the Sanitary Landfill Pond; ground-water monitoring; deed restrictions; installation of leachate extraction wells at the Intermediate Landfill and Cell 1/2; leachate collection from hazardous waste cells; installation of gradient control trenches in the Upper Sand and pumping of contaminated ground water; installation of gradient control wells in the 880 Zone Sand and pumping of contaminated ground water; conversion of monitoring well M-19 to a gradient control well; and pumping of SCMFs 3 and 4/5 ground water underdrains and collection of contaminated ground water.

The goal of the selected remedy is to clean up ground water and eliminate risks to human health by meeting the applicable health-based ground-water protection standards.

The estimated capital cost for this remedy is $3.7 to 4.3 million and the net present worth cost (including O&M costs) is estimated to be $10.6 to 12.2 million.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA held a 60-day public comment period from June 1, 1992 through July 31, 1992. A public meeting was held on June 15, 1992 to address oral and written comments. The main concern expressed by the local community was the long-term protectiveness, integrity and effectiveness of the proposed slurry wall ground-water containment system. Commentors queried whether the excavation of wastes from the unlined, leaking landfill cells and replacement into an existing lined landfill cell was a more permanent solution for protection of local water supplies than the proposed remedial alternative. Commentors included Clermont County, CECOS

International, Miami Township, Tate Township, and Village of Williamsburg. EPA required additional studies of the excavation alternative; these studies confirmed that the selected remedy is appropriate for this facility.

NEXT STEPS

The EPA will issue an Administrative Order to require CECOS to implement the selected remedy. During the remedy implementation period, the EPA will provide further information as appropriate and upon request.

KEYWORDS
ground water; ingestion; VOCs, acetone, benzene, DCA, DCE, TCE; air stripping, containment (hydraulic), filling, leachate collection, monitoring (gw, gas), onsite treatment, offsite disposal, slurry wall

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID # MID 005 057 005

Ford Motor Company, Monroe Stamping Plant
Monroe, Michigan
(Signed May 13, 1995)

Facility/Unit Type: Automotive part manufacturing and chrome plating
Contaminants: Inorganics
Media: Soil
Remedy: Excavation of contaminated soils and sludges, ex-situ stabilization, on-site disposal in CAMU, capping, leachate collection & treatment, groundwater monitoring

FACILITY DESCRIPTION

In 1956, Ford Motor Company began chrome plating operations at its Monroe Stamping Plant. The plating wastewaters and intake water from Lake Erie were treated at the on-site wastewater treatment plant. The treatment plant effluent was then routed to a series of surface impoundments prior to being discharged to the Raisin river. The sludge accumulated in these impoundments was periodically dredged and disposed in other on-site areas. While all the sludges generated by Ford were not from the treatment of electroplating wastewater, RCRA post-closure regulations required that the entire mixture of sludges be managed as a listed hazardous waste (F006 waste). Ford discontinued the electroplating operations in 1982 and no longer generates electroplating sludges.

The Monroe Stamping Plant is subject to RCRA's post-closure regulations, including closure and post-closure requirements, corrective action, ecological assessments and endangered species act compliance. A final post-closure permit was issued to the plant on March 27, 1995. Ford conducted ten RFI-type studies between 1981 and 1991 to characterize the geology, hydrogeology and type, volume, and extent of wastes disposed of in the surface impoundments. Ford also conducted studies to determine the volume and extent of wastes that have migrated into the North Intake Canal and West Marsh. In addition to waste characterization studies, Ford conducted solidification studies to evaluate the feasibility of stabilizing on-site sludges and contaminated soils. The site is contaminated with heavy metals such as lead, cadmium, chromium, copper, nickel, and zinc in the 1,000's mg/kg range. The source of contamination is from a mixture of hazardous electroplating wastewaters and nonhazardous millwater treatment sludges.. Also, organic compounds have been found in groundwater at concentrations of 50 mg/l.

The facility was originally constructed in 1927 and 1931 by Newton Steel. Newton Steel and Republic Steel operated as a steel mill at the site until 1938. In the 40's, Aluminum Company of America reopened the facility. Kelsey-Hayes Wheel Company took over operations for metal stamping and forging. Then in 1949, Ford Motor Company purchased the facility. Ford Motor Company began manufacturing operations at the plant in 1950. The facility has produced automotive bumpers, coil springs, wheel stabilizer bars, and catalytic converters. The Monroe Stamping Plant is located at 3200 East Elm Street, along the River Raisin in Monroe, Michigan. The site is approximately 200 acres consisting of over one million square feet of manufacturing buildings and approximately 50 acres of disposal areas consisting of surface impoundments. The facility is bordered on the north by the intake waterway and Sterling State Park, on the south by the River Raisin, on the east by a marsh interconnected with Lake Erie, and to the west by a marsh extending to Interstate 75.

Groundwater flow is directly influenced by surface water in the area. Groundwater is influenced by the on-site disposal areas that contain water, surrounding marsh areas, Lake Erie, and the River Raisin. The hydraulic interconnections between these areas are not fully defined. Groundwater flow rate and direction in the uppermost aquifer and bedrock aquifer have not yet been fully defined.

Since a CAMU is being used at Ford-Monroe, remediation wastes placed into the CAMU must meet the following performance criteria: (1) solidified wastes shall have a minimum 28-day unconfined compressive strength of at least 25 pounds per square inch (2) solidified wastes shall not contain free liquids and (3) solidified wastes shall be fine grained material capable of being excavated by ordinary excavation methods. Remediation wastes found in areas outside the CAMU, or in areas identified as SWMUs in the post-closure permit, will be removed and solidified to meet the performance criteria specified above prior to placement into the CAMU. Where wastes have been removed outside the CAMU, Ford will perform confirmatory sampling to ensure that the remaining soils meet Act 301Type B cleanup levels specified in the State of Michigan Act 307 Rules.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration 0	Action Level	Cleanup Goal	Point of Compliance
Soil	1 million yards	Lead Cadmium Chromium Copper Nickel Zinc	1,000's mg/kg (approx)	Not given	Not given	Not given
Groundwater	unknown	Organic compounds	50 mg/l	Not Given	Not Given	Not Given

EXPOSURE PATHWAYS

The potential exposure pathways for contaminated soils and sludges are incidental ingestion, dermal contact, and inhalation of contaminated soil and dust.

SELECTED REMEDY

The goal of the selected remedy is to reduce the risks to human health and the environment by consolidating and treating sludges and contaminated soils located in the hazardous waste surface impoundments and in adjacent areas including Disposal Area D-North, D-West, North Intake Canal, and West Marsh. Specific components of the remedy include:

- Use of a corrective action management unit (CAMU) to facilitate the remediation of contaminated sludges and soils in the surface impoundments and in adjacent areas where waste has migrated;
- Treat contaminated sludges and soils by stabilization;
- Dispose of treated sludges and soils in 2 on-site landfills;
- Contain landfills by installing perimeter soil-bentonite cutoff walls;
- Install leachate collection and removal system to maintain inward hydraulic gradient within each landfill;
- Install composite cover over each landfill;
- Implement a groundwater monitoring program to monitor groundwater quality; and
- Implement a monitoring and maintenance program to ensure integrity of the final remedy.

The total cost of the proposed remedy is estimated at $50 million.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA solicited input from the community on the proposed remedy contained in the draft RCRA post-closure permit. The public comment period began on January 20, 1995, and ended March 9, 1995. EPA released a public notice of the draft, post-closure permit and proposed remedy on January 20, 1995, held two informational meetings on October 12 and 26, 1994 and a public hearing on February 22, 1995. Several sets of comments were received which resulted in minor changes to the permit.

NEXT STEPS

Implement the selected remedy.

KEYWORDS:
Soil, sludge; direct contact; inorganics; capping, solidification, containment, leachate collection, groundwater monitoring, on-site disposal, on-site treatment, slurry wall

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# (last 4 #s)

GENERAL ELECTRIC COMPANY

Coshocton, OH
Signed November 27, 1993

Facility/Unit type:	**Manufacturing of electromaterials**
Contaminants:	**Arsenic, barium, iron, manganese, copper, cadmium, chromium, lead, PAHs, phenols**
Media:	**Soil, ground water**
Remedy:	***Excavation, consolidation, onsite disposal, soil capping, ground-water monitoring***

FACILITY DESCRIPTION

In 1987, EPA issued an Administrative Order by Consent which required General Electric to perform a RCRA Facility Investigation (RFI) and Corrective Measures Study (CMS) at the Coshocton, OH site. The RFI was completed in 1991, and its results were used as a basis for developing, evaluating, and recommending corrective action alternative measures which were presented in the CMS. The CMS was completed in February 1993.

The General Electric Company site is an electromaterials facility located on approximately 100 acres in Tuscarawas County, in the southwest portion of Coshocton, OH. In operation since 1946, the facility primarily manufactures plastic- and copper-clad fiberglass laminates. Located on the Muskingum River, the facility is surrounded in the immediate area by residential, agricultural, manufacturing, and commercial properties. The units investigated in the CMS include four temporary container storage areas (unit A), a storage tank (B), a copper scrap storage area (C), an inactive landfill (D), an inactive surface impoundment (E), and an incinerator cage area (F). Soil samples taken from the units indicated the presence of various contaminants, including polycyclic aromatic hydrocarbons (PAHs), arsenic, cadmium, chromium, copper, iron, manganese, lead, and phenols.

The uppermost aquifer underlying the GE site is a high-yielding water table aquifer in the alluvial sand and gravel deposits of the Muskingum River Valley. The unconsolidated sand and gravel deposits are approximately 100 feet thick. Under normal river flow conditions, there is a net southwesterly ground-water flow direction in the alluvial aquifer, with discharge to the Muskingum River.

Domestic wells are located 350 to 400 feet east of the site. These wells have been tested by the Ohio EPA and found to be free from contaminants that could theoretically have migrated upgradient from the facility. The city of Coshocton operates a wellfield approximately 2.8 miles north, upgradient of the plant site. There are no municipal wells currently tapping the segment of the aquifer near the GE site.

EXPOSURE PATHWAYS

The primary exposure pathways arise from the potential migration of hazardous constituents from soil and landfill waste to ground water, from soil to surface water by overland runoff, from ground water to surface water, and into air by volatilization or by suspension of soil. The primary human population of concern are employees who may come into contact with contaminated soil at the facility. The primary routes of exposure to contaminants in the soil are incidental ingestion, dermal contact and inhalation.

SELECTED REMEDY

For units A and B, no corrective action alternatives were assessed due to low concentrations of hazardous constituents. For the contaminated soil in units C, E, and F, the selected remedial action will consist of the excavation of approximately 4,800

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal* (mg/l)	Point of Compliance
ground water		arsenic	49mg/l	0.05	0.05	
		barium	6.89	2.00	2.00	
		chromium	0.015	0.10	0.05	
		lead	0.112	0.015	0.015	
		phenol	0.035	-	20.0	
soil		cadmium	7.7mg/kg			
		chromium	42			
		lead	90			
		PAHs	27.08			

*Action levels based on SDWA MCLs

cubic yards of contaminated soil. The excavated soil will be disposed of within the closed landfill area (unit D). For landfill unit D, the proposed remediation will consist of constructing a fence around the landfill; capping the 3.2 acre landfill using a 24-inch thick low permeability barrier layer, a one-foot thick lateral drainage layer, and an 18-inch thick vegetative cover; monitoring ground water in the vicinity of the landfill; and implementing deed restrictions. For contaminated ground water, deed restrictions will prohibit the installation or use of wells where barium or arsenic concentrations exceed Federal water quality standards. In addition, a new ground-monitoring program will be initiated. If semi-annual monitoring should indicate an increase in levels of contaminants or migration of the contaminants offsite, a decision will be made on instituting more active remedial measures.

The total combined capital cost for this project is $1,125,000. The total present worth cost of the project is $1,200,000, with an annual O&M cost of $36,600.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public comment period was held from March 30, 1993 to April 29, 1993. EPA received no comments and therefore the selected remedy was not modified.

NEXT STEPS

GE will proceed with implementation of the selected remedy.

KEYWORDS
ground water; dermal contact, ingestion, inhalation;organics, PAHs, phenol, inorganics/heavy metals, arsenic, cadmium, chromium, lead; capping, excavation, institutional controls, monitoring, onsite disposal

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HERITAGE

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# 3890

Heritage Environmental Services

Roachdale, Indiana

Facility/Unit Type: **RCRA subtitle C landfill**
Contaminants: **Nickel, lead, barium, cadmium**
Media: **Soil**
Remedy: **Excavation, no further action**

FACILITY DESCRIPTION

Heritage Environmental Services, Inc. (Heritage) of Indianapolis, Indiana operates a RCRA hazardous waste landfill near Roachdale, Indiana. The facility's RCRA permit, originally issued in 1989 and renewed in 1994, allows Heritage to land dispose stabilized waste generated at its Indianapolis treatment facility. The landfilled waste carries a variety of RCRA listed waste codes, but is predominantly composed of RCRA heavy metals.

Landfill operations are conducted on a 55-acre parcel located in rural west-central Indiana. The predominant land use in the area is agricultural with limited light industry. The local population density is low, distributed between farms and small communities (e.g., less than 500 people). Drinking water is primarily derived from private and municipal wells installed into a carbonate aquifer which underlies approximately 150 feet of glacial deposits.

In 1987, Heritage reported that one of its leachate collection tanks had overflowed. The underground unit collected landfill leachate from a gravity-drained system. In response to the report, the U.S. EPA imposed an RFI to address the extent of contamination in the underlying and adjacent soils.

The RFI determined that the soils had been impacted by the spill. The U.S. EPA concluded that the proposed corrective measures were appropriate, and granted approval of the RFI and the remedy. In 1989, Heritage completed the removal of the tank and excavation of the contaminated soils. Verification sampling following the cleanup indicated that all contaminated soils had been removed, and all metals concentrations were equivalent to background levels. The U.S. EPA approved the cleanup measures and recommended no further action for this unit.

EXPOSURE PATHWAYS

The only exposure pathway identified was ingestion of the contaminated soil. Because of the remote location of the site, its limited access, and the localized nature of the release, other health considerations were not made. Impact to the deep ground water was unlikely, as was any release to nearby surface water bodies.

SELECTED REMEDY

The results of the RFI indicated that soil was the only media of concern, and heavy metals were the only constituents of concern. Contamination was limited in areal extent (approximately 20 by 50 feet), and vertical extent (1 to 3 feet). Maximum metals concentrations were generally less than 1,000 mg/kg. The point of compliance (i.e., area requiring cleanup) was defined by background levels. All areas exceeding background were remediated.

The U.S. EPA and Heritage agreed to establish cleanup levels based on background concentrations of metals. The proximity of the landfill to the spill area and the limited extent of contamination suggested that excavation was the most appropriate remedy for this site. All soils exceeding background levels were removed, tested, and disposed in the

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (yd^3)	Contaminant	Maximum Concentration (mg/kg)	Action Level (mg/kg)	Cleanup Goals (mg/kg)	Point of Compliance
soil	765	nickel	1,000	22	22	spill extent

onsite permitted landfill. The cost of the cleanup was approximately $10,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

None.

NEXT STEPS

Remediation of the tank area and impacted soils is complete and no further action is required.

KEY WORDS
Soil; ingestion (soil); heavy metals; excavation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# 3157

Northwestern Steel and Wire Company

Sterling, IL
(signed March 22, 1993)

Facility/Unit Type: Industrial landfill
Contaminants: Cis-1,2-Dichloroethene (cis-1,2-DCE); Trichloroethylene (TCE); Vinyl Chloride
Media: Ground water, sediments
Remedy: Institutional controls for ground water, ground-water monitoring, natural attenuation

FACILITY DESCRIPTION

On September 27, 1987, EPA issued a RCRA permit to the Northwestern Steel and Wire Company (NW Steel) for a facility located in Sterling, IL. The permit, pursuant to Section 3004 of HSWA, required NW Steel to conduct a RFI for a S''MU at the Sterling facility identified as the pre-RCRA Landfill.

The pre-RCRA Landfill covers an area of approximately 13.5 acres, is 8 to 10 feet deep, and is located 200 yards from the Rock River. The landfill was in active use from 1974 until 1980. NW Steel identified the primary materials placed in the landfill as electric furnace slag, emission control dust/sludge from the production of steel in electric furnaces, and lime-neutralized pickle liquor sludge. Other materials placed in the landfill were mill scale, brick, and wood.

During the RFI, sampling was conducted of soils in the vicinity of the landfill, of surface water pathways leading from the landfill site to the Rock River, and of ground-water pathways which would come in contact with any leachate generated in the landfill. A plume of ground-water contamination approximately 600 feet in width and extending from the southern face of the landfill to the river was discovered during the sampling. The ground water was found to contain TCE, DCE, and vinyl chloride. On August 20, 1990, based on the results of the RFI, EPA ordered NW Steel to conduct a CMS to evaluate cleanup alternatives. NW Steel then performed the CMS.

EXPOSURE PATHWAYS

Human exposure could occur via three pathways. First, if the soil and fill in the pre-RCRA Landfill were disturbed, there could possibly be exposure through contact with or ingestion of the soil and fill. Secondly, if ground water were extracted from the plume of contamination, contact with or ingestion of the water could result in exposure. Finally, contact with the water or sediments in the river, either directly by humans or indirectly by the ingestion of plants and animals exposed to the constituents, could occur. Non-controllable pathways of concern involve releases to the river which may result in inhalation of air containing vinyl chloride and dermal exposure to recreational users of the river.

SELECTED REMEDY

The selected remedy consists of restrictions on the usage of ground water that could be affected by the contamination from the landfill, restrictions on activities that would disturb the soils or fill material in the landfill, periodic monitoring of the ground water that could be affected by the contamination from the landfill, and provisions to implement additional corrective measures if any significant increases in contaminant levels occur. The remedy is

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level	Cleanup Goal*	Point of Compliance
sediment	N/A	cis-1,2-DCE Vinyl Chloride	4 18	70 ppb 2 ppb	70 ppb 2 ppb	Landfill boundary of the plume until it reaches the river.
ground water	N/A	cis-1,2-DCE Vinyl Chloride TCE	900 520 5.5	70 ppb 2 ppb 5 ppb	70 ppb 2 ppb 5 ppb	

* Cleanup goal is the Maximum Contaminant Level federally enforceable under the Safe Drinking Water Act.

based on the finding that, under present conditions, the releases to the ground water at the site do not present a significant threat to either human health or the environment, and that natural degradation and attenuation of the constituents will lead to a safe cleanup of the release.

The total cost of the selected remedy is estimated at approximately $179,575 (Capital costs $28,125 and O&M costs $151,450).

INNOVATIVE TECHNOLOGIES CONSIDERED

The following innovative technologies were considered:

- In-situ vapor extraction
- In-situ bioreclamation
- Fix film bioreactors
- Oxidation with UV photolysis.

PUBLIC PARTICIPATION

The public comment period extended from January 21, 1993 through March 8, 1993. No comments were received and no public hearing was requested.

NEXT STEPS

NW Steel will continue to do quarterly groundwater monitoring of the wells along the perimeter of the landfill for a year, and will report the results to EPA. If no significant increase in the concentration of hazardous constituents is found during the quarterly monitoring period, semiannual monitoring will be conducted until there are no releases above MCLs detected.

KEY WORDS
ground water, sediments; ingestion, dermal contact, inhalation; VOCs, heavy metals; institutional controls, monitoring, natural attenuation

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OWENS

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# 2074

Owens-Corning, Inc.

Valparaiso, Indiana

Fa	**Manufacture of polyester resins**
Co	**Antimony, arsenic**
Me	**Soil**
Re	**Excavation, no further action**

FACILITY DESCRIPTION

The Owens-Corning-Valparaiso Resins & Coatings Plant has been in operation since 1973. The facility is located on the outskirts of Valparaiso, Indiana. Surrounding land is agricultural to light industrial. The population of Valparsaiso in 1980 was 22,900. The primary function of this facility is the manufacture of polyester resins. The recovery of antimony cake, ethylene glycol and polyester products from other manufacturers' surplus products was conducted then discontinued in December 1987.

On September 30, 1987, a RCRA permit was issued to the facility, imposing an RFI. In several locations within and slightly outside of the facility boundary, the surface soil had been contaminated with antimony and smaller amounts of arsenic. Owens-Corning had known of this contamination, and in 1979 the contaminated surface soil was removed from this site. Through the RCRA permit, EPA sought to ascertain whether or not the local ground water was impacted.

During the RFI, the upgradient and downgradient ground water was sampled and analyzed for VOCs, base-neutral and acid extractable SVOCs, metals, and cyanide. Low levels of acetone and methylene chloride were detected in the groundwater samples, but were determined to be laboratory contaminants. In August 1989, the RFI concluded that the facility had not impacted the local ground water.

The RCRA permit for Owens-Corning expired on October 30, 1992. Prior to this expiration, the State of Indiana, which is Federally authorized to implement the base RCRA program, acknowledged that the facility had changed its industrial processes so as to no longer generate, treat, store or dispose of hazardous wastes. Therefore, the facility no longer requires a RCRA permit to operate.

On February 4, 1993, EPA examined the residual levels of antimony and arsenic in the facility soils, and concluded that these levels warrant no further action. EPA concurred with the State of Indiana that the renewal of the RCRA permit is not warranted.

EXPOSURE PATHWAYS

Exposure pathways would have included ingestion or inhalation of contaminated soil, as well as the leaching of antimony and arsenic into the ground water.

SELECTED REMEDY

The selected remedy for this site, completed in 1979, included the excavation and removal of contaminated soil.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	Action Level (mg/kg)	Cleanup Goals (mg/kg)	Point of Compliance
soil		antimony arsenic	12400 74.6	30 80	30 80	facility boundary

PUBLIC PARTICIPATION

Because State and Federal RCRA permitting requirements are no longer applicable to this facility, public participation was not implemented.

NEXT STEPS

None.

KEY WORDS
Soil; ingestion (soil), inhalation; heavy metals, arsenic; excavation

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CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	Action Level (mg/kg)	Cleanup Goals (mg/kg)	Point of Compliance
soil		arsenic (total) chromium (total)	5200 2260		43.25 19.84	unit unit

after removal. Air and surface water were potential pathways during excavation activities.

SELECTED REMEDY

The selected remedy for this site includes excavation and disposal at an offsite landfill.

INNOVATIVE TECHNOLOGIES CONSIDERED

In situ vitrification, in situ soil flushing, and soil washing were considered but not chosen as selected remedies.

PUBLIC PARTICIPATION

As a part of the RCRA permit modification, a public comment period and public hearing were required.

NEXT STEPS

None. The area was backfilled.

KEY WORDS

Soil; ingestion (soil), inhalation; heavy metals, arsenic, chromium; excavation, innovative technology (considered): soil washing, in situ soil flushing, in situ vitrification, offsite disposal

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HICKSON

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# 1609

Hickson Corporation

Valparaiso, Indiana
Signed September 26, 1991

Facility/Unit Type:	**Container storage/railroad unloading area (routine and systematic spill area)**
Contaminants:	**Arsenic, chromium**
Media:	**Soil**
Remedy:	**Excavation and offsite disposal**

FACILITY DESCRIPTION

The Hickson Corporation mix plant is a 5.25-acre site located three miles southeast of the City of Valparaiso, Indiana, which contains a major State University. An airport is located approximately one mile north of the site. A rail line extends from the southeast corner of the plant site to the center of the site. Liquid arsenic acid and flaked chromic acid are delivered to the plant by railcar.

The plant produces a 50% chromated copper arsenate wood preservative solution by mixing liquid arsenic acid, liquid chromic acid (or chromic acid flakes), dry cupric oxide, and water in a reactor. The solution is stored in tanks and shipped to licensees. Dricon fire retardant is also produced onsite by mixing a slurry of dicyandiamide, 75% phosphoric acid, and water. The mixture is pumped onto conveyor belts and passed under infrared heaters to produce a dry powder. The powder is then mixed with boric acid to produce Dricon. Dricon is stored in fiber drums or super sacks and shipped to licensees. The process water from both productions is reused through a closed loop system.

Drinking water sources in the area include the Valparaiso well field 1/2 mile to the north at the airport, and ground water used at farms as a water source. Ground water is at 9-38 feet below the surface.

Evidence of chromated copper arsenate constituents in soils adjacent to a rail spur south of the tank car unloading building led to shallow soil sampling in 1987. EPA toxicity sampling showed the presence of arsenic and chromium. An RFI was conducted in 1987 to define the vertical and horizontal extent of the soil contamination. Soil samples were collected from 17 boring locations at the unit, and four background locations. Cleanup levels were calculated as the average background concentration plus three standard deviations.

Additional soil sampling in 1988 and 1989 was required because of the discovery of a leaking fiberglass drip pan underlying the railbed inside the tank car unloading building, which was believed to be the source of the soil contamination.

Ground-water monitoring wells were also installed. Analysis showed no contamination for total and dissolved arsenic and total and dissolved copper. Detectable levels of chromium (63.4 µg/l) and dissolved chromium (75.0 µg/l) were measured in one well. Sediment samples were taken in a dry drainage ditch.

The RCRA permit was modified in May 1992 to incorporate an approved workplan for soil excavation and disposal. The workplan required characterization of soil prior to excavation for disposal purposes, sampling to determine final excavation depths in identified locations, excavating soils, and confirmation soil sampling following excavation.

EXPOSURE PATHWAYS

The primary exposure pathway was dermal contact or ingestion of contaminated soil. This soil pathway was eliminated upon removal of the contaminated soil. Ground water will also be protected

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID #
IND 072051394

Purdue University
West Lafayette, Indiana
(Signed 4 May 1995)

Facility/Unit Type:	***Closed, solid waste landfills at university research farms***
Contaminants:	**Carbon disulfide**
Media:	***Groundwater***
Remedy:	**Augmentation and maintenance of landfill cover, monitoring of groundwater and stream water.**

FACILITY DESCRIPTION

Under federal RCRA permit conditions, Purdue University conducted a RCRA Facility Investigation (RFI) of two of its landfills, which was approved by EPA on February 8, 1991. Purdue also conducted a corrective measures study (CMS) at the direction of EPA, which was approved on September 30, 1994. In compliance with 40 CFR §§270.41 and 270.42, EPA is proposing a Class 3 (major) modification to Purdue's Federal RCRA permit to formalize the selected corrective measures.

Purdue University is a State-supported research and teaching institution. The campus covers 13 square miles in the town of West Lafayette, Indiana. The University owns and operates two research facilities, known as the Thomas Farm and the Horticulture Farm. Each farm contains a closed solid waste landfill for which corrective action has been required. The landfills have received incidental disposal of a variety of wastes over several years by many University departments and maintenance personnel.

The Thomas Farm Dump is a closed landfill with a clay/vegetated cap. It covers approximately 209,100 square feet and contains an estimated 87,900 cubic yards. Contents of the landfill include branches, brush, stumps, construction debris, tires, domestic trash, fly ash, discarded vehicles, implements, appliances, waste NACl road salt, and laboratory wastes (bottles and jars of acids, bases, ethers, peroxides, spent solvents, reactive metals). The following chemicals were detected in soil and stream sediment samples at the foot of the landfill: 23-100 ppb acetone, 7 ppb benzene, 920-1900 ppb semivolatiles (acenaphthene, anthracene, chrysene). Isolated hits in groundwater showed 11 ppb carbon disulfide (down gradient) and 11 ppb dichloromethane (down gradient). Leachate which had elevated pH and chloride ion content had been infiltrating into the adjacent stream, prior to the application of rip-rap and additional clay clap on the flank of the landfill.

The Horticultural Farm Dump is a closed landfill with a clay/vegetated cap that covers approximately 65,000 square feet. The contents of this landfill includes trash, construction debris, spoiled produce, and discarded jars and bottles from laboratories. Isolated hits of contaminants in groundwater showed the following: 26 ppb acetone (up gradient), 7 ppb bromoform (up gradient), 11 ppb dichloromethane (up gradient), 14 ppb dichloromethane (down gradient), 11 ppb dichloromethane (up gradient) and 6 ppb dichloromethane (up gradient).

The surrounding land use is primarily agricultural and residential. Approximately 600 people live within a 2.5 mile radius of the landfill areas. The Purdue University drinking water well field is located 1.25 miles from the landfill areas. The landfills are filled gullies on the flanks of a creek which is a tributary of the Wabash River. The landfills are located on the glacial till plain above the Wabash River aquifer. The glacial till is

predominantly a gravely clay, with discontinuous sand lenses. The aquifers of concern in the landfill areas are within the sand lenses. Local ground water flow approximately mirrors the local topography. The Wabash River aquifer does not appear to be impacted the landfills. The area is in a temperate climate with an average annual precipitation of 36.5 inches, average daily maximum temperatures of 30.6 degrees F in January and 84.3 degrees F in July.

EXPOSURE PATHWAYS

Groundwater passing beneath (down gradient of) the Thomas Farm Landfill was found to contain elevated concentrations of carbon disulfide. Investigation of the Horticultural Farm Landfill revealed no statistically significant difference in the down gradient versus up gradient groundwater. The potential exposure pathways for contaminated groundwater are dermal contact and ingestion.

SELECTED REMEDY

The selected remedies for remediation of the two landfills will prevent further infiltration of contaminants in to the groundwater. The estimated cost of the selected remedies is $600,000. Previous investigations included topographical, geophysical, and hydro geological studies that were performed by various students over several years, and the results were incorporated into the RFI. Specific components of the remedy for the Horticultural Farm Landfill include:

- Permanent access restriction;
- Application of rip-rap to the western slope, where needed;
- Regrading and compaction of the landfill cover, where needed; and
- On-going monitoring of groundwater and stream water for volatile organic compounds (VOCs).

Specific components of the remedy for the Thomas Farm Landfill include:

- Augmentation of landfill cover with clay, top soil and vegetation; and
- On-going monitoring of groundwater and stream water for VOCs.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level	Cleanup Goal	Point of Compliance
Groundwater	Not given	Carbon disulfide	11	Not given	Continue detection monitoring program	Intersections of landfill boundaries with upper-most aquifers

PUBLIC PARTICIPATION

A public notice was published on January 30, 1995 and also broadcast on local AM and FM radio stations. The public comment period began on January 31, 1995 and ended on March 20, 1995. A public hearing was not requested. One set of comments was received which resulted in minor changes to the permit modification.

NEXT STEPS

Implementation of selected remedies.

KEYWORDS:
groundwater; Ingestion, Dermal contact; VOCs, Carbon disulfide; Capping; Groundwater monitoring

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FACILITY: SAFETY-KLEEN CORPORATION
Hebron, Ohio
ID#OHD980587364

The following information was not available in the material provided for this summary:

- FACILITY DESCRIPTION

  - A description of the type of soil and the hydrogeology underlying the facility was not provided. This information would be supportive in discussing groundwater containment goals on the Safety-Kleen property.

  - The authority used to compel corrective action was not mentioned (e.g. RCRA §3008(h) or State Authority). Please confirm the Administrative Consent Order was issued under 3008(h).

  - The portion of the facility (e.g., specific areas, the soil, or the underlying groundwater) that was under the consent order was not described.

- CONTAMINATION AND CLEANUP GOALS

  - Maximum contaminant levels (MCL) and MCL cleanup goals were not provided. It was assumed that the risk-based cleanup levels (RBCL) that were provided could be substituted. This assumption needs to be verified.

  - Estimated volume of contaminated media (soil, groundwater) was not provided.

  - Point of compliance information was not provided. It was assumed that background levels were the point of compliance for both soil and groundwater in the table. This assumption needs to be verified.

The EPA Region is requested to provide text that addresses the missing information in its comments on the Draft Summary, for incorporation in the Final Summary.

July 14, 1998

Mr. Mike Fitzpatrick
EPA Work Assignment Manager
U.S. Environmental Protection Agency
401 M Street, S.W.
Mail Code 5303W
Washington DC 20460

RE: EPA Contract No. 68-W7-001
Work Assignment No. 9, Task 02
Statement of Basis Summary for Safety-Kleen Corporation, Hebron, Ohio

Dear Mr. Fitzpatrick:

Enclosed please find the Draft Statement of Basis summary for the Safety-Kleen facility. The Safety-Kleen Statement of Basis summary materials did not include information on the hydrogeology of the facility, the authority used to compel corrective action, the volume of contaminated groundwater, maximum contaminant levels (MCL) or MCL goals, or points of compliance. After reviewing the data provided, HAZMED opted to substitute the risk-based cleanup levels (RBCLs), which focus on reducing human health risks, for the missing MCL values. HAZMED requests your comments on this decision. If you have any questions please feel free to contact me at 301-577-9339.

Sincerely,

Sue Tripp
Work Assignment Manager

Enclosures

cc: Joseph Waddell (w/o enclosure)
Wendel Miser (w/o enclosure)

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# OHD980587364

Safety-Kleen Corporation
Recycle Center Facility

Hebron, OH
(Signature Date: May 26, 1998)

Facility/Unit Type:	**Solvent Reclamation and Recycling Plant**
Contaminants:	**1, 2 - Dichloroethylene (DCE), Methylene Chloride, Tetrachloroethylene (PCE), 1, 1, 1 - Trichloroethane (TCA), Trichloroethylene (TCE), Mineral Spirits**
Media:	**Groundwater, Soil, Surface Water, and Sediment**
Remedy:	**Remediate the contaminated groundwater by containment and air stripper treatment. Cap contaminated soils with asphalt and remove Volatile Organic Compounds (VOCs) by the Soil Vapor Extraction (SVE) Method.**

FACILITY DESCRIPTION

The Safety-Kleen Corporation (SK) Recycle Center facility is located at 581 Milliken Drive, SE, Hebron, Ohio. The facility is situated on the northeastern corner of the Newark Industrial Park, bordered on the west and south by light industry and to the north and east by the South Fork of the Licking River. The area surrounding SK is predominantly rural with a low population. The closest residence is approximately 1000 feet to the north of the facility.

SK has operated its facility as a solvent reclamation and recycling plant since July 1981. The facility receives spent mineral spirits (Stoddard solvent); dry cleaning process wastes consisting of tetrachloroethylene (PCE) residues, mineral spirits, and freon; solvents consisting of a mixture of mineral spirits and chlorinated solvents; and mineral spirits dumpster mud from SK service centers. The facility also receives spent solvents consisting of 1,1,1- trichloroethane (1,1,1-TCA) ; trichloroethylene (TCE) ; PCE; and methylene choride from industrial users.

The spent solvents are stored and reclaimed using distillation and fractionating process equipment. Dry cleaning process wastes, spent industrial solvents, and mineral spirits dumpster mud are brought to the facility and the solvents are recovered for reuse through the Safety-Therm process. The solid residues generated during the recycling process are transported off site for proper disposal.

On November 27, 1985 a fire occurred in the Aboveground Storage Tank farm, which formally existed east of well H-11S at the Wastewater Treatment Plant (WWTP) site. As a result, an unknown quantity of solvents were released into soil, surface water, and

groundwater. No groundwater impacts have been detected north of the South Fork of the Licking River, but nonaqueous-phase liquids have been detected beneath the facility.

On March 16, 1989, the U.S. Environmental Protection Agency (EPA) and SK signed an administrative order on consent. The consent order required SK to assess the nature of the contamination, evaluate remedial alternatives, and implement the remedy selected by the EPA. The facility initially conducted a RCRA Facility Investigation (RFI) in December 1991 which included extensive groundwater, soil and surface water sampling.

The RFI sampling activities identified the following chemicals of potential concern (COPC):

- 1,2-Dichloroethylene (DCE);
- Methylene Chloride;
- Tetrachloroethylene (PCE);
- 1,1,1-Trichloroethane (TCA);
- Trichloroethylene (TCE); and
- Mineral Spirits.

COPCs were identified in on-site soils; off-site soils adjacent to the facility; groundwater in the north portion of the facility; and surface water and sediments in the South Fork of the Licking River and the oxbow channel.

The sampling results indicated contamination problems that required Interim Corrective Measures (ICM) which SK voluntarily implemented. Measures were taken to contain groundwater and evaluate methods to reduce volatile organic compounds (VOC) concentrations in unsaturated soils in the west yard area, before completion of the Corrective Measures Study (CMS).

EXPOSURE PATHWAYS

The potential exposure pathways for human health and the environment are primarily through soil and soil gas. VOCs in soil gas could be released and contaminate outdoor and indoor air. Potential releases, ingestion, and dermal contact with subsurface soil could occur from digging during construction.

An Environmental Risk Assessment (ERA) was performed to ensure overall protection of the environment from the contaminants released by the facility. The specific area of concern focused on fish and invertebrates and their possible exposure (through adsorption, ingestion or consumption) to COPC contaminants. No surface water COPC concentrations exceeded the available water quality criteria. There are no sediment criteria for the COPCs. Because the COPC concentrations are below EPA established or recommended criteria, no Risk Based Cleanup Levels (RBCLs) were developed specifically for the protection of aquatic organisms.

SELECTED REMEDY

Only one remedial alternative was developed, mainly because many process options were evaluated and screened out during the ICM. The remedy selected incorporates the ICM already implemented at the facility.

The main goal of the groundwater remediation effort is to keep the groundwater contamination contained on the SK property, precluding additional remedial actions. The main goal of the soil remediation effort is to acheive established RBCLs by using a Soil Vapor Extraction (SVE) system. The components of the proposed remedy for groundwater and soil contamination are described below.

Groundwater cleanup efforts include:

- The containment of groundwater by extending the existing sheet-pile wall. The sheet-pile wall extension would be anchored in the silty clay located 18 to 22 feet below the shallow, sandy zone.

- In addition to containment, groundwater extraction would be implemented to prevent the buildup of hydrostatic pressure on the upgradient side of the wall and to collect the contaminated groundwater for treatment before its discharge.

- Groundwater extracted using the installed recovery wells would then be treated using air stripping. Air stripping involves contact of the affected water with air, allowing VOCs to be transferred from the water phase directly to the atmosphere or, if necessary, to an off-gas treatment system. The treated groundwater would be discharged to the Hebron Waste Water Treatment Plant (WWTP).

Unsaturated soils cleanup efforts include:

- Soils will be contained using an asphalt cap to minimize or eliminate infiltration of surface water that could react with COPCs in the unsaturated soils and cause further contamination of the groundwater. A SVE system would be installed in the west yard area. The SVE system would apply a vacuum to the unsaturated soils and extract vapor containing COPCs from the soil pores. The off-gas from the SVE system would then be discharged to the atmosphere. Groundwater monitoring and soil sampling would be conducted to confirm that contaminant levels are being reduced to soil RBCLs.

EPA based its remedy selection on the four general standards for corrective measures in the RCRA statutory requirements and the five remedy decision factors in the proposed Subpart S regulation for corrective action. The following standards and factors were used to evaluate the proposed remedy:

- Overall protection of human health and the environment;
- Attainment of media cleanup standards;
- Controlling the source of releases;
- Compliance with waste management standards;
- Reduction of toxicity, mobility, or volume of contaminants through treatment;
- Long-term reliability and effectiveness;
- Short-term effectiveness;
- Implementability; and
- Cost.

The proposed remedy provides overall protection of human health and the environment. Groundwater and soils would be contained to prevent direct and indirect human contact with these contaminated media. Proper measures will be implemented to treat and discharge contaminated groundwater. Based on the information currently available, the proposed remedy provides the best balance of advantages and disadvantages with respect to the evaluation criteria.

The costs associated with the proposed remedy are estimated by SK to be low (less than $0.1 million.) Monitoring well and SVE installation costs require the greatest capital expenditures. Annual operation and maintenance (O&M) costs are estimated by SK to be moderate ($0.1 to $0.5 million) and would depend on the efficiency of the air stripping and SVE treatment systems.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume of Contaminated Media	Contaminant	Maximum Concentration [Liquids (µg/L); Solids (mg/kg)]	MCL Action Level (mg/kg)	MCL Cleanup Goal [Liquids (µg/L); Solids (mg/kg)]**	Point of Compliance
Groundwater	*	1, 2-DCE	29,000	*	80	*
		PCE	3,300	*	1.4	
		1,1,1-TCA	4,200	*	1,550	
		TCE	2,900	*	2.6	
		Mineral Spirits	160	*	3,260	
					160	
Soil	*	1, 2-DCE	8.4	*	66	*
		Methylene	11	*	0.9	
		Chloride			5.6	
		PCE	280	*	3,260	
		1,1,1-TCA	27	*	2.6	
		TCE	270	*	2,010	
		Mineral Spirits	200	*		
Surface Water	*	1,2-DCE	18	*	*	*
		PCE	3	*	*	
Sediment	*	1, 2-DCE	29	*	*	*
		Methylene Chloride	0.005	*	*	
		PCE	0.46	*	*	
		TCE	0.036	*	*	
		Mineral Spirits	640	*	*	

* Information not provided

** Risk-Based Cleanup Levels (RBCL) were used instead of Maximum Contaminant Level (MCL) Cleanup Goals

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA conducted a formal public comment period on the proposed corrective action remedy from January 21, 1998 - March 9, 1998. There was only one public comment received from a private citizen who was in favor of the proposed remedy, but voiced her concern over the length of the cleanup time. The supporting Administrative Record is available at the Newark Public Library. The Ohio Environmental Protection Agency (OEPA) public noticed the Part B Permit on April 10, 1998, and the public comment period ended on May 25, 1998.

NEXT STEPS

EPA will terminate the March 16, 1989 Administrative Order on Consent and OEPA will assume primacy over the corrective measures implementation at the facility.

KEY WORDS:
soil, groundwater; inhalation, ingestion, dermal contact; 1, 2 - Dichloroethylene (DCE), methylene chloride, Tetrachloroethylene (PCE), 1,1,1 - Trichloroethane (TCA), Trichloroethylene (TCE), mineral spirits; soil vapor extraction, air stripping; reclamation.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID # 3854

United Musical Instrument U.S.A. Incorporated

Eastlake, Ohio
(Signed July 20, 1995)

Facility/Unit Type:	**Brass-plated musical instrument manufacturer**
Contaminants:	**1,1-dichloroethane (DCA), 1,1-dichloroethene (DCE), trans-1,2-DCE, 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2-TCA, trichloroethene (TCE), and vinyl chloride**
Media:	**Groundwater, Soil**
Remedy:	**Excavate contaminated soil, treat via ex-situ soil vapor extraction (SVE), and monitor groundwater.**

FACILITY DESCRIPTION

EPA issued an Administrative Consent Order which required the United Musical Instrument U.S.A. Inc. (UMI) to perform a RCRA Facility Investigation (RFI), Corrective Measures Study (CMS), and implement the selected Corrective Measures. An RFI was completed in 1992 and the CMS report was approved in 1994. Contamination was found in the soil and groundwater within the UMI property boundary. No contamination was found outside of the property boundary.

UMI facility's primary operation is the manufacture of brass-plated musical instruments. The manufacturing process involves all phases of production from the initial metal cutting and grinding to plating and assembly operations. Chemicals used at UMI include 1,1,1,-trichloroethane (1,1,1-TCA) and trichloroethene (TCE), which are used to remove oil and grease from metal parts prior to processing.

The UMI facility is located in the southwestern portion of Lake County approximately two miles south of Lake Erie, in Eastlake Ohio. The facility is located in an area currently zoned for general industrial use. Properties located to the east, west, and south of the UMI facility are also zoned for industrial use; however, residential areas are located between 0.2 and 0.5 miles west, north, and northwest of the facility.

EXPOSURE PATHWAYS

The potential exposure pathways for soil are via direct contact, inhalation, and ingestion. The potential exposure pathways for groundwater are via direct dermal contact and ingestion. The contamination is believed to be the result of discharges to the environment through routine spills and leaks from the uncontained outdoor TCE storage tanks located on the west side of the building.

SELECTED REMEDY

The contaminants of concern include: 1,1-DCA, 1,1-DCE, trans-1,2-DCE, 1,1,1-TCA, 1,1,2-TCA, TCE, and vinyl chloride. The selected remedy requires that the facility:

- Excavate 3,240 cubic yards of contaminated soil;
- Treat excavated soils by means of ex-situ soil vapor extraction (SVE) to capture the highly mobile volatile organic compounds (VOCs);
- Manage acceptably treated soils in a manner that complies with applicable state and Federal hazardous waste regulation; and
- Monitor groundwater using 5 on-site monitoring wells on a quarterly basis for four years.

The total estimated cost for implementation of the selected remedy is between $500,000 and $650,000.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	MCL Action Level (mg/l)	MCL Cleanup Goal (mg/l)	Point of Compliance
Groundwater	Not given	1,1-Dichloroethane (DCA) 1,1-Dichloroethene (DCE) Trans-1,2-Dichlorothene 1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethene Vinyl Chloride	Not given	Not given	N/A 0.007 0.1 0.2 0.005 0.005 0.002	Buffer zone
Soil	Not given	Not given	Not given	Not given	Not given	Not given

*N/A = Not Available. Standards have not yet been developed

PUBLIC PARTICIPATION

A 45-day public comment period began on March 30, 1995 and ended on May 15, 1995. No comments were received.

INNOVATIVE TECHNOLOGIES

The selected remedy, ex-situ SVE is considered an innovative treatment. This remedy consists of placing excavated soils in an on-site treatment tank using slotted vacuum piping at the bottom with a slit sock. The atmospheric air enters the treatment tank through the injection piping and becomes laden in volatile vapor as it passes through the soil pile. The air and vapor mixture is treated with activated carbon before air is discharged back to the atmosphere.

Other innovative technologies considered but not chosen include in-situ SVE, mechanical agitation, and thermal desorption. In-situ SVE would be performed using between 14 and 35 extraction wells installed around the area of contamination. The wells would extract air and some water from the soil by the means of a vacuum. The air and water would be separated and treated on-site by carbon absorption before the air is discharged into the atmosphere. Mechanical agitation consists of an ex-situ process to separate volatile contaminants form the soil. An auger soil mixing system would process the contaminated area. The released vapors would be collected by a hood above the auger and treated by activated carbon. Thermal desorption would be conducted using a mobile, low temperature thermal desorption unit. Volatiles would be removed and burned in an afterburner and collected by activated carbon or recovered in condensation equipment.

NEXT STEPS

Submittal, approval, and implementation of Corrective Measure Implementation (CMI) workplan.

KEYWORDS:
soil, groundwater; direct contact, dermal contact, inhalation, ingestion; VOCs, 1,1-dichloroethane, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, and vinyl chloride; excavation, on-site treatment, groundwater monitoring, innovative technology considered: thermal desorption, in-situ SVE, and mechanical agitation, innovative technology selected: ex-situ SVE

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US Ecology

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region V
ID# ~~(last 4 digits)~~ 3450

U.S. ECOLOGY

Sheffield, Illinois
(signed October 19, 1990)

Facility/Unit Type:	**Landfill**
Contaminants:	**Arsenic, benzene, chloroform, methylene chloride, vinyl, chloride, PCE, TCE, 1,1-DCA, 1,2-DCA, 1,1-DCE, 1,2-DCP**
Media:	**Soil, ground water, sediment, surface water**
Remedy:	**Ground water pump and treat with Granular Activated Carbon; caps and slurry walls**

FACILITY DESCRIPTION

On September 30, 1985, EPA and U. S. Ecology entered into a Consent Order pursuant to Section 3008(h) of RCRA. Under the terms of the Consent Order, U. S. Ecology was required to complete on-site and off-site investigation of the extent of releases of hazardous waste and hazardous constituents.

The 45.8-acre U. S. Ecology facility is a disposal facility that consists of two inactive disposal areas, a 5.8-acre landfill called the Old Site and a 40-acre landfill called the New Site. The facility accepted industrial, laboratory, and agricultural waste from 1967 to 1983. Over 90 percent of the reported 4.4 million cubic feet of waste at the facility is in the New Site landfill. Adjacent to the south side of the Old Site is a 20-acre low-level radioactive waste (LLRW) site that is not addressed by this remedy. The Old Site is situated east of the New Site; the LLRW site is south of the Old Site and southeast of the New Site.

The site is underlain by a bedrock aquifer. A 23-acre contaminated ground water plume extends to the north, east, and southeast from the Old Site. The southeast plume is mixing with a plume of radionuclides from the LLRW site. Contaminated ground water is migrating south and north from the New Site.

Trout Lake, which lies east of the facility, is the nearest body of surface water and has been contaminated by the ground water plumes. Contaminated surface water is also found along the north slope of the New Site where the ground water discharges to seeps.

The rural area in which the facility is located is zoned primarily for agricultural use. A 160-acre area 1500 feet south and southwest of the site is zoned for recreational use such as hunting and camping.

EXPOSURE PATHWAYS

Public health is threatened by human exposure to contaminants in ground water, surface water, and soil. Exposure risks from these pathways vary. The greatest threat to human health is associated with long term ingestion of shallow ground water.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Extent of Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goals*	Point of Compliance
ground water	Not Provided	Benzene	Not provided	Not Provided	2.0 ug/l	well G-120
		1, 1-DCA	Not provided		1.0 ug/l	
		1, 2-DCA	Not provided		0.5 ug/l	
		1, 1-DCE	Not provided		1.0 ug/l	
		1, 2-DCP	Not provided		0.5 ug/l	
		Vinyl chloride	Not provided		1.0 ug/l	
Soil		Arsenic	2.6 mg/kg		1.0 ug/l	
		Chloroform	21.0 mg/kg		0.5 ug/l	
		Methylene Chloride	.01 mg/kg		5.0 ug/l	
		PCE	1.2 mg/kg		5.0 ug/l	
		TCE	.20 mg/kg		1.0 ug/l	

* Cleanup goals are based on the practical quantitation limits (PQLs) listed in 40 CFR Part 264, Appendix IX.

SELECTED REMEDY

The selected corrective measure consists of constructing slurry walls around the Old Site and portions of the New Site and extending existing landfill caps to cover the area beyond the slurry walls. Sixteen ground water extraction wells and a subsurface drain system will capture and treat ground water using chemical precipitation, air stripping, and carbon adsorption. Treated water will be discharged to surface water. Sludge generated from the ground water treatment process will be disposed of at an off-site landfill.

The selected corrective measure is an effective and reliable method that will reduce the toxicity, mobility, and volume of contamination. This alternative offers a cost-effective, permanent solution that uses innovative technologies to attain long and short term remediation.

The total estimated capital costs associated with the remedy are $3,918,500. The estimated capital cost to construct the soil caps and slurry walls is approximately $1,153,500, with a construction and implementation time of 2 years. The estimated capital cost for implementing the ground water pumping and treating systems is $2,765,000. The ground water O&M costs will be $852,000 per year. The estimated construction and implementation time for the pumping and treating system will be 18 months. Remediation of ground water will take a minimum of 30 years. The estimated present worth cost for the entire selected remedy is $11,950, 500.

EPA required modifications to U.S. Ecology's proposed alternatives for ground water extraction and treatment and source control. EPA's modifications for ground water include additional extraction wells, screening of wells in the glacial aquifer as well as the bedrock aquifer, and sampling for radionuclides. EPA also required that source control specifically address repair or modification of trench barrier walls to control the release south of the New Site and incorporation of controls for releases from the New Site into the post-closure permit.

PUBLIC PARTICIPATION

EPA established a public comment period which began on May 28, 1990 and ended on July 11, 1990.

EPA held a public hearing on June 28, 1990 to solicit public comments on the proposed remedy. Approximately 150 people attended the hearing, and 15 individuals gave oral testimony. Several requirements were amended based on comments received:

- Several new monitoring wells will be added around the New Site to facilitate detection of any future or presently undetected releases to the ground water.
- Revised ground water protection standards are included.

- Ground water modeling will be required to predict the effect of these corrective measures on the LLRW site.
- Contingency plans will be developed to negate any adverse effects on the LLRW site.
- Performance standards will be required and established for each component of the corrective measures.

INNOVATIVE TECHNOLOGIES CONSIDERED

- Chemical addition, flocculation, and precipitation.

NEXT STEPS

- Future remedial action will have to be taken to address the LLRW disposal site adjacent to the facility
- The closure permit should consider containment strategies for addressing possible releases from the north and west slopes of the New Site.

KEY WORDS

ground water; soil; ingestion; VOCs, organics, pesticides; PCE, TCE, DCE, DCA, arsenic, benzene; on-site treatment, slurry walls, capping; off-site disposal of residuals; extraction; filtration; excavation; carbon adsorption, air stripping.

CONTACT

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# 1745

Waste Management of Illinois
Laraway Recycling and Disposal Facility
Elwood, IL
(signed March 4, 1993)

Facility/Unit Type:	**Recycling and disposal facility**
Contaminants:	**No continuing releases**
Media:	**None**
Remedy:	**No further corrective action necessary**

FACILITY DESCRIPTION

On September 29, 1989, EPA issued a RCRA permit jointly with the state permit to Waste Management of Illinois for the Laraway Recycling and Disposal (ESL) facility in Elwood, IL. The permit, pursuant to Section 3004 of HSWA, required ESL to conduct a RFI for two sets of Solid Waste Management Units (SWMUs) to determine if any continuing releases of hazardous constituents existed. ESL appealed the federal provisions of the permit to the EPA Administrator and then to the Seventh Circuit Court of Appeals while voluntarily implementing the RFI with the approval and oversight of the EPA.

The two sets of SWMUs designated in the permit consisted of a series of surface impoundments identified as Ponds #1 through #4, and several land treatment units identified as the Closed Landfarm. The completed RFI actually addressed 3 sets of SWMUs, including the 2 original SWMUs and an inactive landfill area discovered subsequent to the issuance of the permit.

During the RFI, a series of subsurface soil samples were taken in the area of the 3 SWMUs and analyzed, and 3 wells were installed downgradient of the surface impoundments to determine if any hazardous constituents from the impoundments were being released into the ground water. Based on the RFI, ESL determined there were no continuing releases of hazardous constituents from the SWMUs and no further corrective action activity was necessary. EPA concurred with ESL conclusions.

EXPOSURE PATHWAYS

Because there are no continued releases of hazardous constituents, no exposure pathways were identified.

SELECTED REMEDY

Because the RFI did not identify any continuing releases or exposure pathways at the ESL facility, no remedy was selected. The federal portion of the permit was modified to terminate further corrective action requirements for the two sets of SWMUs identified in the permit.

INNOVATIVE TECHNOLOGIES CONSIDERED

No technologies were considered.

CONTAMINATION DETECTED AND CLEANUP GOALS

No continuing releases of hazardous constituents

PUBLIC PARTICIPATION

The public comment period extended from December 4, 1992 through January 22, 1993. The comments pertained the history of any documented releases, the course of action in the event of future releases, the reason for terminating additional corrective action requirements, and issues raised in the state permit. The EPA response noted that there are no documented releases from the SWMUs. EPA also noted that in the event of future releases, ESL must report the release to EPA and institute necessary corrective measures. EPA responded that no further corrective action requirements are being taken because no releases have been found.

NEXT STEPS

ESL will continue to submit information on any unidentified SWMUs that it identifies which are not regulated under the State of Illinois authority, and perform certain assessments under the permit.

KEY WORDS

media (none); pathways (none); contaminants (no continued releases); no further corrective action required

CONTACT

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION V
ID# 1745

Waste Management of Illinois
Laraway Recycling and Disposal Facility
Elwood, IL

Facility/Unit Type: Recycling and disposal facility
Contaminants: No continuing releases
Media: None
Remedy: No further corrective action necessary

FACILITY DESCRIPTION

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EXPOSURE PATHWAYS

Because there are no continued releases of hazardous constituents, no exposure pathways have been identified.

SELECTED REMEDY

Because the RFI did not identify any continuing releases or exposure pathways at the ESL facility, no remedy has been selected.

INNOVATIVE TECHNOLOGIES CONSIDERED

No technologies were considered.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
none		no continuing releases of hazardous constituents				

PUBLIC PARTICIPATION

The public comment period extended from December 4, 1992 through January 22, 1993. The comments pertained the history of any documented releases, the course of action in the event of future releases, the reason for terminating additional corrective action requirements, and issues raised in the state permit. The EPA response noted that there are no documented releases from the SWMUs. EPA also noted that in the event of future releases, ESL must report the release to EPA and institute necessary corrective measures. EPA responded that no further corrective action requirements are being taken because no releases have been found.

NEXT STEPS

ESL will continue to submit information on any unidentified SWMUs that it identifies which are not regulated under the State of Illinois authority, and perform certain assessments under the permit.

KEY WORDS

media (none); pathways (none); contaminants (no continued releases); no further corrective action required

CONTACT

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VI
ID # 1235
NM2750211235

U.S. Army White Sands Missile Range

Tularosa Basin, New Mexico
(Signed December 29, 1995)

Facility/Unit Type:	**Testing site for rocket, missile, and laser weapon systems**
Contaminants:	**Arsenic, Barium, Lead, Mercury, Cadmium, Chromium, Beta-BHC, 4,4'DDE, 4,4'DDT, Total cyanide, Methylene chloride, Silver, Benzo(a)pyrene**
Media:	**Soil**
Remedy:	**No further action**

FACILITY DESCRIPTION

In accordance with Section 3004(u) of RCRA, EPA Region 6 entered into a compliance agreement with the U.S. Army White Sands Missile Range (WSMR) for corrective action at its solid waste management units (SWMUs). WSMR is located in Tularosa Basin of south central New Mexico, about thirty miles east of Las Cruces, New Mexico. The range covers an area of approximately 3,200 square miles. WSMR is a government owned facility under the command of the U.S. Army Testing and Evaluation Command. The facility was established in July 1945 as the White Sands Proving Ground.

WSMR encompasses an area larger than the states of Delaware, Rhode Island, and the District of Columbia combined. WSMR principally uses the land for rocket and missile testing. There exist co-use areas that nearly double the size of the range. The areas are inhabited largely by ranching families. New Mexico has a 49 percent minority population, however, less than one percent of the households within 50 square mile of the facility boundaries are minority or economically stressed.

Due to the enormous size of the installation, each work area has its own water distribution system rather than one system for the entire installation. Eleven water wells are located throughout the Main Post Area (MPA). The Small Missile Range (SMR) is located approximately 11 Km north of the MPA complex and overlies a potable water aquifer. The Multifunction Array Radar (MAR) area is 18 Km north of the SMR complex . Two wells located 13 Km from the site supply potable (chlorinated) water to a ground level storage tank at the MAR site. The Stallion Range Center (SRC) is in the northwestern sector of the installation. Two wells produce nonpotable water to an electrodialysis plant for conversion to potable water. A ground storage tank, distribution lines, and pumps furnish potable water within the SRC. Water is hauled by tanker to other locations where there are no potable water sources. Each location is equipped with storage tanks and small water pressure systems.

WSMR lies within the Mexican Highland Section of the basin and range province, which is characterized by a series of tilted fault blocks forming longitudinal ridges or mountains, and broad intervening basins. The major portion of WSMR lies within the Tularosa Basin; the northwest portion lies within the Jornada del Muerto Basin. The basin is bounded on the west by the Organ and San Andres Mountains. The eastern limit of the Tularosa Basin lies just outside WSMR proper, and is formed from north-to-south by the Jicarilla, Sierra Blanca, and Sacramento Mountains.

The primary aquifer in the Post Area is a wedge-shaped unconfined aquifer in the bolson deposits of the Tularosa Basin. Recharge for the aquifer is supplied by drainage from the alluvial fans and accumulations of storm runoff in natural depressions on the bolson surface. Beneath and to the east of the freshwater wedge, the groundwater is saline. Dependent upon groundwater production rates, depth to groundwater in the MPA may be greater than 350 feet. The source of groundwater at WSMR is from precipitation, of which only 25 percent reaches the saturated zone. Yearly precipitation ranges from less

than 7 inches in Tularosa Basin to 25 inches in the higher mountains. In many of the outlying areas, the quality of the groundwater is poor due to very high dissolved solids content. The groundwater flow direction is to the east, toward the center of the valley. In the MPA, groundwater flow is greatly affected by pumping from the MPA well field, which provides potable water for the MPA and adjacent facilities. The overall impact on the groundwater elevation and flow direction varies with the rate of pumping from each well and with recharge from the vicinity of the mountains to the west. Under static, nonpumping conditions, groundwater elevation may be expected to vary from 200 to 300 feet below general level in the MPA. Various perched water conditions have been identified at the High Energy Laser System Test Facility (HELSTF). They are unconfined and groundwater mounding has been observed throughout the location. These conditions are the result of the combination of lateral discontinuity of stratigraphic units and varying degrees of hydraulic conductivities.

There are no surface waters or intermittent streams located in the operational areas; and the MPA and HELSTF areas are not within the 100-year floodplain. Surface waters at WSMR are normally scarce due to low precipitation, high evaporation, and the absorption characteristics of the soils. There are several creeks and springs in the mountains that are dry except immediately following excessive rainfall or snowmelt. None of the surface water on the Installation is potable. There are no off-site surface waters that would be affected by the SWMUs addressed in this SB/RTC.

WSMR's headquarters is at an elevation of almost 4,000 feet. Snowfall is infrequent, although heavy snows have occurred. WSMR is considered a dry area with an average rainfall of 10.8 inches, mostly occurring during the late summer as thunderstorms, often accompanied by hail. Flash floods usually follow heavy rainfalls. The average summer high temperature is 92 degrees F with lows of about 62 degrees F. During the winter months (December through February), the average high is 57 degrees F with an average low of 36 degrees F. Average annual humidity readings are only 37 percent. The dominant climate factor at WSMR is wind from February through May. The prevailing southerly winds blow unimpeded across the desert and at times reach gale force proportions. Storms last for days at a time in the spring.

The property is currently being used to test rocket, missile, and laser weapon systems. Wastes generated at the facility are mainly related to missile testing operation and associated support facilities, fire training, refueling facilities, equipment maintenance, and vehicle maintenance. The hazardous wastes of concern are spent solvents, paint strippers, waste paints, waste oils, waste hydraulic fluids, and waste fuel. Prior to the mid 1980's, hazardous wastes generated at the facility may have been disposed of in on-site SWMUs. Since then, however, hazardous waste has been disposed of off-site through the Defense Reutilization and Marketing Office.

A RCRA facility assessment (RFA) was performed on the WSMR for EPA Region 6 in August 1988. WSMR was issued a RCRA corrective action permit on October 24, 1989. As a result of the RFA, 139 SWMUs and 26 areas of concern (AOC) were identified. Of those identified, 93 SWMUs were included in the HSWA permit and required to be included in the RCRA facility investigation (RFI). The SWMUs were divided into four groups; groups I, II, III, and IV.

Under the corrective action process, WSMR was required to determine the type, concentration, and extent of hazardous waste released into the environment at all SWMU sites. Once the delineation was completed, WSMR was required to recommend corrective action options to remove hazardous waste from the affected media. The Phase I RFI for group I was approved in April 1992 and the Phase I RFI for groups II, II, and IV were approved in September 1993. The Phase I RFI reported the finding of the investigation conducted at 80 SWMUs and Phase II reported the finding of 52 SWMUs.

The results of the field and analytical tests indicated that little or no contamination existed at most of the units investigated. The hazardous constituents found included: arsenic, barium, lead, mercury, cadmium, chromium, beta-BHC, 4,4'DDE, 4,4'DDT, total cyanide, methylene chloride, silver, and benzo(a)pyrene. All of these constituents were found in concentrations under the EPA action levels. An insignificant volume of soil associated with the SWMUs was contaminated and no releases occurred from the listed SWMUs. WSMR subsequently submitted a Class III permit modification requesting that 38 SWMUs be designated as requiring no further action. Upon review of the RFI report and the Class III permit modification, EPA determined

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/l)	MCL Action Level (mg/l)	MCL Cleanup Goal	Point of Compliance
Soil	Unknown	Arsenic	22	80	Residen-	Throughout
		Barium	1600	4000	cial risk-	the plume
		Lead	35	NA	based	
		Mercury	0.13	20	concen-	
		Cadmium	1.0	40	tration	
		Chromium	63	NA	levels and	
		Beta-BHC	0.0059	4	proposed	
		4,4'DDE	0.022	2	Federal	
		4,4'DDT	0.06	2	action	
		Total cyanide	1.8	2000	levels;	
		Methylene chloride	0.023	90	State and Federal	
		Silver	48	200	concen-	
		Benzo(a)pyrene	52	NA	tration levels	

that 24 of the 38 SWMUs required no further investigation. The remaining SWMUs will be investigated as part of the Interim Corrective Measures.

EXPOSURE PATHWAYS

Soil is the potential exposure pathway of concern. Direct contact is the major vehicle of concern for WSMR employees only. Off-site personnel would not experience direct contact due to time and distance for potential waste constituents migration pathways. With the exception of POL, WSMR uses few volatile toxic organic substances for routine purposes. Use is low in number, quantity, and frequency. Small quantities of volatile organics may be released during waste evaporation treatment. Release of particulates from site operations is minimal. WSMR has no continuous running surface water near site operations. The stormwater drainage system may act as a pathway during severe precipitation events. The stormwater drainage system provides a moderate potential pathway for contaminats to enter the environment if located near the surface discharge zones of treated wastes and those land-based units which have no release controls.

The saturated zone and aquifer are found at relatively great depths beneath ground level. However, the permeable soil could allow contaminate transport to and by groundwater. Therefore, the groundwater is considered to have a low potential for transport and release. The highly permeable soils may act as a pathway for release from the units mentions under surface water pathways.

Potential receptors are WSMR residents, WSMR employees (occupational exposures), and range site residents. There are no towns within the area. Nearby residents outside the WSMR boundaries are few in number and minimally exposed. Water supply wells on site are used to meet the potable water needs. Since these wells are screened in a permeable alluvial aquifer, a potential for receiving contaminated water through ingestion exists. However, depending upon groundwater production rates, potable groundwater is about 200 feet to 350 feet below the ground surface and the contaminants would have to travel through the vadose zone before they could spread in the uppermost aquifer.

SELECTED REMEDY

EPA determined that no further action was necessary for 24 of the 38 SWMUs of concern. This determination was based on the analytical and fieldwork results which indicated that there were no or insignificant release(s) of hazardous waste into the environment. In addition, EPA performed risk screening tests which indicated that the releases had no impact on human health and the environment.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Three public hearings were held by WSMR at different locations. The first hearing was held on March 22, 1994, in Alamogrodo, New Mexico. Six individuals attended the meeting including representatives from WSMR, Alamogrodo Daily News, and Alamogrodo citizens. Five questions were asked concerning the history of the paint dump site, cleanup criteria, and disposal of ordinance. WSMR responded by stating that abandoned paint cans were found in a dump site. The cans were removed and the underlying soils were tested for hazardous waste; analytical results from confirmation samples showed no hazardous materials in the soils. WSMR representatives said that specific bombing areas are designated for warhead impacts, and any unexploded or exploded ordinances are recovered. The area has been made pristine for further ordinance testing.

The second hearing was held on March 23, 1994 in El Paso, Texas, however, no one attended the meeting. The third hearing was held on March 24, 1994, in Las Cruces, New Mexico. Seven people attended the hearing including two representatives from WSMR. Five questions were asked concerning what the taxpayers might gain by holding this hearing and by removing the 24 units that were determined to pose no threat to human health or the environment. In addition, questions were asked about further investigations at WSMR, and how to expedite removing units that pose no threat to the public. WSMR responded that by removing these units, funding can be redirected to more practical and useful purposes. WSMR also stated that the facility is regulated by a RCRA/HWSA permit and under the permit it is required to continuously monitor the facility for potential threats to human health and the environment. In addition, WSMR indicated that by good communication and providing adequate evidence to the regulatory community, the process of requesting and receiving approval to remove units which pose no threat to human health and the environment can be streamlined.

NEXT STEPS

The final decision will be advertised and EPA will notify the applicant of each person on the public comment mailing list of the final decision. The final decision will become effective 30 days after the service of notice of the decision unless a later date is specified or review is requested under regulation 40 CFR 124.19. If no comments are received to request a change in the final determination, the decision to approve the application will become effective immediately upon issuance.

KEYWORDS:
soil; arsenic, barium, lead, mercury, cadmium, chromium, beta-BHC, 4,4'DDE, 4,4'DDT, total cyanide, methylene chloride, silver, benzo(a)pyrene; no further action.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VI
ID # 1235
NM2750211235

U.S. Army White Sands Missile Range

Tularosa Basin, New Mexico
(Signed December 29, 1995)

Facility/Unit Type:	**Testing site for rocket, missile, and laser weapon systems**
Contaminants:	**Arsenic, Barium, Lead, Mercury, Cadmium, Chromium, Beta-BHC, 4,4'DDE, 4,4'DDT, Total cyanide, Methylene chloride, Silver, Benzo(a)pyrene**
Media:	**Soil**
Remedy:	**No further action**

FACILITY DESCRIPTION

In accordance with Section 3004(u) of RCRA, EPA Region 6 entered into a compliance agreement with the U.S. Army White Sands Missile Range (WSMR) for corrective action at its solid waste management units (SWMUs). WSMR is located in Tularosa Basin of south central New Mexico, about thirty miles east of Las Cruces, New Mexico. The range covers an area of approximately 3,200 square miles. WSMR is a government owned facility under the command of the U.S. Army Testing and Evaluation Command. The facility was established in July 1945 as the White Sands Proving Ground.

WSMR encompasses an area larger than the states of Delaware, Rhode Island, and the District of Columbia combined. WSMR principally uses the land for rocket and missile testing. There exist co-use areas that nearly double the size of the range. The areas are inhabited largely by ranching families. New Mexico has a 49 percent minority population, however, less than one percent of the households within 50 square mile of the facility boundaries are minority or economically stressed.

Due to the enormous size of the installation, each work area has its own water distribution system rather than one system for the entire installation. Eleven water wells are located throughout the Main Post Area (MPA). The Small Missile Range (SMR) is located approximately 11 Km north of the MPA complex and overlies a potable water aquifer. The Multifunction Array Radar (MAR) area is 18 Km north of the SMR complex . Two wells located 13 Km from the site supply potable (chlorinated) water to a ground level storage tank at the MAR site. The Stallion Range Center (SRC) is in the northwestern sector of the installation. Two wells produce nonpotable water to an electrodialysis plant for conversion to potable water. A ground storage tank, distribution lines, and pumps furnish potable water within the SRC. Water is hauled by tanker to other locations where there are no potable water sources. Each location is equipped with storage tanks and small water pressure systems.

WSMR lies within the Mexican Highland Section of the basin and range province, which is characterized by a series of tilted fault blocks forming longitudinal ridges or mountains, and broad intervening basins. The major portion of WSMR lies within the Tularosa Basin; the northwest portion lies within the Jornada del Muerto Basin. The basin is bounded on the west by the Organ and San Andres Mountains. The eastern limit of the Tularosa Basin lies just outside WSMR proper, and is formed from north-to-south by the Jicarilla, Sierra Blanca, and Sacramento Mountains.

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Under the corrective action process, WSMR was required to determine the type, concentration, and extent of hazardous waste released into the environment at all SWMU sites. Once the delineation was completed, WSMR was required to recommend corrective action options to remove hazardous waste from the affected media. The Phase I RFI for group I was approved in April 1992 and the Phase I RFI for groups II, II, and IV were approved in September 1993. The Phase I RFI reported the finding of the investigation conducted at 80 SWMUs and Phase II reported the finding of 52 SWMUs.

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CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/l)	MCL Action Level (mg/l)	MCL Cleanup Goal	Point of Compliance
Soil	Unknown	Arsenic	22	80	Residen-	Throughout
		Barium	1600	4000	cial risk-	the plume
		Lead	35	NA	based	
		Mercury	0.13	20	concen-	
		Cadmium	1.0	40	tration	
		Chromium	63	NA	levels and	
		Beta-BHC	0.0059	4	proposed	
		4,4'DDE	0.022	2	Federal	
		4,4'DDT	0.06	2	action	
		Total cyanide	1.8	2000	levels;	
		Methylene chloride	0.023	90	State and Federal	
		Silver	48	200	concen-	
		Benzo(a)pyrene	52	NA	tration levels	

that 24 of the 38 SWMUs required no further investigation. The remaining SWMUs will be investigated as part of the Interim Corrective Measures.

EXPOSURE PATHWAYS

Soil is the potential exposure pathway of concern. Direct contact is the major vehicle of concern for WSMR employees only. Off-site personnel would not experience direct contact due to time and distance for potential waste constituents migration pathways. With the exception of POL, WSMR uses few volatile toxic organic substances for routine purposes. Use is low in number, quantity, and frequency. Small quantities of volatile organics may be released during waste evaporation treatment. Release of particulates from site operations is minimal. WSMR has no continuous running surface water near site operations. The stormwater drainage system may act as a pathway during severe precipitation events. The stormwater drainage system provides a moderate potential pathway for contaminats to enter the environment if located near the surface discharge zones of treated wastes and those land-based units which have no release controls.

The saturated zone and aquifer are found at relatively great depths beneath ground level. However, the permeable soil could allow contaminate transport to and by groundwater. Therefore, the groundwater is considered to have a low potential for transport and release. The highly permeable soils may act as a pathway for release from the units mentions under surface water pathways.

Potential receptors are WSMR residents, WSMR employees (occupational exposures), and range site residents. There are no towns within the area. Nearby residents outside the WSMR boundaries are few in number and minimally exposed. Water supply wells on site are used to meet the potable water needs. Since these wells are screened in a permeable alluvial aquifer, a potential for receiving contaminated water through ingestion exists. However, depending upon groundwater production rates, potable groundwater is about 200 feet to 350 feet below the ground surface and the contaminants would have to travel through the vadose zone before they could spread in the uppermost aquifer.

SELECTED REMEDY

EPA determined that no further action was necessary for 24 of the 38 SWMUs of concern. This determination was based on the analytical and fieldwork results which indicated that there were no or insignificant release(s) of hazardous waste into the environment. In addition, EPA performed risk screening tests which indicated that the releases had no impact on human health and the environment.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Three public hearings were held by WSMR at different locations. The first hearing was held on March 22, 1994, in Alamogrodo, New Mexico. Six individuals attended the meeting including representatives from WSMR, Alamogrodo Daily News, and Alamogrodo citizens. Five questions were asked concerning the history of the paint dump site, cleanup criteria, and disposal of ordinance. WSMR responded by stating that abandoned paint cans were found in a dump site. The cans were removed and the underlying soils were tested for hazardous waste; analytical results from confirmation samples showed no hazardous materials in the soils. WSMR representatives said that specific bombing areas are designated for warhead impacts, and any unexploded or exploded ordinances are recovered. The area has been made pristine for further ordinance testing.

The second hearing was held on March 23, 1994 in El Paso, Texas, however, no one attended the meeting. The third hearing was held on March 24, 1994, in Las Cruces, New Mexico. Seven people attended the hearing including two representatives from WSMR. Five questions were asked concerning what the taxpayers might gain by holding this hearing and by removing the 24 units that were determined to pose no threat to human health or the environment. In addition, questions were asked about further investigations at WSMR, and how to expedite removing units that pose no threat to the public. WSMR responded that by removing these units, funding can be redirected to more practical and useful purposes. WSMR also stated that the facility is regulated by a RCRA/HWSA permit and under the permit it is required to continuously monitor the facility for potential threats to human health and the environment. In addition, WSMR indicated that by good communication and providing adequate evidence to the regulatory community, the process of requesting and receiving approval to remove units which pose no threat to human health and the environment can be streamlined.

NEXT STEPS

The final decision will be advertised and EPA will notify the applicant of each person on the public comment mailing list of the final decision. The final decision will become effective 30 days after the service of notice of the decision unless a later date is specified or review is requested under regulation 40 CFR 124.19. If no comments are received to request a change in the final determination, the decision to approve the application will become effective immediately upon issuance.

KEYWORDS:
soil; arsenic, barium, lead, mercury, cadmium, chromium, beta-BHC, 4,4'DDE, 4,4'DDT, total cyanide, methylene chloride, silver, benzo(a)pyrene; no further action.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VI
ID # 0518
NM5890110518

U.S. Department of Energy
Sandia National Laboratories
Albuquerque, New Mexico
(Signed December 31, 1995)

Facility/Unit Type:	**Research, development, and testing of nuclear weapons components and systems**
Contaminants:	**Diesel fuel, Mercury, Depleted uranium (DU), Waste fuel, and PCB oil**
Media:	**Soil**
Remedy:	**No further action**

FACILITY DESCRIPTION

RCRA authority was used to compel corrective action activities at the Sandia National Laboratories (SNL) facility which is located within the boundaries of Kirtland Air Force Base (KAFB) in Albuquerque, New Mexico. The facility occupies land owned by the Department of Energy (DOE), with an additional 14,920 acres of land provided by land-use permits with KAFB, the U.S. Forest Service, and the Isleta Indian Reservation. The site is on a high, arid mesa approximately five miles east of the Rio Grande river.

The primary mission of SNL is to provide engineering and testing support for nuclear weapon components and systems. It has been involved in nuclear weapons research, component development, assembly, testing, and other nuclear activities since 1945. SNL consists of five technical areas (TAs) and several test areas. Assembly of weapons ceased at the facility in the late 1940s, and since 1949, SNL has been dedicated to research, development, and testing. SNL currently employs approximately 8,400 people and KAFB employs approximately 21,000 people.

The current surrounding area land use is industrial. There is a population of approximately 650,000 people within a 50-mile radius of KAFB. There are approximately seven drinking water wells located on the KAFB property. The use of these wells is cycled on and off. There is also a large cluster of city-owned drinking water wells located just north of KAFB. The 13 no further action (NFA) sites listed below are of varying distances from these drinking water well. However, because the vadose zone throughout most of KABF is approximately 500 feet, soil rather than groundwater was the media of concern at these sites.

Sandia Corporation operated SNL, for DOE, from the time of its opening in 1945 until September 1993, when Martin Marietta Corporation took over operations.

SNL received a Corrective Action permit pursuant RCRA from EPA effective August 26, 1993. The permit requires the investigation of approximately 200 SWMUs. RCRA facility investigation (RFI) work plans for all of the SWMUs must be submitted within four years of the effective date of the permit. To date, SNL has submitted eight RFI work plans and is currently ahead of its permit schedule.

On September 28, 1994, DOE/SNL submitted a request to remove a total of 22 SWMUs from its corrective action permit. The 22 NFA site proposals were considered "administrative type" NFAs by SNL because they were not considered to have released hazardous wastes to the environment. The 22 SWMUs described in the proposal had not been included in previous RFI work plans. Most of the evidence presented consisted of interviews with DOE/SNL employees, and a review of historical records, maps, aerial photos, etc.

EXPOSURE PATHWAYS

Soil is the potential exposure pathway of concern. The nearest human receptors are the employees who work on the KAFB property. There

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	MCL Action Level (ppm)	MCL Cleanup Goal	Point of Compliance
Soil	Not applicable	Diesel fuel Mercury Depleted uranium Waste fuel PCB oil	Varies but all concentrations less than action levels	Not applicable	Not applicable	Not applicable

are no sensitive environments located in immediate proximity of the 13 NFA sites.

SELECTED REMEDY

EPA reviewed the proposal and determined that 13 of the 22 SWMUs required no further action based on historical records, aerial photographs, employee interviews, analytical data, and/or field surveys which show no or insignificant release(s) of hazardous wastes to the environment. The 13 NFA areas contained insignificant or nonexistent levels of contamination and no remedial action was performed. The remaining nine SWMUs either did not qualify for no further action, or will be the subject of further investigation.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public meeting was held by SNL on November 9, 1994 at the South Broadway Cultural Center, 1025 Broadway S.E., Albuquerque, NM. Nineteen people attended the meeting, including representatives of SNL, DOE and its contractors. On December 9, 1994, EPA received four written comments from the San Jose Community Awareness Council. The comments concerned SWMU 3, the chemical disposal pit; SWMU 43, the radioactive material storage yard; SWMU 135, the building 906 septic system; and SWMU 195, the experimental test pit. None of these SWMUs were approved for no further action.

EPA issued a Public Notice on July 10, 1995, which announced the beginning of a 45-day public comment period. No request was made for a public hearing, and no additional public comments were received.

NEXT STEPS

EPA will notify DOE/SNL and each person on the public comment mailing list of the final decision. The final decision will become effective thirty days after service of notice of the decision, unless a later date is specified or review is requested under 40 CFR 124.

KEYWORDS:
soil; diesel fuel, mercury, depleted uranium (DU), waste fuel, PCB oil, no further action

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U.S. DOE (Indian Creek)

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region VII
ID# (last 4 digits)

ABANDONED INDIAN CREEK OUTFALL SUBSITE
U. S. DOE, KANSAS CITY PLANT

Kansas City, Missouri
(signed December 20, 1990)

Facility/Unit Type: **Federal Facility**
Contaminants: **PCBs**
Media: **Sediments**
Remedy: **Excavation and disposal at off-site landfill**

FACILITY DESCRIPTION

The U. S. Department of Energy (DOE) conducted a Corrective Measures Study (CMS) and will submit a Corrective Measure Implementation (CMI) plan for the Abandoned Indian Creek Outfall (AICO) in accordance with the schedule of the Corrective Action Order. The selected corrective measure is consistent with the intent of §3008(h) of RCRA and the contaminant-specific requirements of §6(e) of the Toxic Substances Control Act and 40 CFR §761.60(d). The cleanup levels are consistent with the proposed Subpart S regulations.

The AICO subsite is located just south of the main DOE plant in Kansas City, Missouri. The outfall is a large pipe that discharged stormwater runoff from the DOE plant from the early 1960s to 1974. DOE used polychlorinated biphenyls (PCBs) in enclosed equipment systems such as transformers, capacitors, and heat transfer systems. Stormwater runoff transported PCBs from equipment leaks and spills through the outfall to Indian Creek sediments.

During the AICO operation, the stormwater was discharged directly into the surface water of the Indian Creek channel. The original channel has since been relocated as part of a flood control plan. Runoff from the site continues to enter Indian Creek which flows into the Blue River.

The AICO subsite is located in a 100-year floodplain and is subject to flooding and erosion. The water table is approximately 3-4 feet below grade in the proposed excavation area.

AICO is downgradient of other contaminated locations at the DOE facility that have documented releases of VOCs to ground water. DOE is conducting interim measures to recover the VOCs. If the interim measures are unsuccessful, VOCs could migrate to the AICO subsite, increasing the leaching of PCBs into the ground water.

EXPOSURE PATHWAYS

Exposure pathways considered in assessing threats to human health and safety and selecting the corrective measure were soil ingestion, inhalation, dermal contact, and ingestion of contaminated flora and fauna.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Volume Contaminated	Contaminant	Concentration*	Basis	Cleanup Goal**	Basis of Goal
soil	17,000 tons	PCB	at 1' 16.7 ppm at 4' 21.5 ppm at 6' 45.2 ppm at 9' 561.9 ppm at 11' 340.2 ppm at 14' 1756.2 ppm at 16' 346.3 ppm at 18' 670.6 ppm at 21' 51.4 ppm	above 10 ppm	10 ppm	Not provided

* Average concentration calculated from data provided in Table 1 , Soil PCB Results-Round 1, Borings 1-19.

** Cleanup goal based on "Development of Advisory Levels for Polychlorinated Biphenyls (PCBs) Cleanup" (OHEA-E-187, May 1968) and background document referenced in May 1986 PCB cleanup policy rule.

SELECTED REMEDY

The selected remedy entails excavation and removal of PCB-contaminated soil. Ground water will be pumped from dewatering wells into a holding tank to lower the water table in the excavation area. Soil contaminated with greater than 10 mg/kg of PCBs will be excavated (17,000 tons) and stabilized with fly ash (3,000 tons) to remove any free liquids. All non-liquid PCB-contaminated soils will be disposed of in an EPA-permitted chemical waste landfill. The excavation area will be backfilled and capped to prevent exposure and migration of residuals.

The remedy assures protection of human health and the environment by providing rapid cleanup, no significant release of contaminants to air or water from cleanup operations, and cleanup of PCBs to levels established as protective of human health and the environment in the PCB cleanup policy.

The total estimated costs associated with the selected remedy are $8,484,000 and the remedy will require 4 months to implement.

INNOVATIVE TECHNOLOGIES CONSIDERED

- Advanced chemical fixation
- Thermal desorption
- Dechlorination.

PUBLIC PARTICIPATION

EPA solicited public comments and announced a public hearing on July 22, 1990 in The Kansas City Star. EPA received two comments. At the public hearing, a commenter agreed with DOE's choice for remediation. A written comment recommended covering with soil in place based on a belief that PCBs have not been shown to cause ill effects in humans and animals, and that the proposed remedy is not a wise use of resources.

NEXT STEPS

EPA has elected not to modify the selected remedy as a result of public comments. Under the approved schedule of the §3008(h) Consent Order, DOE will submit a CMI work plan for review and approval by November 1, 1991.

KEY WORDS

sediment; soil; ingestion; inhalation; dermal contact; PCBs; VOCs; excavation; off-site disposal; filling.

CONTACT

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VII
ID # 3594

Monsanto Agricultural Company
Muscatine, Iowa
(Signed July 21, 1995)

Facility/Unit Type: Manufacturer of agricultural materials
Contaminants: Chlorobenzene and Diallate
Media: Groundwater
Remedy: Extract contaminated groundwater by using an on-site recovery well system, and treat extracted water with activated carbon

FACILITY DESCRIPTION

In 1980, Monsanto notified EPA of its hazardous waste activities and submitted Part A of its hazardous waste permit application. In 1987, EPA completed a study that determined that soil and groundwater contamination were present at the facility and that further investigation and study were required. In 1988, Monsanto submitted Part B of its permit application, and in 1989 Monsanto and EPA signed a consent agreement, pursuant to RCRA Section §3008(h), which required Monsanto to investigate the soil and groundwater contamination at the facility. Monsanto conducted a RCRA Facility Investigation (RFI) in 1990 and a Corrective Measures Study (CMS) in 1991.

The facility began operations in 1961 for storage of ammonia fertilizer. Production of ammonia began in 1962. Production of the herbicide randox began in 1964 and continued until 1967. The manufacture of propachlor, alachlor, butachlor, and acetochlor began in 1965, 1967, 1970, and 1992, respectively, and continues at the facility today. The facility began manufacturing acrylonitrile-butadiene-styrene (ABS) plastic in 1976.

The Monsanto facility comprises approximately 474 acres along the Mississippi River in Muscatine County, Iowa. The Mississippi River is directly to the east of the facility, and Spring Lake is located several hundred feet to the south. The manufacturing facility consists of approximately 160 acres, which is enclosed by chain-link fencing. Surrounding land use is primarily agricultural (rural), with some industry to the north of the facility. The population of the area is approximately 23,280.

There is an alluvial aquifer with a saturated thickness of about 130 feet across most of the site. Hydraulic conductivity values are highly variable both horizontally and vertically within the alluvial aquifer. Groundwater flow conditions beneath the Monsanto plant are primarily determined by the continuous by Monsanto production wells. The city of Muscatine obtains its drinking water from the alluvial aquifer. The city operates 3 well fields located north of the facility. These 3 wells produce approximately 8.1 billion gallons of drinking water per year. The alluvial aquifer is also used extensively for irrigation purposes. Approximately 3.8 billion gallons per year are utilized for this purpose.

Two plumes of groundwater contamination have been identified: a chlorobenzene plume centered beneath the area of the Lasso "Tech Plant," and a diallate plume centered beneath the areas of the "Liquid Formulation" warehouse. Some residual chlorobenzene and diallate contamination has also been found in the soil at these locations. No off-site contamination has been identified. Pursuant to the consent agreement, Monsanto has implemented interim measures that include monitoring plume migration, and extracting and treating contaminated groundwater.

EXPOSURE PATHWAYS

Groundwater is the primary medium that has been contaminated at the facility. Groundwater contamination is the result of releases from material handling areas, such as loading/unloading areas, where materials spilled onto the ground. Because the

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal	Point of Compliance
Groundwater	Not Given	Chlorobenzene Diallate	21,116 5,500	Not Given	100 98	Not Given

soil at the facility is porous and highly transmissive, rain has carried such spilled materials from the soil into the groundwater. Improvements to the loading areas have reduced or eliminated releases to the soil. Groundwater monitoring has indicated that the contaminant plumes have not migrated beyond the facility boundary.

SELECTED REMEDY

The selected remedy for remediation of the site will address elevated concentrations of chlorobenzene and diallate in the groundwater. The remedy requires that the facility:

- Pump a minimum of 5.5 million gallons of groundwater per day from beneath the facility. Approximately ten production wells will be used to maintain the contaminant plumes beneath the facility. Some of this pumped groundwater will be used for non-contact cooling water and discharged to the Mississippi River without treatment under a National Pollutant Discharge Elimination System (NPDES) permit. The other pumped groundwater will be used as process water and will be biologically treated before it is discharged to the Mississippi River;
- Extract contaminated groundwater from the plumes using four extraction wells. (This system is separate from, and withdraws groundwater in addition to, the water withdrawn by the pumping system);
- Treat the extracted groundwater in an on-site, liquid phase, activated carbon adsorption system;
- Pump the treated water to the facility water distribution system for use as cooling water, after which it will be discharged to the Mississippi River under the facility's NPDES permit; and
- Perform groundwater monitoring.

The total cost of the selected remedy is estimated to be nearly $2.3 million.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public comment period was held from March 16, to May 15, 1996. No comments were received.

NEXT STEPS

EPA will continue to monitor the progress and effectiveness of the remedy by reviewing monitoring reports and conducting periodic on-site inspections of the remedial system.

KEYWORDS:
groundwater; VOCs, chlorobenzene, diallate; extraction, carbon adsorption, monitoring, on-site treatment, on-site discharge

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VII
ID # 2836
IAD 045 372 836

Quantum Chemical Company
Clinton, Iowa
(Signed September 29, 1994)

Facility/Unit Type: Polyethylene manufacturer
Contaminants: VOCs, PAHs, CPAHs
Media: Groundwater, Soil
Remedy: Cap contaminated areas, install run-on and run-off controls, modify the wastewater treatment system, contain contaminated groundwater on-site, treat extracted groundwater on-site, and monitor groundwater

FACILITY DESCRIPTION

Remedial action at the Quantum facility is being implemented through a series of actions taken by EPA pursuant to the Comprehensive Environmental Release, Compensation and Liability Act (CERCLA), RCRA §3008(h) for investigations and studies during interim status, and RCRA Section §3004(u) for remedy selection and implementation in the final permit. EPA completed a RCRA Facility Assessment (RFA) in December 1989 and identified 21 solid waste management units (SWMUs) and areas of concern (AOCs) at the facility. Under CERCLA, releases of hazardous substances are being addressed by two operable unit (OU) activities. The first OU addresses groundwater, and the second addresses soil and waste in 11 of the 21 SWMUs. Under RCRA Section §3004(u), Quantum's final RCRA hazardous waste management permit will remediate contaminated soil and wastes in the ten SWMUs not addressed under CERCLA.

EPA required that a Corrective Measures Study (CMS) be conducted on the area north of the bulk oil tanks, including the "Cold Lime Ponds" (a part of the wastewater treatment system) and the combined areas of the current wastepile and a former landfarm. The CMS determined that volatile organic compounds (VOCs), including benzene, toluene, and ethyl benzene, occur in the groundwater at elevated levels, and that polynuclear aromatic hydrocarbons (PAHs), including carcinogenic PAHs (CPAHs), occur at high concentrations in the soil.

Specifically, benzene was detected in the overburden and bedrock groundwater at the site. In the overburden, benzene has been detected at: 1) the former landfill area; 2) just east of the former landfill area; 3) the southwest corner of the plant [debutanized aromatic concentrate (DAC) tank area, polishing basin area]; and 4) the south-central portion of the plant (railcar loading area). The distribution of benzene in the southern portion of the site trends to the south-southwest, following groundwater flow. The groundwater in the bedrock along the western side of the plant (under the landfill area) also showed the presence of benzene. This distribution of benzene in the bedrock groundwater extends into the DAC spill area and polishing basin area, is more widespread, and at higher concentrations than the benzene distribution in the overburden groundwater.

PCE is present in the overburden in an area extending from the southwest corner of the ethylene production area to west of the former landfill, and just north of the ethylene tank. In the bedrock groundwater, the distribution of PCE is more widespread than in the overburden and encompasses much of the site.

PCE concentrations in groundwater greater than one percent of the solubility in water (greater than 1,500 μg/L) may indicate the presence of dense nonaqueous phase liquids (DNAPL). One such potential DNAPL area is in the overburden south of the fire training area. In bedrock, DNAPL is suspected along the western edge of the site (extending from the southwest corner of the ethylene production area, southwest across the former landfill, to just east of the DAC spill area) and in the

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	MCL Action Level (ppb)	MCL Cleanup Goal (ppb)	Point of Compliance
soil and groundwater	Not given	VOC Benzene Total PAHs Total CPAHs	5 3200 20	Not given	Not given	Not given

*NA = Not Applicable

southeast portion of the site possibly emanating from the production area.

PAH compounds were detected in groundwater in both the overburden and the bedrock. Three primary PAH-affected areas are the former landfill, south area (DAC storage/truck loading area), and the polishing basin. Light nonaqueous phase liquid (LNAPL) has been found in monitoring wells in and around the landfill area, the DAC loading area, and south of the polishing basin.

The Quantum facility is located approximately 1.5 miles northwest of Camanche, Iowa and 5.5 miles west of Clinton, Iowa in Clinton County, Iowa, and has been in operation since 1967. The approximately 630-acre facility includes the high-density and low-density polyethylene manufacturing plant operated by Quantum as well as surrounding agricultural fields. The plant itself is located on 237 acres of land enclosed by a security fence. It consists of several production areas, a wastewater treatment plant, a former landfill area, and various chemical and product storage tanks and loading areas. An anhydrous ammonia plant, owned by the Arcadian Corporation, is located to the southeast, adjacent to the Quantum facility.

The plant and the land on which it is located are owned by the City of Clinton. Initially, the City leased the land to ACC Chemical Company and Getty Chemical Company (GCC), which operated the plant until 1984. Quantum currently leases the plant and the property from the City, excluding a seven-acre landfill on the western portion of the facility. ACC/GCC retain their leasehold interest in that landfill.

Surface topography around the site is generally gradually sloping with several unlined rainwater retention ponds on the west side and manmade channels throughout the site to accommodate surface drainage. There are two small tributaries to the east and the west of the plant, where the surface topography is steepest. The west tributary carries most of the surface drainage away from the plant, although surface runoff from the northeast and some of the eastern areas of the plant drain into the east tributary. Southwest of the plant is a low-lying area that floods during periods of moderate to heavy precipitation.

Groundwater at the site occurs in both the unconsolidated surface deposits and the underlying carbonate bedrock. The groundwater table is, for the most part, in the overburden and is typically found at depths between 2 and 10 feet below ground surface. Groundwater flow in the overburden is believed to be most pronounced within the local sand and gravel unit, southwest of the plant. In general, groundwater flows from the north to the south of the plant with increasing gradients in the southwest and southeast areas near the tributaries. The basal sand and gravel unit in the southwestern portion of the site, overlies highly weathered bedrock and seems to be a prominent flow path for groundwater and soluble groundwater-damaging compounds.

EXPOSURE PATHWAYS

The potential exposure pathways for the contaminated soil are via direct dermal exposure and indirect exposure through migration of contaminants into groundwater. The potential exposure pathways for contaminated groundwater are ingestion and dermal contact.

SELECTED REMEDY

The selected remedy integrates two CERCLA consent decrees (OU#1 for groundwater and OU#2 for soils) with additional actions taken as the result of the RFI and CMS completed pursuant to a RCRA §3008(h) consent order. The RCRA corrective measures are being implemented as part of the RCRA hazardous waste permit issued for a container storage unit.

The CERCLA OU#1 remedy contains contaminated groundwater on-site by installing a series of extraction wells at the perimeter of the facility. Extracted groundwater will be treated in an on-site wastewater treatment plant. Treated groundwater will be discharged under an existing National Pollutant Discharge Elimination System (NPDES) permit to the Mississippi River. The CERCLA OU#2 remedy includes Soil Vapor Extraction (SVE) at the former landfill, and capping and other access restrictions in other former land disposal units (i.e., landfarms and surface impoundments).

The RCRA Corrective Measures being implemented include the following:

- Cap the former landfarm, where sludge from the wastewater treatment plant was managed prior to its disposal off-site. The cap will prevent residual contaminants from being released as contaminated dirt/dust;

- Construct a berm around the sludge pile to prevent run-on and run-off of rainwater and/or liquids. This will prevent the release of contaminants to nearby surface waters; and

- Continue to modify and evaluate process changes to the wastewater treatment system in order to reduce the amount of hazardous constituents in the sludge.

The cost of the selected remedy is estimated at approximately $140,000 capital and $11,000 operations and maintenance (O&M).

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Remedy selection was part of the initial RCRA Permit for storage. A public comment period was held from August 8 to September 21, 1994. No comments were received.

NEXT STEPS

EPA will monitor the progress and effectiveness of the remedy by reviewing monitoring reports and conducting periodic on-site inspections of the remedial system.

KEYWORDS:
soil, groundwater; direct contact, dermal contact, ingestion; organic, VOCs, PAHs, CPAHs; capping, containment, extraction, monitoring, on-site treatment, on-site discharge

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Kansas City, KS 66101

RV 11
Safety Kleen NE
in WP

August 24, 1998

Mr. Mike Fitzpatrick
EPA Work Assignment Manager
U.S. Environmental Protection Agency
401 M Street, S.W.
Mail Code 5303W
Washington DC 20460

RE: EPA Contract No. 68-W7-001
Work Assignment No. 9, Task 02
Final Statement of Basis Summary for Safety-Kleen, Nebraska

Dear Mr. Fitzpatrick:

Enclosed please find the Final Statement of Basis summary for the Safety-Kleen facility in Nebraska. The draft Safety-Kleen Statement of Basis summary was revised based on the information contained in the August 7, 1998 memorandum from Region 7 to yourself and the handwritten comments on the draft summary that were attached to it. You provided the memorandum and its attachment to HAZMED on August 14, 1998.

In its December 2, 1997 deliverable of the draft summary, HAZMED included a summary cover sheet which contained a description of the additional information that HAZMED needed to prepare the final summary. The majority of the information was provided in the August 7, 1998 memorandum from Region 7 to the EPA WAM. However, the memorandum did not address HAZMED's request for clarification as to which term, "facility" or "site" should be used in the summary. But, since the handwritten comments on the draft did not substitute "site" for "facility", HAZMED has retained the term "facility" in the final summary.

All revisions to the draft have bolded and bracketed, per your request, to ease their review. If you have any questions please feel free to contact me at 301-577-9339.

Sincerely,

Sue Tripp
Work Assignment Manager

Enclosure
cc: Joseph Waddell (w/o enclosure)
Wendel Miser (w/o enclosure)

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VII
ID# NED00687186

Safety-Kleen Corporation

Grand Island, Nebraska
(Signature Date: August 19, 1994)

Facility/Unit Type:	**Service Center Collection Facility**
Contaminants:	**1,2 Dichlorobenzene (1,2-DCB), 1,4 Dichlorobenzene (1,4-DCB), Ethylbenzene (EB), Tetrachloroethene (PCE), Mineral Spirits (MS), Toluene, Xylenes**
Media:	**Air, Soil, and Groundwater**
Remedy:	**Remediate the contaminated soil by monitored natural attenuation and implement a system of groundwater monitoring wells to detect the spread of contaminants from soil to groundwater**

FACILITY DESCRIPTION

The Safety-Kleen Corporation (SK) facility is located on ~~at~~ Elk Drive, Grand Island, Nebraska. It is located in an agricultural and industrial area bordered on the north by a truck rental firm, on the south by a trucking and transportation company, on the west by agricultural land, and on the east by a trucking company. The facility's location contains both paved and unpaved areas. There are no permanent surface water bodies in the immediate area of the facility. Groundwater within the vicinity of the facility is used as a source of water to private wells.

The facility is located in the floodplain, between the north and south channels of the Platte River. The topography is virtually flat and the facility is underlain by alluvial sediments consisting of silt, sand, and gravels.

The bedrock underlying the alluvial material is composed of Tertiary Age siltstones and sandstones of the Ogallala Group. The bedrock is thought to be over 100 feet below grade. Groundwater in the alluvium is normally encountered about 10 feet below the ground surface. The groundwater flows northeast at a velocity of about 2.5 feet per day.

SK operated the facility as a branch service center from 1979 to 1992 until it closed and moved to a new location. SK leased the facility from Delbert Trickle. Prior use of the facility is unknown, but it is assumed to be agricultural. The SK facility was a collection center for three types of wastes: parts cleaners and immersion cleaners; dry cleaner filters and solvents; and paint solvents.

Used mineral spirits made up the majority of the waste handled at the facility and were stored in a 12,000-gallon

underground storage tank (UST). There was one additional 12,000-gallon UST for mineral spirit product and one additional 1,200-gallon tank used to store mineral spirit sludge. These tanks were decontaminated and removed by August 1993. Other areas of the service center were also decontaminated including the drum storage area, the return and fill station, and the flammable materials storage units.

On August 19, 1994, the U. S. Environmental Protection Agency (EPA) and SK signed a consent order under section 3008(h) of the Resource Conservation and Recovery Act (RCRA). The consent order outlined the activities that SK needed to take to define the nature and extent of contamination within and beyond the facility boundary and to identify potential exposure risks to human health and the environment.

SK's first step was to submit a workplan for determining the extent of soil and groundwater contamination. EPA approved the workplan on August 3, 1995, and as work progressed, several modifications were made to improve sampling techniques.

The investigation included a review of information gathered during previous closure activities. During the 1990 closure activities, 16 soil samples were submitted for analysis for the presence of total petroleum hydrocarbons (TPH), an indication of mineral spirits contamination; volatile organic compounds (VOCs); cadmium, chromium, and lead. Based on the results of these analyses, contaminants of concern were identified.

As a component of the closure activities in the source area in 1990, soil gas analysis was performed. The soil was left in place, untreated. When the analysis was repeated in 1995, the levels of contamination had decreased, indicating that some form of natural attenuation was taking place. Most likely volatilization and dilution of the contaminants was occurring in the unsaturated zone.

Second, SK submitted a RCRA Facility Investigation (RFI) report that summarized the investigative findings, which EPA approved on September 30, 1996. SK amended the RFI report on January 10, 1997, by adding a risk assessment. Third, a Corrective Measures Study workplan identified potential remedies and methods that would be applicable. EPA approved the Corrective Measures Study (CMS) report on April 17, 1997. It evaluated the potential remedies for facility cleanup.

SK evaluated technologies for treating groundwater and soil under the consent agreement. To assure that contaminants did not migrate into groundwater, EPA required SK to install a monitoring well system. Low levels of mineral spirits (MS), 1,2-DCB, 1,4-DCB, and xylenes were detected from three monitoring wells at the facility in 1990. ~~However, there have been six sampling evaluations since October 1990 and no contaminants have since been discovered.~~

EXPOSURE PATHWAYS

The potential exposure pathways for human health and the environment are primarily through soil and soil gas. Volatile organic compounds (VOCs) in soil gas could be released and contaminate outdoor and indoor air. Potential releases, ingestion, and dermal contact with subsurface soil

could occur from digging during construction.

A risk assessment which assumed soil contaminants could potentially migrate to groundwater, revealed that groundwater could be a potential exposure pathway to the environment as well. The constituents of concern that had been detected in ~~the groundwater~~ in two source area wells in 1990 and 1995 were ~~are~~ MS, 1,2-DCB, 1,4,-DCB, and xylenes.

~~There were, however, low levels of soil contaminants that could potentially transfer into groundwater. Groundwater has been monitored on the facility since October 1990.~~

The risk assessment showed that there are no current risks from either soil or groundwater. Soil gas contaminant levels decreased from 1990 to 1995. Contamination was detected in two source area wells in 1990 and 1995. But, no trace of contamination has been detected in the groundwater for the last three years, since October 1995. The contaminants in the soil and groundwater are believed to have naturally attenuated.

SELECTED REMEDY

The proposed corrective action alternatives included soil vapor extraction (SVE), excavation, and monitored natural attenuation for removal of contaminants in the soil.

The SVE remedy involved the following:

- Installation of wells in the unsaturated soil above the groundwater table. The wells would be connected with piping to create a vacuum. The vacuum would pull contaminated vapors from the soil through carbon filters and then release the clean air into the atmosphere.

- The contaminated carbon filters would be reclaimed by a permitted recycler. This remedy would continue until levels of contaminants in the soil can no longer affect groundwater.

Excavation involved:

- Digging up contaminated soil and disposing of it at an approved facility. Soil sampling and analysis would be required to ensure the removal of all contamination. No additional groundwater monitoring would be required.

Monitored natural attenuation involved:

- Reducing contamination by natural biological and/or chemical degradation, dilution, adsorption, volatilization, and dispersion. Groundwater monitoring would be required to ensure no contaminant migration.

- If contamination from the facility migrates to the groundwater during the monitoring period, SK would be required to submit a revised risk assessment and CMS study for EPA approval.

EPA based its selection of the remedy to be used in cleaning up the facility by using a ratings matrix. Each alternative was evaluated for several factors including short-term effectiveness, long-term

reliability, reduction of contaminants, and cost, to derive a numeric score. The alternative with the best overall score was chosen as the remedy. EPA evaluated the proposed corrective measure alternatives and selected monitored natural attenuation for remediation of the contaminated soil.

EPA will continue to monitor the natural attenuation of contaminants by reviewing laboratory analyses, progress reports, and conducting occasional inspections at the facility on a quarterly basis through 1999. Assuming that no groundwater contamination exceeding the MCLs is detected, the EPA will consider that facility soils no longer pose any risk to the environment and all monitoring wells will be removed. No further corrective action will be required.

The estimated cost for implementing this procedure is $45,000 including capital, operation, and maintenance of the necessary equipment.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (yd^3)	Contaminant	Maximum Concentration (mg/kg)	MCL Action Level (mg/kg)	MCL Cleanup Goal (mg/kg)	Point of Compliance
Soil	1047	Mineral Spirits 1,2 Dichloro-benzene 1,4 Dichloro-benzene Ethylbenzene Tetracholoro-ethene Toluene Xylenes	6200 8.6 3.4 0.69 0.033 0.033 13	Not applicable to soil	Not applicable to soil	Background levels

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (yd^3)	Contaminant	Maximum Concentration (mg/kg)	MCL Action Level (mg/kg)	MCL Cleanup Goal (mg/kg)	Point of Compliance
Groundwater	*	Mineral Spirits 1,2-DCB 1,4-DCB 1,2-DCE Toluene Xylenes	0.96 0.019 0.007 0.013 0.0154 0.056	Not applicable 0.6 0.075 * 1.0 10.0	Not applicable, as groundwater contaminants have not been detected since 1995 ~~1990~~. The groundwater will continue to be monitored through 1999. If contaminants are not detected, EPA will remove all monitoring wells.	~~Maintain background levels~~ Formal point of compliance, as defined in 40 CFR 264.95, was not established. If contaminants are found above their respective MCLs, additional corrective actions will be evaluated.

* Information not provided.

** Information regarding groundwater contaminants was reported at levels of 0.005 mg/l and above. Levels below 0.005 mg/l could not be determined and were reported as non-detected (ND). Samples were taken from several monitoring wells and the maximum concentrations found are reported. All contaminants were not present in all wells, therefore, the presence or absence of a contaminant varied among the wells that were sampled. No contaminants have been detected since October 1995.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA conducted a formal public comment period on all corrective measures considered from June 17, 1997, to August 1, 1997.

EPA's response to comments will be placed in the administrative record when it is completed.

NEXT STEPS

EPA is preparing a Final Decision Document which will reflect any other information obtained and EPA's responses to public comments.

KEY WORDS:

soil, groundwater; inhalation, ingestion, dermal contact; 1,1-DCB, 1,2-DCB, xylene, toluene, mineral spirits, ethylbenzene, tetrachloroethene; soil vapor extraction, excavation, monitored natural attenuation.

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Seagate
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WORKING DRAFT

TECHNICAL REPORT ABSTRACT
EPA CONTRACT No. 68-W7-0001
WORK ASSIGNMENT No. 9; TASK 02

Report Title:	Final Seagate Technology Incorporated Corrective Action Statement of Basis Summary
Report Date:	December 1, 1997
Prime Contractor:	Hazardous and Medical Waste Services, Inc.
Project Officer:	Wendel Miser
Project Officer Address:	Crystal Station; 2800 Crystal Drive; Arlington, VA 22202
Program Office:	Office of Solid Waste
No. of Pages in Report:	6

Does this Report Contain Confidential Business Information?
Yes ___ **No** X

ABSTRACT

This project involved the revision of a draft Corrective Action Statement of Basis Summary in accordance with comments made and additional information provided by the EPA Region. The template format supplied by EPA for this work assignment was used in preparing the draft and the revision. The Seagate Technology facility in Omaha, Nebraska, produced computer disks and disk assemblies. Several chemical contaminants were released from the facility and migrated to underlying groundwater. Seagate Technology facility performed a RCRA Facility Investigation (RFI) to define the nature and extent of contamination and to identify potential exposure risks to the environment and human health. EPA evaluated the corrective measures alternatives and selected soil vapor extraction, groundwater pumping and treatment, and monitored natural attenuation as the remedies.

KEY WORDS:
soil, groundwater; inhalation, ingestion, dermal contact; chloroethane, 1,1-DCA, 1,2-DCA, 1,1-DCE, 1,1,1-TCA, methylene chloride, Freon 113, vinyl chloride, mercury, chromium, acetone, methyl chloride, 1,1,2 TCA, TCE; soil vapor extraction, groundwater pumping and treatment, and monitored natural attenuation.

STATEMENT OF BASIS/ FINAL DECISION AND RESPONSE TO COMMENTS
SUMMARY COVER SHEET

FACILITY: SEAGATE TECHNOLOGY INCORPORATED
Omaha, Nebraska
ID# NED072901945

The following information was updated on the final Statement of Basis:

- FACILITY IDENTIFICATION
  - ID#
  - Signature Date

- CONTAMINATION AND CLEANUP GOALS
  - Estimated Volumes
  - MCL Action Levels
  - Points of Compliance

- REMEDY
  - Monitored Natual Attenuation Was Added

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VII
ID# NED072901945

Seagate Technology Incorporated

Omaha, Nebraska

(Signature Date: December 29, 1989)

Facility/Unit Type:	**Manufacturer of computer disks and assemblies**
Contaminants:	**Acetone, 1,1 Dichloroethane (1,1-DCA), 1,2 Dichloroethane (1,2-DCA), 1,1 Dichloroethene (1,1-DCE), Methyl Chloride, Methylene Chloride, 1,1,1 Trichloroethane (1,1,1-TCA), Chromium, Mercury, Chloroethane, Chloroform, 1,1,2 Trichloroethane (1,1,2-TCA), Trichlorotrifluoroethane (Freon 113), Trichlorethylene (TCE), Xylenes, Isopropanol, Cyclohexanone, Vinyl Chloride, Hexavalent Chromium, and 2-Butanone**
Media:	**Air, Soil, and Groundwater**
Remedy:	**Remediate the contaminated soil by Soil Vapor Extraction (SVE), implement a groundwater pumping and treatment system for contaminated groundwater, and rely on monitored natural attenuation in groundwater.**

FACILITY DESCRIPTION

The Seagate Technology facility is located at 11615 I Street, Omaha, Nebraska, in a commercial and industrial area; the nearest residential areas are approximately 1/4 mile NW and SW of the former manufacturing plant. The facility is located near two shallow groundwater plumes which drain into a deep sand aquifer near Hell Creek. The deep sand aquifer is previously untapped as a source of drinking water. Hell Creek has residential areas located downstream and is home to various forms of aquatic life.

Control Data Corporation (CDC), a manufacturer of computer disks and disk assemblies, originally owned and operated the Seagate Technology facility. CDC and its subsidiary, Imprisis Technology, operated the plant until 1989, when Seagate Technology Incorporated took over ownership of the facility and continued operations until 1992. The King of Kings Lutheran Church acquired the property in 1993 and all manufacturing ceased. A number of chemical spills and leaks have occurred at the facility over a 24-year operation period, including contamination from seven underground storage tank leaks, leakage and runoff from a soakage and containment pit, and a spill of 3,400 gallons of 1,1,1, trichlorethylene (1,1,1-TCE).

On December 29, 1989, the U. S. Environmental Protection Agency (EPA) and Imprisis Technology signed a consent order under the Resource Conservation and Recovery Act (RCRA). The consent order outlined the activities Imprisis must take to define the nature and extent of contamination and to identify

potential exposure risks to human health and the environment. Imprisis' first step was to develop a Description of Current Conditions Report to summarize the status of the facility. This Report was completed in February 1990. Second, Imprisis developed a workplan for evaluating soil and groundwater contaminants which EPA approved in March 1991. The workplan has been amended on several occasions, with the final amendment dated December 1991. Third, a RCRA Facility Investigation report that summarized the investigative findings was approved in September 1995 and amended in September 1996. Fourth, a Corrective Measures Study workplan laid out potential remedies and methods that would be applicable to this site. EPA approved it in December 1995. Finally, the Corrective Measures Study report, approved in May 1996, evaluated the potential remedies for site cleanup.

Seagate Technology began evaluating and implementing technologies for treating groundwater and soil under the consent agreement. Groundwater pumping and treatment began in 1990 and Seagate Technology expanded the extraction well system as the investigation progressed. A short term Soil Vapor Extraction (SVE) test was conducted in 1990, but the results were inconclusive, so a long term test was implemented in 1994. The test revealed that SVE was an effective method of removing volatile organic compounds (VOCs) from the soil. The SVE system was expanded and continues to operate.

EXPOSURE PATHWAYS

The potential exposure pathways for human health and the environment are primarily through soil and soil gas. VOCs in soil gas could be released and contaminate outdoor and indoor air. Potential releases could occur during construction.

A risk assessment which assumed that the facility site may be developed for future residential use, even though no plans currently exist to do so, revealed that groundwater could be a potential exposure pathway. This could occur if the local groundwater and deep sand aquifer were developed for industrial or municipal use. The constituents of concern in the groundwater are 1,1 dichloroethene (1,1-DCE), 1,1,1 trichloroethane (1,1,1-TCA), acetone, 2-butanone, freon 113, and chromium.

SELECTED REMEDY

The proposed selected remedies include SVE and groundwater extraction and treatment for removal of contaminants in the groundwater. These remedies are the same as those that were initially evaluated and used on an interim basis; the SVE system has been expanded. The remedies will also rely on natural attenuation of the contaminants in the groundwater.

The SVE remedy involves the following:

- Installation of wells above the groundwater table in unsaturated soil. The wells are connected with piping so a vacuum can be created. The vacuum pulls contaminated vapors from the soil through carbon filters and then releases the clean air back into the atmosphere.

- The contaminated carbon filters will be reclaimed by a permitted recycler. This remedy will continue until levels of contaminants in the soil can no longer affect groundwater.

Groundwater extraction and treatment involves:

- Installation of new extraction wells and/or use of existing wells that are placed below water level. Interim measures will remain in place until a

system is devised that can operate continuously.

- Discharge of treated groundwater into Omaha's sanitary sewer systems. Seagate Technology will obtain a permit for discharge to the city's sewer system and monitor this discharge to ensure that contaminants levels do not exceed Omaha's requirements. If the contaminants exceed the city's limitations, Seagate Technology will divert contaminated groundwater to an on-site air stripping system. In addition, extraction techniques should also be applied to the deep sand aquifer, even though it is not being used for drinking water purposes, as it was a viable source of drinking water before contamination and should be returned to its natural state.

- Monitored natural attenuation. The contamination will be reduced by natural biological and/or chemical degradation, dilution, adsorption, volatization, and dispersion. Groundwater monitoring will ensure contaminant migration does not occur.

EPA based its selection of the remedies to be used in cleaning up the site by using a ratings matrix. Each remedy alternative was evaluated for several factors, including short-term effectiveness, long-term reliability, reduction of contaminants and cost, and a numeric score derived. The remedies with the best overall score were chosen.

EPA evaluated the corrective measures alternatives proposed and selected both remedies. EPA will continue to monitor the progress of the corrective actions by reviewing laboratory analyses and progress reports, and conducting occasional on-site inspections. The estimated cost for implementing these procedures, including capital, operation, and maintenance of the necessary equipment, is $8.5 million, over 30 years.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminants of Concern	Maximum Concentration (ppm)	MCL Action Level (ppm)	Ground-water Protection Standards (mg/kg)	Point of Compliance
Soil	Estimated volume of contami-nated soil is approxi-mately 13,000 yd^3	1,1-DCA 1,2-DCA 1,1-DCE Methylene chloride 1,1,1-TCA Freon 113	3.9 0.033 4.0 3.1 63 1.5	No MCL action levels have been estab-lished for soil	10.24 0.061 0.184 0.06 5.8 27,144	Not established for soil. Goal is to treat entire area of soil contami-nation.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminants of Concern	Maximum Concentration (ppm)	MCL Action Level (ppm)	Ground-water Protection Standards (mg/kg)	Point of Compliance
Shallow Ground-water Main Plume/ Hell Creek Plume	Estimated volume of water is 63,200,000 gallons	Acetone	850	*	*	Existing limits of groundwater plume
		Chloroethane	0.85	*	*	
		Chloroform	0.395	*	*	
		1,1-DCA	4.6	*	2.54 (12.8)**	
		1,2-DCA	0.058	*	0.018 (0.092)	
		1,1-DCE	62	*	0.025 (0.128)	
		TCE	0.039	*	*	
		Methylene chloride	340	*	0.018 (0.092)	
		1,1,2-TCA	0.046	*	*	
		1,1,1-TCA	190	*	0.72 (3.66)	
		Isopropanol	32	*	*	
		Xylenes	0.635	*	*	
		Cyclo-hexanone	85	*	*	
		Freon 113	20	*	756 (3,843)	
		Chromium	4.3	*	*	
		Mercury	0.0012	*	*	
		Hexavalent chromium	0.53	*	*	
		Vinyl chloride	*	*	0.007 (0.037)	
Surface water and sediment in Hell Creek	unknown	Acetone	8.3	*	*	
		2-Butanone	4	*	*	
		1,1-DCE	0.063	*	*	
		1,1-TCA	0.31	*	*	
		Freon 113	0.057	*	*	

* Information was not available at the time the Statement of Basis summary was prepared.

** The groundwater protection standard for the shallow groundwater Main Plume is provided first, followed by the standard for the Hell Creek Plume enclosed in parentheses.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminants of Concern	Maximum Concentration (ppm)	MCL Action Level (ppm)	MCL Cleanup Goal** (mg/l)	Point of Compliance
Deep Ground-water	Estimated volume of water is 51,000,000 gallons	1,1-DCA	0.071	*	0.7 (ACL)	Existing limits of groundwater plume
		1,1-DCE	0.063	*	0.007 (MCL)	
		Methylene chloride	0.00555	*	0.005 (MCL)	
		1,1,1-TCA	0.12	*	0.2 (MCL)	
		Freon 113	0.0084	*	210 (ACL)	
		Chromium	0.00042	*	*	
		Mercury	0.00345	*	*	
		Vinyl chloride	0.0034	*	0.002 (MCL)	

* Information was not provided at the time the Statement of Basis summary was prepared.

**The levels set for deep groundwater are based on MCLs for those chemicals where an MCL has been developed and alternate concentration limits (ACLs) for chemicals without MCLs. ACLs are risked based calculations that provide protection within acceptable health ranges.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA conducted a formal public comment period on all corrective measures considered from February 21, 1997, to April 7, 1997.

The response to comments document will be placed in the administrative record when it is completed.

NEXT STEPS

EPA is preparing a Final Decision Document which will reflect any other information obtained and EPA's responses to public comments.

KEY WORDS:
soil, groundwater; inhalation, ingestion, dermal contact; chloroethane, 1,1-DCA, 1,2-DCA, 1,1-DCE, 1,1,1-TCA, methylene chloride, freon 113, vinyl chloride, mercury, chromium, acetone, methyl chloride, 1,1,2 TCA, TCE; soil vapor extraction, groundwater pumping and treatment; monitored natural attenuation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VII
ID# 0524

U. S. Department of Energy
Kansas City Plant
Tank Farm Area
Kansas City, MO
(Signed July 15,1992)

Facility/Unit Type:	**Waste storage tank farm**
Contaminants:	***Trichloroethene (TCE), 1,2-Dichloroethene (1,2-DCE), Vinyl chloride***
Media:	**Ground water, soil**
Remedy:	**Ultraviolet-ozone liquid phase treatment of ground water**

FACILITY DESCRIPTION

On June 23, 1989, EPA and the U. S. Department of Energy (DOE) entered into a consent order agreement pursuant to 3008(h) of RCRA. EPA and the Missouri Department of Natural Resources (MDNR) reviewed and approved DOE's Tank Farm Interceptor System Evaluation and Treatment Unit Corrective Action Plan and the Facility Screening of Corrective Measures Technologies for the Tank Farm area.

On October 1, 1990 and February 22, 1991, respectively, EPA approved DOE's Ground Water Treatment Interim Measures Plans which satisified the requirements of a Corrective Measure Implementation Plan (CMIP). The Ground Water Assessment Plan for the Tank Farm area approved on March 1, 1990, also met the requirements of a CMIP.

The DOE facility is part of the Bannister Federal Complex and occupies about 122.5 acres of the 300-acre complex. The Tank Farm, installed in 1943, consists of 28 underground storage tanks that housed various solvents, fuels, and coolants which were pumped from unloading stations to the tanks through hoses. The Tank Farm operated as an interim status waste storage area. In 1987, all of the tanks and most of the contaminated soil around and beneath the tanks were removed. This work was conducted under an approved MDNR closure plan. A small portion of contaminated soil remains on site and will be regulated by MDNR with a post-closure permit. DOE conducted ground-water monitoring in the Tank Farm area and found high levels of volatile organic compounds (VOCs). Because the VOCs were released from the Tank Farm area, DOE is required to clean up the ground water according to regulations in 40 CFR §264 and 10 Code of State Regulations Part 25.

EXPOSURE PATHWAYS

VOC levels in the ground water surpass EPA Maximum Contaminant Levels (MCLs). The ground-water flow may carry the contamination from the Tank Farm area into the Little Blue River located east of the DOE facility. If this river becomes contaminated, it may affect wildlife and people using the river (ie., swimming, fishing, boating, etc.).

PUBLIC PARTICIPATION

The 45-day public comment period on EPA's proposed remedy extended from February 22, 1992 to April 17, 1992. A public meeting was not requested by the public. Two comments from an unidentified citizen were received during the comment period. The citizen agreed with EPA's approach to calculating the drinking

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
groundwater	not given	TCE 1,2-DCE Vinyl Chloride	1670 ppb 2600 ppb 580 ppb	5 ppb 70 ppb 2 ppb	5 ppb* 70 ppb* 2 ppb*	KS87-61** KS87-62** KS87-63**

* Cleanup goal is a Maximum Contaminant Level that is federally enforceable under the Safe Drinking Water Act.
**KS- Kansas City Monitoring Well

water cleanup goals and asked why destruction percentages were not included in the Statement of Basis.

SELECTED REMEDY

Removal and treatment of contaminated ground water using recovery wells was selected as the corrective action. The selected treatment methoisan ultraviolet-ozone liquid-phase treatment system (ultraviolet-ozone system) which has been operational since 1988. EPA approved it as an interim measure in 1990. A liquid-phase carbon absorption filter system has been added to the treatment system to treat excessive levels of VOCs to meet National Pollutant Discharge Elimination System (NPDES) pretreatment requirements.

The ultraviolet-ozone system was selected because it will provide the best overall protection to human health and the environment by removing and destroying VOCs, and minimizing the potential movement of ground-water contamination into the Little Blue River. The system has proven effective and reliable in destroying VOC contamination in ground water and will reduce the level of VOCs at or near the clean-up standards for the Tank Farm.

The total estimated capital costs associated with the selected remedy will be $3,180,000. O&M costs were not presented in the response to comments. The cost-effective ultraviolet system will be easily implemented because it has been in use at the Tank Farm as an interim measure for the past four years.

The selected remedy may not meet the proposed clean-up standards if it is not possible to remove all VOCs from the ground water. However, DOE showed that the system has been successfully controlling the source area. The Kansas City, Missouri waste-water treatment plant will effectively treat any low levels of VOCs remaining in the discharge water.

INNOVATIVE TECHNOLOGIES CONSIDERED

Ultraviolet-ozone liquid-phase treatment system.

NEXT STEPS

At some future date, DOE may wish to combine the CMI for the Tank Farm area into a more comprehensive ground-water CMI involving other areas at the facility so that one comprehensive document addresses all ground-water remediation activities at this facility.

The ultraviolet-ozone system and cleanup levels will be reassessed periodically according to the Ground-Water Assessment Plan under which DOE is operating.

KEY WORDS
ground water, soil; ingestion, dermal contact; VOCs; ultraviolet-ozone liquid phase treatment

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

Region VII
ID# 6873

WICKES FARMASTER SITE

Shenandoah, Iowa
September 15, 1991

Facility/Unit Type: Metal tube milling and painting facility
Contaminants: Lead, chromium
Media: Soil
Remedy: Excavation and off-site disposal

FACILITY DESCRIPTION

On January 23, 1990, the Wickes Farmaster Facility (Wickes) and EPA entered into a Consent Order pursuant to RCRA Section 3008(h). The provisions of the Order require Wickes to characterize on-site soil, monitor ground water quarterly for two years, and develop a closure plan for a drum storage area.

The facility was a metal tube milling and painting plant that began producing farm gates and related products in the early 1950s. Process wastewater, sanitary waste, and general trash, such as wood, metal, and waste paint, were disposed into three unlined on-site ponds.

Depth to the ground water varies from 2 to 6 feet below the ground surface. Ground water flows north to northwest toward the East Nishnabotna River. The river is a ground water discharge area; the site is in a recharge area.

Surrounding land use is predominantly agricultural with residential areas approximately 1 mile south of the facility.

In previous corrective action activity, a Section 3008(a) Complaint, Compliance Order, and Notice of Opportunity for Hearing was issued to the facility in March of 1988 for its storage of hazardous waste. Between 1984 and 1990, Wickes conducted voluntary preliminary investigations of soil, sediments, and ground water. Between January 1990 and 1991, Wickes conducted a RFI and a CMS in accordance with an enforcement order. Investigations confirmed that shallow ground water, and sediments and water from the on-site ponds have not been significantly impacted by hazardous waste.

EXPOSURE PATHWAYS

Contaminated soils present a potential risk to human health and the environment through ingestion and the potential for ground water contamination through soil leaching.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal**	Point of Compliance
soil	3,800 cu. yds.	Lead Chromium	7 to 38,000 ppm 11 to 7,800 ppm		225 ppm 100 ppm	Edge of Corrective Action Management Unit

** The "RCRA Facility Investigation (RFI) Guidance" dated May 1989 was used to identify and evaluate the cleanup levels. The evaluation is based on an assumption that the facility is located in a residential area.

SELECTED REMEDY

The proposed remedy involves excavation of soils which exceed the approved cleanup levels in the RFI guidance and disposal of the contaminated soils at an off-site landfill. Contaminated soils will be transported to an off-site landfill by a vehicle and the excavated areas will be backfilled with clean fill material.

The proposed remedy will achieve substantial risk reduction by removing contaminated soil. The remedy will protect human health and the environment, control the source of release, reduce or eliminate potential exposure pathways to the maximum extent practicable, and attain RFI guidance media cleanup standards.

The proposed remedy will be a final action.

The estimated cost to implement the proposed remedy is $113,000. The remedy will require no anticipated O&M costs.

Soil excavation and off-site disposal comply with the requirements for the management of solid and hazardous wastes.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

No public comments were received. A public meeting was not held.

NEXT STEPS

Additional ground water monitoring is being performed in order to determine if downgradient analytical results are statistically different from upgradient background values. If they are statistically different, then ground water remediation will be imposed.

KEY WORDS

soil, soil ingestion; lead, chromium; excavation, off-site disposal

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FLYING PETROLEUMS

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VIII
ID# 0049

Flying J Petroleums, Inc.

Williston, North Dakota
November 1993

Facility/Unit Type:	**Petroleum refining and storage**
Contaminants:	**Benzo(a)anthracene, pyrene, lead, benzene, 1,2-dichloroethane**
Media:	**Ground water, soil**
Remedy:	**Institutional controls, excavation and disposal of lead-contaminated soils, soil vapor extraction, off-gas treatment, upper sand dewatering, free product recovery, dissolved hydrocarbon pump and treat, treatment and discharge of ground water.**

FACILITY DESCRIPTION

On February 1, 1993, the North Dakota State Department of Health and Consolidated Laboratories (Department) issued a RCRA Post-Closure/Corrective Action permit to Flying J and on May 4 of the same year, the facility submitted proposed revisions. The Department has proposed to incorporate some of the suggested revisions as well as propose remedies to meet the requirements of corrective action.

The Flying J Petroleums - Williston Refinery facility is a petroleum refinery and storage facility located in Williston, Williams County, North Dakota. The facility occupies approximately 41.6 acres owned by Flying J Petroleums, Inc. and includes at least 5.6 acres of property owned by the United States which are included in an easement granted by the Department of the Army Corps of Engineers (USACE), Omaha District to Flying J Petroleums, Inc. Nearby is the Little Muddy River which contains species such as the paddlefish (proposed for listing under the Endangered Species Act) and the pallid sturgeon (a federally-listed endangered species). The refinery was built in the early 1950s and was owned by several entities until April 1980, when it was acquired by Flying J. In October 1984, the process units were shut down and have not been operational since that time. All petroleum storage activities for resale ceased in 1986.

There are four regulated hazardous waste management units (HWMUs) onsite. These were unlined surface impoundments which were constructed in natural soil for the purpose of providing additional oil/water separation. Surface impoundments 1 and 2 are located on the property owned by Flying J, while 3 and 4 are on property owned by the United States.

A 1984 site characterization determined that there was facility-wide contamination. On July 25, 1986, the Department first contacted Flying J about the quality of their surface impoundments. The facility submitted a preliminary hazardous waste closure plan in May, 1986, and on June 26, 1987, a closure plan amendment was submitted. The surface impoundments were then closed pursuant to the approved closure plan in September, 1987. The RFA report dated March 1989 identified four hazardous waste management units, 64 solid waste management units, and 15 areas of concern at the site.

Flying J Petroleums has installed a system of four collection lateral underdrains: two at the north end of the facility, installed in 1989, and two at the southern end, installed in 1991. These intercept free phase product and contaminated ground water in upper sand/till. The facility has also installed a ground-water recovery well in the lower sand to recover hydrocarbons and contaminated ground water.

EXPOSURE PATHWAYS

The highest calculated risk levels for each exposure scenario from highest to lowest are for soil

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume (yd^3)	Contaminant	Maximum Concentration	Action Level	Cleanup Goals	Point of Compliance
soil	4,500	benzo(a)anthracene pyrene lead				
ground water		benzene 1,2-dichloroethane lead				

gas, recovered ground water, and ground water. Under the most probable soil exposure scenario, ingestion of contaminated soil does not yet pose a health threat but inhalation of undiluted soil gas does. In addition, benzene in unsaturated soils may be transferred to ground water where it may pose a significant health threat. The ground water's naturally high salinity may result in adverse health effects based on residential ingestion and refutes the use of drinking water cleanup levels. Because site access is currently restricted and future residential use of the site is highly improbable, only offsite exposure to soil gas and ground water may represent an unacceptable health risk. Institutional controls established for the site and impacted areas offsite are sufficient to control the potential for exposure.

SELECTED REMEDY

The selected remedy includes revegetation of the site; soil vapor extraction (SVE) and catalytic oxidation of extracted off-gas; excavation and offsite disposal of lead-contaminated soil; operation of a dewatering well to enhance SVE in the upper sand; continued operation of the existing collection laterals to recover free product in the upper sand/till; operation of the existing recovery well and three additional recovery wells to remove free product from the lower sand; capture of dissolved hydrocarbons in ground water by pumping of recovery systems; removal of dissolved hydrocarbons in recovered ground water with a diffused aeration tray unit; and discharge of treated ground water to the sanitary sewer. The cost of the selected remedy is $4.25 million over 20 years. This cost does not include post-closure costs, which are estimated at $630,000 over a period of 30 years.

INNOVATIVE TECHNOLOGIES CONSIDERED

Soil vapor extraction was selected as one of the treatment technologies for the Flying J site to reduce residual hydrocarbon concentrations in unsaturated soils and minimize their potential to serve as a long-term source of dissolved hydrocarbon contamination.

PUBLIC PARTICIPATION

The dates of the public comment period were from November 10, 1993 through January 11, 1994. The period included a public meeting on December 7, 1993 at the city hall of Williston, ND. Both Flying J Petroleums and EPA Region VIII commented on the Statement of Basis documents. Flying J Petroleums agreed with the terms and conditions of both the post-closure permit and the SB, and proposed changes to some of the language in the documents. The Department made most of the suggested revisions. On January 6, 1994, EPA Region VIII requested that the public comment period be extended to January 25, 1994. EPA's concern related to the ecological risk posed by leaving wastes in place in the "beak" of the Old Williston Landfill, at SWMU #59. Region VIII contended that an inadequate ecological risk assessment failed to account for the danger of high hydrocarbon concentrations to endangered fish species inhabiting the nearby Little Muddy River. The Department cited evidence that they had taken these possible releases into consideration and declared that the leachability of hydrocarbons to the ground water from the soil left in SWMU #59 was low. The

Department also argued that any releases could not be solely attributed to the Flying J site because these hydrocarbons are also found in coal and naturally occurring crude oil in the area of the Little Muddy River.

NEXT STEPS

The final Post-Closure/Corrective Action permit was issued on February 18, 1994. The final design for the in-situ land treatment must be submitted within 90 days of receipt of the permit.

KEYWORDS

Ground water, soil; direct contact, ingestion (gw), inhalation; organics (PAHs), VOCs (benzene, 1,2-DCA); dewatering, excavation, innovative technology, soil vapor extraction (selected), institutional controls, offsite discharge

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VIII
ID# 4790

Martin Marietta Corporation

Waterton Canyon Astronautics Facility
Littleton, Colorado
(signed September 24, 1990)

Facility/Unit Type:	**Aerospace/Defense research and manufacturing**
Contaminants:	**Trichloroethylene (TCE); 1, 1, 1-Trichloroethane (1,1,1-TCA); 1,2-Dichloroethane (1,2-DCA); 1,1-Dichloroethene (1,1-DCE); Trans 1,2-Dichloroethene (Trans 1,2-DCE); Chromium; N-Nitrosodimethylamine (NDMA); Cadmium; Benzene; Vinyl Chloride; Acetone; Xylene; Toluene**
Media:	**Soil, ground water**
Remedy:	**Interception, pumping and treatment of contaminated shallow ground water; vapor extraction of contaminated soils; dewatering and off-site incineration and disposal of waste combined with thermal extraction of backfill and alluvium, stabilization and RCRA cap**

FACILITY DESCRIPTION

In January of 1992, the Colorado Department of Health (CDH) and the Martin Marietta Corporation entered into a state RCRA consent agreement. EPA issued Martin Marietta a CERCLA Section 106 Administrative Order on February 7, 1986, which required Martin Marietta to conduct an RI/FS for the Waterton Canyon Astronautics Facility in Littleton, CO. The CERCLA investigation continued until a ROD was finalized on September 24, 1990. Since Martin Marietta was an operating facility and CDH received RCRA Corrective Action authorization (Section 3004(u)) in July 1989, it was decided that the ROD and site remediation would be implemented by CDH under RCRA.

The Waterton facility covers approximately 5200 acres and completely surrounds 464 acres of U.S. Air Force property. Martin Marietta has owned and operated the site since the mid-1950s and most of the main manufacturing plants were constructed prior to 1970. During the 1960s, Martin Marietta conducted Titan missile program research and testing at the site.

During operation of the facility, Martin Marietta has generated, treated, and stored waste on-site. Wastes generated at the facility include various oils, fluoride, aluminum, chromium, titanium, nitrate, cyanide, organic solvents, acid etching sludges, and chemical treatment sludges and propellants. From 1959 until 197[illegible], [illegible] wastes that were generated were either treated or disposed of in an on-site area known as the Inactive Site Ponds.

In 1984, off-site contamination was discovered in wells located near Martin Marietta. Subsequent investigations revealed that the facility was the source of the contamination. Two extraction well systems were put into place in 1986 to intercept the contaminated groundwater before it migrated off-site.

EXPOSURE PATHWAYS

Exposure pathways include soil/dust ingestion by on-site workers, deer hunters, and potential future on-site ground-water use. Currently ground water on-site is not used for human consumption. Two endangered species, the bald eagle and the peregrine falcon, and a rare plant, the annual threeawn, are found on-site.

CONTAMINATION DETECTED AND CLEANUP GOALS*

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
			(ug/l)	(ug//)	(ug/l)	
ground water	unknown	1,1,1-TCA	110000	not given	200	Whole Plume
		TCE	596000	"	5	"
		NDMA	12	"	.07	"
		Chromium	18.5 mg/l	"	50	"
		Cadmium	16	"	5	"
		1,2-DCA	1500	"	5	"
		1,1-DCE	6400	"	5	"
		Benzene	51	"	5	"
		Vinyl Chloride	240	"	2	"
			(ug/kg)		(mg/l)	Area
soil	24,400 cy	Acetone	8395	.59 mg/l	160	Under Cap
		1,1-DCE	2860	not given	7.2	"
		TCE	321000	.5 mg/l	.091	"
		1,1,1-TCA	145600	not given	.41	"
		PCE	15270	.7 mg/l	.05	"
		Xylene	232000	not given	28	"
		Toluene	425300	not given	.33	"
		Trans 1,2-DCE	63	not given	33	"
		Cadmium	71000	3.2 mg/kg	1	"
		Chromium	425[illegible]	60 mg/kg	5	"

* Record of Decision - September 24, 1990

SELECTED REMEDY

The selected remedy will address the contaminated soils and ground water on-site via a three-pronged program. Vapor extraction will be used to remove organic contaminants from soils in the area of the Chemical Storage Tanks. Waste removal and incineration, coupled with thermal extraction (desorption), stabilization and RCRA capping of remaining soils will be used in the Inactive Site Pond area. Ground water will be extracted by the two interceptor systems installed in 1986 and at least two additional interceptor systems to be installed as part of the ROD. The extracted ground water will be treated and discharged pursuant to a NPDES permit.

The total estimated cost for the selected remedy is $59,222,000 for capital costs and annual O&M. The project life is estimated to be at least 30 years due to the extensive time required for groundwater extraction and treatment.

Several areas of the facility are also undergoing closure and remediation pursuant to State approved RCRA closure plans. These areas currently have interim status, and are in various stages of RCRA closure. Both clean closure and in-place closure remedies are being applied to these interim status units.

INNOVATIVE TECHNOLOGIES CONSIDERED

Vapor extraction and thermal extraction

PUBLIC PARTICIPATION

Between February 1986 and September 1987, EPA held five public meetings in the area of the facility. EPA also held a public meeting to collect comments on the preferred remedial alternative in July 1990. Approximately 50 people attended these meetings. Several sets of comments were received and responses to comments were prepared.

NEXT STEPS

Next steps involve continued implementation of the selected remedy. To date, investigation reports for the Inactive Site Ponds and the Chemical Storage Tanks are nearing finalization. Soil treatability studies have been performed and results are due in May 1993. Design and location of the additional ground-water interceptor systems will begin in the Fall of 1993. Community relations activities are ongoing.

KEY WORDS

ground water, soil; ingestion; VOCs, heavy metals; vapor extraction, off-site incineration, thermal extraction, dewatering, capping

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...SIS/FINAL DECISION AND ...COMMENTS SUMMARY

REGION VIII
ID# 8294

...Depot-North Area

...ooele, UT
... not given)

Facility/Unit Type: Inc
Contaminants: Tri ... Benzene; Carbon Tetrachloride; Chloroform; Chromium; 2,4-Dimethylphenol; 1,1-Dichloroethane; 1,1-Dichloroethene; 1,2-Dichloropropane; Ethylbenzene; Methylene Chloride; Tetrachloroethane; Trichloroethane; Toluene; Xylenes
Media: Ground water, soils
Remedy: Capping and closing impoundment and ditches; pumping and treating ground water, collecting ground water by extraction wells and processing at the on-site ground-water treatment plant by air stripping; injecting "Clean" water into the aquifer at a downgradient location outside of the plume

FACILITY DESCRIPTION

The Tooele facility is surrounded by land used for agricultural purposes and grazing. The Great Salt Lake is the only large downgradient body of surface water located nearby and some springs are located several miles from the plume. The Tooele facility is now a hazardous waste generator and has permit applications pending for storage and treatment of hazardous waste.

During previous closure activities, the industrial waste lagoon and ditches were capped. Not all of the contaminated material was removed from the lagoon, therefore, the site was closed as a landfill.

Ground water flows approximately 175 to 200 feet below the surface in an unconfined aquifer and is used as a drinking water source. Drinking water wells owned by the town of Grantsville, Utah are located several miles downgradient from the plume. In addition, numerous agriculture and stock watering wells are located near the facility in a downgradient direction.

In 1986, the Utah Division of Solid and Hazardous Waste (Utah DSHW) issued a state order to Tooele. The terms of the order required that Tooele determine the nature and extent of contamination from an industrial waste lagoon and associated conveyance ditches at the facility. Utah DSHW issued a post-closure permit to the Tooele Army Depot on January 7, 1991 pursuant to Section 3004(u) of RCRA. The permit required Tooele to monitor closed lagoon and evaluate cleanup alternatives to address groundwater contamination.

EXPOSURE PATHWAYS

Ground-water contamination has migrated approximately 1/4 mile off-site in a downgradient direction from the lagoon area. The nearest human receptors are the wells used in Grantsville.

SELECTED REMEDY

The selected remedy includes capping and closing the impoundment as a hazardous waste landfill. The closure was completed in late November 1988. Ground-water contamination will be addressed by 12 extraction wells, 2 air stripping towers, and 13 injection wells. The Army selected to close the impoundment in place because a clean closure was not possible in a cost effective manner.

The estimated capital cost to implement the remedy is expected to be approximately $16 million.

Implementation of the impoundment closure is complete. The ground-water treatment system

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
ground water	36 billion gallons	TCE	250 ppb	5 ppb	1 ppb	Vertical surface of downgradient boundary of impoundment

installation is underway and the expected date for project completion is December 13, 1993. Monitoring and cleanup will continue for 30 years or until the groundwater is cleaned to below health based standards.

Soils from drilling will be analyzed and managed appropriately.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public meeting was held on November 13, 1990 in Salt Lake City and Tooele, Utah. Four comments were received; two from U.S. Army and two from U.S. EPA. The main issue at the meetings was how to manage the contaminated ground water generated from well development and testing. It was decided that a temporary lined holding pond would be constructed to manage the water until the water can be treated and injected back to the aquifer.

NEXT STEPS

The ground water will be sampled and analyzed to determine whether the selected remedy will achieve cleanup goals. In addition, the remaining 45 SWMUs at the facility are being investigated under RCRA and CERCLA. The base was listed on NPL on August 30, 1990. A federal facility agreement was signed on September 16, 1991. In that agreement, Tooele agreed to investigate 17 SWMUs under CERCLA and the remaining 28 under RCRA.

KEY WORDS

ground water; ingestion; VOCs, heavy metals; capping, air stripping, on-site treatment, reinjection

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UNION PACIFIC

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VIII
ID# 2470

Union Pacific Railroad-Laramie Tie Plant Site

Laramie, Wyoming
September 28, 1994

Facility/Unit Type:	**Wood preserving and treatment**
Contaminants:	**Creosote, pentachlorophenol**
Media:	**Ground water, soil**
Remedy:	**Continued operation of in-place ground water containment systems; installation of three wells for hydraulic gradient control; removal of DNAPLs using the waterflood oil recovery method; covering contaminated soil with topsoil; capping; and institutional controls**

FACILITY DESCRIPTION

In August, 1991, EPA and Union Pacific Railroad (UPRR) entered into an Administrative Order on Consent (AOC) requiring UPRR to perform a Corrective Measures Study to identify plausible remedies at the Laramie Tie Plant site.

The 110-acre UPRR-Laramie Tie Plant site is an inactive wood preserving and treatment facility located on the Laramie River in Laramie, Wyoming. Land use in the area is primarily agricultural. UPRR intermittently operated the site from 1886 to 1983 for the treatment of railroad ties and other wood preserving operations. The 25,000 residents of the city of Laramie draw drinking water from a combination of the Casper Bedrock unit (five miles upslope and east of the town) and diverted surface water at a point 25 miles upstream from the UPRR facility on the Laramie River.

Contamination has been found in surface soils covering approximately 90 acres of the site. The presence of dense nonaqueous phase liquids (DNAPLs) within the alluvium and at the bottom of the underlying Morrison aquifer has also been established. Creosote and pentachlorophenol (PCP) were the principal wood-preserving agents used at the facility and are the primary sources of ground-water and soil contamination. Treated railroad ties were allowed to drip dry on the ground, accounting for much of the surface or near-surface soil contamination. Wastewater generated in the wood treating process was discharged to low lying areas via a shallow ditch system, and was also stored in an unlined wastewater impoundment.

In 1981, ground-water contamination revealed in monitoring wells installed pursuant to RCRA requirements around a surface impoundment led UPRR to further evaluate contamination at the site. In 1983, EPA placed the site on the NPL and UPRR decommissioned the facility, demolished onsite buildings, and shipped unused wood treatment materials to another facility. In 1984, the waste management impoundments were closed. A remedial investigation (RI) conducted under CERCLA found contamination in surface soils over approximately 90 acres of the site as well as the presence of DNAPLs.

Studies indicate that there is virtually no possibility of contaminants reaching the Casper formation and contaminating the city's water supply. In addition, areas monitored in the Laramie River downstream from the site have shown no site contaminants in greater concentrations than they appear upstream; an indication that contaminants from the site are not being released to surface water.

As part of a Contaminant Isolation System (CIS) installed in 1987 to prevent the migration of contaminants to the Laramie River, UPRR realigned the Laramie River channel approximately 150 feet to the west, installed an underground barrier wall around the site, installed a water treatment system to

CONTAMINATION DETECTED AND CLEANUP GOALS*

Media	Estimated Volume	Contaminant	Maximum Concentration (units)	Action Level (units)	Cleanup Goals (units)	Point of Compliance
ground water		creosote pentachlorophenol				
soil		creosote pentachlorophenol				

* Not applicable due to technical impracticability.

remove and treat contaminated water before returning it to the Laramie River, and implemented a complex ground-water monitoring program to measure the system's effectiveness. In 1988, the Morrison Contaminant Withdrawal System (MCWS), comprised of three ground-water extraction wells, was installed. The system is designed to draw contaminated ground water from a small area 60 feet below the surface outside the western site boundary.

EXPOSURE PATHWAYS

No exposed receptors.

SELECTED REMEDY

The selected remedy for this site includes continuing operation of the CIS and MCWS containment systems to prevent migration of residual DNAPL from the site; installing three new wells to control the hydraulic gradient in the nearby Sundance aquifer and ensure that contamination does not migrate further due to offsite pumping of ground water; removing mobile DNAPL contaminants using the waterflood recovery method; covering 90 acres of contaminated surface soil with topsoil; installing a six-acre soil cap over the former impoundment area; and maintaining indefinitely strict access to the site through institutional controls. The estimated total cost of the selected remedy is $65,000,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

The waterflood oil recovery process employed to remove mobile DNAPLs from alluvial sands and gravels is an innovative technology that involves pumping water into the contaminated area. This causes the mobile DNAPL to mound and enter recovery drainlines installed in the alluvium, after which the DNAPL is withdrawn and eventually reused. The process is expected to remove 90% of the mobile DNAPL over a period of five to seven years.

PUBLIC PARTICIPATION

Approximately 25 people attended the public meeting on May 11, 1994. At the meeting, several questions and concerns were expressed regarding the following: the effectiveness of the proposed remedy, the types of technologies evaluated, the long term capacity of the Wyoming Department of Environmental Quality (WDEQ) to oversee the site, changes in the remedy since 1986, future land use, recreational use of the Laramie River, and the safety of Laramie's water supply. No comments were made that would affect the selected remedy for the site.

NEXT STEPS

Existing technology is limited in its ability to completely remove DNAPLs in bedrock formations and restore DNAPL-contaminated ground water to

drinking water quality. However, through the removal of mobile contamination, ground-water gradient control, and institutional controls, the remedy is protective of human health and the environment. Because the target cleanup goal requiring a 10^{-6} potential carcinogenic risk level throughout the contaminated ground water will not be attained, EPA will require UPRR to obtain a RCRA Post-Closure Permit for the site once the remedy has been implemented. Furthermore, five-year reviews of the technical impracticability (TI) determination will be made and additional remedial measures may be implemented if future advances in technology make attainment of ground-water cleanup standards technically practicable.

KEYWORDS

Ground water, soil; organics (phenols); capping, containment (physical, hydraulic), innovative technology (selected), institutional controls, soil cover

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VIII
ID# 6133

USX/Geneva Steel

Vineyard, Utah
(signed October 27, 1992)

Facility/Unit Type: Steel manufacturing
Contaminants: VOCs, heavy metals
Media: Ground water, soil
Remedy: Impoundments were capped and closed; ground water corrective action-pump and treat; ground water collected by interceptor trench and processed at the on-site biological wastewater treatment plant

FACILITY DESCRIPTION

The State of Utah issued a RCRA post-closure permit containing Corrective Action provisions to USX/Geneva Steel (USX) on November 9, 1989 pursuant to Section 3004(u) of RCRA. The permit required USX to complete an on-site and off-site investigation to determine the nature and extent of contamination from three hazardous waste surface impoundments located at USX's Vineyard, Utah facility and to evaluate cleanup alternatives.

The Vineyard facility is surrounded by land used for agricultural, residential, and business purposes. Utah Lake is approximately 2,500 feet west of the surface impoundments and is used for recreational purposes such as fishing, swimming, and water skiing. Depth to groundwater is approximately 9 feet. The groundwater has limited agricultural use.

USX had interim status for the surface impoundments operations. On November 9, 1988, USX lost interim status and was required to submit a closure plan and a post-closure permit application. During previous closure activities, the impoundments were capped and additional monitoring wells were installed. Closure activies were completed in August 1991.

EXPOSURE PATHWAYS

Ground-water contamination has migrated approximately 600 feet downgradient from the area of the impoundments. Utah Lake lies 1/2 mile downgradient from the impoundment area. Human exposure to the ground-water contamination is not likely to occur because the selected remedy will contain the contamination.

SELECTED REMEDY

Contaminated ground water will be treated by collecting the ground water in an interceptor trench and then processing the ground water at an on-site biological wastewater treatment plant The treated ground water will be discharged to Utah Lake pursuant to a NPDES discharge permit. The residues from the treatment plant will be sent to a permitted hazardous waste landfill for disposal. In addition, the cap will remain over the impoundment area. USX selected to close the impoundment in-place because a clean closure would not be possible and would not be cost effective.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level (ppb)	Cleanup Goal (ppb)	Point of Compliance
ground water	not given	1,1-Dichloroethane	6	1	1	Vertical surface of the downgradient boundary of the Waste Management Area
		1,1-Dichloroethylene	33	7	7	
		1,1,1-Trichloroethane	340	200	200	
		2-Picoline	39,000	5	5	
		2-4-Dimethylphenol	4.6	5	5	
		Acetone	380	100	100	
		Acetonitrile	600	100	100	
		Acetophenone	17,000	10	10	
		Aniline	250	10	10	
		Benzene	21,000	5	5	
		Ethylbenzene	26	2	2	
		Methylene Chloride	10	5	5	
		N-Nitrosomorpholine	10	10	10	
		Naphthalene	250	10	10	
		o-cresol	11	10	10	
		p-cresol	21	10	10	
		Phenol	120	1	1	
		Pyridine	250,000	5	5	
		Toluene	3,100	2	2	
		Xylene	540	5	5	
		Arsenic	280	50	50	
		Barium	560	1,000	1,000	
		Beryllium	12	3	3	
		Chromium	120	50	50	
		Cobalt	250	70	70	
		Cyanide	480	40	40	
		Lead	100	50	50	
		Nickel	380	50	50	
		Tin	4,000	8,000	8,000	
		Vanadium	160	80	80	

The costs associated with the implementation of the selected remedy include $1.8 million for cap closure and $1.2 million for trench installation.

The trench installation was completed in March 1993. Groundwater cleanup is expected to begin in April 1993.

The soils from trench installation will be sampled and disposed of as necessary. The biological wastewater treatment plant has a NPDES discharge permit for Utah Lake. Residues from the treatment plant are disposed of at a permitted hazardous waste landfill.

The selected remedy does not address all site conditions because the site was closed as a landfill and removal of all contaminated material from the impoundments was not complete.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

Public meetings were held on June 13, 1989 in Salt Lake City and Orem, Utah. A total of 136 comments were received from nine meeting attendees in Salt Lake City and 22 attendees in Orem.

NEXT STEPS

An RFI is now in the Phase I information gathering stage for approximately 120 SWMUs. Ground water sampling and analysis will be implemented during the CMI determine whether the cleanup goals have been achieved.

KEY WORDS
ground water, soil; ingestion; VOCs, heavy metals; ground-water extraction, capping, on-site biological treatment

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VIII
ID# 4790

Martin Marietta Corporation

Waterton Canyon Astronautics Facility
Littleton, Colorado
(signed September 24, 1990)

Facility/Unit Type: Aerospace/Defense research and manufacturing
Contaminants: Trichloroethylene (TCE); 1, 1, 1-Trichloroethane (1,1,1-TCA); 1,2-Dichloroethane (1,2-DCA); 1,1-Dichloroethene (1,1-DCE); Trans 1,2-Dichloroethene (Trans 1,2-DCE); Chromium; N-Nitrosodimethylamine (NDMA); Cadmium; Benzene; Vinyl Chloride; Acetone; Xylene; Toluene
Media: Soil, ground water
Remedy: Interception, pumping and treatment of contaminated shallow ground water; vapor extraction of contaminated soils; dewatering and off-site incineration and disposal of waste combined with thermal extraction of backfill and alluvium, stabilization and RCRA cap

FACILITY DESCRIPTION

In January of 1992, the Colorado Department of Health (CDH) and the Martin Marietta Corporation entered into a state RCRA consent agreement. EPA issued Martin Marietta a CERCLA Section 106 Administrative Order on February 7, 1986, which required Martin Marietta to conduct an RI/FS for the Waterton Canyon Astronautics Facility in Littleton, CO. The CERCLA investigation continued until a ROD was finalized on September 24, 1990. Since Martin Marietta was an operating facility and CDH received RCRA Corrective Action authorization (Section 3004(u)) in July 1989, it was decided that the ROD and site remediation would be implemented by CDH under RCRA.

The Waterton facility covers approximately 5200 acres and completely surrounds 464 acres of U.S. Air Force property. Martin Marietta has owned and operated the site since the mid-1950s and most of the main manufacturing plants were constructed prior to 1970. During the 1960s, Martin Marietta conducted Titan missile program research and testing at the site.

During operation of the facility, Martin Marietta has generated, treated, and stored waste on-site. Wastes generated at the facility include various oils, fluoride, aluminum, chromium, titanium, nitrate, cyanide, organic solvents, acid etching sludges, and chemical treatment sludges and propellants. From 1959 until 197[illegible] wastes that were generated were either treated or disposed of in an on-site area known as the Inactive Site Ponds.

In 1984, off-site contamination was discovered in wells located near Martin Marietta. Subsequent investigations revealed that the facility was the source of the contamination. Two extraction well systems were put into place in 1986 to intercept the contaminated groundwater before it migrated off-site.

EXPOSURE PATHWAYS

Exposure pathways include soil/dust ingestion by on-site workers, deer hunters, and potential future on-site ground-water use. Currently ground water on-site is not used for human consumption. Two endangered species, the bald eagle and the peregrine falcon, and a rare plant, the annual threeawn, are found on-site.

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IX
ID # 8025
CAD 008 488 025

Phibro-Tech., Inc.

Santa Fe Springs, California
(Signed June 30, 1995)

Facility/Unit Type:	**Production of inorganic chemicals; storage, treatment and recycling of off-site generated inorganic hazardous wastes**
Contaminants:	**Arsenic, Cadmium, Chromium, Hexavalent chromium, Copper, Lead, Nickel, Zinc, Polychlorinated biphenyls (PCBs), Benzene, Toluene, Ethylbenzene, Xylenes, Tetrachloroethene (PCE), Trichloroethene (TCE), 1,1-Dichloroethene (1,1-DCE), 1,1-Dichloroethane (1,1-DCA), 1,2-Dichloroethane (1,2-DCA), Trans-1,2-Dichloroethene (1,2-DCE), Carbon tetrachloride, 1,1,1-Trichloroethane (1,1,1-TCA), Methylene chloride, and Petroleum hydrocarbons**
Media:	**Groundwater, Soil**
Remedy:	**Groundwater pump and treat system, soil vapor survey and possible extraction, bioventing system, groundwater monitoring, vadose zone monitoring, repair and expansion of existing site cover, and a deed notice**

FACILITY DESCRIPTION

The Phibro-Tech., Inc. (PTI) facility is located at 8851 Dice Road in Santa Fe Springs, California (Los Angeles County). It occupies 4.8 acres of land in a predominantly industrial area, with the closest residential area approximately 800 feet to the northwest. The facility is mostly paved and is surrounded by other industrial facilities. Past uses of the property include a railroad switching station and foundry casting facility (1950's). There has been chemical manufacturing on the site since approximately 1957.

PTI produces a variety of inorganic chemicals on the site, including copper compounds and specialty products used in the aerospace and electronics industries. Specialty products include etchants, solder strippers, brighteners, and conditioners. Other products include copper oxide, copper sulfate, and ferric chloride.

PTI also treats and recycles a variety of inorganic hazardous wastes, which are generated primarily in the electronics and aerospace industries. Wastes are treated through precipitation/ neutralization to generate new products for sale, wastewaters, and metal-containing sludges. Process units include settling tanks, holding tanks, wastewater treatment tanks, filter presses, multistage clarifiers, process and storm drain sumps, drum storage areas, and drum and truck washing areas. PTI discharges treated aqueous wastes to the sanitary sewer pursuant to a permit from the Los Angeles County Sanitation District. Sludges generated by the facility are transported to a heavy metal smelter for recycling.

Soils under the facility are stream and flood plain deposits consisting of interbedded silts and sands with some clayey sequences. Although groundwater is now encountered at a depth of approximately 52 feet below ground surface in the Hollydale Aquifer (the uppermost saturated zone beneath the facility), it is overlain by the currently unsaturated Gage Aquifer and an intermediate low permeability zone. The Hollydale Aquifer is approximately 30 to 40 feet thick and is considered a "leaky" confined aquifer. Groundwater flow direction in the Hollydale Aquifer is toward the south-southwest. No definite vertical gradients were determined for this site.

Although the Hollydale Aquifer is separated from the deeper Jefferson Aquifer by a low permeability clay zone of unknown variable thickness, this zone is not continuous across the site (not found in southwest corner). This suggests that the Hollydale Aquifer and the Jefferson Aquifer, which is currently used as a source of drinking water,

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Federal/ State MCL/Action Level (μg/l)	MCL Cleanup Goal (μg/l)	Point of Compliance
Groundwater	Unknown	Cadmium	860 μg/l	5/10	5	Throughout the plume
		Hexavalent Chromium	59,000 μg/l	100/50	50	
		Chromium (total)	400,000 μg/l	100/50	50	
		Benzene	0.88 μg/l	5/1	None	
		Toluene	57,000 μg/l	1,000/UR	None	
		Ethylbenzene	15,000 μg/l	700/680	None	
		Total Xylenes	40,000 μg/l	10,000/1,750	None	
		Trichloroethene (TCE)	1,100 μg/l	5/5	5	
		1,1,-Dichloroethene	59 μg/l	7/6	.6	
		1,2,-Dichloroethane	23 μg/l	5/0.5	0.5	
Soil	Unknown	Arsenic	95 mg/kg	Not applicable	Not applic-able	Not applicable
		Cadmium	161 mg/kg			
		Hexavalent Chromium	1,160 mg/kg			
		Chromium (total)	37,000 mg/kg			
		Copper	23,100 mg/kg			
		Nickel	28,400 mg/kg			
		Lead	19,100 mg/kg			
		Zinc	40,100 mg/kg			
		Benzene	3 mg/kg			
		PCB	1,500 mg/kg			
		Trichloroethene (TCE)	110 mg/kg			
		Ethylbenzene	37 mg/kg			
		Toluene	5 mg/kg			
		Total Xylenes	310 mg/kg			

ND = Not Detected
UR = Unregulated

may be in direct contact at this location.

PTI installed 7 wells and began groundwater monitoring at the facility in 1985, as requested by the Los Angeles Regional Water Quality Control Board and California Department of Health Services. Sampling confirmed the presence of cadmium, chromium, aromatic volatile organic compounds (VOCs), and halogenated VOCs in the groundwater. In 1987, U.S. EPA contractors conducted a RCRA Facility Assessment of the site to determine where the potential for chemical releases was significant. Identified areas included regulated areas, solid waste management units, and areas of concern where hazardous materials were used or stored.

In September 1988, the California EPA, Department of Toxic Substances Control (DTSC), and EPA modified and approved a closure/post closure plan for Pond 1 (a regulated unit) at the facility. The closure of Pond 1 was to be conducted in conjunction with the provisions of a RCRA 3008(h) consent agreement signed by EPA and PTI in December of 1988. The consent agreement required PTI to conduct a Pre-Investigation Evaluation of Corrective Measures, RCRA Facility Investigation, and Corrective Measures Study.

Removal of two 10,000 gallon underground fuel storage tanks (USTs) in July, 1989, revealed a release of fuel hydrocarbons to subsurface soils. The state and federal agencies involved agreed that this release would be incorporated into the existing RFI. RFI

field work and draft report development took place in two phases between 1990 and 1993. In July 1991, PTI received similar federal and state permits to treat and store hazardous waste.

EXPOSURE PATHWAYS

Soil and groundwater are the two potential pathways for environmental exposure. Both ingestion and dermal contact to contaminants are potential exposure pathways.

SELECTED REMEDY

Groundwater in the Hollydale Aquifer contains elevated levels of: 1) heavy metals, including chromium and cadmium; 2) halogenated VOCs, including trichloroethene (TCE) and 1,2,-dichloroethane (1,2,-DCA); 3) aromatic VOCs, including benzene, toluene, ethylbenzene, and xylenes; and 4) chlorides. The selected groundwater remedy is to pump and treat contaminated groundwater in the Hollydale and Jefferson Aquifers and monitor the Gage Aquifer for the presence of groundwater.

Soils at the facility contain elevated levels of: 1) heavy metals, including lead, cadmium, chromium, copper, and zinc; 2) halogenated VOCs, including TCE, 1,2-DCA and tetrachloroethene (PCE); 3) aromatic VOCs, including benzene, toluene, ethylbenzene, and xylenes; 4) polychlorinated biphenyls (PCBs); 5) petroleum hydrocarbons, including diesel fuel, gasoline and unidentified heavy hydrocarbons (possibly crude oil); and 6) chlorides. The Gage Aquifer is affected by site-derived soil contaminants. Upon resaturation, water in the Gage Aquifer would be impacted from the site-derived soil contaminants.

The remedy for soils includes in-situ bioventing for hydrocarbon contamination in the former UST area, and a soil vapor survey and possible installation and operation of a soil vapor extraction system for halogenated VOC contamination. The remedy includes containment measures, deed restrictions, vadose zone monitoring, revision of the existing facility closure plan, and surface water monitoring.

INNOVATIVE TECHNOLOGIES CONSIDERED

Other groundwater remedies considered, but not selected, include natural restoration and injection of treated groundwater. The only innovative soil remedies considered were in-situ bioventing and soil vapor extraction. Both innovative soil remedies were selected.

PUBLIC PARTICIPATION

EPA and DTSC conducted a public comment period from November 13, 1994, to December 30, 1994, and a public hearing on December 13, 1994, to inform the community about the remedial alternatives. EPA Region 9 and DTSC jointly issued a fact sheet describing the proposed action in both English and Spanish. EPA and DTSC prepared a Response to Comments document to address 125 questions and comments received during the public comment period, and to summarize the changes made as a result of the public comments.

NEXT STEPS

EPA Region 9 and DTSC finalized the soil and groundwater remedy for the Phibro-Tech., Inc. facility on June 30, 1995. Phibro-Tech., Inc. subsequently appealed the permit modification and remedy selection. The permit modification appeal is currently under review in California at DTSC Headquarters.

KEYWORDS:
groundwater, soil; dermal contact, ingestion; cadmium, hexavalent chromium, chromium (total), benzene, toluene, ethylbenzene, xylenes (total), trichloroethylene, 1,1,-dichloroethene, trans-1,2,-dichloroethene, 1,2,-dichloroethane; arsenic, copper, nickel, lead, zinc, PCB, 1,1-dichloroethane, trichloroethene, acetone, methylene chloride; containment (physical), extraction, in-situ treatment, institutional controls (deed restrictions), monitoring (groundwater, soil), venting.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IX
ID # 5435
CAD 990 665 435

John Smith Road Landfill

Hollister, California
(Signed April 18, 1996)

Facility/Unit Type: Non-hazardous municipal/industrial solid waste landfill
Contaminants: Acetone, Benzene, Chlorobenzene, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,2-Dichloroethane, Cis 1,2-Dichloroethene, Trans 1,2-Dichloroethene, 1,2-Dichloropropane, Methylene Chloride, Tetrachloroethene (PCE), Toluene, 1,1,1-Trichloroethane, Trichloroethene (TCE), Trichlorofluoromethane (Freon 11), Vinyl Chloride, Total Xylenes
Media: Groundwater
Remedy: Interim corrective measures including installation of one on-site extraction well, two leachate extraction wells, and two off-site extraction wells were implemented. One additional on-site extraction well will be installed and contaminated groundwater will be treated at the off-site municipal wastewater treatment plant.

FACILITY DESCRIPTION

The authority of RCRA §3008(h) was used to compel corrective action of the John Smith Road Landfill. The John Smith Road Landfill contains two distinct areas, the hazardous wastes area (Class I) and the non-hazardous municipal/industrial solid waste area (Class III). The Class I area is owned by the City of Hollister and the Class III area is owned by the County of San Benito. The Class III area is operated by the John Smith Landfill Company. In 1985, the county and the city entered into identical consent agreements with the Department of Toxic Substances Control (DTSC), then called Department of Health Services, and EPA to close the Class I portion of the facility and to characterize any soil or groundwater contamination in both the Class I and Class III portions of the landfill. In 1989, the county and the city entered into another consent agreement with EPA specifying the work to be performed at both the Class I and Class III portions of the facility. Since that consent order, the two portions of the site have been treated independently.

The site was originally opened in 1968 and was permitted to receive both hazardous waste and non-hazardous waste. During the early years of the site, existing regulation did not require the segregation of the various waste types or a liner system beneath the waste. Starting in 1974, hazardous waste discharge was limited to what is now the central portion of the Class III area. In 1977, two hazardous waste surface impoundments were constructed to the east of the Class III area, forming the Class I area, which received only hazardous waste. On July 17, 1983, the landfill stopped accepting hazardous waste and the Class I area was, at a later date, capped in accordance with an approved closure plan. The Class III area continued to accept non-hazardous municipal and industrial waste.

The John Smith Road Landfill is located on a 65 acre site which includes a small canyon and surrounding hills. The population surrounding the facility is approximately 300 within a one-mile radius and 27,000 within a 15-mile radius. The Class III area consists of approximately 57 acres of which 31 acres are permitted to receive non-hazardous municipal and industrial wastes under the existing Central Coast Regional Water Quality Control Board Waste Discharge Requirements. The landfill is located approximately 4.8 miles southeast of the center of the City of Hollister. The adjacent land is predominantly agricultural and is currently used for dry farming of grains and cattle grazing. According to the California Department of Fish and Game, several threatened or endangered flora and fauna species occur within a 15-mile radius of the site.

The site is underlain by three distinct geologic units: surficial deposits, older alluvium, and a

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ug/l)	Action Level	State Cleanup Goal	Point of Compliance
Groundwater	Unknown	Acetone	33	Not given	-	Facility boundary
		Benzene	5.5		1	
		Chlorobenzene	18		70	
		1,1-Dichloroethane	3.9		5	
		1,1-Dichloroethene	6		6	
		1,2-Dichloroethane	21		0.5	
		Cis 1,2-Dichloroethene	77		6	
		Trans 1,2-Dichloroethene	86		10	
		1,2-Dichloropropane	46		5	
		Methylene Chloride	26		5	
		Tetrachloroethene (PCE)	63		5	
		Toluene	2.5		150	
		1,1,1-Trichloroethane	2		200	
		Trichloroethene (TCE)	95		5	
		Trichlorofluoromethane (Freon 11)	210		150	
		Vinyl Chloride	64		0.5	
		Total Xylenes	22		1,750	

Notes: 1- Source: *Drinking Water Regulations and Health Advisories*, May 1995
2- Source: *Drinking Water Standards and Health Advisories Table*, January 1995

Panache formation. The site is also located in a region of high seismic activity which has been subjected to several strong earthquakes. There are no major faults within the surrounding hills, however, the Calaveras fault is located approximately 3.5 miles southwest and the main trace of the San Andreas fault is located approximately 6.5 miles southwest of the site. Depths to groundwater range from 150 feet deep at the ridge tops, to about 20 feet deep near the entrance of the landfill, to zero feet deep off-site when the seasonal pond is present. Groundwater generally occurs in the alluvium and the first 30 feet of the fractured bedrock Panache formation. Groundwater beneath the site generally flows west and southwest towards the mouth of the canyon where it turns 90-degrees to the north and continues to flow northwest.

There is an aquifer under the site which is a potential source of drinking water. Due to high levels of dissolved minerals, the aquifer is not currently being used for drinking water. There is one active upgradient "domestic" well which is also not used for drinking water. In addition, there are two downgradient springs which provide water to livestock. A seasonal pond is located within the contaminated off-site area which normally forms during the wet season.

The facility is located in a semi-arid climate with a mean annual temperature of approximately 59°F. Average annual rainfall for the area is approximately 12 to 14 inches, occurring primarily between December and April.

EXPOSURE PATHWAYS

The groundwater pathway exhibits the greatest potential for future risk because it contains concentration of multiple contaminants above drinking water standards. Exposure via groundwater would include ingestion, inhalation, and dermal contact.

SELECTED REMEDY

The contaminants of concern found in the groundwater include: acetone, benzene,

chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, cis 1,2-dichloroethene, trans 1,2-dichloroethene, 1,2-dichloropropane, methylene chloride, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane, trichloroethene (TCE), trichlorofluoromethane (freon 11), vinyl chloride, and total xylenes. The selected interim remedial measures include a groundwater extraction system, two leachate extraction wells, and two off-site extraction wells. The groundwater extraction system was installed in March 1993. It is located near the site entrance and is intended to capture and extract all contaminated groundwater before it leaves the landfill. The two leachate extraction wells, installed in April 1993, are intended to extract leachate from within the refuse to avoid additional groundwater contamination. The two off-site extraction wells began operation in June 1993. These off-site wells are located immediately adjacent the landfill and are intended to remediate existing off-site contamination.

The selected remedy includes on-site and off-site groundwater remediation. On-site groundwater remediation goals include hydraulically containing the plume on-site within the facility boundary, eliminating off-site migration, and reducing the source of future groundwater contamination (leachate). Hydraulic control was partially accomplished by the interim extraction well. An additional extraction well will be installed in the same vicinity. The combined discharge will be released into the sanitary sewer system via the existing discharge pipeline and will be treated at the municipal wastewater treatment plant. Assuming concentrations of contaminants remain low, no on-site treatment will occur. However, the system has been designed to readily accommodate the addition of an on-site treatment unit. Periodic water level measurements will be collected to confirm the hydraulic control of the extraction wells. Reduction of leachate was partially accomplished by the interim leachate extraction wells. One of the two leachate wells is to remain operable and if the contaminant concentrations increase, additional leachate wells will be installed and waste cover practices may be upgraded.

Off-site groundwater remediation goals include hydraulically containing the plume, eliminating downgradient migration, and reducing the concentration of contaminants to below health-based levels. Hydraulic control of off-site groundwater was accomplished by the interim extraction wells. The extraction wells will, however, continue to function until concentrations are consistently below cleanup levels for over three consecutive monitoring cycles and a petition to terminate extraction has been approved by the overseeing regulatory agency. The groundwater monitoring wells located within the off-site plume will continue to be monitored on a semi-annual basis.

The associated costs of the selected remedies are minimal compared to the alternative treatments evaluated. Extraction wells are the most inexpensive extraction technology feasible for implementation at this site. Also, the costs associated with the off-site discharge of groundwater to the municipal treatment plant have already been incurred.

INNOVATIVE TECHNOLOGIES CONSIDERED

There were several innovative technologies considered, however, none were selected. In-situ treatments considered include bioreclamation, natural biodegradation, chemical injection, and permeable treatment beds. Other types of on-site treatment technologies considered were activated carbon adsorption, air stripping, reverse osmosis, advanced oxidation, electrolysis, incineration, and biological processes.

PUBLIC PARTICIPATION

DTSC and EPA solicited input from the community on each of the potential cleanup methods as well as the proposed remedy. A Public Notice was issued by DTSC on April 15, 1996 advertising a 45 day public comment period and explaining that a public hearing would be held if significant public interest was noted. The public comment period lasted from April 15 to May 31, 1996. No comments were received and no requests for a public hearing were made.

NEXT STEPS

None.

KEY WORDS:
groundwater; ingestion; acetone, benzene, chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, cis 1,2-dichloroethene, trans 1,2-dichloroethene, 1,2-dichloropropane, methylene chloride, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane, trichloroethene (TCE), trichlorofluoromethane (freon 11), vinyl chloride, and total xylenes; hydraulic control, extraction wells, leachate extraction wells, groundwater monitoring, off-site treatment, and considered innovative technologies.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY **REGION IX**
[ID # CAT 000 618 728]

Southern Pacific Transportation Company/Former Magna Corporation Site

Bakersfield, California

[(Signed: June 1996)]

Facility/Unit Type:	**Acrolein repackaging plant and former waste storage area**
Contaminants:	**Benzene, Xylene, 2-methylnaphthalene, Naphthalene, Phenanthrene, Bis(2-chloroethyl)ether, Aniline, 4-methylphenol, Total petroleum hydrocarbons diesel (TPH-diesel), Toluene, Ethylbenzene, Polyaromatic hydrocarbons (PAHs), Ringed sulfur, Sulfur compounds**
Media:	**Soil, air**
Remedy:	**Soil neutralization injections, soil neutralizing agent, asphalt capping, off-site disposal of contaminated soil, deed restrictions**

FACILITY DESCRIPTION

The Southern Pacific Transportation Company (SPTCo) is the owner of the 1.5-acre site located in Bakersfield, California. SPTCo leased the site to various parties between 1947 and 1985. One lessee (Agri-Chem), which occupied the property between 1947 and 1948, constructed a surface pit (a "sump") that contained "oily wastes." Agri-Chem terminated site operations in 1948.

The Magna Corporation leased the site from 1974 to 1985, for the operation of an acrolein repackaging plant. (Acrolein is an herbicide traditionally used to eradicate vegetation in canals.) The Magna Corporation, which is now owned by the Baker Performance Corporation, vacated the site in 1985. No manufacturing or commercial activities have occurred on the site since that time. **[No waste remaining at the site could be attributed to the Magna operations.]**

The site is located in the **[San]** Joaquin Basin within the southern end of the Great Valley Geomorphic Province of California. The site lies in the 500-year old floodplain of the Kern River, which is more than 3 miles to the north. The closest surface waters are several irrigation ditches (including the Buena Vista Canal). The Kern River and several artificial canals are, however, the primary surface waters in the site's vicinity. Residential areas exist 150 feet from the SPTCo site, across from nearby railroad tracks. **[Areas to the south of the site had been used for farming of non-edible crops, and an industrial park has been proposed for that same area.]**

The predominant soils at the site are interbedded silty sands, sands, and clays. Groundwater depth is **[thought to be]** between 140 and 160 feet, and the flow direction is primarily influenced by groundwater pumping. **[Confirmation sampling for this investigation, however, found groundwater to be between 180 and 190 feet below ground surface.]** Three groundwater wells near the site are used for drinking water. These wells are periodically monitored by the City of Bakersfield Department of Water and

Sanitation. An underground

irrigation pipeline becomes an "open siphon" (a porous tube through which liquid can be transported) for approximately 100 feet as it passes under the railroad tracks **[1/4 mile west of the site.]**

The U.S. Fish and Wildlife Service (FWS) determined that the site area may serve as habitat for several endangered and threatened species. These species include the San Joaquin kit fox; the kangaroo rat (giant and Tipton); the blunt nosed leopard lizard; the valley elderberry longhorn beetle; and the vernal pool fairy shrimp. No functioning habitats were, however, found to exist on the SPTCo site. If a functioning habitat is found, a permit must be obtained from FWS before excavation activities may commence.

When the Magna Corporation ceased operations at the site, it applied to the California Environmental Protection Agency (Cal-EPA), Department of Toxic Substances Control (DTSC), for closure approval. In accordance with Resource Conservation and Recovery Act (RCRA) requirements, all locations where hazardous wastes had been managed needed to be investigated and cleaned up, before closure approval could occur.

During Cal-EPA's investigation of the Magna Corporation's repackaging plant, investigators noticed a dark "tar-like" substance seeping from asphalt at the site. In 1987, the U.S. EPA made a similar identification during a RCRA Facility Assessment (RFA).

[It was originally believed that the contamination at the site was due to a RCRA regulated facility, the Magna Corporation, and EPA issued a unilateral RCRA section 3008(h) order under that assumption to the lessee, the Magna Corporation, and the site owner, SPTCo. However, the RCRA Facility Investigation (RFI) revealed that contamination was not from any of the Magna Corporation's RCRA regulated units. Instead, the contamination was likely caused by Agri-Chem, which is no longer in existence. While SPTCo was not obligated to take action under RCRA, it signed a revised unilateral RCRA section 3008(h) order to finance the rest of the investigation and cleanup.]

The RFI expanded upon a previous sampling effort requested by Cal-EPA's DTSC. The RFI investigated three solid waste management units (SWMUs) identified as: SWMU 10 (the sump area); SWMU 12 (an area located close to nearby railroad tracks); and SWMU 13 (an area west of the site). Excavation trenches and perimeter boring samples were used to evaluate the lateral extent of contamination. Drilling samples were used to determine the vertical extent of contamination.

Early sampling results of the RFI revealed elevated levels of total petroleum hydrocarbon diesel (TPH-diesel), polyaromatic hydrocarbons (PAHs), ringed sulfur and sulfur compounds, and the following indicator chemicals: benzene, toluene, ethylbenzene, and xylene. Levels of concern were based on the State Water Resources Control Board (SWRCB) Leaking Underground Fuel Tank (LUFT) Manual and the U.S. EPA RFI Guidance. Computer modeling and groundwater sampling and analysis determined that no contaminants had, or could, leach into groundwater. At no time during RFI air monitoring activities were any targeted chemicals detected at concentrations that would pose a health risk to the public.

Because the greatest risk to human health at the site is through direct contact with contaminated soil, interim corrective measures consisted of fencing and securing the property.

EXPOSURE PATHWAYS

Pathways of concern for contamination are dermal contact with low pH contaminated soils, ingestion of soils contaminated with semi-volatile organics, and inhalation of hydrogen sulfide. There is potential for acute adverse health effects, including burns and lesions, if a person's skin were exposed to the low pH soils. Exposure to 2-methylnaphthalene, naphthalene, and phenanthrene represent chronic health concerns. **[Computer modeling (VLEACH), confirmed by groundwater testing, shows that the contaminants will not leach into groundwater.]** The closest human receptors exist 150 feet from the site. Sensitive environments may include habitats for several endangered and threatened species, but no functioning habitats have been identified.

SELECTED REMEDY

Before identifying the proposed remedy, EPA reviewed the Corrective Measure Alternatives conducted by SPTCo. These alternatives included: aerobic (ex situ and/or in situ) bioremediation; desorption; capping; off-site disposal; chemical neutralization; and no action. EPA selected the proposed remedy after evaluating the feasibility and effectiveness of proposed alternatives in light of the remedial objectives for the site. The objectives were to reduce the potential for acute and chronic human health risks.

The proposed remedy for SWMU 10 involves the following components:

- Establish air monitoring stations along the site's perimeter. Monitoring would be conducted throughout site preparation and soil excavation, loading, and neutralization. If the monitoring data indicate unsafe conditions, cleanup crews could change work patterns, implement vapor suppression and dust control, or adjust the use of the soil neutralizing agent.
- Treat the contaminated soil's low pH levels through the use of neutralization injections. During and after the injection process, crews would verify pH levels through field testing.
- Provide a layer of neutralizing material over SWMU 10 prior to capping the surface area with Class II aggregate road base asphalt paving.
- Remove debris and secure the site.

The proposed remedy for SWMU 12 involves excavating and transporting contaminated soil to an off-site hazardous waste landfill for disposal. Confirmation soil sampling would also be conducted. Crews would backfill, compact, and regrade the area as necessary.

Deed restrictions would attach to the property in order to maintain industrial use status and notify future property owners and lessees of the neutralized hazardous wastes left on site. SPTCo would be required to record the revised unilateral Corrective Action Order, the Statement of Basis, and the Corrective Measures Implementation Order with the Kern County Recorder's Office for notification purposes. The restrictions would:

- Prohibit the property from being used as a residence, hospital, school, clinic, day care center, or any permanently occupied human habitation (including a hotel or a motel) that could be used as a residence for employees. This prohibition would not apply if the site were reevaluated and remediated for a new land use scenario.
- Require periodic inspection and maintenance of the asphalt paving at the facility. The deed would require that additional asphalt be added to accommodate any increased weight load

accompanying future commercial or industrial use.

- Require that any construction, excavation, or earth moving activity on site minimize the disturbance of contaminated soil. To prevent contact with harmful contaminants, construction workers would be required to wear protective clothing when excavating or disturbing contaminated areas.

The proposed remedy does not address SWMU 13, because investigators identified no contamination above levels of concern at this unit. The total capital cost for the proposed remedy is between $300,541 and $477,968, with operation and maintenance costs of $4,000 per year.

CONTAMINATION DETECTED AND CLEANUP GOALS[1]

[Because the contamination did not originate from RCRA units, the points of compliance are not located at the edge of a RCRA unit, but rather located at the boundary where soil is no longer at levels of concern. The contaminants and the maximum concentration (parts per million (ppm)) at which they were detected for SWMU 10 and SWMU 12 include: TPH-diesel (5,750.0), benzene (18.0), xylene (212.25), 2-methylnaphthalene (1000.0), naphthalene (680.0), phenanthrene (100.0), bis(2-chloroethyl)ether (21.0), aniline (300.0), toluene (not present in amounts above the level of concern), ethylbenzene (not present in amounts above the level of concern), and 4-methylphenol (231.0). A pH level of 1.4 was detected in the soil.

The contaminants present at SWMU 10 are contained in an estimated 5,700 cubic yards of soil. The cleanup goal for SWMU 10 is to neutralize the soil to between pH levels of 6 and 8 and use capping to prevent exposure to other contaminants (no cleanup of the other contaminants was proposed). There are no Maximum Contaminant Level (MCL) goals at SWMU 10 due to an absence of groundwater contamination.

The contaminants present at SWMU 12 are contained in an estimated volume of 300 cubic yards of soil. The cleanup goal for SWMU 12 is to excavate all contaminated soil to background levels. There are no MCL goals at SWMU 12 due to an absence of groundwater contamination.]

INNOVATIVE TECHNOLOGIES CONSIDERED

EPA considered the following innovative technologies for the proposed remedy:

- Ex situ bioremediation procedures, including oxygenation and degradation activities, to bring the area's contamination below levels of concern;
- **[In situ hot air and steam stripping;]** and
- Chemical treatment to raise the pH of affected soils.

PUBLIC PARTICIPATION

EPA Region IX held an initial public comment period from August 1, 1994, through September 15, 1994. The Region also conducted a public hearing on August 16, 1994. In response to concerns that some members of the community lacked adequate notification, EPA Region IX reopened the public comment

[1] **[The Contamination Detected and Cleanup Goals Table usually present in a Statement of Basis summary has not been included in this summary because the information contained in the table is largely irrelevant in this case: groundwater and RCRA units are not at issue, and cleanup is excavation (for SWMU 12) and capping and neutralization (for SWMU 10) of the soil only, not the groundwater.]**

period from October 6, 1994, through November 7, 1994. EPA received one formal comment at the public hearing, and seven mailed letters during the two comment periods. The public comments focused on notification problems and present and future threats to listed species, human health, and the **[property values]** of the community.

NEXT STEPS

As of June 1996, a Correction Action Implementation Order should be issued for SPTCo to act on the selected remedy. Since Cal-EPA's DTSC has corrective action authority, it is likely it will issue the order for remedy implementation and oversee inspections, resurfacing, and replacement of the asphalt in perpetuity.

KEY WORDS:
soil, groundwater; dermal contact, inhalation; acrolein, benzene, xylene, 2-methylnaphthalene, naphthalene, phenanthrene, pH, total petroleum hydrocarbon diesel (TPH-Diesel), bis(2-chloroethyl)-ether, aniline, 4-methylphenol; capping, excavation, neutralization injection, deed, air monitoring, offsite.

CONTACT:
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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS
SUMMARY COVER SHEET

FACILITY: SOUTHERN PACIFIC TRANSPORTATION COMPANY/FORMER MAGNA CORPORATION SITE
BAKERSVILLE, CA
ID # CAT 000 618 728

REGION: IX

Pursuant to EPA's request, the Contamination Detected and Cleanup Goals Table usually present in a Statement of Basis summary is not included in this summary because the information contained in the table is largely irrelevant in this case: groundwater and RCRA units are not at issue, and cleanup is either excavation (SWMU 12) or capping with acid neutralization (SWMU 10). HAZMED did, however, include information regarding the contamination that was detected and the associated cleanup goals within the text of the Statement of Basis. Per your request, revisions are indicated in bold and brackets, to ease the review process.

WORKING DRAFT

TECHNICAL REPORT ABSTRACT
EPA CONTRACT No. 68-W7-0001
WORK ASSIGNMENT No. 9; TASK 2

Report Title:	Final Southern Pacific Transportation Company/Former Magna Corporation Site Corrective Action Statement of Basis Summary
Report Date:	December 2, 1997
Prime Contractor:	Hazardous and Medical Waste Services, Inc.
Project Officer:	Wendel Miser
Project Officer Address:	Crystal Station; 2800 Crystal Drive; Arlington, VA 22202
Program Office:	Office of Solid Waste
No. of Pages in Report:	7

Does this Report Contain Confidential Business Information
Yes ____ **No** _X_

ABSTRACT

This project involved the preparation of a Final Corrective Action Statement of Basis Summary in accordance with the template format supplied for this work assignment and comments received from the EPA Work Assignment Manager on the Draft Summary. The document summarizes the basis for the corrective action selected for the Southern Pacific Transportation Company (SPTCo) site. The document describes the SPTCo facility, detected contamination, and possible exposure pathways. The document also summarizes the selected remedy, cleanup goals, innovative technologies considered, public participation procedures, and future corrective action procedures.

KEY WORDS

Soil, groundwater; dermal contact, inhalation; acrolein, benzene, xylele, 2-methylnaphthalene, naphthalene, phenanthrene, pH, total petroleum hydrocarbon diesel (TPH-Diesel), bis(2-chloroethyl) ether, aniline, 4-methylphenol; capping, excavation, neutralization injection, deed, air monitoring, and offsite.

December 2, 1997

Mr. Mike Fitzpatrick
Work Assignment Manager
U.S. Environmental Protection Agency
401 M Street, S.W.
Mail Code 5303W
Washington DC 20460

RE: EPA Contract 68-W7-001
Work Assignment No. 9 Task 02
Final Statement of Basis Summary for the Southern Pacific Transportation Company Site

Dear Mr. Fitzpatrick:

I have enclosed two copies of the Final Statement of Basis summary for the Southern Pacific Transportation Company (SPTCo) site. I have also included an electronic version of this document, formatted in Wordperfect 6.1, in accordance with the work assignment.

In line with your request to bold and bracket revised text in the Final Seagate Statement of Basis Summary, HAZMED also bolded and bracketed revised text in the Final SPTCo Summary. The revised text reflects the comments made by Nancy Nadel, U.S. EPA Region 9, dated October 3 and 9, 1997. In accordance with the request you and Ms. Nadel made, HAZMED deleted the Contamination Detected and Cleanup Goals Table contained within the Draft Statement of Basis summary. HAZMED did, however, retain within the text of the Statement of Basis information regarding the contamination that was detected and the associated cleanup goals.

If you have any questions or need additional assistance, please feel free to contact me at 301-577-9339, extension 224.

Sincerely,

Sue Tripp
Work Assignment Manager

attachments included
cc: Debra Miller (w/o enclosure)
Wendel Miser (w/o enclosure)

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IX
ID# 3127

Talley Corporation.

Newbury Park, CA
(Signed September 29, 1993)

Facility/Unit Type:	**Manufacturing of aircraft components**
Contaminants:	**Hexavalent chromium (CR+6), barium, copper, lead, vanadium, zinc, 1, 1-dichloroethane (1, 1-DCA), 1, 1-dichloroethane (1, 1-DCE), 1, 1, 1-trichloroethane (1, 1, 1-TCA), 1, 1-dichloroethane (1, 2-DCA), 1, 2-dichloroethane (1, 2-DCE), tetrachloroethylene (PCE), trichloroethylene (TCE)**
Media:	**Ground water**
Remedy:	**Pump and treat ground water**

FACILITY DESCRIPTION

In 1986, an RFA was conducted at the Talley Corporation. In September 1988, EPA and Talley Corporation signed a consent agreement pursant to Section 3008(h) of RCRA. The Administrative Order on Consent required Talley Corporation to install a treatment plant for ground water, maintain ...i impoundment area, perform an RFI for soil and ground water, remove an inactive underground storage tank, conduct a CMS and implement the remedy selected by EPA.

The Talley Corporation manufactured military and civilian aircraft components from approximately 1956 to 1989. The facility was built in the early 1950s on a 12 acre site. In June 1986 the Talley Corporation, including the Newbury Park facility was acquired by Teleflex, Inc. The site also housed the metals casting business, Ventura Castings. The facility was closed in 1989 and existing structures were dismantled and removed.

The site is located within the fully developed residential, industrial, and commercial properties of Newbury Park and the nearby undeveloped hillsides of the Santa Monica mountains.

The site is underlain by alluvial deposits, which consist of clay, sand, and gravel; and the Conejo Volcanics Series which consists of volcanic rock. Water tends to flow readily through the volcanic rock due to its porosity. The aquifer underlying the site is potable and is used by some area residents as a water supply.

During its manufacturing operations, Talley Corporation generated hazardous wastes from metal plating, parts machining, and parts cleaning operations. In 1963, Talley Corporation constructed a surface impoundment to transfer plating wastewater to a surface impoundment for evaporation. A leachfield was found at the facility that was used between 1958 and 1963 and appears to be a primary source of ground-water contamination.

An investigation conducted by the California Environmental Protection Agency's Los Angeles Regional Water Quality Control Board (RWQCB) in 1983, discovered soil and ground water contamination. The surface impoundment was ordered closed in January 1984. The RWQCB also issued a Cleanup and Abatement Order that required removal of contaminated soil and a ground-water assessment. Approximately 2,200 cubic yards of waste and soil were removed. Also in 1983, a routine inspection by the RWQCB found cracks in the surface impoundment. The impoundment was taken out of service in January 1984.

Since 1984, interim corrective measures have been conducted including the removal and capping of underground storage tanks. In 1989, a ground-water extraction system was installed to initiate remediation of the ground-water contamination. Currently over 2,000,000 gallons of water is being pumped and treated each month. Over 56,000,000 million gallons of ground water have been treated to date. The treated ground water is discharged under a National Pollution Discharge Elimination System (NPDES) permit to a Caltrans storm drain which is connected

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level	Cleanup Goal (µg/l)	Point of Compliance
ground water	Not given	1,1-DCA	.5	Not given	5	Concentrations are reduced in entire contaminated area below cleanup goals
		1,1-DCE	260		06	
		1,1,1-TCA	2		200	
		1,2-DCA	11		.5	
		CIS-1,2-DCE	11		6	
		PCE	180		5	
		TCE*	11,000		5	
		Barium	1,500		1,000	
		Chromium (total)**	3,100		50	
		Copper	600		1,000	
		Lead	65		15	
		Vanadium	1,600		-	
		Zinc	1,500		5,000	

* TCE maximun concentration to date is approximately 180,000 ug/l.
** Chromium maximum concentration to date is approximately 9,600 ug/l.

to Conejo Creek.

EXPOSURE PATHWAYS

The contaminated ground water is the principal threat at the site because of the potential for ingestion through drinking water wells. This pathway exhibits the greatest potential for future risk to receptors because it contains concentrations of TCE and chromium that exceed the drinking water standards. Currently, the site has not contaminated drinking water wells.

No rare or endangered species are present at or near the site.

SELECTED REMEDY

The selected remedy consists of pumping and treating contaminated ground-water using existing extraction wells. Chromium is removed by chemical precipitation and microfiltration. The precipitate is considered a hazardous waste (TCLP for chromium) and is sent to a licensed incineration facility for treatment and disposal along with spent filter bags. Volatile organic compounds (VOCs) are removed from the ground water by a permitted air stripper. Emission controls are not required because the VOCs emitted do not exceed the allowable discharge. The facility will continue to regularly monitor ground water.

This remedy is viable as a stand alone remedy and is protective of human health and the environment. The current interim pump and treat systems appear to be effective at controlling further migration of the plume and reducing the mass of contamination. All required permits have been obtained.

The estimated capital and O&M costs for the selected remedy is approximately $590,000 and approximately $500,000 per year.

INNOVATIVE TECHNOLOGIES CONSIDERED

In situ treatment.

PUBLIC PARTICIPATION

The public comment period extended from August 18, 1993 through September 17, 1993. A

public meeting was held on August 24, 1993. The meeting was attended by approximately 30 people, including representatives of the U.S. EPA, Cal-EPA's Department of Toxic Substances Control, and citizens. U.S. EPA responded to numerous questions at the public meeting; there were no formal comments raised by the community at the meeting. Six comment letters were received by mail.

NEXT STEPS

The facility will continue to regularly monitor ground-water in the area of the site and will send reports to EPA summarizing the sampling data and the effectiveness of the remedy. EPA may require modifications to the extraction or treatment system in order to assure plume capture and improve contaminant mass reduction.

EPA is currently working with the Facility on plans for remediation of the source areas at the site. EPA plans to make a decision on the source areas sometime in 1994.

KEY WORDS
ground water; ingestion; VOCs, TCE, PCE, DCA, DCE, heavy metals, chromium, lead; pump and treat, air stripping, precipitation, on-site treatment

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 2010

Arnav Systems, Inc.

Salem, OR
(Signed May 10, 1991)

Facility/Unit Type: Plating operations
Contaminants: Lead, Chromium, Barium, Cadmium, Copper, Zinc
Media: Soil
Remedy: Excavation

FACILITY DESCRIPTION

In November 1990, Arnav Systems, Inc. discovered an unlined earthen sump inside a building on site. Clean closure of a nearby regulated surface impoundment was made contingent on remediation of the sump, which was thought to contain electroplating waste residue.

Arnav Systems, formerly known as Morrow Electronics, Inc., manufactured aircraft navigation equipment and fuel management computers. Materials known to have been handled on site that may have been deposited in the sump include EPA listed electroplating wastes, and wastes characteristically hazardous for lead, chromium and corrosivity.

The site is located in an industrially zoned area. The nearest residential area is a narrow strip of eight residences located 1.4 miles northwest of the site.

The site is underlain by silty clays to a depth of 7 feet. Beneath these clays are 15 to 30 feet of brown silt, a thin layer of silty sand, and gravels which extend to a depth of 100 feet. Depth to ground water is 25 feet below ground surface. Residential and industrial properties located downgradient from the site use ground water from the shallow unconfined aquifer for domestic and industrial uses.

After conducting one year of ground water sampling, it was determined that ground water quality beneath the site was unaffected by the waste in the closed surface impoundment and the sump. The surface impoundment clean closure was completed in October 1991. Remediation of the sump was completed in April 1993.

EXPOSURE PATHWAYS

Exposure pathways include contact or ingestion of soil remaining in the sump area after removal of the waste. An endangerment assessment for human health performed for the nearby surface impoundment indicates that the level of risk posed by this exposure pathway is very low. The nearest residential area is located 1.4 miles northwest of the site.

SELECTED REMEDY

In 1993, waste residue present in the sump and surrounding contaminated soils were excavated. Soil samples taken from the walls of the excavation revealed that cleanup goals were met for all parameters. Excavated material was disposed of at an approved hazardous waste management facility.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION IX
ID # 7137
CAD 059 277 137

Techalloy Company, Inc.
Perris, California
(Signed May 10, 1995)

Facility/Unit Type: Manufactures stainless steel and nickel alloy wire used by aerospace and other related industries
Contaminants: Benzene, Beryllium, Cadmium, Chromium, Chromium VI, Nickel
Media: Groundwater
Remedy: Installing extraction wells; treating groundwater in the on-site wastewater treatment plant; implementing institutional controls, and continued groundwater monitoring.

FACILITY DESCRIPTION

Techalloy Company, Inc, is a stainless steel and nickel alloy wire manufacturer located in Perris, California. Industrial wastewater from the manufacturing operation at the Techalloy facility contains high levels of dissolved metals, acids, nitrates, sulfates, and total dissolved solids (TDS). During past operations, the industrial wastewater was discharged into three evaporation ponds, or surface impoundments, located on the facility's property. During a routine inspection in 1984, an inspector from the Santa Ana Regional Water Quality Control Board (SARWQCB) found contaminated soil under one of the impoundments. On October 29, 1984, SARWQCB issued a cleanup and abatement order requiring Techalloy to properly dispose of all waste materials associated with the impoundment and to mitigate waste migration according to an approved schedule.

Subsequent on-site and off-site groundwater monitoring, also required by the order, found that hazardous constituents had leaked into the groundwater. In December 1988, EPA and Techalloy entered into a consent decree under §3008(a) and 3008(h) of RCRA. In accordance with the consent decree, Techalloy completed closure of the surface impoundments in July 1989 and conducted an RFI from 1989 to 1991. The RFI identified two distinct groundwater plumes; a non-hazardous constituents plume and a hazardous constituents plume.

The Techalloy facility consists of three main buildings, a former drum storage area, product storage areas, sludge bins, three capped former surface impoundments, and a wastewater treatment system. The facility occupies approximately 7 acres of land. The land immediately surrounding the property is used for residential (about 0.25 mile north) and agricultural (east, west, and south) purposes. Local topography slopes gently to the south and southeast toward the San Jacinto River. The facility is located within the central portion of the Perris Block which is bounded by the Elsinore Fault Zone and the San Jacinto Fault Zone.

The facility also lies within the Perris-South II subbasin of the San Jacinto groundwater basin. The groundwater basin drains into the San Jacinto River which drains into the Railroad Canyon Reservoir, located approximately two miles south of the facility. The groundwater located in the Perris-South II subbasin is used for agricultural and municipal/domestic purposes, which includes drinking water. There are no known drinking water wells located within the immediate vicinity of the Techalloy facility. Unconfined groundwater lies within fractured bedrock at a depth of approximately 20 feet beneath the facility. Groundwater flows from the northwest towards the southeast at a calculated rate of about 20 to 200 feet per year.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	1995/1996 Concentrations (mg/l)	Action Level	Cleanup Standard	Point of Compliance
Groundwater	Unknown	Benzene	0.022	None	0.001	Hazardous constituents plume
		Beryllium	0.039		0.004	
		Cadmium	0.17		0.005	
		Chromium	1.0		0.05	
		Chromium VI	0.43		0.05	
		Nickel	457		0.10	

EXPOSURE PATHWAYS

Groundwater is the potential exposure medium of primary concern. Exposure via groundwater would include ingestion.

SELECTED REMEDY

Contaminants of concern found in the groundwater include benzene, beryllium, cadmium, chromium, chromium VI, and nickel. In response to public comments, the scope of the corrective measure proposed in the Statement of Basis was modified to allow the California EPA, Department of Toxic Substances Control (DTSC), in conjunction with SARWAQB, to make a final decision as to whether remediation of the non-hazardous constituent plume is necessary and to incorporate a phased approach toward remediation of the hazardous constituents plume.

The selected final remedy includes: 1) pumping of groundwater from the hazardous constituents plume via extraction wells; 2) treating the extracted groundwater using the wastewater treatment plant already in existence at the Techalloy facility; 3) placing institutional controls on the facility's property; and 4) continued groundwater monitoring.

Phased implementation will first include the installation of two to three extraction wells with further expansion depending upon the effectiveness of the initial remediation system. The estimated cost is approximately $225,200 for the first phase (4 years).

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The 45 day public comment period extended from July 15, 1994 through August 29, 1994. EPA developed an information repository and distributed a fact sheet with background information regarding the Techalloy facility and a description of the proposed corrective action measures. The fact sheet was distributed to a mailing list consisting of approximately 361 local residents, businesses, agencies, and other interested parties in mid-July. The proposed remedy was also announced in *The Press-Enterprise* newspaper on July 13, 1994, and in the *Perris Progress* newspaper. Public comments were received and incorporated into the remedy selection process.

NEXT STEPS

EPA will incorporate by reference the final statement of basis and response to comments into the CMS report. Techalloy must submit a Corrective Measures Implementation Plan to EPA within the time period set forth in the consent decree. The final corrective measures will be implemented and Techalloy will conduct additional investigations into the lateral extent and impact of the non-hazardous constituent plume. If the investigation determines that remediation of the non-hazardous constituent plume in needed, such remediation may be required under Techalloy's post-closure permit as issued by DTSC.

KEY WORDS:
California; groundwater; ingestion; benzene, beryllium, cadmium, chromium, chromium VI, nickel; extraction wells, on-site treatment, institutional controls, groundwater monitoring.

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 2010

Arnav Systems, Inc.

Salem, OR
(Signed May 10, 1991)

Facility/Unit Type: Plating operations
Contaminants: Lead, Chromium, Barium, Cadmium, Copper, Zinc
Media: Soil
Remedy: Excavation

FACILITY DESCRIPTION

In November 1990, Arnav Systems, Inc. discovered an unlined earthen sump inside a building on site. Clean closure of a nearby regulated surface impoundment was made contingent on remediation of the sump, which was thought to contain electroplating waste residue.

Arnav Systems, formerly known as Morrow Electronics, Inc., manufactured aircraft navigation equipment and fuel management computers. Materials known to have been handled on site that may have been deposited in the sump include EPA listed electroplating wastes, and wastes characteristically hazardous for lead, chromium and corrosivity.

The site is located in an industrially zoned area. The nearest residential area is a narrow strip of eight residences located 1.4 miles northwest of the site.

The site is underlain by silty clays to a depth of 7 feet. Beneath these clays are 15 to 30 feet of brown silt, a thin layer of silty sand, and gravels which extend to a depth of 100 feet. Depth to ground water is 25 feet below ground surface. Residential and industrial properties located downgradient from the site use ground water from the shallow unconfined aquifer for domestic and industrial uses.

After conducting one year of ground water sampling, it was determined that ground water quality beneath the site was unaffected by the waste in the closed surface impoundment and the sump. The surface impoundment clean closure was completed in October 1991. Remediation of the sump was completed in April 1993.

EXPOSURE PATHWAYS

Exposure pathways include contact or ingestion of soil remaining in the sump area after removal of the waste. An endangerment assessment for human health performed for the nearby surface impoundment indicates that the level of risk posed by this exposure pathway is very low. The nearest residential area is located 1.4 miles northwest of the site.

SELECTED REMEDY

In 1993, waste residue present in the sump and surrounding contaminated soils were excavated. Soil samples taken from the walls of the excavation revealed that cleanup goals were met for all parameters. Excavated material was disposed of at an approved hazardous waste management facility.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal (ppm)	Point of Compliance
soil	Not given	lead	2110	Not given	2000	Not given
		chromium	508		400	
		barium	921		4000	
		cadmium	8.1		40	
		copper	10800		80000	
		zinc	167		162	

PUBLIC PARTICIPATION

The Oregon Department of Environmental Quality requested public comments from May 27, 1993, until July 12, 1993. No comments regarding the sump were received. No requests for a public hearing were submitted, and a public hearing was not held.

NEXT STEPS

Remediation of the sump was completed and no further action is required.

KEY WORDS

soil; dermal contact, ingestion (soil); inorganics/heavy metals, lead, chromium, cadmium; excavation

CONTACTS

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 2631

PacifiCorp (Utah Power & Light)

Idaho Falls, ID
(Signed November 27, 1988)

Facility/Unit Type:	**Creosote treatment of power poles**
Contaminants:	**Creosote, PAHs and Phenols**
Media:	**Ground water and soil**
Remedy:	**Pump and treat ground water, excavation, capping**

FACILITY DESCRIPTION

In March 1988, EPA and the Idaho Department of Health and Welfare (IDHW) jointly issued a post-closure permit to Utah Power and Light Company (UPLC) pursuant to §3004 and §3005 of RCRA, and Idaho Code §39.4409(5). Corrective action conditions under the permit require remediation of ground water and soil contaminated with creosote.

In 1988, UP&L merged with PacifiCorp, and operating responsibility for the site was transferred to Pacific Power & Light, a Division of PacifiCorp. The PacifiCorp pole treatment yard is located in a commercial and industrial area in the southern part of Idaho Falls. From the early 1920s through 1983, electrical power poles were treated on site by soaking them in a vat of heated creosote and then allowing the excess creosote to drip off into a receiving tank. In July 1983, creosote was found to be leaking from underground piping connecting the treatment vat to a storage tank.

Approximately 37,000 tons of creosote-contaminated soil and rock were subsequently excavated from the area, forming a pit that extended down 25 feet to the native basalt bedrock. Borings extending into the bedrock showed the presence of creosote as a nonaqueous phase liquid. The installation of ground water monitoring wells revealed creosote contamination of Snake River Aquifers 1 and 2.

Depth to ground water is approximately 130 feet. The site is underlain by surficial silt, sand and gravel ranging in thickness from a few feet to about 20 feet. Below this zone, interlayered basalt extends to a depth of 400 feet. Three interconnected aquifers have been identified beneath the site. Contamination was found to be limited to Aquifers 1 (130 - 160 feet) and 2 (240 - 260 feet).

The site lies approximately 1000 feet east of the Snake River. There are no known Snake River drinking water intakes within three miles downgradient of the site. The city of Idaho Falls obtains municipal water from three wells located upgradient of the site.

EXPOSURE PATHWAYS

There is low potential for human exposure to contaminants via the ground water pathway. Water samples taken by EPA in 1985 showed no contamination in any of the off-site wells located within 1 mile of the site. There is negligible potential for a significant release to surface water since ground water does not recharge to surface water in the vicinity. Contaminated soil is not an exposure pathway because the highly contaminated soils were removed, and the remaining affected area has been capped.

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 5182

BSB Diversified (Formerly Hytek Finishes Company)

Kent, WA
(Signed August 29, 1991)

Facility/Unit Type:	**Electroplating and metal finishing**
Contaminants:	**Volatile organics, arsenic, cyanide**
Media:	**Ground water**
Remedy:	**Ground-water extraction and treatment**

FACILITY DESCRIPTION

In November 1988, EPA and the Washington Department of Ecology issued a joint RCRA permit to Hytek Finishes Company pursuant to RCRA and the Washington Administrative Code. Corrective action conditions under the permit required ground-water remediation and long term monitoring.

BSB and its predecessor, Heath Plating, conducted metal finishing and electroplating operations at the site beginning in 1957. From 1964 through 1985, the facility generated metal plating wastes that were treated and stored in five unlined surface impoundments. Use of the impoundments was discontinued in 1985. The facility also used various chlorinated and nonchlorinated processing solvents which have contributed to ground-water contamination.

Ground water at the site is contaminated by arsenic, cyanide, and organic compounds. Contamination by organic compounds is believed to have originated from spills at a container storage area and from releases at other solid waste management units.

Depth to ground water is approximately 5 feet. This unit extends to a depth of approximately 60 feet, and is separated from a lower artesian aquifer by a 30 foot low permeability zone. The facility is located in a area that is primarily industrial, but also includes a few residential households.

EXPOSURE PATHWAYS

Ground water is the primary contaminant migration pathway at the site. The risk of exposure is minimal, however, as ground water affected by contamination is not used as a drinking water source. The nearest residential household is located 200 feet from the facility. An ephemeral creek is located 300 feet from the facility.

SELECTED REMEDY

A ground-water extraction and treatment system began operation in August 1992. Extracted ground water is treated with an air stripping unit. The total capital and O&M costs are estimated to be $1.8 million (1991).

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/l)	Action Level	Cleanup Goal* (mg/l)	Point of Compliance
ground water	Not given	benzene	0.046	Not given	0.005*	**
		xylene	0.734		70.0	
		ethyl benzene	0.099		3.5	
		toluene	0.816		10	
		1,1 dichloroethane	2.675		0.94*	
		1,1,1-trichloroethane	3.980		0.20*	
		1,1,2-trichloroethane	0.033		0.006	
		1,1,2,2-tetrachloroethane	0.002		0.002	
		1,2-dichloroethane	0.042		0.005	
		chloroethane	0.021		0.01	
		1,1-dichloroethylene	0.978		0.007*	
		trans-1,2-dichloroethene	210		0.07	
		vinyl chloride	106.5		0.002*	
		tetrachloroethene	0.36		0.007	
		trichloroethylene	300		0.005*	
		arsenic	0.012		0.05*	
		cyanide	0.31		0.2	

* Cleanup goals are Maximum Contaminant Levels

** The point of compliance is defined as the downgradient boundary of the parcel which contains all of the regulated units, and includes all monitoring wells along 84th Avenue (East Valley Road).

PUBLIC PARTICIPATION

A public meeting was held on March 17, 1986, to discuss the permitting process at Hytek. No comments were received from the public.

NEXT STEPS

EPA will continue to monitor the ground-water recovery system to ensure the effectiveness of the system.

KEY WORDS
ground water; ingestion; VOCs, benzene, TCE, toluene, xylene, inorganics/heavy metals, arsenic; on-site treatment, air stripping

CONTACT
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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 4654

Envirosafe Services of Idaho, Inc., Site B (ESII-B)

Grand View, ID
(Signed November 8, 1988)

Facility/Unit Type:	**Treatment, storage and disposal facility**
Contaminants:	**Tetrachloromethane, Trichloromethane, Chloromethane, Dichloromethane**
Media:	**Air and ground water**
Remedy:	**Cap with vapor collection and treatment system**

FACILITY DESCRIPTION

Envirosafe Services of Idaho, Inc. Site B (ESII-B) is a 120-acre land disposal facility located approximately 10 miles northwest of Grandview, Owyhee County, Idaho. The site is located on a plateau near the Castle Creek/Snake River drainage divide, well outside the 100-year floodplain. The site is very arid, with a precipitation rate of about 7.3 inches per year. The area surrounding the site is sparsely populated and is used primarily as agricultural and range land. A birds of prey sanctuary is located near the facility.

The site is underlain by gravels grading into interbedded lacustrine (lakebed) sands and clays (60-80 feet below ground surface). The regional aquifer is an artesian aquifer found about 1,800 feet below ground surface. Ground water is encountered at a depth of 180 to 200 feet beneath the site. The upper aquifer is separated by 20 to 30 feet of clay from a lower aquifer.

The site was first developed as a Titan Missile Silo Complex by the US Air Force (USAF). The site was sold to WesCon when the USAF discontinued site activities. WesCon began disposing pesticide/herbicide wastes in the silos on August 1, 1973. By 1980 the silo complex was almost filled with a wide variety of hazardous and solid wastes. ESII took control of the site in 1981, after WesCon was convicted of illegal disposal of PCBs in a 1981 criminal trial.

In November 1988, EPA and Idaho Department of Health and Welfare (IDHW) jointly issued a RCRA permit to ESII-B pursuant to RCRA, HSWA and Idaho Code §39.4401. The permit required ESII-B to place covers and vapor collection/treatment systems on the units associated with the missile silo/radar antennae silos where hazardous and PCB wastes were disposed, and to implement a ground-water monitoring program.

EXPOSURE PATHWAYS

Potential exposure pathways for unsaturated soil and ground water include inhalation of organic vapors venting from the silos and, to a much lesser extent, escaping from the soil; and consumption of ground water. Cap placement, along with restricted site access minimizes the risk of exposure through inhalation. The risk of exposure through ground water ingestion is minimal as the aquifer beneath the site is not used as a drinking water source.

SELECTED REMEDY

Caps and carbon adsorption units were placed on top of the silo complexes for treatment of air emissions. A ground-water monitoring program was implemented to monitor the integrity of the three silo complexes, and other land-based units, both past-practice and regulated.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level*	Cleanup Goal	Point of Compliance
ground water	N/A	tetrachloromethane	35	*	not specified	downgradient edge of the unit.
		trichloromethane	200	*		
		chloromethane	130	*		
		dichloromethane	19	*		
vapors from silos		1,1 dirchlorocthene	31			exit point from silo.
		m, p xylenes	11			
		ethyl benzene	5			

* A quantitative method risk-based to determine action levels that would trigger ground water corrective action was specified in an August 1993 permit modification. Individual action levels are not specified and have not yet been exceeded.

On August 4, 1993, IDHW approved a class 2 permit modification implementing a ground-water compliance monitoring program.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period began on August 30, 1988, and continued through October 14, 1988. Public meetings were held on September 15, 1988, and on September 29, 1988. Numerous comments were received from the public concerning the adequacy of the ground-water monitoring system, the facility's proximity to Castle Creek and the Snake River, and facility operations. Numerous comments were also received from ESII. EPA and IDHW responded to all of the comments, which resulted in minor changes to the permit.

Regular public meetings are held at least quarterly with the Owyhee County Commissioners. Public meetings/hearings are held as necessary for permit modifications.

NEXT STEPS

In response to the detection of VOCs in ground water, a draft CMS was submitted by ESII-B in April 1993. The study proposes forced venting of the existing silo vent, and ground-water extraction and treatment. The CMS is currently under review by EPA and the Idaho Department of Environmental Quality. ESII-B continues the collection and analysis of ground-water samples.

KEY WORDS

air, ground water; ingestion, inhalation; VOCs; capping, carbon adsorption, monitoring

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STATEM + save RESI as WP POR FINAL DECISION AND MENTS SUMMARY

REGION X
ID# 3466

Corporation
is, OR
ch 23, 1990)

Facility/Unit Type: Fiberboard manufacturing plant
Contaminants: Trichloroethylene (TCE); Chloroform; Vinyl Chloride 1,1-Dichloroethane (1,1-DCA); Trans-1,1-dichloroethene (Trans-1,1-DCE); 1,1,1-Trichloroethane (1,1,1-TCA)
Media: Ground water, soil, air, surface water
Remedy: Ground water pump and treatment, soil vapor extraction

FACILITY DESCRIPTION

In March of 1990, a post-closure permit was issued to Evanite Fiber Corporation (Evanite) for long term care of a hazardous waste landfill created by a large spill of TCE. Corrective action conditions under the permit required ground-water remediation for releases from the landfill.

The depth to ground water is approximately 20 feet. Ground water flows northeast and discharges into the Willamette River. The Willamette and Marys Rivers are the two nearest surface water bodies. The Evanite facility is located at the confluence of these rivers and is approximately 1/2 mile from downtown Corvallis. The facility is surrounded by a residential neighborhood and farmland. A city park is also located at the river confluence and includes a boat ramp and bicycling facilities.

EXPOSURE PATHWAYS

Contamination has been detected above drinking water levels in wells in the nearby community. The contamination has also been detected in the Willamette River, which is used for recreation. Potential for exposure due to air emissions are extremely high, particularly at the neighboring park. Contaminated soil is not an exposure pathway because the contaminated soils were removed during closure, and the remaining affected area has been capped.

SELECTED REMEDY

Soil vapor extraction will be used to remediate the contaminated subsoils which remain in the landfill, while ground-water remediation consists of a pump and treat system. Contaminated ground water will be pumped from the extraction well network, air-stripped to remove the volatile contaminants, and then discharged to Evanite's wastewater treatment system. TCE recovered from the air stripper and soil vapor extraction system will be recovered and reused in the manufacturing process. Remaining air emissions from these units will be vented to a carbon adsorption unit, and the spent carbon will be treated at a carbon regeneration facility off-site. Cost of remedy is currently estimated at approximately $450,000. This cost does not include initial investigation costs or installation of the ground water treatment system, as those activities have been completed. Remedy selection was based on effectiveness.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
ground water*	1200 million gallons	Chloroform	1700ug/l	5.7 ug/l	5.7 ug/l	landfill "unit" boundary
		1,1-DCA	1000ug/l	5 ug/l	5 ug/l	
		Trans-1,2-DCE	6700ug/l	100 ug/l	100 ug/l	
		1,1,1-TCA	1000ug/l	200 ug/l	200 ug/l	
		TCE	18 inches layer of TCE	5 ug/l	5 ug/l	
		Vinyl Chloride	4200ug/l	2 ug/l	2 ug/l	
air*	Not given	TCE	> 1 ppm	.27 μ/m^3	.27 μ/m^3	maximum exposed individual
surface water*	Not given	TCE	14.4 mg/l	5 ug/l	5 ug/l	surface water monitoring stations along river bank and in on-site culvert
soil	30 acre-feet	TCE	10,000 mg/kg	Not given	Not given	

* Contaminants detected off-site in media.

INNOVATIVE TECHNOLOGIES CONSIDERED

Soil Vapor Extraction.

PUBLIC PARTICIPATION

A public meeting/hearing was held on December 12, 1989. Approximately 65 people attended. Comments received during the public comment period largely concerned air emissions at the facility, most of which are not subject to RCRA.

NEXT STEPS

Ground-water investigations at the facility have detected the presence of a separate dense phase plume. The permit contained a requirement to determine whether the dense phase plume is continuing to migrate along the aquitard; this investigation has been completed. EPA and the State are concerned that this plume will provide a continuing source of contamination, and will not be easily remedied by an extraction program. The permit requires that Evanite research cleanup technologies once the current corrective action system ceases to perform effectively, and implement an appropriate remedy.

KEY WORDS

ground water, soil, air; ingestion, inhalation; VOCs; air stripping, on-site treatment, soil vapor extraction, carbon adsorption

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION III
ID# 1705

Atlantic Research Corporation

Gainesville, VA
(Signed September 30, 1991)

Facility/Unit Type:	**Rocket motor production and testing operations**
Contaminants:	**Tetrachloroethene (PCE), 1,1-Dichloroethene (1,1-DCE), 1,1,1-Trichloroethane (1,1,1-TCA), Methyl Chloride (MEC), Trichloroethylene (TCE), Chlorobenzene, Arsenic, Hexavalent Chromium (VI), Lead, Mercury**
Media:	**Ground water, soil, surface water**
Remedy:	**Continued pumping and treating ground water, shredding VOC-contaminated soil with in-situ placement, excavating inorganic-contaminated soil with off-site disposal**

FACILITY DESCRIPTION

On May 25, 1989, EPA and Atlantic Research Corporation (ARC) entered into a Consent Order pursuant to Section 3008(h) of RCRA. The agreement required ARC to complete an on-site and off-site investigation to determine the nature and extent of contamination from the facility and to conduct a study to evaluate cleanup alternatives.

The 420-acre ARC facility began operation in 1951. ARC tests and manufactures rocket motors and gas generators. The facility consists of solid rocket propellant and rocket motor production and testing operations, research laboratories, and design technology areas. ARC has identified itself as a generator of hazardous waste and an owner/operator of a hazardous waste treatment, storage, and disposal facility. In November 1988, the facility submitted a Part B permit application for open burning pits referred to as thermal treatment units, which is currently being processed.

ARC has undertaken several remedial measures to address past disposal and releases of chemical constituents. Two preliminary investigations for volatile organic compounds (VOCs) at the Facility were conducted. The conclusion of the second investigation led to the development of the "Plan of Action for Environmental Investigation and Interim Remedial Action" (POA). The POA was approved by EPA as a equivalent of an RFI report. ARC submitted a CMS report to EPA on April 15, 1991 and also completed a risk assessment. The findings in the reports indicated the presence of VOC contamination in ground water and soils, and metals contamination in soils within a localized area. The majority of the contamination appears confined to shallow soils and ground water, with some surface water contamination.

In October 1991 after the SB was signed, an ARC contractor encountered an odor in the soil. ARC sampled the area in November 1991 and tests results revealed the presence of chlorobenzene in the soil. The newly discovered contamination will be addressed through the selected remedy. EPA has addressed this development and other issues with two Explanations of Significant Differences, which are amendments to the signed Statement of Basis and Response to Comments.

EXPOSURE PATHWAYS

The contaminated groundwater is a potential threat at the site because of the

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 0032

Federal Aviation Administration
Lake Minchumina Flight Service Station
Lake Minchumina, AK
(CMI order signed on August 25, 1992)

Facility/Unit Type:	**Federal Facility flight service station**
Contaminants:	**Chloro-phenoxy herbicides, Dichlorodiphenoltrichloroethane (DDT), 1,1-Trichloro-2,2-Dis(p-chlorophenyl) (DDD), Dichlorodiphenoldichloroethylene (DDE)**
Media:	**Soil**
Remedy:	**Excavation, off-site disposal, on-site storage**

FACILITY DESCRIPTION

The Federal Aviation Administration's (FAA) Lake Minchumina Flight Service Station is located 150 miles southwest of Fairbanks, Alaska, and covers approximately 750 acres along the northwest shore of Lake Minchumina. From 1942-1969, pesticides were used. Petroleum products were used for heating and for vehicle and airplane fuel. Solvents were used for machine maintenance. In 1985, two 55 gallon drums of mixed herbicides rusted through in the Former Drum Storage Area (FDSA), releasing the entire contents. Stained soil and stressed vegetation spots were observed at various locations on site. Grid sampling and surface soil excavations later confirmed spill areas were confined to near surface soils. In 1988 and 1990, additional drums of material generated during investigation and removal activities were placed in the storage building. These drums included potentially dioxin-contaminated soils and pesticides.

Lake Minchumina supports aquatic organisms and is an area where residents boat, fish, trap, and gather wood. The community of Lake Minchumina is adjacent to the site and has a population of up to 35 people.

EXPOSURE PATHWAYS

Contaminants were found no lower than 10 feet below ground surface (bgs) at the FDSA. At the site of the herbicide spill, contamination had migrated to a maximum depth of 6 feet bgs, with herbicides at low concentrations of less than 330 ug/kg across two-thirds of the FDSA with high levels only at the spill site. Extensive areas of the Flight Service Station had residual DDT-T contamination which resulted from insect control. Herbicide contamination was also found in several other areas of the facility. Nearest potential receptors include nearby residents in the community of Lake Minchumina and aquatic organisms.

SELECTED REMEDY

In 1990, soil excavation was conducted at the FDSA and at other locations where high levels of contaminants had been detected to remove contaminated soil and ensure concentrations of hazardous constituents did not exceed clean-up levels. The contaminated soil was containerized and shipped off-site for final disposal. Drums containing dioxin and two small drums of investigations "derived" wastes remained on-site.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/kg)	Action Level (mg/kg)	Cleanup Goal* (mg/kg)	Point of Compliance
soil	16 cubic yds	Chloro-phenoxy herbicides	100	2000	2000	N/A
		Total DDT, DDD, DDE	150	10	10	
		Dieldrin	7	0.08	0.08	
		PCBs	4	10	10	
		Endrin	4	40	40	

* Based on Risk Assessment in RFI

FAA proposes to excavate soils to cleanup goals in hot spots identified in confirmation sampling conducted during 1990. Drums containing dioxin contaminated soil and herbicides will remain on-site until arrangements can be made to ship them off-site to a permitted storage facility. Once drums are removed, the liner of the storage area will be steam cleaned; samples from steam cleaning and from the storage area will be analyzed for contaminants until none are detected. The liner will be disposed of as hazardous waste. All other equipment will be decontaminated.

The approximate costs for the remedy are provided below:

Labor/Travel etc.	225,000-325,000
Excavation and Removal	70,000-100,000
Transport of Waste	375,000-450,000
Storage of Waste (offsite for one year)	625,000-650,000

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

EPA issued a public notice and gave the public an opportunity to comment following the posting of the notice for forty-five (45) days. No comments were submitted and no public meeting was held.

NEXT STEPS

Drums containing dioxin-contaminated soil and herbicides will be stored on-site in the FDSA until they can be shipped off-site for storage and ultimate disposal. After all wastes have been removed, the facility will complete closure under RCRA.

KEY WORDS

soil; pesticides, dioxin; excavation; off-site disposal, on-site storage

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 6831

Morrison-Knudsen Company, Inc., Boise Industrial Complex

Boise, ID
(Signed July 24, 1991)

Facility/Unit Type:	**Manufacture and overhaul locomotives, mass transit cars, and other heavy equipment**
Contaminants:	**VOCs**
Media:	**Ground water**
Remedy:	**Pump and treat ground water; perform long term monitoring**

FACILITY DESCRIPTION

In January 1991, the Idaho Department of Health and Welfare issued a post-closure permit to Morrison-Knudsen Company, Inc., Boise Industrial Complex (MK BIC) pursuant to RCRA and the Idaho Hazardous Waste Management Act. Corrective action conditions under the permit require ground-water remediation for releases from two drainfields and a landfill at the facility, and long term monitoring of ground water in two perched aquifers.

Locomotives, mass transit cars, and other heavy equipment are overhauled at the site, which is located about 2 miles east of the Boise Municipal Airport. From the early 1970s until September 1984, MK BIC used various solvents to clean equipment. These solvents were routinely allowed to drain into two drainfields on site. A landfill was also used for the disposal of sludge and items contaminated with the solvents.

These activities have resulted in the contamination of the upper perched aquifer (zone A) located about 90 feet below ground surface. A lower perched zone (zone B) is located at 160 feet below ground surface, while the regional ground water table (zone C) is located about 235 feet below ground surface. Contamination has been detected in the zone B aquifer at levels below regulatory concern. The zone C aquifer has not been impacted by the site. Due to the denial of off-site access, the extent of off-site contamination in the zone A aquifer was not determined prior to issuance of the permit.

After permit issuance, off-site contamination of the zone A aquifer was confirmed; the level and extent of contamination has not, however, been confirmed. The facility is located approximately 800 feet from the nearest residential areaq.

EXPOSURE PATHWAYS

Ground water is the primary contaminant migration pathway at the site. The risk of exposure is minimal, however, as ground water in the zone A aquifer is not drinking water quality and is therefore not used as a drinking water source.

SELECTED REMEDY

MK BIC has installed a pump and treat system for the zone A aquifer. Extracted ground water is treated in a carbon adsorption unit and discharged to the municipal water treatment facility. Reduction of recharge from the MK BIC sewage disposal system and from runoff ponded along the north side of the site is planned. Long term monitoring for zone A and zone B will also be performed. The total capital and O&M costs for remediation are estimated to be $1.5 million (1991).

INNOVATIVE TECHNOLOGIES CONSIDERED

In situ bioremediation was considered, but rejected because the low permeability and porosity and high nitrate levels would limit the effectiveness

CONTAMINATION DETECTED AND CLEANUP GOALS**

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level	Cleanup Goal (µg/l)	Point of Compliance
ground water	not given	1,1,1 trichloroethane	5400	not given	200	not given
		1,1,2 trichloroethane	10		5	
		1,1 dichloroethane	610		5	
		1,2 dichloroethane	24		5	
		1,1 dichloroethylene	620		7	
		tetrachloroethylene	280		5	
		trichloroethylene	120		5	
		1,1,2,2 tetrachloroethane	8		5	
		chloroethane	<3		10	
		vinyl chloride	<1		2	

of the microorganisms available for breakdown of 1,1,1 trichloroethane and because of the technology limitations associated with performing enhanced bioremediation at depths greater than 50 feet.

PUBLIC PARTICIPATION

The public comment period began on October 2, 1990, and ended November 16, 1990. Two written comments were received, which resulted in minor changes to the proposed permit. There were no requests for a public meeting.

NEXT STEPS

Limited access for installation of off-site wells has been obtained since issuance of the permit. Access to additional off-site well locations is being pursued to support characterization and remediation efforts.

KEY WORDS

ground water; ingestion; VOCs, TCE; carbon adsorption, on-site treatment, monitoring

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 6831

MORRISON-KNUDSEN COMPANY, INC., BOISE INDUSTRIAL COMPLEX

Boise, ID
(September XX, 1993)

Facility/Unit Type: **Manufacture and overhaul locomotives, mass transit cars, and other heavy equipment**
Contaminants: **VOCs**
Media: **Ground water**
Remedy: **Pump and treat ground water; perform long term monitoring**

FACILITY DESCRIPTION

In January 1991, the Idaho Department of Health and Welfare issued a Post Closure Permit to Morrison-Knudsen Company, Inc., Boise Industrial Complex (MK BIC) pursuant to RCRA and the Idaho Hazardous Waste Management Act. Corrective action conditions under the permit require ground water remediation for releases from two drainfields and a landfill at the facility, and long term monitoring of ground water in two perched aquifers.

Locomotives, mass transit cars, and other heavy equipment are overhauled at the site, which is located about 2 miles east of the Boise Municipal Airport. From the early 1970s until September 1984, MK BIC used various solvents to clean equipment. These solvents wee routinely allowed to drain into two drainfields on site. A landfill was also used for the disposal of sludge and items contaminated with the solvents.

These activities have resulted in the contamination of the upper perched aquifer (zone A) located about 90 feet below ground surface. A lower perched zone (zone B) is located at 160 feet below ground surface, while the regional ground water table (zone C) is located about 235 feet below ground surface. Contamination has been detected in the zone B aquifer at levels below regulatory concern. The zone C aquifer apparently has not been impacted by the site. Due to the denial of off-site access, the extent of off-site contamination in the zone A aquifer was not determined prior to issuance of the permit

EXPOSURE PATHWAYS

Ground water is the primary contaminant migration pathway at the site. The risk of exposure is minimal, however, as ground water in the zone A aquifer is not drinking water quality and is therefore not used as a drinking water source.

SELECTED REMEDY

MK BIC has installed a pump and treat system for the zone A aquifer. Extracted ground water is treated in a carbon adsorption unit and discharged to the municipal water treatment facility. Reduction of recharge from the MK BIC sewage disposal system and from runoff ponded along the north side of the site is planned. Long term monitoring for zone A and zone B will also be performed.

INNOVATIVE TECHNOLOGIES CONSIDERED

In situ bioremediation was considered, but rejected because the low permeability and porosity and high nitrate levels would limit the effectiveness of the microorganisms available for breakdown of 1,1,1 trichloroethane; and because of the technology limitations associated with performing enhanced bioremediation at depths greater than 50 feet.

CONTAMINATION DETECTED AND CLEANUP GOALS**

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level (µg/l)	Cleanup Goal	Point of Compliance
ground water		1,1,1 trichloroethane	5400		200	
		1,1,2 trichloroethane	10		5	
		1,1 dichloroethane	610		5	
		1,2 dichloroethane	24		5	
		1,1 dichloroethylene	620		7	
		tetrachloroethylene	280		5	
		trichloroethylene	120		5	
		1,1,2,2 tetrachloroethane	8		5	
		chloroethane	<3		10	
		vinyl chloride	<1		2	

PUBLIC PARTICIPATION

The public comment period began on October 2, 1990 and ended November 16, 1990. Two written comments were received, which resulted in minor changes to the proposed permit. No requests for a public hearing were submitted, and a public hearing was not held.

NEXT STEPS

Limited access for installation of off-site wells has been obtained since issuance of the permit. Access to additional off-site well locations is being pursued to support characterization and remediation efforts.

KEY WORDS
ground water; ingestion(gw); VOCs, TCE; carbon adsorption, on-site treatment, monitoring(gw)

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 2314

Occidental Chemical Corporation

Tacoma, WA
(Signed July 15, 1992)

Facility/Unit Type: Inorganic chemical production plant
Contaminants: Chlorinated organic compounds
Media: Ground water, soil, sediment
Remedy: Ground-water extraction and treatment

FACILITY DESCRIPTION

In November 1988, EPA and the Washington Department of Ecology jointly issued a RCRA permit to Occidental Chemical Corporation (OCC) pursuant to RCRA and the Washington Administrative Code. Corrective action conditions under the permit require ground-water remediation, long term monitoring of ground water, sediment sampling, surface run-off monitoring, and seep monitoring along the adjacent waterway.

The 33-acre facility is located in the industrial port area of Tacoma, Washington, adjacent to the Hylebos Waterway. The facility, which began operations in 1929, produces many inorganic chemicals including chlorine caustic, calcium chloride, hydrochloric acid, and ammonia. Between 1947 and 1973, trichloroethylene and perchloroethylene were also produced at OCC.

During 1979 and 1980, an on-site investigation conducted by OCC revealed that soil and ground water beneath the site were contaminated with solvents. More than 10,000 cubic yards of contaminated soil were removed by the facility in 1981 and 1982. Other areas of soil contamination were paved in order to minimize exposure.

Ground-water use in the area includes drinking water and production water. Residents located within a 3-mile radius of the OCC facility (100-200 people) obtain their drinking water from the City of Tacoma's reservoir system located more than 3 miles from the site, and a city of Tacoma well (referred to as the Tideflats well) located 3,000 feet southeast of the site. The Tideflats well is supplied by artesian aquifer zones at depths of 450 to 780 feet below ground surface. Laboratory testing has not detected contamination in the Tideflats well.

Ground water flow directions are tidally dominated, reversing on a daily basis. During low tides, ground water flows in a northerly direction toward the Hylebos Waterway. The Hylebos Waterway discharges to Commencement Bay, which has been classified a National Priorities List (NPL) Superfund site.

Soils underlying the site consist of silty sand and sandy gravel extending 200 feet below ground surface. The sand is underlain by a confining layer of glacial till.

EXPOSURE PATHWAYS

The potential for human exposure via contact with contaminated soil has been eliminated through excavation or asphalt capping of contaminated soil. Ground water and surface water are the primary contaminant migration pathways for human and ecological receptors.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level	Cleanup Goal (µg/l)	Revised* Cleanup Goal (µ/l)
groundwater	N/A	Methylene Chloride	25,000	Not given	5.0	16.0
		Trans-1,2-dichloroethylene	241,000		5.0	5.0
		Trichloroethylene	790,000		5.0	81.0
		1,1,2,2-Tetrachloroethane	23,200		5.0	11.0
		Tetrachloroethylene	110,000		7.0	9.0
		Carbon tetrachloride	1,350		5.0	7.0
		1,1-Dichloroethylene	6,870		5.0	5.0
		Chloroform	350,000		6.0	16.0
		1,1,2-Trichloroethane	2,210		6.0	42.0
		Vinyl chloride	26,000		10.0	525.0

* If it is demonstrated by OCC that there are no human uses of ground water which are likely to be adversely impacted by contamination from the facility, the revised cleanup goals, which are based on Water Quality Criteria for ingestion of fish, will become effective.

* The point of compliance for the specified cleanup goals include all on and off-site monioring locations within and at the edge of the plume,

SELECTED REMEDY

A ground water extraction and treatment system will be installed on site. The ground water treatment system will consist of steam stripping and carbon adsorption, with catalytic oxidation of off-gases. It is anticipated that the system will be operational in 1994. The total capital and O&M costs for remediation are estimated to be $1.8 million.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period began on June 30, 1988 and closed on August 15, 1988. No significant comments were received and no public meeting was held.

NEXT STEPS

Sediment contamination characterization information will be used for a future determination of the need for corrective action in the Hylebos Waterway.

KEY WORDS

ground water, sediments, soil; ingestion; organics; on-site treatment; pump and treat, carbon adsorption

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 2631

PacifiCorp (Utah Power & Light)

Idaho Falls, ID
(Signed November 27, 1988)

Facility/Unit Type: Creosote treatment of power poles
Contaminants: Creosote, PAHs and Phenols
Media: Ground water and soil
Remedy: Pump and treat ground water, excavation, capping

FACILITY DESCRIPTION

In March 1988, EPA and the Idaho Department of Health and Welfare (IDHW) jointly issued a post-closure permit to Utah Power and Light Company (UPLC) pursuant to §3004 and §3005 of RCRA, and Idaho Code §39.4409(5). Corrective action conditions under the permit require remediation of ground water and soil contaminated with creosote.

In 1988, UP&L merged with PacifiCorp, and operating responsibility for the site was transferred to Pacific Power & Light, a Division of PacifiCorp. The PacifiCorp pole treatment yard is located in a commercial and industrial area in the southern part of Idaho Falls. From the early 1920s through 1983, electrical power poles were treated on site by soaking them in a vat of heated creosote and then allowing the excess creosote to drip off into a receiving tank. In July 1983, creosote was found to be leaking from underground piping connecting the treatment vat to a storage tank.

Approximately 37,000 tons of creosote-contaminated soil and rock were subsequently excavated from the area, forming a pit that extended down 25 feet to the native basalt bedrock. Borings extending into the bedrock showed the presence of creosote as a nonaqueous phase liquid. The installation of ground water monitoring wells revealed creosote contamination of Snake River Aquifers 1 and 2.

Depth to ground water is approximately 130 feet. The site is underlain by surficial silt, sand and gravel ranging in thickness from a few feet to about 20 feet. Below this zone, interlayered basalt extends to a depth of 400 feet. Three interconnected aquifers have been identified beneath the site. Contamination was found to be limited to Aquifers 1 (130 - 160 feet) and 2 (240 - 260 feet).

The site lies approximately 1000 feet east of the Snake River. There are no known Snake River drinking water intakes within three miles downgradient of the site. The city of Idaho Falls obtains municipal water from three wells located upgradient of the site.

EXPOSURE PATHWAYS

There is low potential for human exposure to contaminants via the ground water pathway. Water samples taken by EPA in 1985 showed no contamination in any of the off-site wells located within 1 mile of the site. There is negligible potential for a significant release to surface water since ground water does not recharge to surface water in the vicinity. Contaminated soil is not an exposure pathway because the highly contaminated soils were removed, and the remaining affected area has been capped.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level	Cleanup Goal** (µg/l)	Point of Compliance
ground water	Not given	naphthalene	24,0[illegible]	Not given	5	Ground-water wells A-1, A-2, B-1, B-2, C-1, C-2, D-1, D-2, MW-4, MW-14
		fluoranthene	14,00[illegible]		7	
		chrysene	3,000		8	
		benzo (a) anthracene	3,000		2	
		benzo (b) fluoranthene	1,600		16	
		benzo (a) pyrene	1,200		8	
		indeno (1,2,3, -cd) pyrene	180		12	
		phenol	120		5	
		2,4-demithylphenol	460		9	
		2-methyl phenol	460		9	
		4-methyl phenol	480		9	
		acenaphthylene	28		10	
		acenaphthene	18,000		10	
		anthracene	2,400		10	
		benzo (k) fluoranthene	*		10	
		benzo (g,h,i) perylene	200		10	
		dibenzo (a,h) anthracene	ND		10	
		dibenzofuran	6,500		10	
		fluorene	10,200		10	
		phenanthrene	28,000		10	
		pyrene	11,000		10	
		2 methyl naphthalene	8,000		10	
		2 nitrophenol	36		50	

* maximum concentration shown for benzo (b) fluoranthene is the sum of benzo (b) fluoranthene and benzo (k) fluoranthene.

** the ground water protection standards (i.e., cleanup goal) are the practical quantitation limits of SW-846 Method 8270.

SELECTED REMEDY

The primary objective of ground-water remediation at this site is to hydraulically contain the contaminants to prevent them from moving off site, and to produce local reversal of the downward flow of ground water from Aquifer #2 to Aquifer #3. A ground-water extraction and treatment system was activated in February 1987. The treatment train consists of activated charcoal, followed by a clarifier, a dewatering unit, and an activated carbon system. Treated ground water is discharged to the POTW. **During the extraction pilot study, it was found that creosote was incompatible with PVC, causing the piping to become brittle and crack.** All PVC piping in the treatment facility was replaced with steel.

In 1983, 37,000 tons of creosote contaminated soil were removed from the site. Contaminated soil was disposed of at an approved hazardous waste management facility. The pit was lined with a 12-foot layer of compacted clay, backfilled with clean gravel, capped with a clay layer, and topped with asphalt. All remaining areas of contaminated soil were capped with asphalt.

The total capital and O&M costs associated with the remedy are estimated to be $6.8 million.

INNOVATIVE TECHNOLOGIES CONSIDERED

In 1988 and 1989, in situ bioremediation pilot studies were conducted on site to determine if white rot fungus could effectively remediate creosote in soil. The technology was not demonstrated to be effective, possibly because of insufficient moisture and elevated pH in the native soil.

PUBLIC PARTICIPATION

The public comment period began on November 27, 1987, and closed on January 10, 1988. Two sets of written comments were received, which resulted in minor changes to the permit. A public hearing was tentatively scheduled for January 19, 1988. However, because no requests or inquiries were made about the public hearing, it was cancelled.

NEXT STEPS

IDHW will continue to monitor the groundwater recovery system to ensure the effectiveness of the system. Because of the existence of creosote in the aquifers as a nonaqueous phase, it is unlikely that aquifer restoration to cleanup goals will be attained within the foreseeable future. Contaminant concentrations have declined significantly, however, during the 5 years of recovery system operation.

KEY WORDS
ground water, soil; ingestion, dermal contact; creosote, organics, phenols, PAHs; on-site treatment, excavation, capping

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID # 5502

Pendleton Woolen Mills, Inc.
Washougal, Washington
(Signed May 11, 1995)

Facility/Unit Type:	**Wool processing facility, cloth and clothing production, dry cleaning**
Contaminants:	**Dieldrin**
Media:	**Soil, groundwater, sediments, and surface water**
Remedy:	**Excavate and cap soil, cover soil with grass, perform groundwater monitoring**

FACILITY DESCRIPTION

In 1988, EPA and Pendleton entered into a consent order that required Pendleton to close a ballast water pond at the facility and to conduct a RCRA Facility Investigation (RFI) and a Corrective Measures Study (CMS). The RFI included sampling of soil, groundwater, sediments, surface water, and aquatic biota. The pesticide dieldrin was the most frequently detected organic compound in soils beneath and south of the "Piece/Yarn" and "Stock Dye Houses", in groundwater south of the buildings, and in sediments in the drainage ditch along the north side of State Route 14.

Pendleton has been in operation since 1909. Today it is the only industry in town and a major employer for local residents. When the facility was built, it was constructed on a floodplain to take advantage of river flooding to facilitate the removal of manufacturing wastes. Waste dye and dieldrin, a class B carcinogen used as a mothproofing agent, would accumulate in the floodplain until the next flood washed it away. In the 1970's, a catchment system was installed to collect waste dye and route it to an on-site wastewater treatment facility.

The facility is located on the edge of town along the northern bank of the Columbia River in Washougal, Washington. There is an industrial park across the road to the east and an open area to the west. To the south there is a city park. A small pond, or wetland, is located on the site and will be maintained as a wetland for waterfowl. The nearest water supply wells are located 3,600 feet north (up gradient) of the site. Groundwater elevation information shows that groundwater does not flow from the site toward Washougal's public well fields.

EXPOSURE PATHWAYS

The potential exposure pathways for contaminated soil are incidental ingestion of soil, dermal contact of soil, and inhalation of contaminated soil as dust. The potential exposure pathways for contaminated groundwater are ingestion and dermal contact. A fate and transport analysis conducted as a part of the RFI indicated that dieldrin is adsorbed into the soil. It also indicated that leaching of dieldrin from soils to groundwater under existing site conditions should not cause a detectable increase in dieldrin concentrations in the Columbia River (the point of potential exposure to humans and aquatic organisms) for at least 300 years. Exposure to contaminated sediments and surface water by aquatic organisms is also a concern.

SELECTED REMEDY

Buildings at the facility that are above dieldrin-contaminated soil will be demolished. Pendleton will place a low permeability, engineered cap over the area, rebuild grades using soils in existing stockpiles, and vegetate the cap to prevent soil erosion. The upper one foot of soil in the contaminated area has already been excavated and disposed of off-site at a hazardous waste landfill.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal	Point of Compliance
Soil	Not given	Dieldrin	Not given	.0022-.05	.0022-.05	Facility Boundary
Groundwater	Not given	Dieldrin	.033-.53	.0022-.05	.0022-.05	Facility Boundary
Surface water and sediments	Not given	Dieldrin	30-73	.0022-.05	.0022-.05	Facility Boundary

Groundwater monitoring will be performed for at least three years to determine whether significant increases in dieldrin concentrations occur near the river. Pendleton has also agreed to impose institutional controls on the property to prevent future development of drinking water supplies.

PUBLIC PARTICIPATION

The public comment period began on April 7, 1995, and ended on May 8, 1995. Notice of the public comment period was announced in newspapers in Portland, Oregon, and Camas, Washington. The Statement of Basis and supporting documents were available to the public from various sources. No comments were received.

INNOVATIVE TECHNOLOGIES

The CMS considered biological treatment of excavated soil by introducing microorganisms to stimulate biodegradation of contaminants. Because bioremediation may not effectively treat soils contaminated with dieldrin, it was not chosen as the selected remedy.

NEXT STEPS

EPA will continue to monitor contaminant concentrations in the groundwater near the river.

KEY WORDS:

soil, groundwater, sediments, surface water; ingestion, direct contact, dermal contact; pesticides, dieldrin; capping, excavating, soil cover, innovative technology considered: bioremediation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 1187

Permapost Products Company

Hillsboro, OR
(Signed July 21, 1989)

Facility/Unit Type:	**Disposal for wood treatment wastes**
Contaminants:	**Pentachlorophenol (PCP); 2,3,4,6-Tetrachlorophenol; Arsenic**
Media:	**Ground water**
Remedy:	**Ground water pump and treatment system with carbon absorption and ion exchange filtration, off-site treatment**

FACILITY DESCRIPTION

In July of 1989, a final post-closure permit was issued to Permapost Products Company (Permapost) for long-term care of closed hazardous waste surface impoundments. Corrective action conditions under the permit require ground-water remediation for releases from the impoundment and other Solid Waste Management Units (SWMUs) at the facility.

Permapost began operation in 1961 using a process of alternately applying a vacuum and pressure to wood to extract water and replace it with preservatives such as PCP, arsenic, and chromium. Contaminated wastewater generated by this process was stored in two surface impoundments. In November 1984, the surface impoundments were removed from service and replaced with two above-ground steel tanks. The impoundments were then closed as a hazardous waste landfill in accordance with state and federal standards. However, a plume of contamination extends over an area approximately 400 feet long and 170 feet wide. Although the plume does not pose a threat to drinking water, some of the contaminants exceeded EPA's health-based standards and required corrective action.

The depth to ground water is approximately 5 feet. Ground water in the area is shallow and flows northeast from the facility. Nearly all of the contaminated plume is located off-site. Cemetery Lake and Rock Creek are the two nearest bodies of surface water. Neither body is a drinking water source or is used for recreation. The adjoining property is a cemetery.

EXPOSURE PATHWAYS

Potential for human exposure is low because ground water in the vicinity is not used as a drinking water source or for recreation. Potential for exposure to aquatic species is possible if the plume migrates. No sensitive environmental or endangered species are known.

SELECTED REMEDY

Permapost has installed a pump and treat system. Contaminated ground water is treated by filtration, ion exchange to remove the arsenic, and carbon absorption to remove organics. Spent carbon is treated off-site at a carbon regeneration facility. Estimated cost of remedy is $1.05 million. Remedy selection was based on effectiveness.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goal	Point of Compliance
ground water*	10.5 million gallons	2,3,4,6-Tectrachlorophenol	3.9 mg/l	1.00 mg/l	1.00 mg/l	Unit boundary
		PCP	51.0 mg/l	0.22 mg/l	0.22 mg/l	
		Arsenic	.024 mg/l	0.05 mg/l	0.05 mg/l	

* All contaminants detected off-site.

INNOVATIVE TECHNOLOGIES CONSIDERED

The facility considered bioremediation, however, they chose the conventional pump and treat system.

PUBLIC PARTICIPATION

No significant comments were received during the public comment period and a public hearing was not held.

NEXT STEPS

Compliance with the performance standards for achieving adequate progress in the ground-water cleanup will be monitored through compliance inspections.

KEY WORDS
ground water; ingestion; organics, heavy metals; filtration, ion exchange, carbon absorption, off-site treatment

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CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppm)	Action Level	Cleanup Goal (ppm)	Point of Compliance
sump oil		Total petroleum Hydrocarbons	96,000		75	
soil		Total petroleum Hydrocarbons	21,900		75	

PUBLIC PARTICIPATION

There was no public participation

NEXT STEPS

Remediation of the sump and contaminated surface soil was completed, and no further action is required.

KEY WORDS
soil; ingestion; organics, oils; excavation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# (last 4 #s)

Safety-Kleen Corporation
Boise, ID

Facility/Unit Type: Vehicle maintenance operations
Contaminants: Diesel fuel, waste oil
Media: Soil
Remedy: Excavation

FACILITY DESCRIPTION

In 1989, Safety-Kleen conducted a visual site inspection of a new, proposed Safety-Kleen facility in Boise, Idaho. A sump containing oily waste and surface soil stain areas were found during the inspection. The Idaho Department of Health and Welfare requested that Safety-Kleen remediate the sump and determine the vertical and lateral extent of on-site soil contamination.

The property was occupied by a dealership for excavating and auguring machines from approximately 1978 through 1983. Waste handling practices included the disposal of waste oils in an unlined sump. The property was purchased by a trucking company in 1983, at which time the sump was emptied by an oil recycler. In 1986, the site was rented to a scale service company, and use of the sump for waste oil disposal was continued. Sampling results indicate that diesel fuel was present in the sump and at each of four soil stain locations.

The site is in an area zoned for light industrial activities. Underlying soil is well drained and primarily alluvial in origin. Municipal water supply is obtained from the Boise River through a system of three dams upstream from the city of Boise. No known wells, critical habitats or wetlands, parks or schools are located within one quarter mile of the site.

EXPOSURE PATHWAYS

Contact with contaminated soil is the primary exposure pathway at the site. The risk of exposure is minimal, however, since the highly contaminated soils were removed. Ground water is not a contaminant migration pathway because the vertical extent of contamination was limited to approximately 11 feet below ground surface.

SELECTED REMEDY

In July 1990, the sump contents and surrounding soil, PVC piping, sump drain, and contaminated surface soil were excavated. Each of the contaminated surface soil locations was excavated to a depth of approximately 2.5 feet. The sump was excavated to depth of 4.5 feet, and the sump drain was excavated to a depth of 11 feet.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 0231

Tektronix, Inc.
BEAVERTON, OR
(Signed June 25, 1990)

Facility/Unit type: Develop, manufacture and service electronic instruments
Contaminants: Trichloroethylene (TCE), & other volatile organics
Media: Ground water
Remedy: Ground water extraction and treatment

FACILITY DESCRIPTION

In July of 1990, EPA and the Oregon Department of Environmental Quality issued a RCRA permit to Tektronix, Inc. (TEK) pursuant to Sections 3004(u) and (v) of RCRA and Chapter 340 of the Oregon Administrative Rules. The permit requires Tektronix to conduct corrective action for closed hazardous waste disposal units and other solid waste management units at its Beaverton, Oregon facility.

TEK develops, manufactures, and services a broad range of electronic measurement and control instruments. Hazardous wastes are generated as a result of research and development activities, degreasing and cleaning operations, and as by-products of manufacturing and the industrial wastewater pre-treatment plant. The Facility is located in an industrial area where the nearest residential area is located within 1/4 mile.

TCE has been found in the ground water in three separate areas. These areas are the sludge holding ponds, drum storage areas, and land application of sludge.

The facility is underlain by fill material due to past construction and landscaping activity. The fill ranges in depth from 1 to 13 feet. The clayey silt fill material is underlain by alluvium. The depth to ground water is approximately 10 feet. The uppermost aquifer extends to 45 feet, and consists of an upper unconfined unit and a lower semi-confined unit.

Beaverton Creek flows through the site, and an unnamed creek flows from the northeast into Beaverton Creek. These creeks are the primary receptors for surface drainage.

EXPOSURE PATHWAYS

Ground water is the primary contaminant migration pathway at the site, but the risk of exposure is minimal because beneficial uses are either upgradient or at some distance from the site. The presence of TCE in Beaverton Creek from upstream and site sources has been documented. The risk of exposure through surface water is limited to areas downgradient of the site. Residential areas are located 1/4 mile downstream of the Facility. Potential for exposure to contaminated subsurface soil is low because of limited access to soil, and the infrequency of excavation in contaminated areas. Potential for exposure to air emissions caused by the air stripping based water treatment system have been minimized through permit constraints.

SELECTED REMEDY

First implemented in January 1989, the ground-water recovery system is composed of ten recovery wells, two cutoff collars, and a central air stripper-based water treatment system. A cutoff collar was installed near the storm drain backfill beneath the Building 40 surface impoundment area

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (µg/l)	Action Level (ug/l)	Cleanup Goal* (µg/l)	Point of Compliance
ground water	Not given	TCE tetrachloroethene trans-1,2-dichloroethene 1,1,1-trichloroethane 1,2-dichloroethane	42,500 16,000 41 2,100 170	5 5 100 200 5	5 5 100 200 5	Not given

- Cleanup goals are Maximum Contaminant Levels that are federally enforceable under the Safe Drinking Water Act.

to stop flow from directly entering Beaverton Creek. The total capital and O&M costs are estimated to be $2.5 million (1986).

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period began on March 8, 1990 and ended on April 23, 1990. A public hearing was not held because no request or inquiries were made about the hearing.

NEXT STEPS

EPA will continue to monitor the ground-water recovery system to ensure the effectiveness of the system.

KEY WORDS
ground water; ingestion; VOCs, TCE; air stripping, on-site treatment

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CONTAMINATION DETECTED AND C. ANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration	Action Level	Cleanup Goals *	Point of Compliance
soil	10 yd^3	PCE		10 mg/Kg	8.7 mg/kg	area c t.
sediment		PCE	5,700 mg/kg		78 mg/kg	
ground water		PCE	100 µg/L	5 µg/L	5 µg/L	plu

* Based on SDWA MCLs

EXPOSURE PATHWAYS

The ingestion of and dermal contact with soil in the old corrosive tank farm are current exposure pathways for workers and are pathways for potential future onsite residents. There are currently no houses on the site and ground water moving offsite contains PCE below MCLs. Additionally, inhalation of soil gas is a current pathway for workers.

SELECTED REMEDY

The proposed remedy will address the remed tion of contaminated soil, prevent contaminants f m migrating from sediment to ground water, and prevent the ingestion of ground water containing unacceptable levels of VOCs. The proposed remedy for this site consists of excavating contaminated soil that exceeds the EPA-approved cleanup level of 8.7 mg/kg of PCE from the old corrosive tank farm area; disposing of the soil in a pre-approved offsite landfill; reducing sediment contamination to the 78 mg/kg cleanup level by extending for 6 months the period of operation of the existing vapor recovery system at the north drywell area; treating the contaminated vapor; and monitoring ground water for 1 year in order to verify that PCE contamination remains below the cleanup levels.

The estimated present worth cost for this remedial action is $64,525 which includes an annual O&M cost of $4,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

A public comment period was held from January 21, 1994 to March 11, 1994. No comments were submitted during or prior to this period, nor was a public hearing requested.

NEXT STEPS

The facility is currently operating and is undergoing RCRA closure of its storage unit with the intent of clean-closing the unit and having its interim status terminated. The 6-month extension of the vapor recovery unit operating period ended in October 1993. Sediment samples will be collected and assessed in order to determine if cleanup levels have been met. If MCLs have not been achieved, the situation will be evaluated to determine if the system should be reactivated. In addition, ground water will be monitored for 1 year. If cleanup levels have been achieved, then monitoring will cease. If PCE contamination is detected at any time, then ground-water monitoring will be extended for an additional year. If at the end of the monitoring period concentrations of PCE are greater than MCLs, then the situation will be evaluated.

KEY WORDS

Ground water, sediment, soil; ingestion (soil), inhalation; VOCs, PCE; excavation, monitoring (gw), offsite disposal, vapor recovery; O&M

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 6811

Van Waters & Rogers

Spokane, Washington
Signed April 4, 1994

Facility/Unit Type:	**Chemical distribution facility**
Contaminants:	**Perchloroethylene (PCE)**
Media:	**Soil, sediment, ground water**
Remedy:	**Excavation and offsite disposal of contaminated soil, treatment using vapor recovery for contaminated sediment, and ground water monitoring**

FACILITY DESCRIPTION

In 1989, based on information gathered previously during monitoring, analysis, and testing, EPA and Van Waters & Rogers (VW&R) entered into a §3008(h) agreed order to perform an RFI summarizing the extent of onsite contamination.

The Van Waters & Rogers site is a 3.9-acre chemical distribution facility located in Spokane, Washington. Since 1969, the facility has accepted bulk shipments of mineral acids, solvents, and antifreeze formulations and repackaged these items for further distribution.

There are no residential areas within 0.5 miles of the facility. Approximately 2,032 people live between 0.5 and 0.75 miles of the facility. At present, there are approximately 7 employees onsite. The ground-water aquifer beneath the facility was designated as a sole-source aquifer in 1978. There are no drinking water wells within a 2-mile radius of the facility. However, the most directly exposed population is the facility workers who might come into contact with contaminated soil or inhale soil gas emitted into the atmosphere.

The areas of PCE contamination at the site are divided into three zones: contaminated soil in and adjacent to the old corrosive tank farm, sediment in the north drywell, and ground water beneath the facility.

There have been three documented spills at the facility since operations began. In 1982, a drum of hydrogen peroxide spilled when it was hit with a forklift. The material was washed off the recovery pad area onto the asphalt truck receiving dock and ran into the nearest drywell. In 1985, approximately 200 gallons of acetone were spilled onto the loading dock and adjacent railroad siding when a storage tank was overfilled. The remaining acetone on the dock was absorbed by floor-dry absorbent. No further treatment was initiated since site personnel assumed that the acetone had evaporated. The third spill occurred in 1986 when 100 gallons of PCE were leaked from a portable tank in the unpaved yard area. Four to seven inches of soil were removed from the spill area and spread on plastic sheeting to promote evaporation. The soil was then respread over the unpaved site area.

The subsequent 1988 site investigation determined that VOCs consisting of PCE, TCA, and TCE were the main chemicals of concern. In order to remove VOCs from the soil and reduce the migration of contaminants to the ground water, the following interim measures were implemented: soil was excavated at the old corrosive tank farm; sediment was removed from the north, west, and south drywells; and a vapor recovery system consisting of six vapor recovery wells was installed in 1989 to remove contamination from soil that was affecting ground water quality. The RFI concluded that current contamination is limited to PCE.

Since 1991, PCE has only been detected in ground-water monitoring wells three times - all below 3 µg/L, which is below the cleanup level of 5 µg/L.

CONTAMINATION DETECTED AND CLEANUP GOALS**

Media	Estimated Volume	Contaminant	Maximum Concentration (mg/lg)	Action Level (mg/lg)	Cleanup Goal	Point of Compliance
soil		Dinoseb	0.0078	80		
			1.4	80		
		2, 4-D	0.046	800		
		Diuron	5.8	-		
		Terbutryn	6.3	-		
		Glyphosate	5.3	-		
		Dicamba	0.016	-		
		Trifluralin	0.28	-		
		Benomyl	0.03	-		

* Action levels for Dinoseb and 2, 4-D are specified in "Interim Final RCRA Facility Investigation Guidance" (USEPA 1989).

** Maximum contaminant levels detected in the clay layer of the pond after removal of the sludge and in the off-site soils are given below.

NEXT STEPS

The facility was clean-closed and no further action is required.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period began on March 14, 1990, and closed on April 12, 1990. No written comments were received. Because no requests or inquiries were made about a public hearing, a hearing was not scheduled.

KEY WORDS
soil; dermal contact; organics; pesticides; excavation

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 3411

Western Farm Service, Star Mill Facility

Reubens, ID
(September XX, 1993)

Facility/Unit Type: **Retail pesticide sales and equipment rental**
Contaminants: **Dinoseb and 2,4-D**
Media: **Soil**
Remedy: **Excavation**

FACILITY DESCRIPTION

On May 15, 1987, the State of Idaho and Western Farm Services, Star Mill Facility entered into a Consent Order Pursuant to Idaho Hazardous Waste Management Act §39-4413. The agreement required Western Farm Services to determine the nature and extent of contamination from the facility and to submit a closure plan confirming that removal and cleanup had occurred.

Western Farm Service retails pesticide products, and leases equipment for application of pesticides and fertilizers. In 1977 a 0.13 acre clay-lined surface impoundment was constructed at the facility. Pesticides were mixed for application on a concrete pad adjacent to the pond, and spills drained into the pond via a concrete gutter. Application equipment was generally rinsed on this same pad. Application equipment was generally rinsed on this same pad. The pond was in use from 1977 through 1986. Approximately 3000 gallons of rinsate were discharged to the pond annually. In April 1986, approximately 5000 gallons of liquid from the surface impoundment were released in an off-site field. The area impacted by the release was approximately 11,000 square feet.

Depth to ground water is estimated to be between 350 and 450 feet below land surface. Site characterization efforts indicate that no perched water zones exist below the site. A 40 foot thick clay layer is present directly below land surface.

EXPOSURE PATHWAYS

Potential releases of hazardous constituents from the impoundment and off-site location, if not addressed, would result in human exposure via contact with residual soils. Air, surface water and ground water do not present exposure pathways at the site.

SELECTED REMEDY

By the fall of 1988, all of the liquid in the pond had evaporated. An estimated 62 cubic yards of sludge were removed from the pond, after which the pond was backfilled, compacted and graded. No soil was removed from the off-site location, as all Dinoseb concentrations were significantly below the 80 mg/kg action level.

CONTAMINATION DETECTED AND CLEANUP GOALS

Media	Estimated Volume	Contaminant	Maximum Concentration (ppb)	Action Level	Cleanup Goal* (ppm)	Point of Compliance
soil	40 cubic yards	2,4,D	ND		850	Not given
		Chlorpyrifos	ND		255	
		DDT	8,500		0.830	
		Dieldrin	560		0.440	
		Disulfoton	12,000		3	
		Endosulfan (I and II)	3,010		4	
		Endrin	ND		20	
		Heptachlor	1.5		0.2	
		Heptachlor Epoxide	ND		0.080	
		Hexachlorocyclohexane	ND		0.5	
		Lindane	ND		25.5	

* Soil cleanup levels were calculated using reference doses (RfDs) and Carcinogenic Potency Factors (CPFs) which were obtained from EPA's Reference Dose Tracking System, August 1989, and EPA's Integrated Risk Information System (IRIS).

taminated soil containing pesticides above the cleanup levels were removed from the former tank/pad area and disposed of at a permitted hazardous waste TSD facility.

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The public comment period began on August 24, 1992, and closed on September 22, 1992. A public hearing was held on September 10, 1992. No comments were received from the public during either the comment period or the public hearing.

NEXT STEPS

Regulated units at the facility were clean-closed, all other contaminated areas were remedied to risk-based levels, and no further action is required. The site was removed from the NPL on September 1, 1993.

KEY WORDS
soil; ingestion; pesticides; excavation; off-site disposal

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STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION X
ID# 3957

Yakima Agricultural Research Lab, United States Department of Agriculture

Yakima, WA

(Signed September 8, 1989)

Facility/Unit Type: Agricultural research laboratory
Contaminants: Pesticides
Media: Soil
Remedy: Source removal and excavation

FACILITY DESCRIPTION

In September of 1987, EPA issued a NOV to Yakima Agricultural Research Lab (YARL) requiring ground-water well installation, ground-water sampling, and submittal of a revised closure plan for a septic and drainfield system. The site was proposed for the NPL in December 1982 and finalized on September 8, 1983.

The YARL, originally an orchard, has been in operation since 1961. The primary activity at the laboratory involves the development of insect control technologies that benefit fruit and vegetable agriculture in the Pacific Northwest. Records indicate that various pesticides, including persistent organochlorine pesticides such as DDT, Dieldrin, and Lindane, were used on site. Complete records indicating names and quantities of chemicals disposed of are not available.

Dilute waste pesticide compounds were discharged to a modified septic and drainfield system from 1965 to 1985. Approximately 5,000 gallons of rinsate from equipment cleaning operations and less than 250 gallons of residual pesticide solutions were discharged into the system annually during that time period. Prior to 1965, wastes were disposed of directly on the ground.

Seven ground-water monitoring wells were installed around the septic tank unit. Following installation of these wells, the septic tank and washdown pad were removed. Quarterly sampling in 1990 and 1991 indicate that the level of ground-water contamination is below regulatory thresholds. The levels of residual contaminants were below the Maximum Contaminant Levels (MCL) codified in the Model Toxic Controls Act Cleanup Regulation, WAC 173-340-270(2) and in 40 CFR §141.11 and 40 CFR §141.12.

Ground water is found 40 feet below the ground surface, and flows to the south-southeast. This shallow aquifer is underlain by a confined aquifer. City water is pumped from the Naches river, located 2-3 miles north of the site. Private wells completed in the shallow aquifer are located downgradient of the site. Three shallow domestic wells are less than 1 mile from the site. Areas surrounding the site are zoned residential , local small business, and planned development.

EXPOSURE PATHWAYS

The potential for human exposure via contact with contaminated soils has been eliminated through excavation of contaminated soil. Ground water presents minimal risk to humans because contaminants, when present, are below cleanup levels. Air and surface water do not present exposure pathways at the site.

SELECTED REMEDY

The septic tank and washdown pad were removed. Approximately 40 cubic yards of con-