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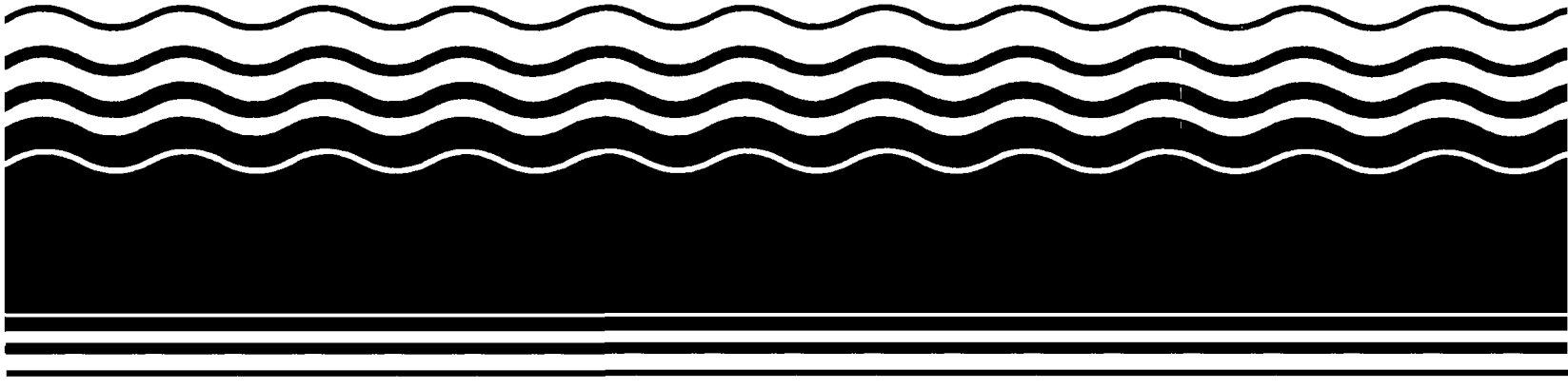
June 1993

EPA

Superfund Record of Decision:

Recticon/Allied Steel, PA



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REPORT DOCUMENTATION PAGE	1. REPORT NO. EPA/ROD/R03-93/167	2	3. Recipient's Accession No.

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SUPERFUND RECORD OF DECISION
Recticon/Allied Steel, PA
First Remedial Action - Final

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800/800

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15. Supplementary Notes
PB94-963908

16. Abstract (Limit: 200 words)

The 4.7-acre Recticon/Allied Steel site is comprised of two former manufacturing facilities located in Parker Ford, Chester County, Pennsylvania. Land use in the area is predominantly industrial and commercial, with mixed agricultural and residential areas. The site is situated near two surface water bodies, the Schuylkill River and Pigeon Creek, a floodplain, wetlands, and sparse woodlands. Ground water is the principal source of drinking water for the area residences and offices. From 1974 to 1981, Recticon manufactured silicon wafers for the semiconductor industry on 1.8 acres of the site. Until 1975, facility operations included using and storing TCE and other solvents onsite. Spent TCE was stored in drums in the interior of the facility, which were periodically removed. The cutting and polishing areas, where the TCE was used, contained unbermed, recessed floor drains that were connected to process waste lines that discharged to the surface water drainage pipes and ditches. From 1979 to 1988, State sampling of soil, ground water, and surface water revealed the presence of VOCs, including TCE and DCE. In 1981, the State required Recticon to undertake ground water pumping, treatment, and monitoring activities. From 1970 to 1988, Allied Steel fabricated customized, pressurized steel vessels on the other 2.9 acres. Allied Steel reportedly used solvents, including TCE, TCA, and high-flash naphtha to clean a

(See Attached Page)

17. Document Analysis a. Descriptors
Record of Decision - Recticon/Allied Steel, PA
First Remedial Action - Final
Contaminated Media: soil, gw
Key Contaminants: VOCs (PCE, TCE), other organics (PAHs), metals (arsenic)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 118
	20. Security Class (This Page) None	22. Price

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

Abstract (Continued)

generator and other miscellaneous parts and equipment; and spread waste solvent on the ground surface to control dust. In 1984, Allied Steel conducted soil sampling that revealed TCE-contaminated soil, which the company subsequently excavated and removed. Because the recovery and treatment process implemented in 1981 did not resolve the contamination problems, the State required Recticon to remove TCE-contaminated soil. In 1988, the State required Allied Steel to plan for the remediation of ground water contamination and to implement a ground water recovery system, including construction of a stripping tower for the treatment of ground water. In 1990, EPA required the PRPs to install activated carbon filtration units in the homes and businesses near the site where VOCs were detected at or above MCLs. This ROD addresses a final action source control for the contaminated soil and ground water. The primary contaminants of concern affecting the soil and ground water are VOCs, including PCE and TCE; other organics, including PAHs; and metals, including arsenic.

The selected remedial action for this site includes excavating contaminated soil to a depth of 9 feet, storing the soil temporarily onsite, and disposing of the contaminated soil offsite; backfilling the excavated areas with the soil if analyses show that this soil meets the cleanup standard of less than 320 ug/kg of TCE; extracting and treating contaminated ground water onsite using granulated activated carbon to remove VOCs, with offsite discharge to the Schuylkill River, preceded by a predesign hydrogeologic investigation and well abandonment to eliminate the possibility that the existing pumping and monitoring wells act as a conduit for future ground water contamination; providing an alternate water supply by installing a municipal water line; monitoring the ground water; sampling the drainage ditch sediment to determine the source and extent of copper and zinc contamination; and performing a Phase I archaeological survey. The estimated present worth cost for this remedial action is $4,096,516, which includes an annual O&M cost of $172,141 over 30 years.

PERFORMANCE STANDARDS OR GOALS:

Soil cleanup goals will be based on removing all soil with concentrations of TCE >320 ug/kg. Ground water cleanup goals are based on the more stringent of SDWA MCLs or background levels, and include 1,2-DCA 5 ug/l; 1,1-DCE 7 ug/l; cis-1,2-DCE 70 ug/l; PCE 5 ug/l; TCE 5 ug/l; and vinyl chloride 2 ug/l.

RECORD OF DECISION
RECTICON/ALLIED STEEL

DECLARATION

Site Name and Location

Recticon/Allied Steel
Parker Ford, East Coventry Township, Chester County, Pennsylvania

Statement of Basis and Purpose

This decision document presents the final selected remedial action for the Recticon/Allied Steel site in Parker Ford, East Coventry Township, Chester County, Pennsylvania which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for selecting the remedy for this site.

The Commonwealth of Pennsylvania concurs on the selected remedy. The information supporting this remedial action decision is contained in the Administrative Record for this site.

Assessment of the Site

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, that actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

This is the only planned response action for the site. This remedy addresses source control of contaminated soil, groundwater remediation and an alternative water supply. Groundwater contamination represents a primary threat; therefore, the extraction and treatment of groundwater and an alternative water supply will be required. Soils on-site represent a low-level threat that may potentially impact groundwater quality; therefore, an excavation and off-site disposal remedy for source control will be required.

The selected remedy includes the following major components:

-Installation of a municipal water line;

-Excavation and off-site disposal of contaminated soils;

-Extraction and treatment of groundwater with discharge to the Schuylkill River following a predesign hydrogeologic investigation and well abandonment;

-Long-term groundwater monitoring;

-Verification sampling to determine the source and extent of the copper and zinc found in drainage ditch sediments; and

-Performance of a Phase I archaeological survey.

Statutory Determinations

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

Because this remedy will result in hazardous substances above health-based levels remaining on-site (in the groundwater), a review will be conducted within five years after commencement of remedial action and every five years thereafter, as required by Section 121(c) of CERCLA, 42 U.S.C. § 9621 (c), to ensure that the remedy continues to provide adequate protection of human health and the environment.

W. Laskowski

Stanley L. Laskowski
for Regional Administrator
Region III

6-30-93

Date

RECORD OF DECISION

RECTICON/ALLIED STEEL SITE

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RECORD OF DECISION
RECTICON/ALLIED STEEL

DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

The Recticon/Allied Steel site (the "Site") is located in Parker Ford, East Coventry Township, Chester County, Pennsylvania. The Site consists of two properties and the areal extent of contamination which includes the contaminated groundwater plume. The two properties are comprised of 4.7 acres located on the northwest and southeast corners of the intersection of Route 724 and Wells Road in Parker Ford (see Figures 1 and 2). The former Recticon facility consists of a one-story building with manufacturing and office areas, a southeast parking lot with a loading area, and a driveway that extends from Wells Road to a second parking lot northwest of the building. Sanitary sewage is disposed of through the on-site septic system. Water is supplied by on-site production well W-3. The Allied Steel facility has been vacant since approximately 1988. The facility includes two buildings; a fabrication shop and an office. The office and a parking area lie west of the fabrication shop. Outside the northwest corner of the fabrication shop is an air compressor area. A former scale for weighing steel products is located southeast of the office. To the southeast is the debris-filled crane area. An aboveground water tank and air stripping tower are situated along the exterior of the eastern wall of the fabrication shop. An aboveground storage tank, reportedly used to store heating oil, is located along the exterior of the western wall of the office building. The tank was empty during the site investigations. Northeast of the fabrication shop is a drainage ditch and a railroad track. North of the fabrication shop are two drainage ditches. A septic system lies southwest of the fabrication shop. Three groundwater production wells exist at the Allied Steel facility; PW1 (south of the fabrication shop), PW2 (housed within the fabrication shop), and PW3 (southwest of the fabrication shop).

The Site is located approximately 8 miles northwest of Phoenixville and 3.2 miles southeast of Pottstown. The land surrounding the Site is sparsely wooded. Industrial and commercial establishments, farms, and single-unit residential areas exist within 0.5 mile of the Site. Two surface water bodies are situated in the vicinity of the Site: the Schuylkill River, approximately 0.5 mile east of the Site, and Pigeon Creek, approximately 0.25 mile south of the Site. There are no known federally listed endangered species or critical habitats within the immediate vicinity of the Site. A wetlands area is located near the confluence of Pigeon Creek and the Schuylkill River.

The Recticon portion of the Site lies outside the 500-year and 100-year flood hazard area. Tne eastern and southeastern portions of the Allied Steel property lie within the 500-year flood hazard area and the drainage ditch and southeastern portion of the property lie within the 100-year flood hazard area.

The Site is mapped in the Phoenixville 7.5-minute United States Geological Survey (USGS) topographic quadrangle at an approximate elevation of 130 feet above mean sea level (MSL). The topography at the site gently slopes from west to east. The site is situated within the Lowlands Physiographic Province (Sloto, 1987), which is characterized by low rolling hills that consist of Triassic sedimentary and igneous rocks. This province is the result of the erosion of sandstone and shale units, which are less resistant than the crystalline rocks of the uplands that lie to the south and southwest.

Groundwater is the primary source of water for the businesses and homes surrounding the site. Private wells pump groundwater from the Hammer Creek Formation. Groundwater generally flows from the west to the east. The nearest public water and sewerage systems are located in East Vincent Township which is serviced by Citizens Utility Home Water Company.

II. SITE HISTORY AND ENFORCEMENT ACTIVITY

The 1.8 acre Recticon portion of the Site has been owned by Highview Gardens Inc. since September 11, 1969. This property was leased to Varadyne Industries, Inc. on March 1, 1971. Beginning in April 1, 1974, Recticon Corporation ("Recticon"), a subsidiary of Rockwell International Corporation ("Rockwell"), operated on the property, manufacturing silicon wafers for the semiconductor industry. Recticon ceased manufacturing operations at the Site in 1981.

The other portion of the Site, consisting of 2.9 acres, has been owned by Allied Steel Products Corporation ("Allied Steel") since 1970. A subsidiary of Allied Steel, Allied Steel Products Corporation of Pennsylvania ("Allied Steel-PA") operated on the property fabricating customized, pressurized steel vessels until they ceased operations in 1988.

Analytical results for samples collected from groundwater, surface water and soil at various points at the Site from 1979 through 1988 by the Pennsylvania Department of Environmental Resources ("PADER") and contractors retained by Rockwell and Allied Steel revealed the presence of several volatile organic compounds ("VOCs"). The contaminants with the highest observed concentrations were trichloroethene ("TCE") and cis-1,2-dichloroethene ("DCE").

The compound TCE, specifically Reagent Grade - ACS

Trichloroethene, was used at the Recticon facility until 1975. TCE and other solvents were shipped and stored in 55-gallon drums. The drums were stored in a small room adjacent to the loading dock, in another small room between the polishing room and an exit door near Well 1, in the loading dock area (within the facility), and "outside of the plant." The location of the exterior drum storage area is not known. Use of TCE was generally restricted to the cutting and polishing areas of the facility. When TCE was needed in these areas, 1-quart dipping vats were filled from the drums and transported. Spent TCE was returned to the drum storage area and stored in drums, which were periodically removed. The flooring of the storage, cutting, and polishing areas reportedly was not bermed. Also, the cutting and polishing areas contained unbermed, recessed floor drains that were connected to process waste lines that discharged to the surface water drainage pipes and ditches.

In October 1981, Recticon and PADER entered into a Consent Order and Agreement. In accordance with the terms of the Agreement, Recticon undertook groundwater pumping, treatment, and monitoring activities. However, the recovery and treatment process did not resolve the contamination problem at the Site. Other cleanup activities on the Recticon property involved the removal of TCE contaminated soils in May, 1981.

Allied Steel-PA reportedly used solvents to clean a generator and other miscellaneous parts and equipment. According to an August 1979 PADER Waste Discharge Inspection Report, the SAF-T-SOLVENT used by Allied Steel-PA contained 10 percent TCE, 30 percent 1,1,1-trichloroethane ("TCA"), and 60 percent high-flash naphtha. In July 1982, the PADER sampled the solvent and found it to contain 38 percent TCE. A drum storage area for waste solvents was formerly located near the air compressor area. A PADER Waste Discharge Inspection Report dated August 22, 1980, reported that waste solvent was historically spread on the ground surface to control dust.

In 1984, a contractor retained by Allied Steel found TCE in soils near the compressor room on their property. The contaminated soil was subsequently excavated and removed. In 1988, Pennsylvania's Environmental Hearing Board ordered Allied Steel to plan for the remediation of groundwater contamination and to implement a groundwater recovery system. Allied Steel subsequently planned for and constructed a stripping tower for the treatment of groundwater. This remediation program however, was never implemented and Allied Steel-PA subsequently filed a petition for bankruptcy.

EPA placed the Site on the National Priorities List ("NPL") on October 4, 1989. Rockwell, Allied Steel and Highview Gardens Inc. were sent notifications that they were identified by EPA as potentially responsible for the Site contamination. Rockwell and EPA signed a Consent Order in March 1990 to conduct a Remedial

Investigation/Feasibility Study ("RI/FS") to identify the types, quantities and locations of contaminants and to develop ways of addressing the contamination problems. Field work for the first phase of the RI was conducted from January to November 1991. The field work for the second phase of the RI was conducted from June to October 1992. The RI/FS for the Recticon/Allied Steel Site was completed in May 1993.

On May 11, 1990, EPA and Rockwell entered into an additional Consent Order to install activated carbon filtration units in each of the homes and businesses near the Site where VOCs have been detected at or above Maximum Contaminant Levels ("MCLs"). Rockwell was required to install filtration units to treat the well water supplies at five businesses and one duplex residence and monitor those systems and other surrounding residential wells under that Consent Order.

On May 20, 1993, EPA released the RI/FS reports and the Proposed Plan for the Site. The Proposed Plan provided a 30-day comment period ending June 19, 1993.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Community relation interviews of local residents, businesses and officials were conducted from August 13 to August 16, 1990 in order to ascertain the community's concerns. The results of those interviews were documented in a Community Relations Plan dated December 12, 1990. This document lists contacts and interested parties throughout government and the local community. It also establishes communication pathways to ensure timely dissemination of pertinent information.

The Site's Administrative Record and Site Repository were initially established prior to a public meeting which was held on January 9, 1991 to communicate the plans for the RI/FS field work. Fact Sheets were mailed to those on the contact list during August 1990, January 1991 and May 1992 providing information on RI/FS plans and progress. An informal meeting was held on March 17, 1993 with residents and businesses currently having activated carbon filtration units or having wells potentially affected by groundwater contamination to solicit their concerns regarding alternative water supply options. The RI/FS reports and the Proposed Plan were released to the public on May 20, 1993. All of these documents were made available in both the Administrative Record at EPA Region III's office in Philadelphia, PA and at the Site Repository in the East Coventry Township building. A public comment period was held from May 20, 1993 to June 19, 1993. In addition, a public meeting was held on May 27, 1993, to discuss the results of the RI/FS and the preferred alternative as presented in the Proposed Plan for the Site. Notice of the Proposed Plan and public meeting was published in the Pottstown Mercury on May 20, 1993. All comments which were received by EPA prior to the end of the public comment

period, including those expressed verbally at the public meeting, are addressed in the Responsiveness Summary which is attached to this Record of Decision.

IV. SCOPE AND ROLE OF RESPONSE ACTION WITHIN SITE STRATEGY

The remedy selected in this ROD addresses treatment of the contaminated groundwater emanating from the Site, provision of a potable source of water for the affected and potentially affected residents and excavation and off-site disposal of the contaminated soil on the Recticon property. This is the only planned response action for this Site.

The selected remedy will comprehensively address the threats posed by the release of hazardous substances at the Site. The principal threats posed by the Site are due to VOC contamination in the groundwater. Since this groundwater aquifer is a Class IIA aquifer, the beneficial use for groundwater is a drinking water supply. The primary risk to human health and the environment is from ingestion and inhalation of, and contact with, groundwater from wells that contain contaminants above the MCLs established by the Safe Drinking Water Act ("SDWA"). One area of soil on the Recticon portion of the Site also is contaminated with VOCs and therefore represents a low-level threat due to the potential for the VOCs to migrate into the groundwater. In addition, the levels of copper and zinc in sediment samples from the on-site drainage ditch represent a potential threat to the environment since the levels are greater than literature levels indicative of ecological affects. Consequently, EPA plans to address these threats by meeting the following goals: 1) to prevent human exposure to contaminants in the groundwater; 2) to restore groundwater to its beneficial use and to background levels of contaminants, if technically practicable; 3) to protect uncontaminated groundwater and surface water for current and future use, and environmental receptors.

The first goal, to prevent human exposure to contaminants in the groundwater, will be accomplished by providing a potable source of drinking water via the municipal water line. The second goal of this remedial action is to restore contaminated groundwater to its beneficial use and to background concentrations, if technically practicable, or MCLs, whichever is more stringent. This will be accomplished by extracting the contaminated groundwater, treating it with a granulated activated carbon ("GAC") adsorption system, and discharging the treated effluent to the Schuylkill River.

The second goal will further be met by source control of contaminated soils. The purpose of this action is to prevent the transport of soil contaminants into the groundwater in order to protect groundwater for its beneficial uses and meet applicable or relevant and appropriate requirements ("ARARS") for the groundwater. The RI Report indicates that the contaminated soils

are located nine to eleven feet below the ground surface and are at levels that do not pose a risk based on direct dermal contact and ingestion. No principal threats, such as areas of highly toxic or highly mobile hazardous substances, were found. Therefore, EPA has determined that contaminated soils are a low-level threat and not a principal threat. However, rainfall infiltration into the soils can cause hazardous substances to continue to leach into the groundwater above background levels and possibly MCLs. Therefore, the selected remedial alternative requires excavation and off-site disposal of the contaminated soil into a permitted landfill.

Treatment of contaminated groundwater and removal of the contaminated soil will assist in accomplishing the third goal of protecting uncontaminated groundwater and surface water for current and future use, and environmental receptors. However, the source and extent of the levels of copper and zinc found in the sediment samples in the on-site drainage ditch must be further characterized during a verification study in order to ensure that environmental receptors are protected.

V. SUMMARY OF SITE CHARACTERISTICS AND EXTENT OF CONTAMINATION

Site Characteristics

The site is underlain by an overburden and bedrock aquifer. The overburden aquifer is composed of weathered and reworked bedrock material. This material consists of clay to gravel-size material that has been eroded and redeposited in meandering stream deposits that make-up the Schuylkill River floodplain. These deposits thin towards the borders of the river valley. Ground water flow within the overburden aquifer occurs though the intergranular porespace. The amount of porespace is controlled by the grain-size and the degree of sorting of the material.

The underlying bedrock aquifer is composed of interbedded conglomerates, sandstone, siltstone, and shale units and are collectively referred to as the Gettysburg Formation. These rock units were laid-down in an ancient meandering stream and river environment. Sedimentary layers within the Gettysburg Formation are divided by bedding planes. The sedimentary layers over time have been rotated into an east-west orientation with a northward dip between 12 and 20 degrees. Some of the bedding planes have separated into what are referred to as bedding plane fractures. Oriented perpendicular to and connecting the bedding planes fractures to various degrees are joint fractures. The degree of jointing is dependent on the thickness and brittleness of the sedimentary layers. Ground water flow in the bedrock aquifer is restricted to movement along the bedding plane fractures and joints. The intergranular porosity, where present, also contributes to ground water movement. Intergranular porosity contributes more to the storativity of the aquifer than to flow though the aquifer.

The general horizontal flow direction in both the overburden and bedrock aquifer is to the east. Vertically the flow direction in both aquifers is generally downward on the Recticon and Allied Steel properties and upward closer to the Schuylkill River.

The distribution of contamination in this setting is controlled by the above constraints. Contaminants have been found in the unsaturated overburden beneath the parking lot on the northwest portion of the former Recticon facility. This suggests the possibility of a source area in the unsaturated overburden on the Recticon property.

This conclusion is further supported by the distribution of contaminants in the overburden aquifer, and the seasonal fluctuation in contaminant levels seen in some overburden wells. The highest concentration of contaminants occurs along an east-west trend encompassing the overburden ("OB") wells OB-2, OB-5, and OB-8 (see Figures 5 and 6). OB-3 also lies along this trend, but does not monitor the ground water within the gravel layer monitored in the other wells. Seasonally high contaminant levels were found during times of corresponding high seasonal water table elevations. This suggests seasonal contact between the ground water and a residual source. Evidence for this source area has been given above. Elevated contaminant levels in OB-5 and -8 may be the result of their position down-gradient from the possible source area.

Bedrock contamination trends follow the same east-west trend seen in the overburden aquifer. Contamination extends along a trend from around deep bedrock ("DBR") well DBR-12 to past DBR-9. Monitoring well DBR-12 and the bedrock ("BR") well BR-2 are located near suspected source areas discussed above and in areas affected by local pumping. The affects of local pumping can be seen by the cone of depression developed around production well W-3 and by the pump test recovery data. DBR-11, while appearing to be located along side gradient from the site, monitors water-bearing zones that rise to the south and surface beneath the Recticon property. The downward vertical gradient could easily have carried contamination downward in the direction of DBR-11. The affects of local pumping in the area of DBR-11 are unknown.

Nature and Extent of Contamination

The nature and extent of contamination at the Site was characterized through a soil gas survey, sampling of surface soils, subsurface soils, sediments, surface water, groundwater monitoring wells and residential drinking water wells.

Subsurface Soils

A soil vapor survey was performed to scan for potential source areas of chlorinated hydrocarbons, using this relatively rapid survey mechanism to provide sufficient information to select

subsurface soil boring locations. The soil vapor survey was performed using a grid system established for each of the sites. A total of 110 soil vapor samples were collected and analyzed in the field. TCE, TCA, and toluene, were detected above a concentration of 0.1 ug/l in the soil vapor samples collected. The contaminant found at the highest concentrations was TCE. The highest amount of TCE was 170 ppb detected in the northwest portion of the former Recticon facility. Based on the TCE soil vapor results, subsurface sampling locations were selected. Five soil boring sample locations were selected at the former Recticon facility and four soil boring locations were selected on the Allied Steel facility. Three additional soil boring locations were sampled to further define the soil contamination on the northwest portion of the former Recticon facility. A total of sixteen samples were analyzed from these locations. The soil boring locations are shown on Figure 3.

The soil borings were analyzed for volatile and semivolatile organic compounds and for inorganic compounds. Only VOCs were detected at levels significantly above either background sample concentrations or reference background levels (Shields, 1985). The area with the greatest concentrations of VOCs in soil was identified in the northwest portion of the parking lot of the former Recticon facility. The concentrations of TCE and DCE in that soil sample (R/A7) were 1,400 ppb and 48 ppb respectively. Additional soil sampling and the soil vapor data suggest that the TCE and DCE concentrations in R/A7 represent an isolated soil impact. Table 1 summarizes the chemicals detected in the subsurface soil samples.

During the RI/FS, the Summers model for groundwater contamination transport was used to estimate the concentration of TCE in soils that would impact groundwater above background levels. TCE was used in the model because it represents the highest VOC contaminant concentration in both soil and groundwater. Based on this model, EPA has determined that the clean-up level for the contaminated soils is 320 ppb of TCE. This level is based on the amount of residual contamination that, if left in the soil, would not cause the groundwater to be contaminated above background levels.

Surface Soil, Sediment and Surface Water

A review of historic operational practices at the Recticon facility indicates that waste water was occasionally discharged to surface drainage ditches. Historical sampling results revealed the presence of chlorinated hydrocarbons in culverts; TCE concentrations ranged from less than 1 ug/l to 229 ug/l. Eight locations were selected in the surface drainage ditches adjacent to the facilities and a railroad track to evaluate the presence of chlorinated hydrocarbons and metals in the surface soil, sediment and surface water. Three of these locations (SS-7A,7B,7C) were surface soil samples selected as background

reference samples. These background samples were taken from a grass covered area at the furthest upgradient location on the former Recticon property. The remaining locations were sampled for sediments in the drainage ditch (SS-3 - SS-6), and in one instance, a stormwater drainpipe (SS-2). Surface water was only available at locations SS-3 and SS-4 (SW-1 and SW-2 respectively). Figure 4 presents the sampling locations. The surface soil/sediment and surface water samples were analyzed for volatile organics, semivolatile organics, and metals and cyanide. Table 2 and 3 summarize the chemicals detected in the surface soil, sediment and surface water samples. Surface water samples contained levels of cadmium and copper exceeding acute ambient surface water quality criteria. However, the concentrations of the compounds found in the downstream surface water location (SW-2) were generally less than or equal to the concentrations found in the upstream sampling location (SW-1). Only low levels of VOCs were detected in some surface soil/sediment samples. The sediment samples did contain significant levels of copper (43.3-211 ppm) and zinc (123-772 ppm), at levels that were 5 to 10 times higher than background levels. Several base/neutral extractable compounds, particularly the polycyclic aromatic hydrocarbons ("PAHs") were also detected at levels above the background concentrations. The PAHs, however, are commonly found in tar derivatives from road surfaces. In addition, the downgradient samples were taken from drainage ditches and pipes that had accumulated sediments from surface water runoff from the asphalt roads and the adjacent railroad tracks, whereas the background sample locations were from a grassy location that does not accumulate sediments.

Groundwater

In order to evaluate the hydrogeology and groundwater quality of the aquifer that underlies the site, eight overburden wells and eight shallow bedrock wells were installed on the former Recticon and Allied Steel properties during Phase I of the RI. The overburden and shallow bedrock wells were constructed as paired well clusters to evaluate groundwater quality in the unconsolidated and bedrock aquifers and the vertical hydraulic gradient. The overburden wells were installed to a depth of approximately 30 feet below ground surface, and the shallow bedrock wells were installed to a depth of approximately 65 feet below ground surface. During Phase II of the RI, eight additional monitoring wells were completed both on and off the Recticon and Allied Steel properties to monitor deeper bedrock zones and shallow zones at the edges of the plume. The well locations are shown on Figure 5. The general horizontal flow direction in both the overburden and bedrock aquifer is to the east. Vertically the flow direction in both aquifers is generally downward based on flows in the wells located on the Recticon and Allied Steel properties and upward based on the flows measured in the wells closer to the Schuylkill River.

The Phase I groundwater monitoring wells were sampled on four occasions during the Phase I of the RI and once again along with the Phase II wells. During the first sampling round, samples were analyzed for volatile and semivolatile organics, metals, and inorganic compounds. Only low levels of semivolatile organics, metals, and inorganic compounds were detected during the first sampling round and therefore, subsequent rounds were analyzed for VOCs only. Tables 4A and 4B present a summary of the chemicals detected during groundwater sampling. Contaminants were found in groundwater at concentrations that exceed background levels and MCLs under the SDWA. TCE and DCE accounts for approximately ninety percent of the total VOC concentrations. The maximum concentration detected for TCE was 1900 ppb and for DCE it was 730 ppb.

Groundwater monitoring at the Site indicates that the VOCs have moved through groundwater both vertically and off the former Recticon and Allied Steel properties toward the Schuylkill River at levels that exceed MCLs. Figure 6 shows the approximate location of the contaminant plume. The concentration of VOCs in wells decreased between the properties and the River, indicating that dispersion and dilution is occurring. The outer boundaries of the groundwater plume were not fully delineated during the RI. EPA believes, however, that sufficient information regarding groundwater movement and contamination was collected during the RI to select a remedy for the site. The extent of the groundwater plume will be studied further during the design phase of remedy implementation.

VI. SUMMARY OF SITE RISKS

As part of the RI/FS, a baseline risk assessment was conducted to characterize the current and potential future threats to human health and the environment posed by contaminants in the groundwater, soil, sediments, subsurface soil and the leaching of contaminants from soil to groundwater, in the absence of remedial action. Table 5 provides a discussion of the key terms used in the risk assessment described in the ROD. The risk assessment consisted of identification of contaminants of concern, exposure assessment, toxicity assessment, risk characterization and an environmental evaluation.

Contaminants of Concern

The risk assessment compiled a list of contaminants from the results of the various sampling activities at the Site and chemical contaminants of concern were identified by media for the various exposure routes.

The specific contaminants of concern in the surface soil include the PAHs.

The specific contaminants of concern in groundwater include cis-1,2-dichloroethylene, 1,1-dichloroethylene, TCE, tetrachloroethylene, 1,2-dichloroethane, vinyl chloride, beryllium, and arsenic.

Exposure Assessment

Current land use in the vicinity of the Site is residential, commercial and agricultural. Groundwater beneath the Site is classified as a Class IIA aquifer, a current source of drinking water. Numerous residential wells in the area of the site are used for drinking water and other domestic uses. The residential wells were sampled during the RI/FS and those residences and commercial establishments having wells with levels of contaminants above MCLs were provided individual carbon treatment units. During performance of the base line risk assessment both the former Recticon and Allied Steel properties were vacant.

The exposure assessment identified potential exposure pathways. Four exposure scenarios were examined under current and future land use assumptions. Exposure of receptors to chemicals in potentially impacted media (surface soil, groundwater, and air) were examined under Reasonable Maximum Exposure ("RME") assumptions.

The four scenarios were: 1) trespassers and 2) offsite residents under the current land use assumption, and; 3) onsite worker and onsite resident under the future land use assumption.

Use of an exposure scenario based on future residential use is consistent with EPA Risk Assessment Guidance which requires consideration of hypothetical residential use. The NCP requires that groundwater which is suitable for use as a water supply be protected and restored to its beneficial use.

Potential exposure routes considered for the purpose of evaluating Site risks included: ingestion, dermal contact and vapor inhalation of contaminated groundwater; inhalation of volatiles and particulates in outdoor/indoor air; and ingestion and dermal contact with surface soil and water. The potential exposure routes chosen for each of the exposed populations are listed in Table 6.

The next step in the exposure assessment process involved the quantification of the magnitude, frequency, and duration of exposure for the populations and exposure routes selected for evaluation. The contaminant intake equations and intake parameters were derived from standard literature equations and data from EPA guidance documents. Average Daily Doses ("ADD") and Lifetime Average Daily Doses ("LADD") were estimated for contaminants of concern in the baseline risk assessment.

Toxicity Assessment

The Reference Dose (RfD) for a substance represents the level of intake which is unlikely to result in adverse non-carcinogenic health effects in individuals exposed for a chronic period of time. For carcinogens, the slope factor is used to estimate an upper-bound probability of an individual developing cancer as a result of exposure to a particular level of a potential carcinogen.

Vinyl chloride, beryllium and arsenic are classified as human carcinogens based on epidemiological studies. Trichloroethylene, 1,2-dichloroethane and tetrachloroethylene are classified as probable human carcinogens based on toxicological studies performed on laboratory animals. Scientific data collected to date is not sufficient to classify cis-1,2-dichloroethylene as a carcinogen.

Risk Characterization

The baseline risk assessment in the RI/FS quantified the potential carcinogenic and non-carcinogenic risks to human health posed by contaminants of concern in several exposure media. For the Site, the carcinogenic and non-carcinogenic risks were determined for soil, air and groundwater.

Carcinogenic risk is presented as the incremental probability of an individual contracting some form of cancer over a lifetime as the result of exposure to the carcinogen. Risk standards for non-carcinogenic compounds are established at acceptable levels and criteria considered protective of human populations from the possible adverse effect from human exposure. The ratio of the ADD to the RfD values, defined as the hazard quotient, provides an indication of the potential for systemic toxicity to occur. If the sum of the aggregate hazard quotients does not exceed one, there is not a concern for a non-carcinogenic public health threat. The carcinogenic and non-carcinogenic risks are summarized on Tables 7, 8 and 9. The risk evaluation of the site indicated the following:

Current Land Use

On-site Trespasser The hazard index did not exceed one. Total cancer risks were estimated at 3×10^{-7}.

Off-site Resident The hazard index did not exceed one. Total cancer risks were estimated at 4×10^{-7}.

Future Land Use

On-Site Worker The hazard index for all pathways exceeded one. Total cancer risks were estimated at 3×10^{-4}.

On-Site Resident The hazard index for one target organ (blood) exceeded one. One chemical cis-1,2-dichloroethene (in groundwater) contributed the greatest amount. All other indices were well below the health-based criteria. The hazard index for all pathways was estimated at 3.643. Total cancer risks were estimated at 6×10^{-4}.

Because the hazard indices exceeded 1 and the baseline carcinogenic risk exceeds the risk range of 10^{-4} to 10^{-6}, and because MCLs are exceeded, remedial action for groundwater will be taken at this Site.

Environmental Evaluation

Based on consultation with U.S. Department of the Interior, Fish and Wildlife Service, there are no known federally listed or proposed endangered or threatened species within the immediate vicinity of the site. The only State-listed endangered or threatened species is the transient blue heron.

Based on the site vegetation, soils, and degree of development, the site does not appear to include substantial wildlife habitat. The vegetation on the majority of the Site is disturbed on a semi-regular basis by activities associated with normal property maintenance. The Phoenixville, Pennsylvania, National Wetlands Inventory indicates that no wetlands have been mapped on the site. The primary drainage feature of the site is related to the ditches that drain the areas upgradient of the former Recticon and Allied Steel facilities to the tributary of Pigeon Creek located south of the Allied Steel property. The closest stream (Pigeon Creek) lies approximately 1,800 feet southeast of the site and has wetlands associated with it. The closest inventoried wetland lies approximately 2,500 feet to the east (along the Schuylkill River).

Due to the nature of contamination and the lack of substantial habitat on the former Recticon and Allied Steel portions of the Site, the Baseline Risk Assessment only qualitatively assessed potential ecological effects and identified potential data gaps.

The major contaminants of concern, VOCs, were not detected in the surface water above ambient water quality criteria or in sediments at levels that could have adverse ecological impacts. Downstream drainage ditch sediment samples, however, contained significant levels of copper (43.3-211 ppm), zinc (123-772 ppm) that were 5 to 10 times higher than background levels. The levels of these contaminants are above levels causing biological effects when compared to literature sediment levels (e.g., Long and Morgan, 1990). The Effects Range-Low ("ER-L"), is a concentration at the low end of the range in which biological effects have been observed. The ER-L for copper is 70 ppm and for zinc, it is 120 ppm. A data gap exists concerning the source and extent of copper and zinc due to the small number and limited

spatial distribution of samples. Although it is possible that the copper and zinc in the sediments are related to site activities, it appears that the elevated levels could also be related to road surface runoff due to tire wear. Several base/neutral extractable compounds, particularly the polycyclic aromatic hydrocarbons (PAHs) were also detected at levels above their ER-Ls. The PAHs are commonly found in tar derivatives from road surfaces, however, and these sediments were sampled from drainage ditches that receive surface water runoff from the asphalt roads and some of the locations receive runoff from adjacent railroad tracks.

Since a data gap exists regarding the source and extent of copper and zinc, additional sediment and surface soil sampling will be required during the remedial design phase. If sampling shows that the site is the source of these metal contaminants, additional samples will be taken in the direction of Pigeon Creek and the Schuylkill in order to determine the extent of contamination and evaluate the potential for adverse effects associated with copper and zinc.

Summary

An unacceptable level of risk is presented by the groundwater in the vicinity of the Site property in a future land use scenario involving an onsite worker or resident's ingestion, inhalation and dermal contact with the groundwater contaminants. Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present a substantial endangerment to public health, welfare, or the environment.

The levels of copper and zinc are above levels which may cause biological effects. Since a data gap exists regarding the source and extent of copper and zinc, additional sediment and surface soil sampling will be required during the remedial design phase.

VII. DESCRIPTION OF ALTERNATIVES

A feasibility study was conducted to identify and evaluate remedial alternatives for remediation of groundwater and contaminated soils on the former Recticon property and the provision of an alternative water supply. Applicable remediation technologies were initially screened in the feasibility study based on effectiveness, implementability, and cost. The alternatives meeting these criteria were then evaluated and compared to nine criteria required by the National Contingency Plan ("NCP"). The NCP requires that no action alternatives be evaluated as a point of comparison for other alternatives. The alternatives evaluated for water supply, soil and groundwater are described below.

Water Supply

WS1 No Action

Estimated Capital Costs: $0
Estimated Annual O&M Costs: $69,077
Estimated Present-Worth Costs: $1,263,555
Estimated Implementation Time: Immediate
Monitoring Time: 30 years

The NCP requires that EPA consider a "No Action" alternative for every site to establish a baseline for comparison to alternatives that do require action. Under this alternative, no action would be taken at the Site to provide a potable source of water for residents within the area of concern. This alternative only includes ongoing private water supply well monitoring. The Chester County Health Department has existing well permitting requirements applicable to all of these alternatives that control the installation of new wells within the plume.

WS2 Community Well

Estimated Capital Costs: $696,306
Estimated Annual O&M Costs: $63,464
Estimated Present-Worth Costs: $1,857,199
Estimated Implementation Time: 6 - 12 Months

A new well, 270 feet deep, would be installed outside the plume with a storage tank, well pump, disinfection system, distribution pump, and distribution system to connect the new water supply to affected homes. The average water consumption per affected well is assumed to be 300 gallons per day (1,800 gallons per day total). To provide capacity to meet peak demands, a 10,000-gallon storage tank and a 4,000-gallon hydropneumatic tank will be included in this system. Disinfection will be by ultra violet ("UV") light. Three 4 inch by 270 foot deep monitoring wells will be installed between the contaminant plume and the supply well to detect if contamination begins to migrate towards the proposed well. Groundwater monitoring will be implemented to identify other users that may require connection to the system.

WS3 Municipal Water Line

Estimated Capital Costs: $293,177
Estimated Annual O&M Costs: $2,661
Estimated Present-Worth Costs: $317,421
Estimated Implementation Time: 3 Months

This alternative will provide a source of potable water to the affected and potentially affected residents by extending a municipal water line to the area in the vicinity of the Site. The Citizen's Home Utility Water Company currently supplies water

to East Vincent Township, and has sufficient capacity at this time to provide water. A water main is located approximately 1/4 mile south of the Site, at the intersection of Shady Lane and Old Schuylkill Road. Under this alternative, a water line will be installed from the main to the Site and the affected well users will be connected to the line. The line will be installed in a trench below the freeze line along and across Old Schuylkill Road and brought into the area of concern. Independent connections will then be brought into each of the affected residences and businesses. Fire hydrants will be installed at 500 foot intervals along the water line. Only those users currently impacted or potentially impacted by the contamination in the groundwater will be connected to the municipal water system. A determination concerning which wells may be potentially impacted will be made once the outer boundaries of the contaminated groundwater plume has been further delineated based on the results of the predesign hydrogeologic investigation.

W84 Individual Home Treatment (Carbon) Units

Estimated Capital Costs: $21,678
Estimated Annual O&M Costs: $27,238
Estimated Present-Worth Costs: $519,909
Estimated Implementation Time: 0 Months

Currently, six water supply wells in the vicinity of the Site are equipped with individual carbon treatment units. Each unit consists of two adsorption units (each using approximately 2 pounds of carbon) in series, with an UV light disinfection system. The units are leased. This alternative includes purchasing the leased units and possibly installing new units for additional residential wells. The carbon units and the UV lamp would be replaced annually. The treated water from each home would be sampled and analyzed twice a year. Groundwater monitoring will be implemented to identify other users that may require connection to the system.

Soil Alternatives

S1 No Action

Estimated Capital Costs: $0
Estimated Annual O&M Costs: $0
Estimated Present-Worth Costs: $0
Estimated Implementation Time: Immediate

The NCP requires that EPA consider a "No Action" alternative for every site to establish a baseline for comparison to alternatives that do require action. Under this alternative, no action would be taken at the Site to remove, remediate, contain, or otherwise address the area with soil contamination.

S2 Asphalt Cap

Estimated Capital Costs: $43,243
Estimated Annual O&M Costs: $3,300
Estimated Present-Worth Costs: $103,607
Estimated Implementation Time: 3 Months

The area in question is currently isolated by an asphalt parking lot. However, for the purposes of alternative development and cost evaluation, it has been assumed that the existing parking lot will be removed and replaced. The actual extent of replacement required will be determined after a field inspection has been performed. It is estimated that the area of soil contamination is approximately 25 feet by 20 feet, or 500 square feet. There are currently no structures in the parking lot, so site preparation will involve mobilizing equipment and removing the existing asphalt layer. The excess material will be stockpiled on-site for disposal as construction debris, or could be recycled into the asphalt mixer for reuse. The underlying gravel base will be removed, and the native soil will be recompacted to minimize the potential for subsidence over time. A 4-inch gravel subbase will be installed and compacted over the Site. A 3.5-inch layer of asphalt will then be installed over the gravel subbase. The site will be graded to direct surface water off the site, and will be bermed around the perimeter to minimize surface water runon and runoff. Institutional controls, such as deed restrictions on excavation of the area will be implemented to ensure the integrity of the cap.

S3 Excavation/Offsite Incineration

Estimated Capital Costs: $147,014
Estimated Annual O&M Costs: $0
Estimated Present-Worth Costs: $147,014
Estimated Implementation Time: 3 Months

Alternative S3 includes excavation and offsite incineration of the contaminated soils. Sample analyses indicate that the vertical extent of contamination extends from approximately 9 to 11 feet below grade. Based on this information, an estimated 37 cubic yards, or approximately 50 tons, of material will require excavation. As the excavation occurs, the material will be sampled until the results indicate that the soils do not contain TCE above the clean-up level of 320 ppb. Once the excavation is complete, additional clean borrow material will be brought in to restore the excavation to original grade, and the existing asphalt surface will be repaired.

S4 Excavation/Offsite Landfill

Estimated Capital Costs: $40,261
Estimated Annual O&M Costs: $0
Estimated Present-Worth Costs: $40,261
Estimated Implementation Time: 3 Months

Alternative S4 includes excavation and off-site disposal of the contaminated soils from the Site at an approved RCRA landfill. Sample analyses indicate that the vertical extent of contamination extends from approximately 9 to 11 feet below grade. Based on this information, an estimated 37 cubic yards, or approximately 50 tons, of material will require excavation. As the excavation occurs, the material will be sampled until the results indicate that the soils do not contain TCE above 320 ppb. Once the excavation is complete, additional clean borrow material will be brought in to restore the excavation to original grade, and the existing asphalt surface will be repaired.

S5 In Situ Vacuum Extraction

Estimated Capital Costs: $46,888
Estimated Annual O&M Costs: $42,073
Estimated Present-Worth Costs: $78,961
Estimated Implementation Time: 2 Months
Estimated Operation Time: 1 year

Vacuum Extraction ("VE") is an in-situ process that requires minimal site disturbance prior to and during implementation. Under this alternative, a VE well would be installed to approximately 11 feet below grade in the area of concern. The well will be connected to a vacuum. The organic constituents in the subsurface will volatilize and be drawn to the extraction well because of the induced vacuum. The vapor discharge from the VE system would pass through an off-gas treatment unit, such as vapor-phase GAC or a thermal treatment unit, to reduce contaminant concentrations in the air stream to acceptable levels prior to discharge. If contaminant concentrations in the off-gas remain constant during the cycle phase, the VE unit will be turned off, and post-treatment sampling will be performed to confirm that the treatment was successful.

Groundwater Alternatives

Common Components

All of the treatment systems except the No Action alternative will be designed to reduce or remove the Site-related VOCs in the extracted groundwater, unattended, on a continuous, 24-hour-per-day performance basis. The ultimate objective of these groundwater pump and treat alternatives is to comply, if technically practicable, with the Commonwealth of Pennsylvania's standards requiring that groundwater containing hazardous

substances be remediated to "background" quality as set forth in 25 Pa. Code §§264.97(i) and (j), and 264.100(a)(9) or the MCL, whichever is more stringent. The combined recovery well pumping rate that will capture the estimated groundwater contaminant plume is approximately 225 gallons per minute ("gpm"). All the treatment systems will be designed to handle raw groundwater at a rate of approximately 250 gpm. The systems will also have the flexibility to respond to varying concentrations and flow rates. The final combined pumping rate will be determined by EPA during design based on the size and number of wells necessary to hydraulically control the contaminated groundwater plume. Since the effluent from the selected system will be discharged to the Schuylkill river, the system will be designed to remove 98% of the VOCs in order to comply with the State's discharge requirements. If variations occur, such as increased contaminant concentration or increased flow rate, the selected system may not be capable of attaining the required effluent concentration limits. Options to address these potential variations will be evaluated as necessary during the detailed system design.

Other common components include:

- Performance of a predesign hydrogeologic investigation including aquifer pumping tests to further delineate the outer boundaries of the contaminated groundwater plume and provide sufficient data to design an extraction system that will meet, to the extent technically practicable, the objective to restore the contaminated groundwater plume to background levels or MCLs, whichever is more stringent.

- Abandonment of wells which serve no useful purpose in order to eliminate the possibility of these wells acting as a conduit for future groundwater contamination. Wells which may be abandoned include the pumping wells on the Allied Steel property and any well not used or considered for practical use as part of a long-term groundwater monitoring network.

- Performance of a Phase I archaeological survey prior to any intrusive remedial activities.

- Periodic monitoring of groundwater to determine the effectiveness of the selected alternative.

GW1 No Action

Estimated Capital Costs: $0
Estimated Annual O&M Costs: $69,077
Estimated Present-Worth Costs: $1,263,555
Estimated Implementation Time: Immediate

The NCP requires that EPA consider a "No Action" alternative for every site to establish a baseline for comparison to alternatives that do require action. Under this alternative, no action would

be taken at the Site to remove remediate, contain, or otherwise address the groundwater contamination. This alternative only includes ongoing private water supply well monitoring for 30 years.

GW2 Extraction/Air stripping/Discharge to Schuylkill River

Estimated Capital Costs: $413,400
Estimated Annual O&M Costs: $246,400
Estimated Present-Worth Costs: $4,920,557
Estimated Implementation Time: 30 years

It is anticipated that the air stripping system will include a treatment building, dual bag filters, controls, and an air stripping tower with a blower, discharge pump, instrumentation and controls, and emission control equipment. The treatment building will have space reserved for additional process equipment, as needed. Groundwater will be pumped from recovery wells through buried pipelines to the treatment building. The piping will transfer water from the tank, through a dual bag filter, to an air stripping tower. The filtered groundwater will be introduced at the top of an air stripping tower, and will flow countercurrent to a clean air stream introduced at the base of the stripping tower. The tower will be designed to remove VOCs from groundwater to meet effluent requirements. The vapor stream will be exhausted to a vapor treatment system while the treated groundwater will be discharged to the Schuylkill.

GW3 Extraction/GAC Treatment/Discharge to Schuylkill River

Estimated Capital Costs: $638,700
Estimated Annual O&M Costs: $169,480
Estimated Present-Worth Costs: $3,738,834
Estimated Implementation Time: 30 years

A system to treat contaminated groundwater with GAC would include water conditioning, solids filtration and handling, and GAC adsorption. The groundwater will be pumped to the filters for solids removal, and then to GAC columns for adsorption of VOCs. The solids from the filters will be characterized for proper disposal. The effluent will be discharged to the Schuylkill River.

GW4 Extraction/ UV/Oxidation /Discharge to Schuylkill River

Estimated Capital Costs: $808,900
Estimated Annual O&M Costs: $165,900
Estimated Present-Worth Costs: $3,843,548
Estimated Implementation Time: 30 years

A system to treat contaminated groundwater with UV/oxidation would include water conditioning, solids filtration, air compression, ozone generation, a hydrogen peroxide metering

system, the UV/oxidation reactor, and the catalytic ozone decomposer.

The UV/oxidation process uses a combination of UV radiation, ozone, and hydrogen peroxide to destroy organic compounds in water by oxidizing them. The final reaction products include salts, water, carbon dioxide, and possibly some organic acids.

Groundwater pretreatment is required to reduce the concentration of metals that will hinder the operation of the system. Pretreated groundwater is mixed with hydrogen peroxide before entering the UV/oxidation reactor. In the reactor, ozone and hydrogen peroxide oxidize the organic contaminants.

Ozone discharged to the environment is corrosive to electrical components, many metals, and foliage. To avoid ozone discharge to the atmosphere, a catalytic ozone decomposer is included in the system design. The catalytic ozone decomposer achieves ozone destruction efficiencies greater than 99.99 percent.

VIII. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The remedial action alternatives for the water supply, soil and groundwater described above were evaluated using nine evaluation criteria. The resulting strengths and weaknesses of the alternatives were then weighed to identify the alternative providing the best balance among the nine criteria. A summary of these nine criteria is provided below.

Summary of Nine Criteria

In selecting EPA's preferred alternatives EPA evaluated each proposed remedy against the nine criteria specified in the National Contingency Plan. The alternative must first satisfy the threshold criteria. Next the primary balancing criteria are used to weigh the tradeoffs or advantages and disadvantages of the alternatives. Finally after public comment has been obtained the modifying criteria are considered. Below is a summary of the nine criteria used to evaluate the remedial alternatives.

Threshold Criteria

- Overall protection of human health and the environment: Whether the remedy provides adequate protection and how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

- Compliance with ARARs: Whether or not a remedy will meet all applicable or relevant and appropriate requirements ("ARARs") of Federal and State environmental statutes and/or whether there are grounds for invoking a waiver.

Primary Balancing Criteria

- Long-Term effectiveness and permanence:
  The ability of the remedy to afford long term, effective and permanent protection to human health and the environment along with the degree of certainty that the alternative will prove successful.

- Reduction of toxicity, mobility or volume:
  The extent to which the alternative will reduce the toxicity, mobility, or volume of the contaminants causing the site risks.

- Short term effectiveness:
  The time until protection is achieved and the short term risk or impact to the community, onsite workers and the environment that may be posed during the construction and implementation of the alternative.

- Implementability:
  The technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement that remedy.

- Cost:
  Includes estimated capital, operation and maintenance, and net present worth costs.

Modifying Criteria

- State Acceptance:
  Whether the Commonwealth concurs with, opposes, or has no comment on the selected remedy. Based on PADER comments, the Commonwealth concurs with the remedy and therefore this criteria will not be discussed further.

- Community Acceptance:
  Whether the public agrees with the selected remedy. A public meeting on the Proposed Plan was held May 27, 1993 in Pottstown, Pennsylvania. Comments received from the public meeting and comments received in writing during the public comment period are referenced in the Responsiveness Summary attached to this Record of Decision. The community favors the selected remedy and therefore this criteria will not be discussed further.

Comparative Analysis Of Alternatives
Water Supply Alternatives

Overall Protection. Since WS1 (No Action) would neither eliminate nor reduce to acceptable levels the threats to human health presented by contamination at the Site, it will not be

discussed in the remainder of this analysis. Alternatives WS2, WS3 and WS4 would all protect human health because they significantly reduce the risk associated with the ingestion and inhalation of contaminated groundwater by providing a potable source of drinking water to the affected residents.
The preferred alternative WS3 provides the highest level of long term effectiveness and permanence because a permanent source of potable water will be provided by an existing water authority that is regulated under State law.

Compliance with ARARs. ARARs will be met by all the remedial alternatives with the exception of the No Action alternative. Alternatives WS2, WS3 and WS4 will provide the affected residents with a source of potable water, which is in compliance with currently promulgated MCLs, as presented in 40 C.F.R. Part 141 and, to the extent that the requirements are more stringent, in 25 PA Code §109.202(a) and (b).

Long Term Effectiveness and Permanence. Alternative WS3 provides the highest level of long term effectiveness and permanence because a permanent source of potable water will be provided by an existing water authority that is regulated under State law. Alternatives WS2 and WS4 will require continual long term monitoring of the contaminated groundwater to ensure effectiveness.

Reduction of Toxicity, Mobility, or Volume through Treatment. Alternatives WS2, WS3 and WS4 will not reduce the toxicity, mobility, or volume of the contaminants detected in the Site groundwater except through natural attenuation, dispersion, or degradation. These alternatives will, however, eliminate the exposure of affected water users to site-related groundwater contaminants by providing an alternate water supply. Since WS4 includes treatment of individual well water, it affords a very minor reduction in the toxicity and volume of the impacted groundwater by treating the portion used as a potable water source.

Short Term Effectiveness. Alternatives WS2, WS3 and WS4 all have minimal short term impacts and can all be implemented in a relatively short time frame. The risks to workers and the community during implementation are very minimal for all the alternatives because there is no contact required with contaminated groundwater or soils.

Implementability. There are no technical constraints on implementing any of these alternatives. Commercially available equipment and materials can be used for all phases of these alternatives. Alternatives WS2 and WS4 will require long-term monitoring to gage the migration of the contaminant plume. Periodic long-term monitoring will also be required, however, under the groundwater alternatives. Access issues will need to be addressed for installing the community well (WS2) and the

municipal line (WS3). Administratively, Alternative WS2 may be difficult to implement since a permanent authority would have to be established to administer and maintain the system.

Costs. Capital and operation and maintenance costs are summarized in Table 10. The Municipal Line Alternative (WS3) would have the lowest net present-worth costs at $317,421.

Comparative Analysis Of Alternatives
Soil Alternatives

Overall Protection. EPA developed a soil cleanup level (320 ppb of TCE) with the objective of removing contaminated soil that has the potential to cause groundwater contamination above background levels. S1 (No Action) and S2 (Asphalt Cap) would neither eliminate nor reduce the soil contamination to acceptable levels, except by natural attenuation. Therefore, they will not be discussed further. Alternatives S3, S4 and S5 provide the highest levels of overall protectiveness because they will result in the permanent removal of the contaminants of concern from the soils at the Site. There could be potential short-term impacts associated with the two excavation alternatives (S3 and S4), but these are very minimal since the levels of VOCs are below health based risk levels. S3 and S4 have an advantage over alternative S5 in regards to long-term effectiveness and permanence because the post-excavation sampling method is more reliable than the post-treatment sampling method.

Compliance with ARARs. There are no ARARs that are pertinent for the development of clean-up levels for the contaminated soil at the Site. The equations used to develop soil cleanup criteria for TCE in soil for the site require use of an acceptable standard for groundwater. The groundwater criteria are used to back calculate the soil criteria. Section 264.97(i) and (j) and 264.100(a)(9) of Title 25 of the PA Code sets forth standards that are ARARs for groundwater. These regulations were used in the development of soil cleanup criteria. Alternatives S3, S4 and S5 will meet the soil clean-up criteria. Since contaminants will exist in the soil excavated under Alternatives S3 and S4, the soil will be tested to determine if it is a RCRA characteristic waste in accordance with 40 C.F.R. §261.24 by the Toxic Characteristic Leaching Procedure ("TCLP"). If it is determined to be hazardous waste, the remedy will be implemented consistently with the substantive requirements, which are relevant and appropriate, of 25 Pa. Code §§262.11 and 262.12 (relating to hazardous waste determination and identification numbers), 25 Pa. Code §§262.20-262.23 (relating to manifesting requirements for off-site shipments of spent carbon or other hazardous wastes), and 25 Pa. Code §§262.30-262.34 (relating to pretransport requirements); 25 Pa. Code §§263.10-263.31 (relating to transporters of hazardous wastes); and with respect to the operations at the Site generally, with the substantive requirements of 25 Pa. Code §§264.10-264.56 and 264.170-264.178

(in the event that hazardous waste generated as part of the remedy is managed in containers), 25 Pa. Code §§264.190-264.199 (in the event that hazardous waste is managed, treated or stored in tanks); and if prohibited by land disposal restrictions, 40 CFR §§268.7, 268.9 and 268.35 (although 40 CFR §268.32(e)(2) was cited as an ARAR in the Proposed Plan for this Site, EPA does not presently have sufficient information to determine whether the constituents are hazardous wastes; however, as noted above, EPA shall require the performance of TCLP testing to address this) and 40 CFR §268.50 (prohibitions on storage of hazardous waste), which are relevant and appropriate.

Long Term Effectiveness and Permanence. Alternatives S3, S4 and S5 provide a high level of long term effectiveness and permanence because they will result in the permanent removal of the contaminants of concern from the soils at the Site. The degree of effectiveness attained by S5, however, must be verified by a post-treatment soil sampling method which is less reliable than the post-excavation soil sampling method associated with S3 and S4. S3 and S5 permanently destroy the contaminants through treatment. However, EPA's preference to use treatment to address the principle threats is met by the treatment of groundwater as discussed under the groundwater alternatives.

Reduction of Toxicity, Mobility, or Volume through Treatment. Alternatives S3, S4 and S5 will result in a permanent reduction in the toxicity, mobility, and volume of the contaminants of concern at the Site because the contaminants will either be permanently destroyed or removed from the Site. Alternative S4 will not treat the contaminants but EPA's preference to use treatment to address the principle threats is met by the treatment of groundwater.

Short Term Effectiveness. Alternative S5 will have the least short-term impacts associated with Site disturbance. Short-term impacts associated with alternatives S3 and S4 include the disruption of the Site associated with removing and replacing soil and the existing asphalt layer and physical risks involved in any activities where heavy equipment is used. The risks associated with the two excavation alternatives (S3 and S4), however, are very minimal since the levels of VOCs are below health-based risk levels. The off-gas from the Vacuum Extraction system will require monitoring to ensure that it complies with relevant health-based standards.

Implementability. The excavation alternatives (S3 and S4) do not require specialized equipment, but will require personnel experienced in hazardous material handling and transport. Experienced transporters are readily available to convey the material to the appropriate facility. Vacuum Extraction (S5) requires experienced personnel and specialized equipment. A pilot study should be performed to confirm the operating parameters of the system. VE has, however, been effective for

removing the contaminants of concern in similar subsurface environments.

Costs. Capital and operation and maintenance costs are summarized in Table 10. The Excavation/Offsite Landfill alternative (S4) would have the lowest net present-worth costs at $40,261.

Comparative Analysis Of Alternatives
Groundwater Alternatives

Overall Protection. Since GW1 (No Action) would neither eliminate nor reduce to acceptable levels the threats to human health or the environment presented by contamination at the Site, it will not be discussed in the remainder of this analysis. Alternatives GW2, GW3 and GW4 would all protect human health because they significantly reduce the risk associated with the ingestion and inhalation of contaminated groundwater by treating the plume.

Compliance with ARARs. ARARs will be met by all the remedial alternatives with the exception of the No Action alternative. Alternatives GW2, GW3 and GW4 will comply if technically practicable, with the Commonwealth of Pennsylvania's standards requiring that groundwater containing hazardous substances be remediated to "background" quality as set forth in 25 Pa. Code §§264.97(i) and (j), and 264.100(a)(9), or MCLs, whichever are more stringent. Any surface water discharge of treated effluent will comply with the substantive requirements of the National Pollutant Discharge Elimination System ("NPDES") discharge regulations set forth in 25 Pa. Code §92.31, and the Pennsylvania Water Quality Standards (25 Pa. Code §93.1-93.9).

Long Term Effectiveness and Permanence. Once clean-up goals have been met, contaminant concentrations in the groundwater aquifer will be permanently reduced to acceptable levels by alternatives GW2, GW3 and GW4.

Reduction of Toxicity, Mobility, or Volume through Treatment. Alternatives GW2, GW3 and GW4 all include recovery and treatment of the contaminated groundwater and will therefore significantly reduce the toxicity, and volume of the contaminants of concern by removing them. The volatile organics recovered in GW2 will be removed from the groundwater in the air stripping tower, and will be treated by the off-gas control system. The volatile organics recovered in GW3 will be removed from the groundwater by the GAC. The contaminants of concern recovered in GW4 will be treated by oxidizing them to carbon dioxide, water, and salts.

Short Term Effectiveness. Alternatives GW2, GW3 and GW4 all have similar short-term impacts related to dermal hazards associated with workers contacting the contaminated groundwater, physical hazards associated with installing the recovery well and effluent distribution piping and potential hazards to on-site personnel. Potential dermal contact hazards can be minimized using appropriate personnel protective equipment when contact with contaminated groundwater is possible. Physical hazards will be minimized by using experienced field personnel and good field practices. Short-term impacts resulting from stripper emissions (GW2) will be controlled by using the appropriate off-gas treatment. The hazards associated with UV/Oxidation (GW4) are greater than those associated with air stripping and GAC due to the hydrogen peroxide and ozone handling requirements.

Implementability. Alternatives GW2, GW3 and GW4 can be readily implemented at the Site. Sufficient information is currently available for preliminary sizing of the treatment systems' components, however, these components are subject to modification during the final design of the alternative. Groundwater extraction using recovery wells and treatment by air stripping (GW2) and GAC (GW3) are proven technologies for treating contaminated groundwater whereas treatment by UV/oxidation is still considered an innovative technology for contaminated groundwater treatment, but has proven effective in numerous industrial wastewater treatment applications for similar contaminants. Consequently, UV/Oxidation will require a treatability study to accurately determine all the operating parameters of the system. Periodic sampling of the effluent from the all of the alternatives will also be required to ensure that the discharge complies with ARARs. Likewise, all of the alternatives will require long-term monitoring to determine the effectiveness of the systems to contain and remediate the contaminant plume.

The distribution pipeline from the treatment facility to the Schuylkill River can be installed using readily available equipment. It will be necessary to address access issues with landowners in connection with the installation of the piping along the proposed discharge line. Since this portion of the remedy will be implemented entirely on-site, only the substantive requirements of PADER's NPDES discharge permit must be met.

Costs. Capital and operation and maintenance costs are summarized in Table 10. The Excavation/Offsite Landfill alternative (S4) has the lowest net present-worth costs at $40,261.

IX. SELECTED REMEDY

EPA has selected Alternatives WS3, S4 and GW3 as the remedy for the Recticon/Allied Steel Site. This remedy shall also include verification sampling of soil/sediment for copper and zinc and performance of a Phase I archaeological survey. This remedy is protective of human health and the environment, cost-effective, shall meet ARARs, and utilizes treatment technologies to the maximum extent practicable. The selected remedy includes the following components:

-Installation of a municipal water line;

-Excavation and off-site disposal of contaminated soils;

-Extraction and treatment of groundwater with discharge to the Schuylkill River following a predesign hydrogeologic investigation and well abandonment;

-Long-term groundwater monitoring;

-Verification sampling to determine the source and extent of the copper and zinc found in drainage ditch sediments; and

-Performance of a Phase I archaeological survey.

Each component of the remedy and its performance standard(s) will be described in turn.

1. Municipal Water Line

A. Description of the Component of the Remedy

This portion of the remedy will provide a source of potable water to the affected and potentially affected residents by extending a municipal water line to the area of concern in the vicinity of the Site (see Figure 6). The Citizen's Home Utility Water Company currently supplies water to East Vincent Township, and has sufficient capacity at this time to provide water. A water supply pump station and main is located southeast of the Site in East Vincent Township on Shady Lane. A water line will be installed from the pumping station or main to the Site and the affected well users will be connected to the line. The line will be installed in a trench below the freeze line along and across Old Schuylkill Road and brought into the area of concern. Independent connections will then be brought into each of the affected residences and businesses. Fire hydrants will be installed at 500 foot intervals along the water line. Only those users currently impacted or potentially impacted by the contamination in the groundwater will be connected to the municipal water system. All areas impacted by the construction activities during remedy implementation and operation and maintenance shall be graded, restored and revegetated, as

necessary. The existing residential wells shall be abandoned, if appropriate.

B. Performance Standards

The water supply system shall be constructed in compliance with the requirements of the Citizens Utility Home Water Company and local and State requirements. Connections shall be offered and provided to the residences and businesses currently served by individual carbon filtration units (see Table 11) and any other residence determined by EPA during the Remedial Design to be affected or potentially affected by the plume of contamination. Potentially impacted wells include those that are within or near the boundaries of the contaminated groundwater plume and those that are hydraulically impacted by the remedial action. A determination concerning which wells may be potentially impacted will be made once the outer boundaries of the contaminated groundwater plume has been further delineated based on the results of the predesign hydrogeologic investigation. All areas impacted by the construction activities during remedy implementation and operation and maintenance shall be restored to preexisting conditions. When the affected and potentially affected parties are connected into the public water supply system, all wells shall be abandoned by the party implementing the remedy, unless the well is selected as a sampling location for long-term groundwater monitoring. Such abandonment shall be performed in compliance with the requirements of 25 PA Code 109.602(c) and consistent with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11

To the extent that the implementation of this portion of the remedy impacts floodplains and wetlands (e.g., installation of the municipal water line), the performance standard will be compliance with Executive Order No. 11983 and 40 CFR Part 6, Appendix A (regarding avoidance, minimization and mitigation of impacts on floodplains), and Executive Order No. 11990 and 40 CFR Part 6, Appendix A (regarding avoidance, minimization and mitigation of impacts on wetlands).

2. Excavation and Off-Site Disposal of Contaminated Soil

A. Description of the Component of the Remedy

This portion of the remedy consists of excavation and off-site disposal of the impacted soil located beneath the parking lot on the northwest portion of the former Recticon facility to a permitted RCRA landfill. Excavation will continue until the soil left in place meets the soil clean-up level of 320 ppb of TCE.

The asphalt and subbase in the excavation area described above will be removed and staged for off-site disposal as construction debris. Excavation will then begin using a backhoe, and the sides of the excavation area will be cut back to a minimum 2 to 1

slope to prevent side wall failure. Excavation will continue to a depth of 9 feet. Soil removed during this phase of the excavation will be stockpiled at a location approved by EPA pending sample analyses and, if analyses show that this soil has less than 320 ppb of TCE, it will be utilized for replacement material after excavation activities are complete.

All soil from the 9 to 11 foot depth interval, and any additional soil containing TCE greater than 320 ppb, will be removed in lifts and loaded onto vehicles for transport to a permitted, off-site RCRA landfill facility. Sediment and erosion controls and temporary covers will be installed to protect exposed soil from the effects of weather consistent with the PADER Bureau of Soil and Water Conservation's Erosion and Sediment Pollution Control Manual.

Post-excavation sampling will be performed after the excavation has progressed to 11 feet. Post-excavation samples will be obtained from the base and the sidewalls of the excavation to ensure that contamination is not present above the clean-up level. The location of the post-excavation samples will be selected based on visual observation of lithology and screening for VOCs using an appropriate organic vapor detector. The samples will be analyzed for VOCs on a quick turnaround basis using a method approved by EPA. If the post-excavation sample concentrations are below the clean-up level, the excavation will be backfilled using the stockpiled clean soil. Additional clean borrow material will be brought in to restore the excavation to original grade, and the asphalt surface will be repaired. Backfilling will be performed in 6-to-12 inch lifts, and the material will be compacted to minimize the potential for subsidence.

If TCE is detected above 320 ppb in the post-excavation samples, additional material will be removed from the excavation area, and new samples will be obtained for analysis as discussed above. Excavation and sampling activities will continue until the results indicate that the soils do not contain TCE above the clean-up level. The excavation area will then be restored as described in the preceding paragraph.

B. Performance Standards

The performance standard for the excavation of soils from the area of excavation is to remove all soil with concentrations of TCE greater than 320 ppb, which is the soil clean-up level.

The performance standard to protect exposed soil from the effects of weather shall be compliance with the PADER Bureau of Soil and Water Conservation's Erosion and Sediment Pollution Control Manual.

3. Extraction and Treatment of Groundwater

A. Description of the Component of the Remedy

Groundwater shall be treated using an on-site treatment system. The treatment system will be designed to reduce the Site-related VOCs in the extracted groundwater, unattended, on a continuous, 24-hour-per-day performance basis. Groundwater shall be collected using multiple extraction wells. The exact location, size and number of wells shall be determined during the design of the groundwater recovery system following a predesign hydrogeologic investigation. The predesign study is necessary to further define the outer boundaries of the groundwater plume and the hydraulic properties within the aquifer and the contact zone with the Schuylkill River. A system to treat contaminated groundwater with GAC shall include water conditioning, solids filtration and handling, and GAC adsorption. The groundwater will be pumped to filters for solids removal, and then to GAC columns for adsorption of VOCs. Spent solids from the solids filtration system will be characterized in accordance with 40 C.F.R. §261.24 by the Toxic Characteristic Leaching Procedure ("TCLP") for proper disposal. The treated groundwater effluent will be discharged to the Schuylkill River through a new outfall pipe that shall be constructed as part of the remedial action. The treatment system will be designed to achieve 98 percent removal of VOCs in compliance with the substantive requirements of PADER's NPDES regulations. Final flow rates and GAC system dimensions will be determined by EPA during remedial design. The final combined pumping rate and the exact location, size and number of wells shall be based on the ability to hydraulically control the contaminated groundwater plume as determined by EPA. The pumping rate will be designed not to impact the water table elevation in the remaining operating private wells in the area. Extraction and treatment will continue until EPA, in consultation with the Commonwealth of Pennsylvania, determines that the performance standard for each contaminant of concern in the groundwater has been achieved, to the extent technically practicable, throughout the entire contaminated groundwater plume, including both the groundwater contamination in the area of the former Recticon and Allied Steel facilities and the area of groundwater contamination located beyond the facilities' property boundaries. Figure 6 shows the approximate area presented in the RI.

In addition, existing pumping and monitoring wells which serve no useful purpose shall be properly plugged and abandoned consistent with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11 in order to eliminate the possibility of these wells acting as a conduit for future groundwater contamination. Wells which may be plugged and abandoned include the pumping wells on the Allied Steel property and any well not used or considered by EPA for practical use as part of a long-term groundwater monitoring network. Periodic monitoring of groundwater will

occur to determine the performance of the pump and treat system and the effectiveness of the selected remedy in meeting the performance standards.

B. Performance Standards

The performance standard for each contaminant of concern in the groundwater in the area of groundwater contamination shall be the MCL for that contaminant [40 C.F.R. Part 141 and, to the extent that the MCLs more stringent, in 25 PA Code §109.202(a)] or the background concentration of that contaminant [25 PA Code §§264.97(i), (j), and 264.100(a)(9)], whichever is more stringent. The background concentrations for each contaminant of concern shall be established in accordance with the procedures for groundwater monitoring outlined in 25 PA Code §264.97 before groundwater treatment begins. In the event that a contaminant of concern is not detected in samples taken for the establishment of background concentrations, the detection limit for the method of analysis utilized with respect to that contaminant shall constitute the "background" concentration of the contaminant. The area of groundwater contamination (the area in which these performance standards are to be met) is the entire contaminated groundwater plume, including the groundwater contamination in the area of the former Recticon and Allied Steel properties and the area of groundwater contamination beyond those property boundaries. MCLs, detection limits, and appropriate analytical detection methods for these contaminants of concern are listed below.

Contaminant	MCL(ug/l)	Detection Limit (ug/l)	Method[1]
Tetrachloroethylene	5	0.03	601/602
Trichloroethylene	5	0.12	601/602
Vinyl Chloride	2	0.18	601/602
1,1-Dichloroethylene	7	0.13	601/602
1,2-Dichloroethane	5	0.03	601/602
Dichloroethylene (cis-1,2-)	70	0.12	524.2

[1]Method 601/602 40 C.F.R. Part 136
Method 524.2 40 C.F.R. Part 141

The performance standard for the treated groundwater prior to discharge to the Schuylkill River shall be compliance with the substantive requirements of the NPDES discharge regulations set forth in 25 Pa. Code §92.31, and the Pennsylvania Water Quality Standards (25 Pa. Code §§93.1-93.9). Pursuant to the Pennsylvania Department of Environmental Resources' determination, 98 percent removal of trichloroethylene and cis-1,2-dichloroethylene shall be required prior to discharge to the Schuylkill. Monitoring for all the other contaminants of concern shall also be required.

The performance standard for well abandonment shall be compliance with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11.

To the extent that the implementation of this portion of the remedy impacts floodplains and wetlands (e.g., installation of the wells, piping, buildings and the outfall pipe), the performance standard will be compliance with Executive Order No. 11983 and 40 C.F.R. Part 6, Appendix A (regarding avoidance, minimization and mitigation of impacts on floodplains), and Executive Order No. 11990 and 40 C.F.R. Part 6, Appendix A (regarding avoidance, minimization and mitigation of impacts on wetlands).

C. Groundwater Remedy Implementation

Because the selected remedy will result in contaminants remaining on-site, 5-year Site reviews under Section 121(c) of CERCLA will be required.

An operation and maintenance plan for the groundwater extraction and treatment system, including long-term groundwater monitoring, shall also be required. The performance of the groundwater extraction and treatment system shall be carefully monitored on a regular basis, as described in the long-term groundwater monitoring component in 4.A. below, and the system may be modified, as warranted by the performance data collected during operation. These modifications may include, for example, alternate pumping of extraction wells and the addition or elimination of certain extraction wells. In addition, all of the extraction/treatment alternatives (GW2, GW3 and GW4) rated relatively evenly against all of the criteria except the cost criterion. Consequently, if, based on more detailed information gathered during remedy implementation or operation, variations occur, such as a change in the contaminant concentration or flow rate, the selected system may no longer be cost-effective when compared to one, or a combination, of the other extraction/treatment alternatives. In that case, based on the final design parameters, EPA may consider the utilization of a combination of any of the groundwater treatment technologies under GW2, GW3 or GW4.

It may become apparent during implementation or operation of the groundwater extraction system and its modifications, that contaminant levels have ceased to decline and are remaining constant at levels higher than the performance standards over some portion of the contaminated plume. If EPA, in consultation with the Commonwealth of Pennsylvania, determines that implementation of the selected remedy demonstrates, in corroboration with hydrogeological and chemical evidence, that it will be technically impracticable to achieve and maintain the performance standards throughout the entire area of groundwater contamination, EPA, in consultation with the Commonwealth may

require that any or all of the following measures be taken, for an indefinite period of time, as further modification(s) of the existing system:

a) long-term gradient control provided by low level pumping, as a containment measure;

b) chemical-specific ARARs may be waived for those portions of the aquifer that EPA, in consultation with the Commonwealth determine that it is technically impracticable to achieve further contaminant reduction;

c) institutional controls may be provided/maintained to restrict access to those portions of the aquifer where contaminants remain above performance standards; and

d) remedial technologies for groundwater restoration may be reevaluated.

The decision to invoke any or all of these measures may be made during implementation or operation of the remedy or during the 5-year reviews of the remedial action. If such a decision is made, EPA shall amend the ROD or issue an Explanation of Significant Differences.

4. Long-Term Groundwater Monitoring

A. Description of the Component of the Remedy

A long-term groundwater monitoring program shall be implemented to evaluate the effectiveness of the groundwater pumping and treatment system. A plan for the long-term groundwater monitoring program shall be included in the operation and maintenance plan for the groundwater extraction and treatment system. Numbers and locations of these monitoring wells shall be approved by EPA during the remedial design, in consultation with the Commonwealth of Pennsylvania. The wells shall be installed in the area of groundwater contamination and sampled quarterly for the first three years and semi-annually thereafter. Sampling and operation and maintenance shall continue until such time as EPA, in consultation with the Commonwealth of Pennsylvania, determine that the performance standard for each contaminant of concern has been achieved to the extent technically practicable throughout the entire area of groundwater contamination. If EPA and the Commomwealth make such a determination, the wells shall be sampled for twelve consecutive quarters throughout the entire plume and if contaminants remain at or below the performance standards, the operation of the extraction system shall be shut down.

Semi-annual monitoring of the groundwater shall continue for five years after the system is shutdown. If subsequent to an extraction system shutdown, monitoring shows that groundwater

concentrations of any contaminant of concern are above the performance standard, the system shall be restarted and continued until the performance standards have once more been attained for twelve consecutive quarters. Semi-annual monitoring shall continue until EPA determines, in consultation with the Commonwealth of Pennsylvania, that the performance standard for each contaminant of concern can be achieved on a continuing basis.

B. Performance Standards

Implementation of the component of the remedy described in 4.A., above is the performance standard.

5. Verification Sampling of Copper and Zinc

A. Description of the Component of the Remedy

During the conduct of the RI/FS, levels of copper and zinc in upgradient and downgradient soil and sediment samples located in the drainage areas on-site may be capable of causing adverse ecological effects. However, the source and extent of these compounds in soil from surface drainages are not well characterized. It is possible that the copper and zinc concentrations detected in downgradient soil samples are related to site activities or the elevated levels may be related to road surface runoff from Route 724 or Wells Road. Further downstream, Pigeon Creek and the adjacent wetland area may also be potentially affected by the migration of copper and zinc with drainage ditch sediments. Additional sampling and investigation are required to determine the source and extent of the copper and zinc detected in the drainage ditch sediments. The design and construction of the groundwater pump and treatment system shall be coordinated with this investigation so that design and implementation schedules are compatible. If necessary, as determined by EPA, a program to protect sensitive environmental receptors or habitats shall be implemented.

B. Performance Standards

Implementation of the component of the remedy described in 5.A., above is the performance standard.

6. Phase I Archaeological Survey

A. Description of the Component of the Remedy

Performance of a Phase I archaeological survey prior to any remedial activities is also required in accordance with the National Historic Preservation Act (Chapters 106 and 110(f) and 36 CFR Part 800) and the Archaeological and Historic Preservation Act (16 U.S.C. § 469a-1).

B. Performance Standards

Implementation of the component of the remedy described in 6.A., above is the performance standard.

X. STATUTORY DETERMINATIONS

EPA's primary responsibility at Superfund sites is to select remedial actions that are protective of human health and the environment. Section 121 of CERCLA also requires that the selected remedial action comply with ARARs, be cost-effective, and utilize permanent treatment technologies to the maximum extent practicable. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and Environment

Based on the baseline risk assessment for the Site, potential exposure to VOCs in drinking water through ingestion, inhalation, and dermal contact, was identified as the principal risk at the Site. Potential exposure to soils was not determined to be a principal threat based on the depth and level of contaminants in soil.

The selected remedy protects human health and the environment by reducing levels of contaminants in the groundwater to ARARs through extraction and treatment and providing a potable source of drinking water through the municipal water line. The risk level will be reduced to the 10^{-4} - 10^{-6} level or less. The soil remedy will also protect human health and the environment by removing the contaminated soil, thereby eliminating the potential for contaminant migration to the groundwater and preventing exposure through inhalation, ingestion, and dermal contact.

Implementation of the selected remedy will not pose any unacceptable short-term risks or cross-media impacts to the Site or the community.

Attainment of Applicable or Relevant and Appropriate Requirements of Environmental Laws

The selected remedy will comply with all applicable or relevant and appropriate chemical-specific, location-specific, action-specific ARARs.

Chemical Specific ARARs

The remedy will provide the affected residents with a source of potable water, which is in compliance with currently promulgated MCLs, as presented in 40 C.F.R. Part 141 and, to the extent that the requirements are more stringent, in 25 PA Code §109.202(a) and (b).

MCLs shall be achieved throughout the entire contaminated groundwater plume in accordance with 40 C.F.R. Part 141 and, to the extent that the requirements are more stringent, in 25 PA Code §109.202(a). To the extent that they are more stringent than these MCLs, the Commonwealth of Pennsylvania standards, which specify that all groundwater containing hazardous substances must be remediated to "background" quality pursuant to 25 PA Code §§264.97(i), (j), and 264.100(a)(9). These background levels shall be attained as part of this remedial action unless EPA, in consultation with the Commonwealth of Pennsylvania, determines that attaining such levels is technically impracticable, or they are waived under CERCLA Section 121(d).

Action-Specific ARARs

Since the treated groundwater will be discharged to Schuylkill River, the National Pollutant Discharge Elimination System ("NPDES") requirements and the State water quality criteria under the Pennsylvania Clean Streams Law specified below are ARARs for this action. Any surface water discharge of treated effluent will comply with the substantive requirements of the NPDES discharge regulations set forth in 25 Pa. Code §92.31, and the Pennsylvania Water Quality Standards (25 Pa. Code §§93.1-93.9).

Since residuals will be generated in the solids filtration portion of the treatment system and the spent GAC carbon filters and contaminants will exist in the excavated soil, these will be tested to determine if they are RCRA characteristic wastes in accordance with 40 C.F.R. §261.24 by the Toxic Characteristic Leaching Procedure ("TCLP"). If any of these are determined to be hazardous waste, the remedy will be implemented consistent with the substantive requirements, which are relevant and appropriate, of 25 Pa. Code §§262.11 and 262.12 (relating to hazardous waste determination and identification numbers), 25 Pa. Code §§262.20-262.23 (relating to manifesting requirements for off-site shipments of spent carbon or other hazardous wastes), and 25 Pa. Code §§262.30-262.34 (relating to pretransport requirements); 25 Pa. Code §§263.10-263.31 (relating to transporters of hazardous wastes); and with respect to the operations at the Site generally, with the substantive requirements of 25 Pa. Code §§264.10-264.56 and 264.170-264.178 (in the event that hazardous waste generated as part of the remedy is managed in containers), 25 Pa. Code §§264.190-264.199 (in the event that hazardous waste is managed, treated or stored in tanks); and if prohibited by land disposal restrictions, 40 CFR §§268.7, 268.9 and 268.35 (although 40 CFR §268.32(e)(2) was cited as an ARAR in the Proposed Plan for this Site, EPA does not presently have sufficient information to determine whether the constituents are hazardous wastes; however, as noted above, EPA shall require the performance of TCLP testing to address this) and 40 CFR §268.50 (prohibitions on storage of hazardous waste), which are relevant and appropriate to this action.

Location Specific ARARS

This remedy will comply with the substantive requirements of the Delaware River Basin Commission Ground Water Protected Area Regulations regarding construction of water extraction wells (No. (6)(f); Water Code of the Basin, Section 2.50.2), metering of surface water intakes (No. 9; Water Code of the Basin, Section 2.50.2), non-interference with domestic or other existing wells (No. 10) and non-impact on ground water levels, ground water storage capacity, or low flows of perennial streams (No. 4; Water Code of the Basin, Section 2.20.4).

To Be Considered (TBC) Standards

Pennsylvania's Ground Water Quality Protection Strategy, dated February 1992 and EPA's Ground Water Protection Strategy, dated July 1991 are TBCs.

Existing pumping and monitoring wells which serve no useful purpose will be properly plugged and abandoned consistent with PADER's Public Water Supply Manual, Part II, Section 3.3.5.11.

With respect to Site remedial activities (e.g., installation of the municipal water line, placement of new wells and the treatment plant, and the laying of pipelines from the wells to the treatment plant and from the plant to the Schuylkill River), Executive Order No. 11983 and 40 C.F.R. Part 6, Appendix A (regarding avoidance, minimization and mitigation of impacts on floodplains), and Executive Order No. 11990 and 40 C.F.R. Part 6, Appendix A (regarding avoidance, minimization and mitigation of impacts on wetlands).

Sediment and erosion controls and temporary covers will be installed to protect exposed soil from the effects of weather in accordance with PADER, Bureau of Soil and Water Conservation's Erosion and Sediment Pollution Control Manual.

EPA OSWER Directive 9834.11 which prohibits the disposal of Superfund Site waste at a facility not in compliance with §3004 and §3005 of RCRA and all applicable State requirements is a TBC.

Cost Effectiveness

The selected remedy is cost-effective in providing overall protection in proportion to cost, and meets all other requirements of CERCLA. Section 300.430(f)(ii)(D) of the NCP requires EPA to evaluate cost-effectiveness by comparing all the alternatives which meet the threshold criteria - protection of human health and environment and compliance with ARARs - against three additional balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; and short-term effectiveness. The selected remedy meets these criteria and provides for overall effectiveness in

proportion to its cost. The combined estimated present worth cost for the selected remedy is $4,096,516. Detailed capital and O&M cost estimates for the alternatives included in the selected remedy are shown in Tables 12A - 12D.

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

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized while providing the best balance among the other evaluation criteria. Of those alternatives evaluated that are protective of human health and the environment and meet ARARs, the selected remedy provides the best balance of tradeoffs in terms of long-term and short-term effectiveness and permanence, cost, implementability, reduction in toxicity, mobility, or volume through treatment, State and community acceptance, and preference for treatment as a principal element.

Under the selected remedy, treatment of groundwater using GAC (GW3) is more cost-effective than the other alternatives evaluated. It also will be easier to implement and have less short-term impacts than UV/Oxidation option. Alternative GW3 will reduce contaminant levels in groundwater and reduce the risks associated with the potential ingestion of the groundwater to the maximum extent practicable, as well as provide long-term effectiveness. All options provide similar degrees of long-term effectiveness and reduction of toxicity, mobility, or volume through treatment.

The municipal water line (WS3) provides the highest degree of long-term effectiveness among the water supply options and is the most cost-effective. It also will be the easiest to implement over the life of the project since long-term monitoring will not be required as in the other options. This option is also favored by the residents and officials of East Coventry Township.

The selection of S4, the excavation and off-site disposal of contaminated soils, is consistent with Superfund program policy regarding principal and low level threat wastes in that it utilizes engineering controls for low level threat wastes. The remedy provides the highest degree of long-term effectiveness and permanence, is the most cost-effective, reduces mobility and reduces risk to human health and the environment.

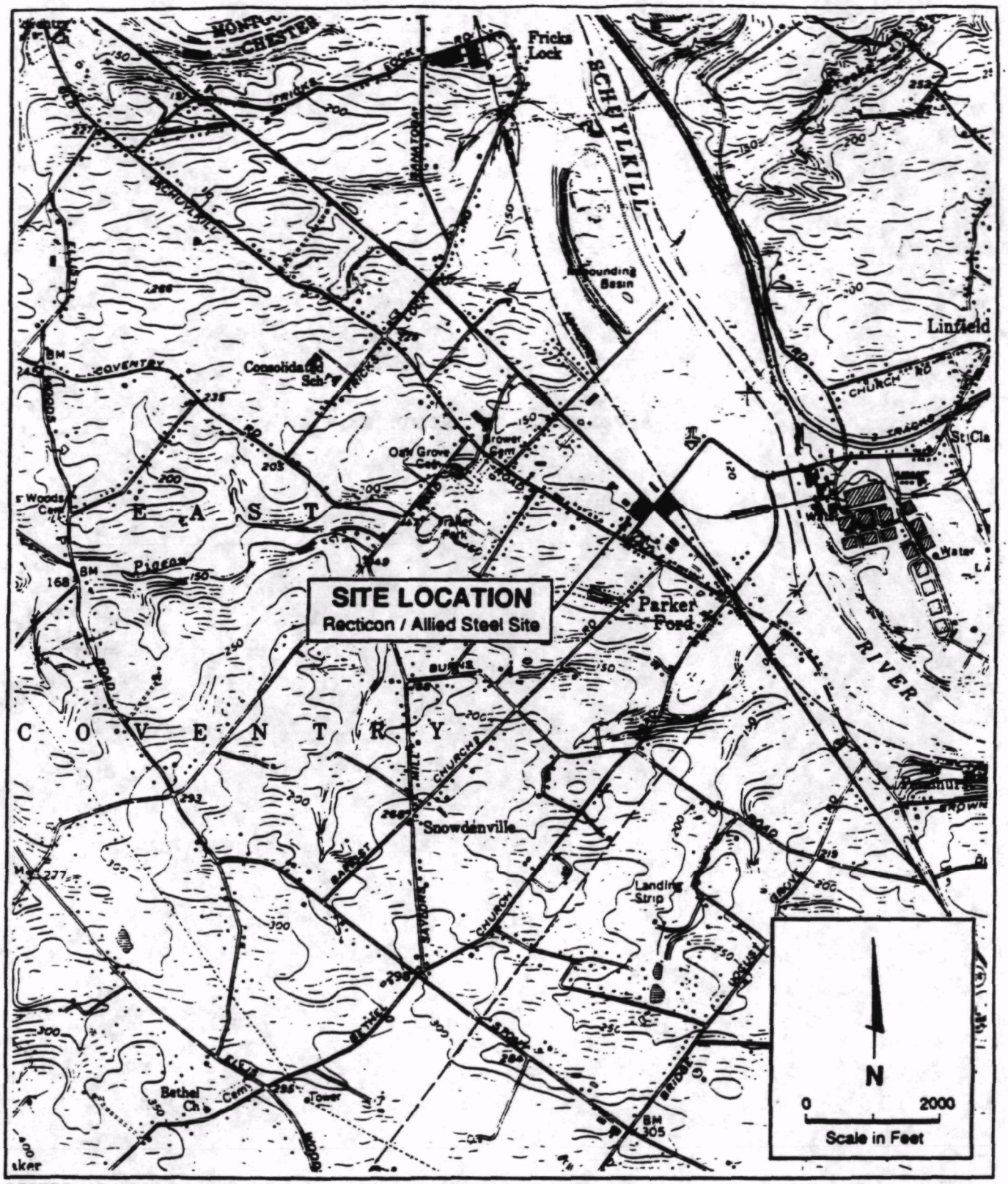
Preference for Treatment as a Principal Element

The selected remedy satisfies, in part, the statutory preference for treatment as a principal element. Alternative GW3 addresses the primary threat of future direct contact, inhalation and ingestion of contaminated groundwater through treatment using a GAC system. Since the contaminated soil does not constitute a principal threat, treatment is not required.

XI. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Recticon/Allied Steel Site was released for public comment on May 20, 1993. The Proposed Plan identified the selected remedies as the preferred remedies. EPA reviewed all written and verbal comments submitted during the public comment period. No significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

APPENDIX A FIGURES



REFERENCE: USGS 7.5 Minute Quadrangle; Phoenixville, Pennsylvania, 1983.

SITE LOCATION MAP
Recticon / Allied Steel Site
Parker Ford, Pennsylvania
OCTOBER 1992

DAMES & MOORE

10839-126-032 SJR 9/28/92 SITE.1

Figure 1

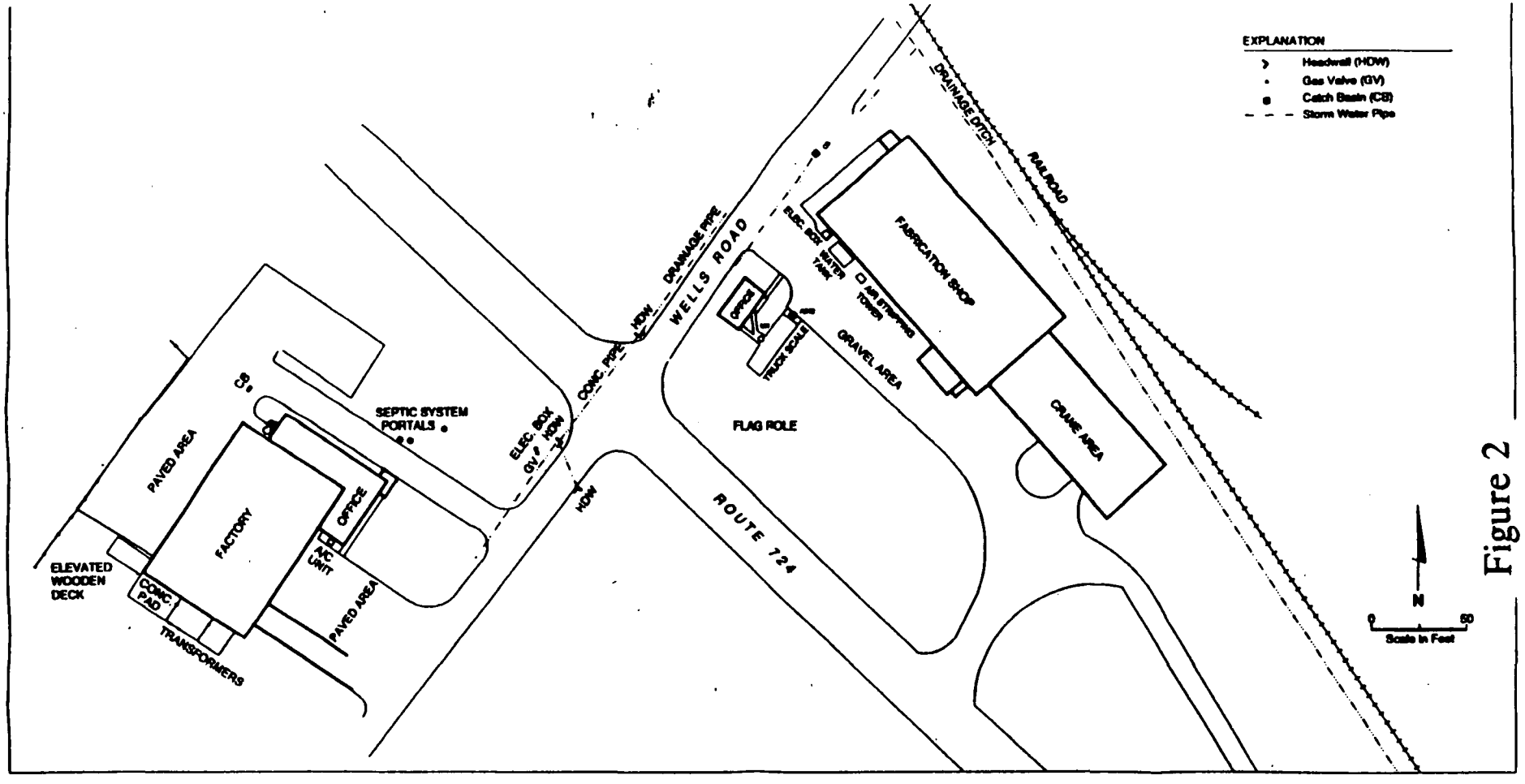


Figure 2

SITE LAYOUT

Raritan / Allied Steel Site
Porter Ford, Pennsylvania
MARCH 1993

DAMES & MOORE

10839-126-032 SJR 9/24/92 LAYOUT

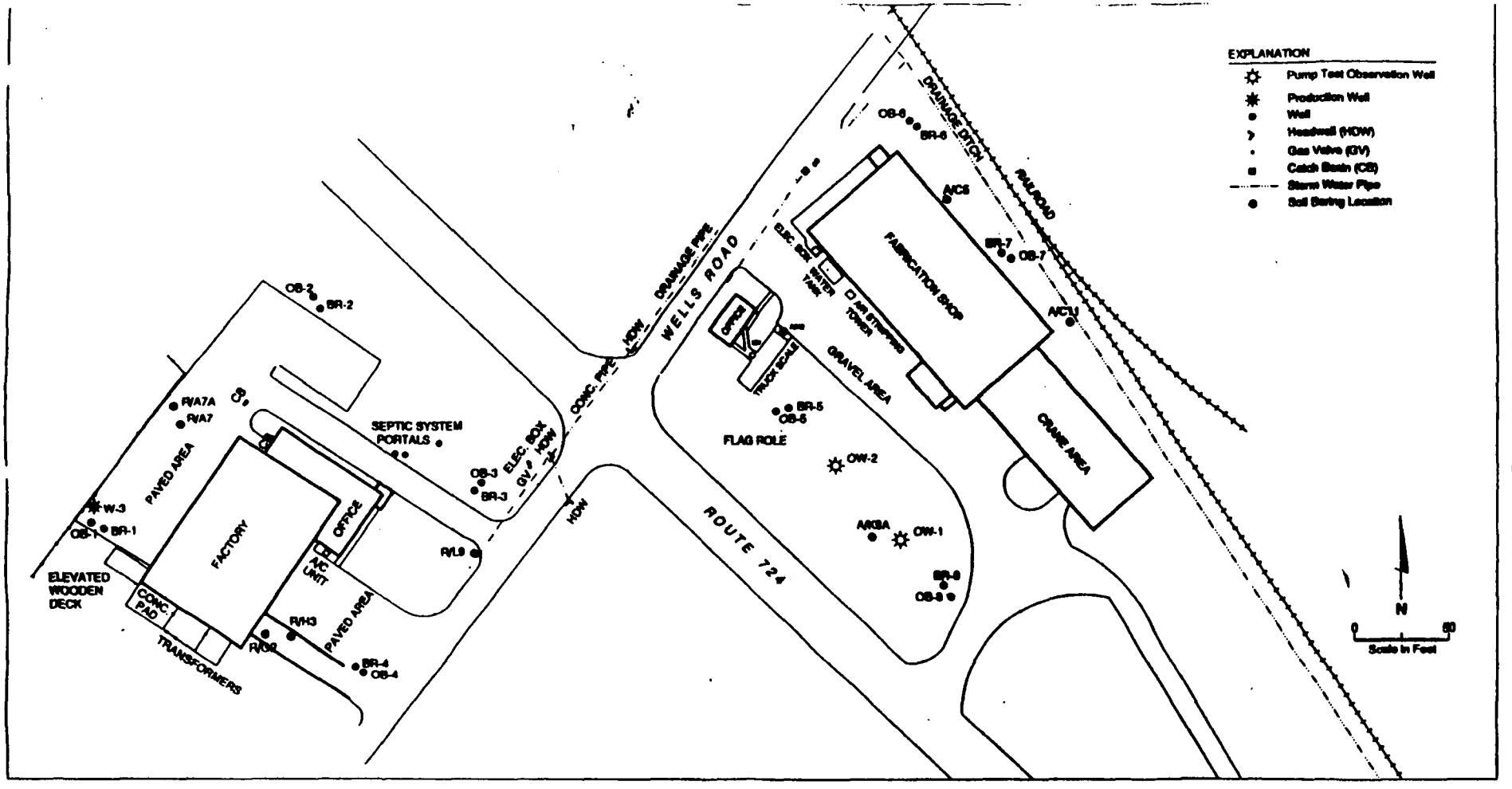
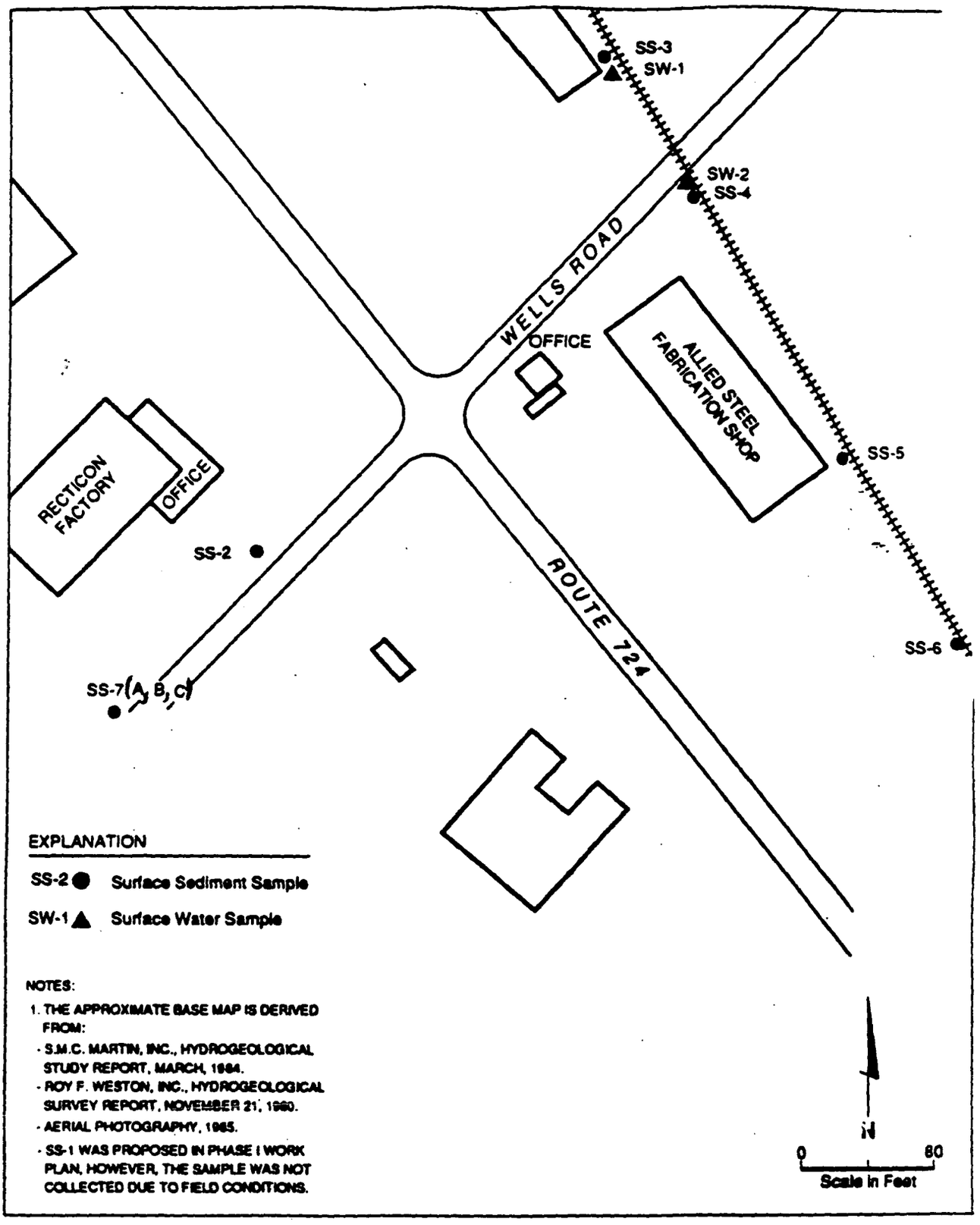


Figure 3

SOIL BORING LOCATIONS

Raccoon / Allied Steel Site
Parker Ford, Pennsylvania
MARCH 1993

DAMES & MOORE



SURFACE SOIL AND SURFACE WATER SAMPLING LOCATIONS

Recticon / Allied Steel Site
Parker Ford, Pennsylvania
MARCH 1993

DAMES & MOORE

Figure 4

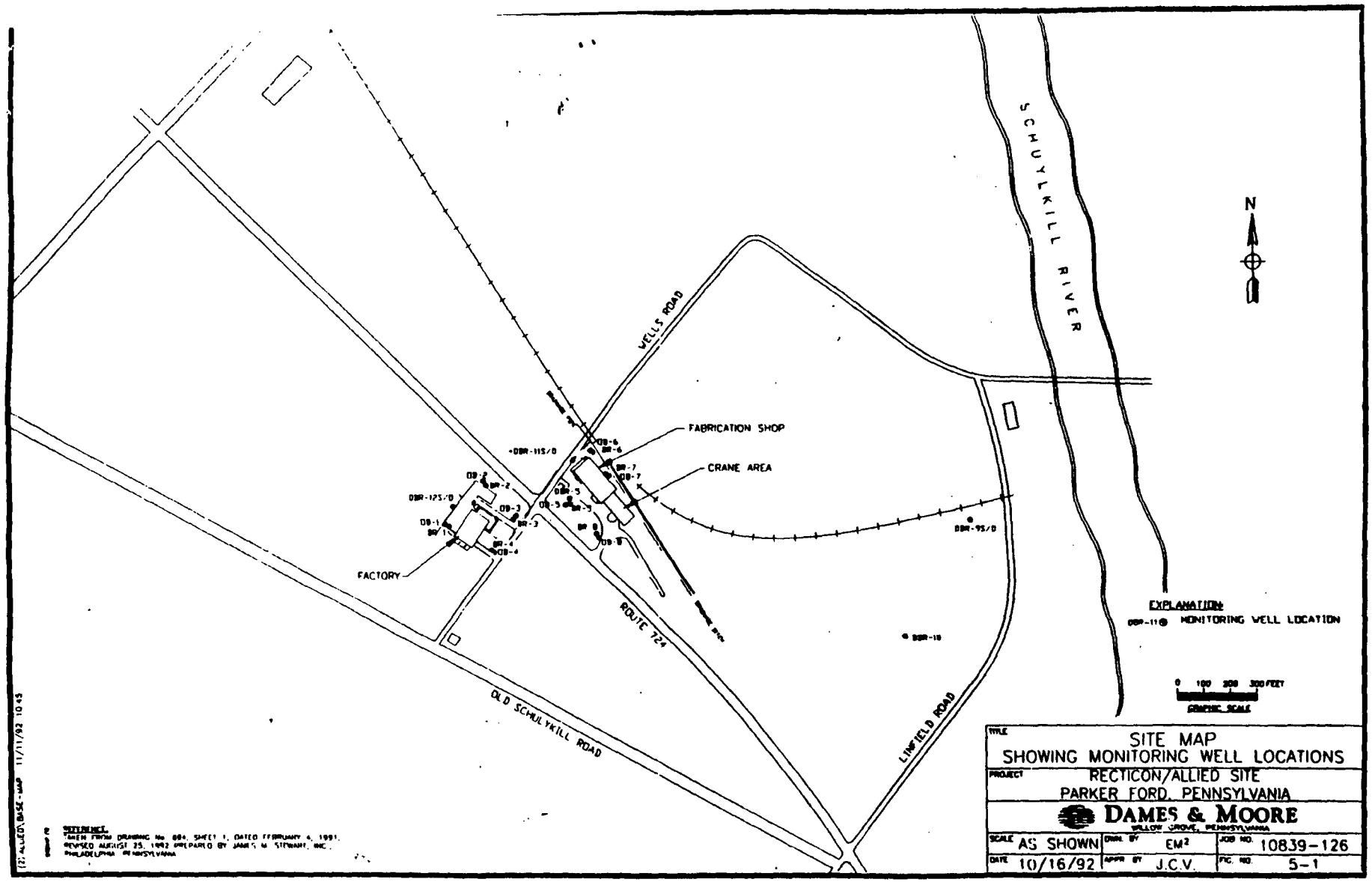

SCHUYLKILL RIVER
WELLS ROAD
FABRICATION SHOP
CRANE AREA
FACTORY
ROUTE 724
OLD SCHUYLKILL ROAD
LIMEFIELD ROAD
N
EXPLANATION:
MONITORING WELL LOCATION
SITE MAP
SHOWING MONITORING WELL LOCATIONS
RECTICON/ALLIED SITE
PARKER FORD, PENNSYLVANIA
DAMES & MOORE
WILLOW GROVE, PENNSYLVANIA
SCALE AS SHOWN
DRWN BY EM²
JOB NO. 10839-126
DATE 10/16/92
APPR BY J.C.V.
FIG. NO. 5-1

Figure 5

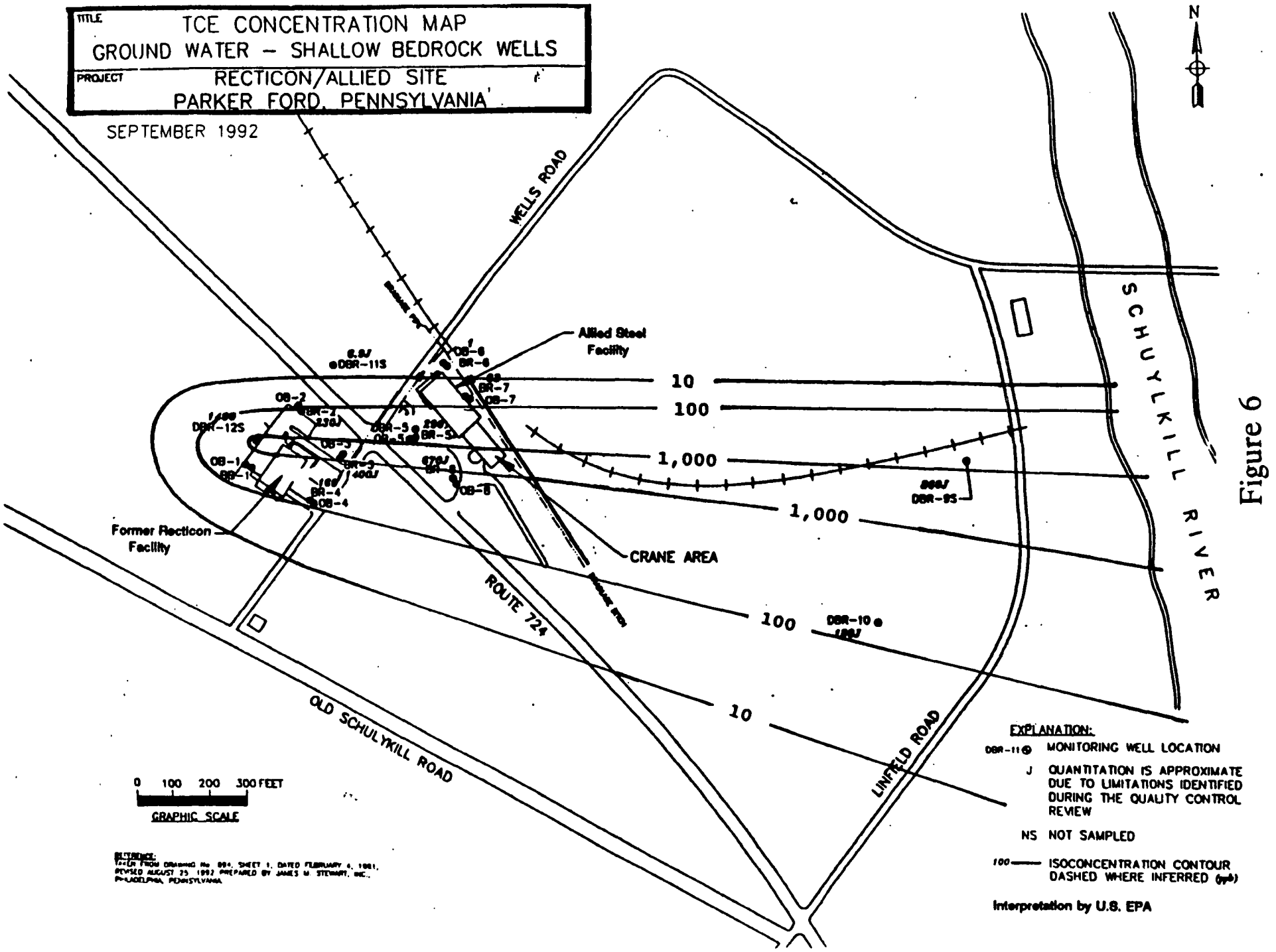

TITLE
TCE CONCENTRATION MAP
GROUND WATER – SHALLOW BEDROCK WELLS
PROJECT
RECTICON/ALLIED SITE
PARKER FORD, PENNSYLVANIA
SEPTEMBER 1992
N
WELLS ROAD
Allied Steel Facility
SCHUYLKILL RIVER
10
100
1,000
1,000
100
10
CRANE AREA
Former Recticon Facility
ROUTE 724
OLD SCHULYKILL ROAD
LINFIELD ROAD
0 100 200 300 FEET
GRAPHIC SCALE
EXPLANATION:
MONITORING WELL LOCATION
J QUANTITATION IS APPROXIMATE DUE TO LIMITATIONS IDENTIFIED DURING THE QUALITY CONTROL REVIEW
NS NOT SAMPLED
ISOCONCENTRATION CONTOUR DASHED WHERE INFERRED (ug/l)
Interpretation by U.S. EPA

Figure 6

APPENDIX B TABLES

Table 1

Summary of Chemicals Detected in Subsurface Soil Samples at the Recticon and Allied Steel Facilities

Chemical	Allied Steel			Recticon		
	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations
METALS (in mg/kg)						
Aluminum	6 of 6	-	4040 - 8200	6 of 6	-	2290 - 9440
Arsenic	6 of 6	-	1.2 - 2.7	3 of 6	0.45 - 0.46	0.81 - 2.2
Barium	6 of 6	-	32.2 - 106	6 of 6	-	38.3 - 317
Beryllium	3 of 6	0.44 - 0.49	0.48 - 0.59	4 of 6	0.43 - 0.46	0.71 - 1.3
Chromium	6 of 6	-	12.4 - 21.7	6 of 6	-	2.6 - 16.5
Cobalt	6 of 6	-	5.9 - 15.7	6 of 6	-	4.7 - 15.1
Copper	6 of 6	-	9.7 - 22.4	5 of 6	2.3	2.6 - 16.3
Lead	6 of 6	-	5.3 - 15.3	6 of 6	-	1.1 - 15.7
Manganese	6 of 6	-	330 - 1000	6 of 6	-	270 - 1450
Nickel	6 of 6	-	7.3 - 13.2	6 of 6	-	3.3 - 31.7
Vanadium	6 of 6	-	14 - 23.2	6 of 6	-	4.1 - 22.2
Zinc	6 of 6	-	21.8 - 36	6 of 6	-	6.4 - 46.9
SVOCs (in ug/kg)						
Benzoic Acid	4 of 6	1600 - 2000	49 - 120	1 of 6	1700 - 1900	99
bis(2-ethylhexyl)phthalate	1 of 6	330 - 450	62	0 of 6	350 - 420	-
Di-n-butylphthalate	0 of 6	330 - 450	-	1 of 6	350 - 420	160
VOCs (in ug/kg)						
1,2-Dichloroethene (total)	0 of 7	5 - 10	-	1 of 6	5 - 6	48
Acetone	0 of 7	11 - 20	-	4 of 6	11 - 13	9 - 114
Methylene Chloride	1 of 7	5 - 10	1	2 of 6	5 - 6	3
Trichloroethene	1 of 7	5 - 10	2	3 of 6	5 - 6	7 - 400

Data summarized from Table 4-5 of RI (Dames & Moore, 1992). See Attachment A for individual sample results.

*Range of sample quantitation limits is shown for samples that did not contain detectable concentrations.

Table 2

Summary of Chemicals Detected in Surface Water Samples from Upgradient and Downgradient Drainage Locations at the Recticon/Allied Steel Site

Chemical (Units in ug/l)	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations
METALS (total)			
Aluminum	2 of 2	-	1550 - 2250
Barium	2 of 2	-	51.7 - 55.6
Cadmium	1 of 2	4	4.9
Chromium	2 of 2	-	6.6 - 10.6
Copper	2 of 2	-	87.6 - 90.2
Lead	2 of 2	-	7.4 - 20.6
Manganese	2 of 2	-	200 - 245
Selenium	1 of 2	2	2.6
Vanadium	2 of 2	-	6.1 - 9.9
Zinc	2 of 2	-	72.3 - 116
METALS (dissolved)			
Aluminum	1 of 2	33	64.7 - 2250
Barium	2 of 2	-	30.7 - 55.6
Copper	2 of 2	-	30.4 - 192
Manganese	2 of 2	-	115 - 156
Vanadium	1 of 2	5	5.3
Zinc	2 of 2	-	24.7 - 41.6
SVOCs			
bis(2-ethylhexyl)phthalate	1 of 2	10	1
Diethylphthalate	1 of 2	10	1
VOCs			
Acetone	2 of 2	-	8 - 14

Data summarized from Table 4-3 of the RI (Dames & Moore, 1992). See Attachment A for individual sample results.

*Range of sample quantitation limits is shown for samples that did not contain detectable concentrations.

Summary of Chemicals Detected in Surface Soil Samples from Upgradient and Downgradient Drainage Locations at the Recticon/Allied Steel Site

Chemical	Allied Steel			Recticon		
	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations
METALS (mg/kg)						
Aluminum	4 of 4	-	9870 - 11500	4 of 4	-	6290 - 11600
Arsenic	4 of 4	-	2 - 6	2 of 4	0.48 - 1.4	2.1 - 2.6
Barium	4 of 4	-	115 - 178	4 of 4	-	92.5 - 139
Beryllium	3 of 4	0.66	1 - 2.8	3 of 4	0.52	0.68 - 0.83
Cadmium	1 of 4	1.2 - 1.4	1.4	0 of 4	0.97 - 1	-
Chromium	4 of 4	-	19.9 - 80.7	4 of 4	-	9.5 - 75.4
Cobalt	4 of 4	-	10.8 - 15.7	4 of 4	-	9.8 - 14.1
Copper	4 of 4	-	43.3 - 211	4 of 4	-	4.3 - 92.1
Lead	4 of 4	-	60.7 - 151	4 of 4	-	30.2 - 74
Manganese	4 of 4	-	356 - 1500	4 of 4	-	642 - 1310
Nickel	4 of 4	-	15.9 - 28.7	4 of 4	-	10.5 - 18.4
Vanadium	4 of 4	-	24.9 - 30.2	4 of 4	-	16.9 - 27.1
Zinc	4 of 4	-	111 - 772	4 of 4	-	38 - 123
PAHs (ug/kg)						
2-Methylnaphthalene	2 of 4	590 - 1100	250 - 700	0 of 4	410 - 440	-
Acenaphthylene	4 of 4	-	230 - 330	2 of 4	430 - 440	140 - 350
Anthracene	4 of 4	-	150 - 320	2 of 4	430 - 440	77 - 210
Benzo(a)anthracene	4 of 4	-	300 - 900	2 of 4	430 - 440	200 - 1000
Benzo(a)pyrene	4 of 4	-	490 - 900	2 of 4	430 - 440	250 - 1200
Benzo(b)fluoranthene	4 of 4	-	1200 - 2000	3 of 4	430	110 - 1400
Benzo(g,h,i)perylene	4 of 4	-	250 - 810	1 of 4	430 - 440	690
Benzo(k)fluoranthene	0 of 4	550 - 1100	-	1 of 4	430 - 440	950
Chrysene	4 of 4	-	520 - 1000	3 of 4	430	60 - 1000
Dibenz(a,h)anthracene	2 of 4	550 - 1100	63 - 230	0 of 4	410 - 440	-
Dibenzofuran	2 of 4	590 - 1100	110 - 300	0 of 4	410 - 440	-
Fluoranthene	4 of 4	-	720 - 1600	3 of 4	430	68 - 1300
Fluorene	1 of 4	550 - 1100	120	0 of 4	410 - 440	-
Indeno(1,2,3-cd)pyrene	4 of 4	-	260 - 1100	0 of 4	410 - 440	-
Naphthalene	2 of 4	590 - 1100	110 - 400	0 of 4	410 - 440	-
Phenanthrene	4 of 4	-	290 - 1600	2 of 4	430 - 440	94 - 330
Pyrene	4 of 4	-	100 - 1600	2 of 4	430	98 - 1200
SVOCs (ug/kg)						
Benzoic Acid	1 of 4	2700 - 5600	260	1 of 4	2000 - 2100	250
bis(2-ethylhexyl)phthalate	4 of 4	-	220 - 930	3 of 4	430	46 - 560
Butylbenzylphthalate	3 of 4	950	140 - 390	1 of 4	430 - 440	92
Di-n-butylphthalate	1 of 4	590 - 1100	73	1 of 4	430 - 440	99
VOCs (ug/kg)						
Acetone	1 of 4	14 - 33	25	2 of 4	13	18 - 140
Trichloroethene	2 of 4	7 - 9	2 - 5	0 of 4	6 - 7	-

Data summarized from Table 4-6 of the RI (Dames & Moore, 1992).

*Range of sample quantitation limits is shown for samples that did not contain detectable concentrations.

Note: Samples collected downgradient of the Allied Steel facility are also downgradient of the Recticon facility.

Table 3

Table 4A

Summary Statistics for Bedrock Monitoring Well Samples at the Recticon/Allied Steel Site

Chemical (Units in ug/l)	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations	Arithmetic Average	Standard Deviation	95% UCL of of Arithmetic Average
METALS (total)						
Aluminum	8 of 8	-	80.4 - 2290	523.55	729.11	1012.12
Arsenic	2 of 8	2	2.1 - 2.4	1.31	0.58	1.70
Barium	8 of 8	-	119 - 361	253.63	75.33	304.10
Beryllium	1 of 8	1	1.2	0.59	0.25	0.75
Chromium	3 of 8	6	6.4 - 6.7	4.31	1.81	5.53
Cobalt	6 of 8	4	4.3 - 9.1	5.68	2.72	7.50
Copper	8 of 8	-	7.3 - 10.8	9.34	1.37	10.26
Manganese	8 of 8	-	205 - 1420	557.25	392.58	820.31
Nickel	7 of 8	7	8.1 - 19.7	10.80	4.96	14.12
Vanadium	1 of 8	4	8	2.75	2.12	4.17
METALS (dissolved)						
Antimony	1 of 8	16	19.1	9.39	3.92	12.02
Barium	8 of 8	-	20 - 318	194.25	95.07	257.95
Cobalt	1 of 8	4	4.6	2.33	0.92	2.94
Copper	3 of 8	10	10.1 - 12.9	7.29	3.27	9.48
Lead	1 of 8	1	4.5	1.00	1.41	1.95
Manganese	8 of 8	-	159 - 1200	470.25	352.85	706.69
Nickel	6 of 8	7	7 - 15.1	8.51	3.86	11.10
Zinc	8 of 8	-	27.8 - 56.7	13.54	21.48	27.94
SVOCs						
Dimethylphthalate	1 of 8	10	2	4.63	1.06	5.34
TICs						
1,1,2-Trichloro-1,2,2-trifluoroethane	1 of 1	-	3	-	-	-
Carbon Disulfide	9 of 9	-	0.08 - 560	-	-	-
tert-butylmethylether	7 of 7	-	0.25 -1.5	-	-	-
VOCs						
1,1,1-Trichloroethane	21 of 32	0.5 - 50	0.1 - 2.5	0.97	0.85	1.54
1,1,2-Trichloroethane	1 of 32	0.5 - 50	0.3	0.25	0.00	0.25
1,1-Dichloroethane	18 of 32	0.5 - 50	0.12 - 2.7	1.02	0.93	1.65
1,1-Dichloroethene	10 of 32	0.5 - 50	0.08 - 2.9	0.99	1.07	1.71
1,2,3-Trichlorobenzene	1 of 32	0.5 - 50	0.19	0.25	0.01	0.25
1,2,4-Trimethylbenzene	1 of 32	0.5 - 50	0.05	0.24	0.02	0.26

Table 4B

Summary Statistics for Bedrock Monitoring Well Samples at the Recticon/Allied Steel Site

Chemical (Units in ug/l)	Frequency of Detection	Range of Detection Limits*	Range of Detected Concentrations	Arithmetic Average	Standard Deviation	95% UCL of of Arithmetic Average
1,2-Dichloroethene	5 of 32	0.5 - 50	0.52 - 2.6	0.49	0.61	0.90
cis-1,2-Dichloroethene	27 of 32	0.5	0.38 - 730	221.38	287.16	413.81
trans-1,2-Dichloroethene	8 of 32	0.5 - 50	0.24 - 8.4	0.86	1.50	1.87
1,3-Dichlorobenzene	2 of 32	0.5 - 50	0.05 - 0.07	0.24	0.02	0.25
Benzene	7 of 32	0.5 - 50	0.08 - 0.36	0.23	0.03	0.25
Carbon Tetrachloride	1 of 32	0.5 - 50	0.93	0.27	0.06	0.31
Chlorobenzene	1 of 32	0.5 - 50	0.19	0.25	0.01	0.25
Chloroethane	6 of 32	0.5 - 50	0.18 - 0.47	0.28	0.07	0.33
Chloroform	17 of 32	0.5 - 50	0.06 - 1.3	0.25	0.11	0.33
Chloromethane	1 of 32	0.5 - 50	1	0.28	0.09	0.34
Dichlorodifluoromethane	6 of 32	0.5 - 50	0.14 - 0.84	0.31	0.11	0.38
Methylene Chloride	17 of 32	0.5 - 50	0.15 - 14	0.18	0.02	0.20
Tetrachloroethene	11 of 32	0.5 - 50	0.11 - 8.8	1.48	2.57	3.20
Trichloroethene	31 of 32	0.5	0.3 - 1900	627.26	648.65	1061.91
Trichlorofluoromethane	3 of 32	0.5 - 50	0.06 - 7.5	0.27	0.06	0.31
Vinyl Chloride	9 of 32	0.5 - 50	0.42 - 2.2	0.56	0.37	0.81
m,p-Xylene	1 of 32	0.5 - 50	0.07	0.24	0.02	0.26

Data are summarized from RI (Dames & Moore, 1992).

*Range of sample quantitation limits is shown for samples that did not contain detectable concentrations.

Notes:

(1) Average and UCL concentrations for VOCs were calculated based on the average concentration detected over time in each well. SVOCs and metals were tested in only one sampling event.

(2) To calculate summary statistics, nondetected concentrations were assumed to be one-half the sample quantitation limit. However, nondetected results were excluded from the calculation in cases where the sample quantitation limit exceeded the maximum detected concentration for the well.

KEY RISK TERMS

Average Daily Dose (Add): The average amount of a chemical in contact with an individual on a daily basis.

Carcinogen: A substance that increases the incidence of cancer.

Chronic Exposure: A persistent, recurring, or long-term exposure. Chronic exposure may result in health effect (such as cancer) that are delayed in onset, occurring long after exposure ceased.

Exposure: The opportunity to receive a dose through direct contact with a chemical or medium containing a chemical.

Exposure Assessment: The process of describing, for a population at risk, the amounts of chemicals to which individuals are exposed or the distribution of exposures within a population, or the average exposure of an entire population.

Hazard Index (HI): An EPA method to assess the potential noncarcinogenic risk. The ratio of the ADD to the chronic RFD (or other suitable toxicity value for noncarcinogens) is calculated. If it is less than one, then the exposure represented by the ADD is judged likely to produce an adverse noncarcinogeniceffect. A cumulative endpoint-specific HI can also be calulated to evaluate the risks posed by exposure to more than one chemical by summing the ADD/RFD ratios for all the chemicals of interest that exert a similar effect on a particular organ. This approach assumes that multiple subthreshold exposures could result in an adverse effect on a particular organ and that the magnitudeof the adverse effect will be proportional to the sum of the ratios of the subthreshold exposure. If the cumulative HI is greater than one, then there may be concern for public health risk.

Reference Dose (RFD): The EPA's preferred toxicity value for evaluating noncarcinogenic effects.

Risk: The nature and probability of occurrence of an unwanted, adverse effect on human life or health, or on the environment.

Risk Assessment: The characterization of the potential adverse effect on human life or health, or on the environment. According to the National Research Council's Committee on the Institutional Means for Assessment of Health Risk, human health risk assessment includes: description of the potential adverse health effects based on an evaluation of results of epidemiologic, critical, toxicologic, and environmental research: extrapolation from those results to predict the types and estimate the extent of health effects of humans under given conditions of exposure: judgements as to the number and characteristics of persons exposed at various intensities and durations: summary judgements on the existence and overall magnitude of the public-health program; and characterization of the uncertainties inherent in the process of inferring risk.

Slope Factor: The statistical 95% upper confidence limit on the slope of the dose response relationship at low doses for a carcinogen. Values can range from about 0.0001 to about 100,000, in units of lifetime risk per unit dose (mg/kg-day). The larger the value the more potent is the carcinogen, i.e., a smaller dose is sufficient to increase the risk of cancer.

Table 5

MATRIX OF POTENTIAL EXPOSURE ROUTES
FOR THE RECTICON/ALLIED STEEL SITE

EXPOSURE MEDIUM/ EXPOSURE ROUTE	CURRENT ONSITE TRESPASSER	CURRENT/FUTURE OFFSITE RESIDENTIAL POPULATION	FUTURE ONSITE COMMERCIAL/ INDUSTRIAL POPULATION	FUTURE POTENTIAL ONSITE RESIDENTIAL POPULATION
Groundwater				
Ingestion	–	L	A	L
Dermal Contact	–	L	A	L
Vapor Inhalation	–	L	A	L
Surface Water				
Ingestion	I	–	–	I
Dermal Contact	I	–	–	I
Sediment				
Incidental Ingestion	–	–	–	–
Dermal Contact	–	–	–	–
Air				
Inhalation of Vapors				
Indoors	–	L	A	L
Outdoors	I	L	A	L
Inhalation of Particulates	I	–	A	L
Soil/Dust				
Incidental Ingestion	I	–	A	L, I
Dermal Contact	I	–	A	L, I
Food				
Ingestion	–	–	–	–

L = Lifetime exposure.
A = Exposure to adults (highest exposure is likely to occur during occupational activities).
– = Exposure of this population via this route is not likely to occur.
I = Intermittent exposure.

Table 6

Table 7

SUMMARY OF HAZARD QUOTIENTS AND HAZARD INDICES BASED ON CRITICAL EFFECT FOR THE FUTURE ONSITE WORKER SCENARIO AT THE RECTICON/ALLIED STEEL SITE

CHEMICAL	CRITICAL EFFECT	TOTAL FROM SOIL PATHWAYS	TOTAL FROM VAPOR PATHWAYS	GROUNDWATER INGESTION	TOTAL FROM ALL PATHWAYS
Non-carcinogenic effects					
METALS					
Arsenic	S	--	--	0.111	0.111
Barium	Cv	--	--	0.085	0.085
Beryllium	NONE	--	--	0.003	0.003
Chromium	NONE	0.005	--	<0.001	0.005
Copper	GI	<0.001	--	0.005	0.005
Manganese	Lu, Cn	--	--	0.161	0.161
Nickel	D	<0.001	--	0.014	0.014
Vanadium	NONE	--	--	0.012	0.012
TICs					
Carbon Disulfide	F	--	--	0.110	0.110
VOCs					
1,1,2-Trichloroethane	B	--	<0.001	0.001	0.001
1,1-Dichloroethene	Li	--	<0.001	0.004	0.004
cis-1,2-Dichloroethene	B	--	<0.001	0.810	0.810
trans-1,2-Dichloroethene	B	--	<0.001	0.002	0.002
Carbon Tetrachloride	Li	--	<0.001	0.009	0.009
Tetrachloroethene	Li	--	<0.001	0.006	0.006
HAZARD INDEX FOR ALL PATHWAYS (Screening):					1.337

NONE - None Observed

-- Chemical is not a chemical of concern via this pathway

HAZARD INDEX Based on Critical Effect	
Target Organ/Critical Effect (Screening Code)	Hazard Index
Blood (B)	0.813
Cardiovascular System (Cv)	0.085
Central Nervous System (Cn)	0.161
Decreased Body & Organ Weight (D)	0.014
Fetal Toxicity (F)	0.110
Gastrointestinal System (GI)	0.005
Liver (Li)	0.019
Lung (Lu)	0.161
Skin (S)	0.111

SUMMARY OF HAZARD QUOTIENTS AND HAZARD INDICES BASED ON CRITICAL EFFECT FOR THE FUTURE ONSITE RESIDENTIAL SCENARIO

CHEMICAL	CRITICAL EFFECT	TOTAL FROM SOIL PATHWAYS	TOTAL FROM VAPOR PATHWAYS	GROUNDWATER PATHWAYS			TOTAL FROM ALL PATHWAYS
				DERMAL	INGESTION	INHALATION	
Noncarcinogenic effects							
METALS							
Arsenic	S	--	--	<0.001	0.185	--	0.185
Barium	Cv	--	--	<0.001	0.141	--	0.141
Beryllium	NONE	--	--	<0.001	0.005	--	0.005
Chromium	NONE	0.021	--	<0.001	<0.001	--	0.021
Copper	GI	<0.001	--	<0.001	0.009	--	0.009
Manganese	Lu, Cn	--	--	<0.001	0.267	--	0.267
Nickel	D	<0.001	--	<0.001	0.023	--	0.023
Vanadium	NONE	--	--	<0.001	0.019	--	0.019
TICs							
Carbon Disulfide	F	--	--	0.009	0.182	--	0.191
VOCs							
1,1,2-Trichloroethane	B	--	--	<0.001	0.002	0.002	0.004
1,2,3-Trichlorobenzene	AG	--	--	<0.001	<0.001	0.003	0.003
1,1-Dichloroethene	Li	--	<0.001	<0.001	0.006	0.006	0.012
cis-1,2-Dichloroethene	B	--	<0.001	0.029	1.345	1.345	2.719
trans-1,2-Dichloroethene	B	--	<0.001	<0.001	0.003	0.003	0.006
Carbon Tetrachloride	Li	--	<0.001	<0.001	0.014	0.014	0.028
Chlorobenzene	Li	--	--	<0.001	<0.001	0.002	0.002
Chloroform	Li	--	<0.001	<0.001	0.001	0.001	0.002
Tetrachloroethene	Li	--	<0.001	0.001	0.010	0.010	0.021
HAZARD INDEX FOR ALL PATHWAYS (Screening):							3.659

NONE = None observed

-- Chemical is not a chemical of concern via this pathway

HAZARD INDEX Based on Critical Effect	
Target Organ/Critical Effect (Identifying Code)	Hazard Index
Adrenal Gland (AG)	0.003
Blood (B)	2.729
Cardiovascular System (Cv)	0.141
Central Nervous System (Cn)	0.267
Decreased Body & Organ Weight (D)	0.023
Fetal Toxicity (F)	0.191
Gastrointestinal System (GI)	0.009
Liver (Li)	0.066
Lung (Lu)	0.267
Skin (S)	0.185

SUMMARY OF CARCINOGENIC RISKS FOR THE
RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

SCENARIO/PATHWAY	CANCER RISK ESTIMATE
CURRENT	
Trespasser	
Dermal Contact (Soil)	2.5×10^{-7}
Soil Ingestion	4.7×10^{-8}
Particulate Inhalation	1.0×10^{-10}
Vapor Inhalation (Outdoor)	4.7×10^{-11}
Total Risk:	3×10^{-7}
Offsite Resident	
Vapor Inhalation (Outdoor)	3.8×10^{-9}
Groundwater Ingestion	3.6×10^{-7}
Total Risk:	4×10^{-7}
FUTURE	
Onsite Worker	
Dermal Contact (Soil)	1.4×10^{-6}
Soil Ingestion	1.3×10^{-7}
Particulate Inhalation	4.3×10^{-10}
Vapor Inhalation (Outdoor)	1.9×10^{-10}
Vapor Inhalation (Indoor)	3.4×10^{-9}
Groundwater Ingestion	2.9×10^{-4}
Total Risk:	3×10^{-4}
Onsite Resident	
Dermal Contact (Soil)	2.9×10^{-6}
Soil Ingestion	6.1×10^{-7}
Particulate Inhalation	2.3×10^{-9}
Vapor Inhalation (Outdoor)	4.0×10^{-9}
Vapor Inhalation (Indoor)	2.4×10^{-9}
Dermal Contact (Showering/Bathing)	6.8×10^{-6}
Groundwater Ingestion	2.9×10^{-4}
Vapor Inhalation (Showering)	2.6×10^{-4}
Total Risk:	6×10^{-4}

Table 9

WATER SUPPLY ALTERNATIVES

WS1 No Action

Estimated Capital Costs: $0
Estimated Annual O&M Costs: $69,077
Estimated Present-Worth Costs: $1,263,555
Estimated Implementation Time: Immediate

WS2 Community Well

Estimated Capital Costs: $696,306
Estimated Annual O&M Costs: $63,464
Estimated Present-Worth Costs: $1,857,199
Estimated Implementation Time: 6 - 12 Months

WS3 Municipal Water Line

Estimated Capital Costs: $293,177
Estimated Annual O&M Costs: $2,661
Estimated Present-Worth Costs: $317,421
Estimated Implementation Time: 3 Months

WS4 Individual Home Treatment (carbon) Units

Estimated Capital Costs: $21,678
Estimated Annual O&M Costs: $27,238
Estimated Present-Worth Costs: $519,909
Estimated Implementation Time: 0 Months

SOIL ALTERNATIVES

S1 No Action

Estimated Capital Costs: $0
Estimated Annual O&M Costs: $0
Estimated Present-Worth Costs: $0
Estimated Implementation Time: Immediate

S2 Asphalt Cap

Estimated Capital Costs: $43,243
Estimated Annual O&M Costs: $3,300
Estimated Present-Worth Costs: $103,607
Estimated Implementation Time: 3 Months

S3 Excavation/Offsite Incineration

Estimated Capital Costs: $147,014
Estimated Annual O&M Costs: $0
Estimated Present-Worth Costs: $147,014
Estimated Implementation Time: 3 Months

S4 Excavation/Offsite Landfill

Estimated Capital Costs: $40,261
Estimated Annual O&M Costs: $0
Estimated Present-Worth Costs: $40,261
Estimated Implementation Time: 3 Months

S5 In Situ Vacuum Extraction

Estimated Capital Costs: $46,888
Estimated Annual O&M Costs: $42,073
Estimated Present-Worth Costs: $78,961
Estimated Implementation Time: 2 Months

GROUNDWATER ALTERNATIVES

GW1 No Action

Estimated Capital Costs: $0
Estimated Annual O&M Costs: $69,077
Estimated Present-Worth Costs: $1,263,555
Estimated Implementation Time: Immediate

GW2 Extraction/Air stripping/Discharge to Schuylkill River

Estimated Capital Costs: $413,400
Estimated Annual O&M Costs: $246,400
Estimated Present-Worth Costs: $4,920,557
Estimated Implementation Time: 30 years

GW3 Extraction/GAC Treatment/Discharge to Schuylkill River

Estimated Capital Costs: $638,700
Estimated Annual O&M Costs: $169,480
Estimated Present-Worth Costs: $3,738,834
Estimated Implementation Time: 30 years

GW4 Extraction/ UV/Oxidation /Discharge to Schuylkill River

Estimated Capital Costs: $808,900
Estimated Annual O&M Costs: $165,900
Estimated Present-Worth Costs: $3,843,548
Estimated Implementation Time: 30 years

Table 10

RESIDENT LIST

RECTICON/ALLIED STEEL SITE
PARKER FORD, PENNSYLVANIA

RESIDENT/LANDOWNER	STATION	ADDRESS
Quarterly Sampling*		
Global Spill Management (formerly Total Recovery, Inc.)	1A	Rte. 724 and Wells Rd.
Keystone Auto Center, Inc. Adam DeFrancesco	18A	Rte. 724 and Wells Rd.
Leisure Equipment, Inc. Paul Lederer	19A	Rte. 724
Bell Telephone Gambone Bros., Owner	22A	Rte. 724
Fritz Haneberry, Owner (Schlichter & Ott, tenants)	32A	Linfield Rd.
Auto Quest Tony Dulee, Owner	59A	2579 Rte. 724

* Wells that have activated carbon filtration units.

Table 11

Preliminary Cost Estimate
Recticon/Allied Steel Site

Alternative WS3 – Extension of the Municipal Water Supply Line

Capital Costs

Item	Quantity	Units	Cost/Unit ($)	Total Cost ($)
1. Installation of municipal water line (12 inch ductile iron, in place)	1320	lf	50	66,000
2. Installation of fire hydrants (1 required every 500 feet)	6	hydrants	2000	12,000
3. User connections	11	connections	5500	60,500
			Direct Cost Subtotal:	*138,500*
			Utility Tax (40 %)	55,400
			Utility Review Cost (7%)	9,695
			Total Direct Costs:	*203,595*
			Engineering & Supervision (+20%)	40,719
			Subtotal:	*244,314*
			Contractors Fees (+5%)	12,216
			Contingency (+15 %)	36,647
			TOTAL:	*$293,177*

Operations & Maintenance

Item	Quantity	Units	Cost/Unit ($)	Total Cost ($)
1. User fees	93	kcf/yr	25	2,274
			Subtotal:	$2,274
			Contingency (+10 %)	$227
			Administration (+7%)	$159
			ANNUAL TOTAL:	*$2,661*

Table 12A

Preliminary Cost Estimate
Recticon/Allied Steel Site

Alternative S4 – Excavation/Offsite Disposal

Capital Costs

Item	Quantity	Units	Cost/Unit ($)	Total Cost ($)
1. Preliminary Site Preparation (Existing asphalt removal)	2300	sf	0.3	690
2. Excavation to 9 feet below grade – clean material	450	cy	10	4,500
3. Excavation 9 to 11 feet contaminated material	40	cy	10	400
4. Post-Excavation sampling (5 samples – 1 base, 2 sidewalls for VOCs; 3 day turnaround)	5	samples	500	2,500
5. Backfill and compaction of clean material	450	cy	5	2,250
6. Backfill and compaction of borrow material	50	tons	16	800
7. Bank run gravel (in-place & compacted to 98 per cent – 4 inches)	46	tons	12.5	575
8. Asphalt placement (4 inch base and wearing course)	2300	sf	1.11	2,553
9. Existing asphalt disposal	57	tons	30	1,702
10. Contaminated soil disposal at an approved facility	50	tons	300	15,000
			Subtotal:	$30,970
			Contingency (+20 %)	$6,194
			Engineering & Administration (+10 %)	$3,097
			TOTAL:	***$40,261***

Operations & Maintenance

There is no long-term Operations & Maintenance cost associated with this alternative.

Table 12B

Preliminary Cost Estimate
Recticon/Allied Steel Site

Alternative GW3 – Extraction/GAC Treatment/ Discharge to Schuylkill River

Capital Costs

Item	Quantity	Units	Cost/Unit ($)	Total Cost ($)
1. Installation of recovery well (200 feet, 6 inch PVC casing)	200	lf	50	10,000
2. Recovery well pump				
– 25 gpm @ 300 feet TDH	1	ea.	2000	2,000
– 100 gpm @ 400 feet TDH	2	ea.	4000	8,000
3. Dual Bag Filter	1	ls	7500	7,500
4. Well pump distribution piping				
– 3–inch diameter PVC	1700	lf	10.5	17,850
– 2–inch diameter PVC	100	lf	8.5	850
5. Liquid–Phase GAC Purchase	1	ls	110000	110,000
6. Effluent distribution piping (6 inch PVC)	2000	lf	26	52,000
7. Road connections (3 required, 50 foot connections)	150	lf	220	33,000
8. Equipment building	900	sf	55	49,500
			Direct Cost Subtotal:	*290,700*
			Electrical (16 %)	46,512
			Instrumentation (14%)	40,698
			Total Direct Costs:	*377,910*
			Engineering & Supervision (+30%)	113,373
			Subtotal:	*491,283*
			Contractors Fees (+5%)	24,564
			Contingency (+25 %)	122,821
			TOTAL:	*$638,700*

Table 12C

Preliminary Cost Estimate
Recticon/Allied Steel Site

Alternative GW3 – Extraction/GAC Treatment/
Discharge to Schuylkill River

Operations & Maintenance

Item	Quantity	Units	Cost/Unit ($)	Total Cost ($)
1. Electrical Power	431000	kw-hr	0.08	34,480
2. System Operation and mechanical maintenance (3 hrs/ day, 7 d/wk @ $60/hr)	1092	hours	60	65,520
3. Maintenance materials (1% of total capital investment	1	ls	6400	6,400
4. Semiannual GAC replacement	2	ea.	10000	20,000
5. Quarterly ground water monitoring (VOCs, standard turnaround)	24	samples	250	6,000
6. Sampling labor (32 hrs/qtr) (VOCs, standard turnaround)	128	hours	60	7,680
7. Reporting (20 hrs/qtr)	80	hours	60	4,800
			Subtotal:	$144,880
			Contingency (+10 %)	$14,488
			Administration (+7%)	$10,142
			ANNUAL TOTAL:	***$169,480***

Table 12D

APPENDIX C RESPONSIVENESS SUMMARY

RECTICON/ALLIED STEEL SITE
Parkerford, Chester County, Pennsylvania

RESPONSIVENESS SUMMARY
June 1993

This Responsiveness Summary documents public comments received by EPA during the public comment period on the Proposed Plan ("Plan") for the Recticon/Allied Steel Site ("the Site") and provides EPA's responses to those comments. The Responsiveness Summary is organized as follows:

1. **Overview**
2. **Summary of Citizens' Comments Received During the Public Meeting and EPA's Responses**
3. **Summary of Written Comments Received and EPA's Responses**

1. OVERVIEW

The public comment period on the Proposed Plan for the Recticon/Allied Steel Site began on May 20, 1993 and ended on June 19, 1993. EPA held a public meeting at the East Coventry Township Municipal Building in Pottstown, PA on May 27, 1993.

At the meeting, EPA representatives summarized the results of the Remedial Investigation ("RI"), the Feasibility Study ("FS") and the Baseline Risk Assessment ("BRA") performed for the Site. They then presented EPA's preferred remedial alternatives for mitigating the public health and environmental threats posed by contamination at the Site. They explained that the Proposed Plan addresses contamination in the ground water in the vicinity of the Site, contamination in the soil on the former Recticon property and provision of a public water supply system for the affected and potentially affected residences and commercial establishments.

Local residents offered comments on the Plan. Comments and questions related to results of the RI and details on the proposed remedy. The transcript of the public meeting is contained in the Administrative Record for the Site. In addition, EPA received one set of written comments during the public comment period which are addressed below in Section 3.

2. SUMMARY OF CITIZENS' COMMENTS RECEIVED DURING THE PUBLIC MEETING AND EPA'S RESPONSES

Comments and questions raised during the public meeting can be grouped into the following categories:

A. **RI Results**

B. **Soil Excavation and Disposal**

C. **Groundwater Extraction and Treatment**

D. **Water Supply System**

E. **Costs**

F. **Superfund Process**

Comments made during the public meeting and EPA's responses are summarized below:

A. RI Results

- Citizens asked whether all of the wells in the Parker Ford area have been tested, which wells have been resampled and whether any are still sampled?

EPA Response: All of the homes and businesses shown on the map in Figure 4-38 of the RI had their wells sampled and tested during EPA's residential well survey in January 1990. Based on the results of that survey, the wells noted with an asterisk on Table 4-19 of the RI have been treated with activated carbon filtration units and sampled on a quarterly basis. Table 4-19 also lists the wells that are used for monitoring and the frequency of sampling for those wells.

- A citizen asked what the highest concentrations of contaminants were, whether the concentration of TCE is increasing or decreasing and how much variation occurred during the water table elevation measurements.

EPA Response: Trichloroethylene ("TCE") is the contaminant that has been detected at the highest concentration which was 1900 ppb. The sample results indicate that when the water level rises, the contaminant levels generally rise also. In months when we sampled that had less precipitation, the contaminant levels decreased. However, there is not sufficient data to indicate whether the average concentration of TCE is decreasing over time. There are wells that are in the unconsolidated portion above the bedrock and there are also bedrock wells. The wells that are in the unconsolidated aquifer have the greatest fluctuation in water table levels which is in the order of a few feet. The bedrock wells' water table levels have stayed at approximately the the same levels.

B. Soil Excavation and Disposal

- Citizens asked questions regarding the location, source, depth and approximate volume of soil planned for excavation.

EPA Response: The only significant soil contamination found during the RI was on the former Recticon facility underneath the parking lot on the northwest side of the building. It was detected from 9-11 feet below grade and it is estimated to be 37 cubic yards or about 50 tons of material. The source of this contamination is not definitely known, however, not far from that location (see Figure 4-2 of the RI), is an area that was used as a drum storage area and a nearby gravel pad area was remediated in the past due to occurrence of high levels of contamination. It is possible that the remaining soil contamination could have been caused by the migration of contaminants from the gravel pad area.

- A citizen asked about the location of the permitted RCRA landfill where the contaminated soil would be disposed.

EPA Response: There are a number of landfills that can accept the contaminated soil and the final location will not be chosen until the remedial design phase. Examples of potential landfills are the Delaware Container Company in Coatesville, PA and Waste Conversion, Inc. in Hatfield, PA.

- A citizen commented that the cost estimate of $40,261 seemed excessive for the amount of material that had to be remediated and disposed.

EPA Response: The soil is contaminated and it must be treated as a hazardous waste, since it has not been characterized yet, to protect the workers that will come in contact with it. Also, when it is disposed of in a RCRA permitted landfill, that landfill has more extensive monitoring requirements than a solid waste landfill, and consequently the landfill charges considerably more money to dispose of contaminated soil than uncontaminated soil.

C. Groundwater Extraction and Treatment

- Citizens asked questions concerning the flow rate and depth of the extraction system and expressed concerns that the system may negatively impact the surrounding private wells.

EPA Response: The estimated flow rate used in the FS for costing purposes was 225 gallons per minute ("gpm"). However, as stated in the Plan, further hydrogeologic data is necessary to delineate the boundaries of the plume prior to final design of the extraction system. The depth of the extraction wells will vary, but must be designed to hydraulically control the contaminated groundwater plume. Therefore, since the deepest monitoring wells at the Site exhibited some contamination at 200 feet below the ground surface, the deepest extraction wells must be screened at a depths that enable the system to capture that portion of the contaminated plume.

In regards to impacts to surrounding public wells, EPA is

required to design the extraction system in a manner that does not negatively impact groundwater levels. To further address this concern, the remedy description in the Record of Decision ("ROD") has been revised from that in the Plan to state that the pumping rate will be designed not to impact the water table elevation in the remaining operating private wells in the area.

D. Water Supply System

- A citizen asked questions regarding who will pay for the waterline coming from Citizens Utility Home Water Company ("Citizens"), whether the Township Supervisors support the water line, what is the size of the water main, and whether Citizens will install a water line with sufficient capacity to service the entire Parker Ford area in the future.

EPA Response: Since EPA has identified Potentially Responsible Parties ("PRPs") for the remediation of the Site, one enforcement option is for EPA to enter into a consent decree with the PRPs to implement and pay for the remedy, including the municipal water supply portion of the remedy. In addition, if EPA is unable to negotiate a consent decree, another option would be a unilateral administrative order, which would order the parties to implement the remedy or, if the PRPs do not implement the remedy, EPA has the additional option of using the Superfund to pay for the costs and seek reimburement of its cost from the PRPs in a cost-recovery action.

Based on EPA's coordination with the Township Supervisors to date, the Supervisors have stated that they favor the municipal water line option, but that the water line would require final Township approval by resolution.

EPA cannot state for certain whether other parties plan to install a water line with sufficient capacity to service the entire Parker Ford area in the future. EPA's authority at the Site is limited to protecting human health and the environment from exposure to site-related risks. That is why the Plan and the ROD state that the water line will be provided to those residences and businesses impacted or potentially impacted by the contaminated groundwater. EPA has selected this remedy partly because Citizens has assured EPA that they have the capacity to service these residences and businesses. Rockwell's contractor, however, has stated in the Site's FS, that "a 12-inch water line will be installed...sized to permit future development...". EPA will coordinate the design of the system with Citizens, the Township and possibly the PRPs, and the final design of the system will be based on the results of this coordination.

- A citizen asked what the estimated flow would be to service the impacted people with a supply of drinking water.

EPA Response: Currently six businesses and residences are known to be impacted. The FS has calculated that 1,800 gallons of

water would be necessary to replace these wells based on an assumed average consumption of 300 gallons per well. From this information, the FS stated that the peak water supply rate for those 6 wells is estimated at 18 gpm.

- A citizen made a comment that he didn't think EPA has studied or evaluated the water line enough or given the Township enough information regarding the type of public water system, how much of an area it will cover, what is going to be the recurring cost (i.e., users fees and hook up costs) to all the people involved and what provisions are there if the plume was to spread unexpectedly.

EPA Response: EPA has properly followed the guidance and regulations in studying and evaluating the options available to provide an alternative public water supply to the affected residences and businesses. EPA has selected the municipal water line from four possible water supply alternatives as the remedy that best meets the nine criteria that EPA utilizes for comparative analysis purposes, as documented in the Plan and the ROD.

Regarding the area served, the water line shall be extended to those residents and businesses that are affected or potentially affected by the plume. The affected wells are those that currently have activated carbon filters. As stated in the Plan and the ROD, however, the determination regarding which residents are potentially affected cannot be made until the outer boundaries of the plume are further characterized. The definition of "potentially affected" has been further defined in the ROD to address this concern.

Regarding users' fees and hook-up costs, EPA's authority is limited to providing an alternative source of drinking water, and will ensure that the water line is hooked up to the impacted residences and businesses. Therefore, there are no hook-up costs to be paid by the users. EPA cannot, however, pay recurring user fees if it was to implement the remedy. Rockwell's contractor, however, included several years of user fees as operating and maintenance costs in the FS.

As part of the remedy, the plume shall be controlled, treated and monitored on a regular basis, as defined in the ROD. Therefore, if for some unexpected reason, the plume was to spread, EPA will detect this event and take appropriate actions to protect human health and the environment from site-related contaminants.

E. Costs

- **A citizen asked what the project costs have been to date.**

EPA Response: EPA does not have information on the RI/FS costs to date because the majority of the work was performed by Rockwell, and they are not required to submit any cost

information to EPA.

F. Superfund Process

- A citizen asked when the information from the public meeting will be published in the public record?

EPA Response: A copy of the transcript from the meeting is in the Administrative Record and a copy of that is in the Site repository at the Township building.

- A citizen asked whether a public meeting on EPA's final determination will be held before it is made effective and whether EPA would notify the Township supervisors directly.

EPA Response: The purpose of the public meeting held on May 27, 1993, was to propose EPA's preferred remedy and to take comments prior to selecting the final remedy. EPA will notify the Township supervisors of the selected remedy.

- A citizen commented that it seemed that EPA already unilaterally made the final decision and selected the final remedies.

EPA Response: The purpose of the public meeting held on May 27, 1993, was to propose EPA's preferred alternative and to take comments on the preferred alternative, as well as the other alternatives, prior to selecting the final remedy.

3. SUMMARY OF WRITTEN COMMENTS RECEIVED AND EPA'S RESPONSES

Only one written comment letter was received by EPA. In a four page document dated June 17, 1993, Jerome C. Muys, Jr., commented on the Plan for the Site on behalf of the Rockwell International Corporation. A copy of this document is contained in the Administrative Record for the Site. The written comments and EPA's responses are summarized below:

Comment: Recticon is not currently a subsidiary of Rockwell International; it is a former subsidiary.

EPA Response: EPA agrees with this comment. Neither the Plan or the ROD, however, contradicts this fact.

Comment: In addition to road surface runoff, elevated levels of copper and zinc at the Site may reflect the elevated levels of these metals commonly found in soil samples in southeastern Pennsylvania. See United States Geological Service, Professional Paper No. 1270, Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States (1984).

EPA Response: EPA agrees that levels of these elements are

commonly found in soil samples in southeastern PA. This fact, however, does not explain why the data for zinc shows a definite trend of increasing concentrations further from the background samples and why the concentrations of both elements are much greater in the downgradient samples than in the background samples. A gap remains in the data for these elements which shall be addressed by performing a verification study as required by the Record of Decision.

Comment: The second sentence in the first paragraph on page 5 should be changed to read "Consumption of untreated groundwater..."

EPA Response: The first full paragraph on page 4 of the Plan specifies that the Site risks are posed by the use of untreated groundwater. Use of untreated groundwater when calculating future risks is a given assumption since the National Contingency Plan ("NCP") requires that groundwater be restored to its benificial use, which at this Site is a drinking water supply, as noted in the ROD.

Comment: The Plan should define which residents are "potentially affected" by the contaminant plume. The extension of the water line should only be to those residents that could reasonably be expected to be affected by the plume.

EPA Response: EPA agrees that the water line should only be extended to those residents and businesses that could reasonably be expected to be affected by the plume. As stated in the Plan and the ROD, however, the determination regarding which residents are potentially affected cannot be made until the outer boundaries of the plume are further characterized. The definition of "potentially affected" residences and businesses has been further defined in the ROD to address this concern.

Comment: A) The Plan does not identify how the "background" level of groundwater contamination will be determined. There are potential upgradient sources of groundwater contamination in the area of the Site. For example, Taylor Industries, located approximately 1/4 mile upgradient of the Site has had 3 ppb to 6.8 ppb of TCE in its production well. The contribution of these sources to the Site groundwater contaminant plume must be taken into account in identifying "background" levels of contamination. It is Rockwell's understanding that EPA has taken the

position that the residential wells southwest of the Site reflect background. As discussed in Rockwell's FS and Response to Comments, Rockwell does not believe that these wells accurately reflect the background levels of contamination in the area of the site. Because the background level will be one of the primary factors influencing the scope and extent of the groundwater and soil cleanup, EPA must provide a reasonable opportunity for comment on the Agency's identification of background. See 40 C. F. R. § 300.430(f)(2).

B) The Plan states that the objective of the groundwater treatment alternatives is to restore the plume to background levels, "if technically practicable." EPA should define the meaning of "if technically practicable" and provide an opportunity to comment on this issue.

C) The Plan states that the combined recovery well pumping rate "that will capture the estimated groundwater contaminant plume is approximately 225 gallons per minute ('gpm')." This statement fails to reflect the fact that virtually all of the critical variables influencing the design of the groundwater remediation system (e.g., size of plume, flow rate, contaminant concentrations) are at this time to some extent unknown. The 225 gpm number was used in the FS simply as a means for comparing different treatment technologies and does not reflect an actual estimate of the necessary pumping rate, since that rate cannot be even roughly estimated at this time.

D) See comments on page 14, 2nd ¶. regarding the applicable effluent limitations.

E) This paragraph should be changed to state that further evaluation of the groundwater treatment option will be necessary prior to implementation.

EPA Response:

A) To address this comment, which substantially repeats comments made by Rockwell in the Administrative Record, the ROD contains a performance standard for the groundwater extraction/treatment portion of the remedy that defines how background shall be determined. The background concentrations for each contaminant of concern shall be established in accordance with the procedures for groundwater monitoring outlined in 25 PA Code §264.97 before groundwater treatment

begins. (The specific chapter containing this provision was cited by Rockwell's contractor in the FS, including Table 2.1 in connection with state hazardous waste regulations for ground water.) In the event that a contaminant of concern is not detected in samples taken for the establishment of background concentrations, the detection limit for the method of analysis utilized with respect to that contaminant shall constitute the "background" concentration of the contaminant. We note also that no contaminants were found in the well on the Taylor Industries property during EPA's residential well sampling activity in January 1990. Those results are reported in the Site Administrative Record ("AR") on pages AR400001-AR400052.

EPA's responsibilities to provide reasonable opportunity for comment are set forth in 40 C.F.R. § 300.430(f)(2), which has been cited throughout this comment letter, and in 40 C.F.R. § 300. 430(f)(3)(i)(C). The latter section of the National Contingency Plan ("NCP") provides, in part, the following:

"Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments on the proposed plan and information located in the information repository,..."

EPA has complied with the NCP by providing a reasonable opportunty to comment, including a 30-day public comment period after issuance of the Plan [which complied with the requirements of 40 C.F.R. § 300. 430(f)(2)] along with the supporting documentation, including the RI/FS, and by considering the public comments received in the ROD.

B) EPA has further defined the meaning of "if technically practicable" in the ROD. It may become apparent during implementation or operation of the groundwater extraction system and its modifications, that contaminant levels have ceased to decline and are remaining constant at levels higher than the performance standards over some portion of the contaminated plume. In that case, EPA, in consultation with the Commonwealth of Pennsylvania, may determine that implementation of the selected remedy demonstrates, in corroboration with hydrogeological and chemical evidence, that it will be technically impracticable to achieve and maintain the performance standards throughout the entire area of groundwater contamination.

C) EPA utilized the combined recovery well pumping rate estimated in the FS by Rockwell's contractor for the Plan. EPA, however, clearly stated in the Plan that further hydrogeologic data is necessary to design the extraction system. To further address this concern, the remedy description in the ROD has been revised to include the following language:

Final flow rates and GAC system dimensions will be determined by EPA during remedial design. The final combined pumping rate will be determined by EPA based on the size and number of wells necessary to hydraulically control the contaminated groundwater plume.

D) See response to comments on page 14, 2nd ¶. regarding the applicable effluent limitations.

E) The Plan and the ROD clearly state that further hydrogeologic data is necessary to design the extraction system and that EPA may consider the use of the other groundwater treatment options based on the results of the predesign hydrogeologic investigation which is required prior to construction of the remedy.

Comment: The Plan states that "periodic monitoring" will be required to determine the effectiveness of the selected alternative. The Plan should specify how frequently this monitoring will take place. Rockwell submits that, once the treatment system is in place, annual monitoring will be sufficient to determine the effectiveness of the system.

EPA Response: EPA has considered this comment in preparation of the ROD. Rockwell's contractor specified quarterly groundwater monitoring under the operation and maintenance costs in the FS. The ROD specifies that the wells shall be sampled quarterly for the first three years and semi-annually thereafter.

Comment: The Plan states that, based on additional information, "the selected system may no longer be cost-effective when compared to one, or a combination, of the other extraction/treatment alternatives. In that case, based on the final design parameters, EPA may consider the utilization of any of the groundwater treatment technologies presented in the Proposed Plan that is determined to be the most cost-effective." Rockwell appreciates EPA's efforts to provide some

flexibility in the determination of the appropriate remedy in light of the limited data currently available, and believes that, once the pre-design work is completed, it is very possible that another treatment option, such as air strippng, will prove to be the most cost-effective. However, if the treatment option ultimately selected departs in any significant manner, such as increased cost or design, from the options evaluated in the proposed remedial action plan, we believe that EPA should provide Rockwell and other interested parties a meaningful opportunity to comment on that treatment option.

EPA Response: The ROD states, as required by the National Contingency Plan ("NCP") that, if such a decision is made, EPA shall amend the ROD or issue an Explanation of Significant Differences. EPA shall then comply with the applicable community relation requirements found under 40 C.F.R. §300.435(c)(2).

Comment: See comments on page 9, 1st ¶, with respect to the determination of "background."

EPA Response: See response to comments on page 9, 1st ¶, with respect to the determination of "background."

Comment: The Plan incorrectly states that permits will be required from RCRA facilities that accept soil from the Site for incineration or land disposal.

EPA Response: EPA agrees. The ROD now addresses this comment by deleting that reference.

Comment: A) See comment on page 9, 1st ¶, regarding the meaning of "if technically practicable."

B) See comment on page 9, 1st ¶, regarding the identification of "background" levels of contamination.

C) The Plan does not provide an opportunity for meaningful comment on the effluent limitations that will be applied to the discharges from the Site to the Schuylkill River. The Plan refers to the State NPDES regulations and water quality standards. Those regulations and standards, however, do not provide effluent limitations applicable to the Site discharges. The Plan states that the State has made a preliminary determination that the Site discharges will require 98% removal of the VOCs "based on Technology Based Effluent Limits." EPA has

provided no basis for this statement. It is not known what technology-based limits are being relied upon by the State. it is also unclear whether the 98% removal will be a design specification or an efficiency limitation that must be met by the treatment process. It is further unclear whether this 98% removal refers to total VOCs. EPA must provide a reasonable opportunity for comment on the discharge limitations. See 40 C. F. R. § 300.430(f)(2).

EPA Response:

A) *See response to comment on page 9, 1st ¶,* regarding the meaning of "if technically practicable."

B) See response to comment on page 9, 1st ¶, regarding the identification of "background" levels of contamination.

C) As stated above, EPA's responsibilities to provide reasonable opportunity for comment, in accordance with 40 C.F.R. §300.430(f)(2) and 40 C.F.R. §300.430(f)(3)(i)(C), is, as set forth in part in the latter section, to:

"Provide a reasonable opportunity, not less than 30 calendar days, for submission of written and oral comments on the proposed plan and information located in the information repository,..."

The information repository contains the FS prepared by Rockwell's contractor, the Plan and a letter (see AR304243-AR304245) containing the Commonwealth of Pennsylvania's NPDES determination dated April 9, 1993. That letter states that Technology Based Effluent Limits ("TBELs") based on 98 percent removal must be achieved for trichloroethene, cis-1,2,-dichloroethene and cyanide and that all other parameters of concern should be monitored for. This determination was based on water quality data from Table 7-3 of the draft FS. (Please note that the table incorrectly reported cyanide as a compound that was expected to be in the extracted groundwater at 0.2 ppm. Cyanide was never detected in any groundwater sample but Rockwell's contractor incorrectly reported the detection limit of 0.2 ppm as an actual result. Also note that PADER explained during a telephone communication on June 24, 1993, that the term TBELs was incorrectly referenced in their letter. The correct term is BDAT, as defined under 25 PA Code §95.4(g), which is also a

regulation cited in the FS.) The FS identified NPDES regulations and water quality standards (see Table 2-5) as being potential action-specific ARARs for the Site's discharges. EPA has complied with the requirement to provide reasonable opportunity for comment by; including the information it utilized to formulate the Plan, providing a 30 day public comment period after issuance of the Plan and considering the public comments received on the Plan in the ROD.

The ROD further addresses this comment by including the 98 percent removal requirement as a performance standard that must be achieved in the treated groundwater prior to discharge.

APPENDIX D ADMINISTRATIVE RECORD INDEX

DRAFT

RECTICON/ALLIED STEEL
ADMINISTRATIVE RECORD FILE *
INDEX OF DOCUMENTS

I. SITE IDENTIFICATION

1. Letter to Mr. Richard N. Snyder, Allied Steel Products Corporation, from Mr. Dennis Pennington, SMC Martin Inc., re: TCE investigation report, 3/7/84. P. 100001-100014. The report is attached.

2. Report: Report on Groundwater Contamination by Organic Solvents at Allied Steel Corporation's Parker Ford, Pennsylvania Manufacturing Facility, prepared by R.E. Wright Associates, Inc., 5/85. P. 100015-100074.

3. Report: Target Population Study Report, Rockwell International - Recticon, prepared by NUS Corporation, 1/10/86. P. 100075-100117.

4. Report: Preliminary Assessment, prepared by Pennsylvania Department of Environmental Resources (PADER), (undated). P. 100118-100230.

* Administrative Record File available 8/10/89, updated 1/7/91, 7/29/91, 6/1/92, 5/20/93, and 6/30/93.

Note: Company or organizational affiliation is identified in the index only when it appears in the file.

II. REMEDIAL ENFORCEMENT PLANNING

Allied Steel

1. Letter to Mr. Richard Snyder, Allied Steel Products Corporation, from Mr. Bruce P. Smith, U.S. EPA, re: 104(e) request for information, 3/27/87. P. 200001-200003.

2. Letter to Mr. William Early, U.S. EPA, from Ms. Vicki Jan Isler, Budd, Larner, Gross, Picillo, Rosenbaum, Greenberg & Sade, re: Extension for 104(e) response, 4/6/87. P. 200004-200005.

3. Letter to Ms. Vicki Isler, Budd, Larner, Gross, Picillo, Rosenbaum, Greenberg & Sade, from Mr. William C. Early, U.S. EPA, re: Location map, 4/23/87. P. 200006-200008. Two copies of the map are attached.

4. Letter to Mr. Sudhir R. Patel, U.S. EPA, from Mr. Richard N. Snyder, Budd, Larner, Gross, Picillo, Rosenbaum, Greenberg & Sade, re: Terminology clarification, 6/29/87. P. 200009-200010.

5. Letter to Ms. Laura Boornazian, U.S. EPA, from Ms. Vicki Jan Isler, Budd, Larner, Gross, Picillo, Rosenbaum, Greenberg & Sade, re: Delineation of the Parkerford TCE site, 8/19/87. P. 200011-200012.

6. Letter to Ms. Laura Boornazian, U.S. EPA, from Ms. Vicki Jan Isler, Budd, Larner, Gross, Picillo, Rosenbaum, Greenberg & Sade, re: Inclusion of Allied Steel property in site, 8/27/87. P. 200013-200090. Supporting non-privileged documents are attached.

7. Letter to Mr. John Van Dzura, Sr., Allied Steel Products Corporation, from Mr. Stephen R. Wassersug, U.S. EPA, re: Notification of potential responsibility, 5/2/89. P. 200091-200095.

8. Letter to Mr. David G. Byro, U.S. EPA, from Mr. H. Frank Pettit, re: Response to request for information, 5/16/89. P. 200096-200097.

9. Letter to Mr. H. Frank Pettit, from Mr. Joseph J.C. Donovan, U.S. EPA, re: "Innocent Landowner" policy, 7/6/89. P. 200098-200098.

10. Letter to Mr. David G. Byro, U.S. EPA, from Mr. H. Frank Pettit, Counselor at Law, re: Supplemental information, 7/18/89. P. 200099-200102. A letter regarding insurance benefits is attached.

11. Letter to Mr. John Van Dzura, Sr., Allied Steel Products Corporation, from Mr. Thomas C. Voltaggio, U.S. EPA, re: Special notice letter, 10/19/89. P. 200103-200106. Two certified mail receipts are attached.

12. Letter to Mr. John Van Dzura, Sr., Allied Steel Products Corporation, from Ms. Sarah E. Peachey, U.S. EPA, re: Good Faith proposal for RI/FS, 11/9/89. P. 200107-200108.

Highview Gardens

13. Letter to Mr. David G. Byro, U.S. EPA, from Ms. Catherine M. Harper, Hamburg, Rubin, Mullin and Maxwell, 5/18/89. P. 200109-200110.

14. Letter to Mr. David G. Byro, U.S. EPA, from Ms. Catherine M. Harper, Hamburg, Rubin, Mullin and Maxwell, re: Response to 104(e) inquiry, 5/30/89. P. 200111-200155.

15. Letter to Ms. Catherine M. Harper from Mr. Joseph J.C. Donovan, U.S. EPA, re: "Innocent Landowner" policy, 7/6/89. P. 200156-200156.

16. Letter to Mr. John Gambone, Highview Gardens, Inc., from Mr. Thomas C. Voltaggio, U.S. EPA, re: Special notice letter, 10/19/89. P. 200157-200158.

17. Letter to Mr. John Gambone, Highview Gardens, Inc., from Ms. Sarah E. Peachey, U.S. EPA, re: Good Faith proposal for RI/FS, 11/9/89. P. 200159-200160.

18. Letter to Mr. David G. Byro, U.S. EPA, from Ms. Catherine M. Harper, Hamburg, Rubin, Mullin & Maxwell, re: RI/FS negotiations, 12/15/89. P. 200161-200163.

Rockwell International

19. Letter to Mr. Harry E. Pappas, Recticon Corporation, from Mr. Richard L. Hinckle, East Coventry Township, re: Industrial waste discharge, 7/31/73. P. 200164-200174. The following are attached:

a) a letter concerning Recticon Preliminary Report;

b) a letter concerning pH and conductivity;

c) a Recticon Corporation pH record;

d) a Recticon Corporation TDS by Conductivity Record;

e) a letter concerning a permit for industrial waste waters;

f) a PADER Waste Discharge Inspection Report;

g) a letter regarding violation of the Clean Streams Law.

20. Letter to Mr. James A. Vlahos, Rockwell International-Recticon, from Mr. Richard L. Hinkle, PADER, re: Effluent limitations for waste water discharge, 2/14/78. P. 200175-200180. The following are attached:

a) a letter regarding waste water;

b) a letter regarding unpermitted industrial waste;

c) a waste discharge inspection report;

d) a letter regarding industrial waste discharges.

21. Letter to Mr. Rae Houke, Rockwell International, from Mr. Dan Yost, Rockwell International, re: Proposed response to Ms. Shupe's [sic] March 11, 1980 letter, 3/28/80. P. 200181-200187. The following are attached:

a) Ms. Shup's letter;

b) a letter regarding PADER inspection;

c) a PADER Waste Discharge Inspection Report;

d) a letter regarding application for permit to discharge waste water;

e) a Wastex Industries Incorporated Sample Analysis sheet;

f) a second Wastex Industries Incorporated Sample Analysis sheet.

22. Letter to Ms. Marilyn Shup, PADER, from L.W. Slaven, Rockwell International, re: Application for a NPDES permit, 3/31/80. P. 200188-200188.

23. Letter to Mr. David W. Stevenson, Rockwell International, from Mr. Michael R. Ruser, Highview Gardens, Inc., re: Contaminated wells, 4/1/80. P. 200189-200191. A letter regarding a well located on Highview Garden property is attached.

24. PADER Bureau of Water Quality Management Water or Waste Quality Report - Special Analyses, 4/17/80. P. 200192-200193.

25. List of Actions Taken, April/May, 1980. P. 200194-200198. The following are attached:

a) a list of Planned Near Term Actions;
b) a list of Planned Corrective Actions;
c) a list of Alternative Planned Actions;
d) a list of waste effluents.

26. Letter to Mr. L.W. Slaven, Rockwell International-Recticon, from Ms. Marilyn Shup, PADER, re: Industrial waste, 5/2/80. P. 200199-200201. A parameter and effluent chart and a list of detected chemicals are attached.

27. Letter to Recticon Corporation from Mr. James P. Ridolfi, PADER, re: Draft Water Quality Management Permit, 5/6/80. P. 200202-200223. The permit is attached.

28. Letter to L.W. Slaven, Rockwell International-Recticon, from Mr. William H. Jolly, III, PADER, re: Groundwater contamination, 5/22/80. P. 200224-200230. The following are attached:

a) a list of sampling sites;
b) a TCE Contamination in Parkerford map;
c) a second list of sampling sites;
d) a location map.

29. Letter to Ms. Marilyn Shup, PADER, from L.W. Slaven, Rockwell International, re: Facility Pollution Incident Prevention Plan, 5/29/80. P. 200231-200252. The plan is attached.

30. Handwritten outline from Rockwell International/Allied Steel Company meeting, 6/9/80. P. 200253-200257. A list of attendees is attached.

31. Handwritten attendance list from Rockwell International/Allied Steel Company meeting, 6/9/80. P. 200258-200266. Notes from the meeting are attached.

32. Handwritten Recticon-Parkerford, PA, information sheet, 6/9/80. P. 200267-200267.

33. Handwritten list of chemicals at polymeric storage area, 6/10/80. P. 200268-200268.

34. Letter to Mr. William H. Jolly, III, from R.E. Houke, Rockwell International, re: List of hydrogeologists, 6/12/80. P. 200269-200272. A copy of a business card and a list of consulting firms are attached.

35. Handwritten notes on Recticon, Parkerford, PA, 6/19/80. P. 200273-200277.

36. Letter to Mr. Arnold W. Canfield, Rockwell International, from Mr. Randall J. Brubaker, PADER, re: Transmittal of a Proposal Consent Order and Agreement, 6/20/80. P. 200278-200289. The Proposal Consent Order In The Matter Of Rockwell International-Recticon and a Groundwater Contamination Investigation in Parkerford are attached.

37. Letter to Mr. James P. Ridolfi, PADER, from Mr. Roy J. Bestland, Rockwell International, re: Discharge monitoring, 7/9/80. P. 200290-200290.

38. Letter to Mr. James P. Ridolfi, PADER, from Rockwell International, re: NPDES permit, 7/10/80. P. 200291-200292.

39. PADER Waste Discharge Inspection Report, 7/15/80. P. 200293-200295. An internal letter concerning short-term environmental compliance and a list of soil samples analytical results are attached.

40. Letter to Mr. Randall J. Brubaker, PADER, from Mr. Arnold W. Canfield, Rockwell International, re: Extension for hydrogeologic study, 7/17/90. P. 200296-200298. A waste discharge inspection report and an internal letter regarding the relocation occupancy design package are attached.

41. Memorandum to Mr. Roy Bestland from Ms. Marilyn Shup, PADER, re: The results of well water after filter, 7/18/80. P. 200299-200299.

42. Letter to Mr. Randall F. Brubaker, PADER, from Mr. Roy J. Bestland, Rockwell International, re: Scope of Work for ground water, 7/25/80. P. 200300-200307. The proposed Scope of Work is attached.

43. Letter to Mr. Roy J. Bestland, Rockwell International-Recticon, from Mr. James P. Ridolfi, PADER, re: Draft effluent limits, 8/21/80. P. 200308-200309. A list of effluent limitations and monitoring requirements is attached.

44. Letter to Mr. Roy J. Bestland, Recticon, from Mr. Randall J. Brubaker, PADER, re: TCE Contamination of groundwater, 8/26/80. P. 200310-200310.

45. Letter to Mr. Roy J. Bestland, Rockwell International-Recticon, from Mr. James P. Ridolfi, PADER, re: Draft Effluent Limits, 9/8/80. P. 200311-200312. The Draft Effluent Limits are attached.

46. Letter to C.T. Beechwood, PADER, from Mr. Joseph Davis, U.S. EPA, re: Approval of revised draft permit, 9/25/80. P. 200313-200313.

47. Letter to Mr. Roy J. Bestland, Rockwell International-Recticon, from Mr. James P. Ridolfi, PADER, re: Written comments on Draft Effluent Limits, 10/9/80. P. 200314-200314.

48. Wastex Industries, Inc. Effluent (Waste Sample) Sheet, 10/10/80. P. 200315-200315.

49. Letter to Mr. Roy Bestland, Rockwell International, from Mr. Frederick Bopp III, Roy F. Weston Inc., re: Draft findings Phase I, 10/17/80. P. 200316-200342. The Phase I Report - Working Draft is attached.

50. Project Engineering Work Schedule for Building No. 802, 10/20/80. P. 200343-200345. A handwritten Suspended Solids Sheet is attached.

51. Letter to Mr. James P. Ridolfi, PADER, from Mr. Roy J. Bestland, Rockwell International, re: NPDES Application, 10/22/80. P. 200346-200348. A list of soil sample analytical results and a letter concerning the TCE Contamination Proposal are attached.

52. Recticon Corporation Written Consent of Board of Directors, 10/29/80. P. 200349-200350.

53. Letter to Ms. Marilyn Shup, PADER, from Mr. Daniel M. Yost and Mr. Roy J. Bestland, Rockwell International, re: Pollution Incident Prevention Plan, 11/4/80. P. 200351-200356. Revised copies of Page 8 and a list of companies that specialize in oil spill clean-up are attached.

54. Handwritten Recticon Progress Report, 11/5/80. P. 200357-200359.

55. Handwritten D.E.R. Norristown notes, 11/6/80. P. 200360-200361.

56. Letter to Mr. Roy J. Bestland, Rockwell International-Recticon, from C.T. Beechwood, PADER, re: Pollution Incident Prevention Plan, 11/13/80. P. 200362-200363. A graph is attached.

57. Handwritten notes from meeting with D.E.R, 11/25/80. P. 200364-200368. A list of attendees is attached.

58. Parkerford Well #1 Monitoring Log, 1981. P. 200369-200378. The following are attached:

    a) Figure 1, TCE Concentration Levels, No. 1 Well;

    b) Figure 2, 1,2, Dichloroethene Concentration Levels;

    c) Parkerford Sample Locations TCE Concentrations;

    d) two Wastex Industries, Inc. Analysis sheets;

    e) a sample map;

    f) a map of TCE Contamination in Parkerford;

    g) a list of sample sites.

59. Letter to PADER, from R.J. Bestland, re: Modifications to the Pollution Incident Prevention Plan, 1/7/81. P. 200379-200380.

60. Letter to R.J. Bestland, Rockwell International, from C.T. Beechwood, PADER, re: Pollution Incident Prevention Plan, 1/23/81. P. 200381-200383. A letter concerning modification to the Pollution Incident Prevention Plan is attached.

61. Handwritten Recticon Status Report, 1/29/81. P. 200384-200385.

62. Handwritten Recticon-Parkerford, PA, Composite Sampling list, 2/2/81. P. 200386-200386.

63. Consent Order and Agreement In The Matter Of: Recticon Corporation, 2/19/81. P. 200387-200397.

64. PADER Bureau of Water Quality Management Water or Waste Quality Report, 2/24/81. P. 200398-200399.

65. PADER Bureau of Water Quality Management Water or Waste Quality Report, 2/25/81. P. 200400-200400.

66. Letter to Mr. Randall J. Brubaker, PADER, from Mr. Arnold W. Canfield, Rockwell International Corporation, re: Settlement Proposal for unpermitted industrial waste discharges, 3/3/81. P. 200401-200404. A handwritten Recticon Progress Report is attached.

67. Notification of Hazardous Waste Site, U.S. EPA, 4/15/81. P. 200405-200407.

68. Letter to Mr. Roy Bestland, Rockwell International-Recticon, from Mr. Frederick Bopp III, re: Contract with Delaware Container Company, Inc., 4/28/81. P. 200408-200417. An information copy of the contract is attached.

69. PADER Hazardous Waste Manifest, 5/13/81. P. 200418-200425. Seven Hazardous Waste Manifests are attached.

70. Handwritten Parkerford Sampling list, 5/21/81. P. 200426-200428. A PADER Water or Waste Quality Report - Special Analyses Report is attached.

71. Handwritten Recticon notes, 6/8/81. P. 200429-200433.

72. Letter to Mr. Arnold W. Canfield, Rockwell International, from Mr. James D. Morris, PADER, re: Consent Decree letter, 8/28/81. P. 200434-200436. A letter concerning consent decree guidelines is attached.

73. Letter to Mr. Arnold W. Canfield, Rockwell International, from Mr. James D. Morris, PADER, re: Other sources of groundwater pollution, 9/9/81. P. 200437-200438. A letter regarding the revised Recticon Consent Order and Agreement is attached.

74. AGES Laboratories Certificate of Analysis, 9/28/81. P. 200439-200446. Seven pages of sampling data are attached.

75. Letter to Rae Houke, Rockwell International, from Mr. Dan Yost, Rockwell International, re: Parkerford Well Monitoring Log, 10/2/81. P. 200447-200448. The well monitoring log is attached.

76. Letter to Wastex Industries, from Mr. Joseph J. Strug, Jr., Dalare Associates, re: Sample Analysis, 10/8/81. P. 200449-200449.

77. Letter to Mr. Roy Bestland, Rockwell International, from Mr. Frederick Bopp III, Roy F. Weston, Inc., re: Report on soil excavation operations, 10/13/81. P. 200450-200468. The following are attached:

    a) Figures 1-10, photographs and a map;

    b) Attachment No. 1, U.S. EPA Priority Pollutant List, Volatile Organics Fraction;

    c) Attachment No. 2, a letter regarding volatile priority pollutant analysis;

    d) Attachment No. 3, a letter regarding analysis of fill material.

78. Wastex Industries, Inc. Before Filter and After Filter Sample Analysis sheet, 10/16/81. P. 200469-200475. Five sample analysis sheets and one TCE Monitoring Well page are attached.

79. Letter to Mr. John Gambone, Highview Gardens, Inc., from Mr. Arnold W. Canfield, Rockwell International, re: Consent Order and Agreement between PADER and Recticon, 10/21/81. P. 200476-200478.

80. Letter to A.W. Canfield, Rockwell International, from R.E. Houke, Rockwell International, re: Weston Soil Excavation Report, 10/28/81. P. 200479-200479.

81. Letter to Bureau of Water Quality Management from Mr. Roy J. Bestland, Rockwell International, re: Check pursuant to the Consent Order and Agreement, 11/3/81. P. 200480-200492. A Consent Order In The Matter Of Recticon Corporation is attached.

82. Letter to Mr. Christian T. Beechwood, III, Rockwell International from Mr. Daniel M. Yost, Rockwell International, re: October monitoring activity, 11/23/81. P. 200493-200497. Three Parkerford Well Monitoring Operation sheets are attached.

83. Wastex Industries, Inc. Before Filter and After Filter Sample Analysis sheet, 12/2/81. P. 200498-200503. Handwritten notes on wells one and two, three Before Filter and After Filter sheets, and a handwritten page on the TCE Monitor Well are attached.

84. Letter to Mr. Christian T. Beechwood, III, PADER, from Mr. Dan Yost, Rockwell International, re: Sample Units, 12/4/81. P. 200504-200507. Parkerford Well Monitoring Operation Sheets dated 11/6/81, 10/30/81, and 10/16/81, respectively, are attached.

85. Letter to Mr. Christian T. Beechwood, III, PADER, from Mr. Dan Yost, Rockwell International, re: November well water pumping and monitoring activity at Parkerford, 12/22/81. P. 200508-200510. Two Parkerford Well Monitoring Operation sheets are attached.

86. Letter to Rae Houke, Rockwell International, from Mr. Dan Yost, Rockwell International, re: Parkerford well monitoring for November 12/22/81. P. 200511-200511.

87. Handwritten Parkerford Well Monitoring Information sheet, 12/23/81. P. 200512-200517. Two Wastex Industries, Inc. Before Filter and After Filter Sample Analysis sheets, two Parkerford Well Monitoring lists, and a Wastex Industries, Inc., After Filter Sample Analysis sheet are attached.

88. Parkerford Well Monitoring list, 1/8/82. P. 200518-200523. Two Wastex Industries, Inc. Before Filter and After Filter sheets, two Parkerford Well Monitoring lists, and a Wastex Industries, Inc. After Filter sheet are attached.

89. Letter to Mr. Christian T. Beechwood, III, PADER, from D.M. Yost, Rockwell International, re: December Groundwater Pumping and Monitoring report, 1/22/82. P. 200524-200527. The report is attached.

90. Parkerford Well Monitoring List, 2/4/82. P. 200528-200532. Two Parkerford Well Monitoring lists and two Wastex Industries, Inc. sheets are attached.

91. Parkerford Well Monitoring Operation list, 2/9/82. P. 200533-200537. The following are attached:

    a) a letter concerning well water pumping and monitoring;

    b) a Parkerford Well Monitoring Operation list, sample date 1/8/82;

    c) a Parkerford Well Monitoring Operation list, sample date 1/27/82;

    d) an internal letter concerning the Consent Order and Agreement between Recticon and PADER.

92. Letter to Mr. Roy J. Bestland, Rockwell International, from R.E. Houke, Rockwell International, re: Consent Order and Agreement between Recticon and PADER, 2/18/82. P. 200538-200538.

93. PADER Bureau of Water Quality Management Water or Waste Quality Report - Special Analyses, lab number 3243, 2/24/82. P. 200539-200539.

94. PADER Bureau of Water Quality Management Water or Waste Quality Report - Special Analyses, lab number 3245, 2/24/82. P. 200540-200540.

95. PADER Bureau of Water Quality Management Water or Waste Quality Report - Special Analyses, lab number 3246, 2/24/82. P. 200541-200541.

96. Parkerford Well Monitoring information package, 3/3/82, P. 200542-200554.

97. Letter to Mr. Christian T. Beechwood, III, PADER, from Mr. Dan Yost, Rockwell International, re: Groundwater recovery operation, 3/29/82. P. 200555-200560. Four Parkerford Well Monitoring Operation sheets and a letter regarding the well water pumping and monitoring operation report for January 1982 are attached.

98. Letter to Mr. Christian T. Beechwood, III, from Rockwell International, re: Recticon's Interim Evaluation Report, 4/22/82. P. 200561-200564. The report is attached.

99. Letter to D. Yost, Rockwell International, from R.E. Houke, Rockwell International, re: Rewritten report, 4/22/82. P. 200565-200565.

100. Memorandum to Mr. Dan Yost, PADER, from Ms. Marilyn Shup, PADER, re: Sample results for Parkerford, 4/28/82. P. 200566-200574. Two Hazardous Waste Manifests, three transporter receipts, and three Generator Manifest Documents are attached.

101. Letter to Mr. Christian T. Beechwood, III, PADER, from Mr. Dan Yost, Rockwell International, re: Parkerford Well Monitoring Operation, 4/28/82. P. 200575-200577. Two Parkerford Well Monitoring Operation sheets are attached.

102. Parkerford Well Monitoring information package, 4/30/82. P. 200578-200583.

103. Letter to Mr. Frank S. Shuklis, Rockwell International, from R.E. Houke, Rockwell International, re: Interim Evaluation Report, 5/6/82. P. 200584-200595. A letter regarding the report and the report itself are attached.

104. Parkerford Well Monitoring information package, 5/27/82. P. 200596-200601.

105. Parkerford Well Monitoring information package, 6/9/82. P. 200602-200609.

106. Letter to Mr. Christian T. Beechwood, III, PADER, from Mr. Dan Yost, Rockwell International, re: Parkerford Well Monitoring Operation, 6/17/82. P. 200610-200614. Four Parkerford Well Monitoring Operation sheets are attached.

107. Parkerford Well Monitoring information sheet, 7/16/82. P. 200615-200616. A Wastex Before Filter and After Filter sheet is attached.

108. Letter to Mr. Christian T. Beechwood III, PADER, from R.A. Bedley, Rockwell International, re: Recticon Corporation's Final Report on the Groundwater Recovery Operation, 7/22/82. P. 200617-200618. A graph is attached.

109. Letter to Mr. Christian T. Beechwood III, PADER, from R.A. Bedley, Rockwell International, re: Final Report on Groundwater Recovery Operation, 7/22/82. P. 200619-200619.

110. Report: Final Report, Review of Groundwater Monitoring Data, prepared by Roy F. Weston, Inc., 7/26/82. P. 200620-200639.

111. Letter to Mr. Ronald Leslie, Rockwell International Corp., from Mr. James D. Morris, PADER, re: Meeting between Rockwell/Recticon representatives and PADER, 8/16/82. P. 200640-200641.

112. Letter to Mr. James D. Morris, PADER, from Mr. Ronald Leslie, Rockwell International, re: Legal coordination, 8/24/82. P. 200642-200643.

113. Handwritten letter to Bob from Dan, re: Call from Ms. Marilyn Shupe [sic], 1/13/83. P. 200644-200649. The following are attached:

    a) a letter concerning the Final Groundwater Report;

    b) a letter requesting a meeting between Recticon and PADER;

    c) a letter concerning a return phone call;

    d) a letter concerning review of groundwater monitoring data;

    e) a letter regarding a groundwater report.

114. Letter to Ms. Laura Boornazian, U.S. EPA, from R.R. Kenski, Rockwell International, re: 104(e) information, 7/16/85. P. 200650-200656. Information on silicon is attached.

115. Letter to Ms. Laura Boornazian, U.S. EPA, from R.R. Kenski, Rockwell International, re: Groundwater Study reports, 3/20/86. P. 200657-200701. The two reports are attached.

116. Letter to R.R. Kenski, Rockwell International Corporation, from Mr. Harold G. Byer, U.S. EPA, re: FOIA request, 8/13/86. P. 200702-200703.

117. Letter to U.S. EPA, from R.R. Kenski, Rockwell International, re: Recticon Corporation, 9/3/86. P. 200704-200704.

118. Letter to Mr. Al Sheets, Recticon Corporation, from R.R. Kenski, Rockwell International, re: Claim of business confidentiality, 9/5/86. P. 200705-200705.

119. Letter to Ms. Lorie Acker, U.S. EPA, from Mr. Al Sheets, Recticon Corporation, re: Freedom of Information Act (FOIA) release, 9/15/86. P. 200706-200706.

120. Letter to Mr. Rae Houke, Rockwell International Corporation, from Mr. Bruce P. Smith, U.S. EPA, re: 104(e) request for information, 4/3/87. P. 200707-200709.

121. Letter to Mr. Sudhir R. Patel, U.S. EPA, from Rae E. Houke, Rockwell International, re: 104(e) extension, 4/9/87. P. 200710-200713. A list of chemicals used at Recticon and a letter concerning the 104(e) response is attached.

122. Letter to Mr. Donald Beall, Rockwell International Corporation, from Mr. Stephen R. Wassersug, U.S. EPA, re: General notification of potential responsibility at the Recticon/Allied Site,, 5/2/89. P. 200714-100717.

123. Letter to Mr. David G. Byro, U.S. EPA, from Mr. John R. Stocker, Rockwell International, re: Participation in contamination investigation, 5/22/89. P. 200718-200719.

124. Letter to Mr. Scott L. Holden, Rockwell International, from Mr. Joseph J.C. Donovan, U.S. EPA, re: "Innocent Landowner" policy, 7/6/89. P. 200720-200720.

125. Letter to Mr. Robert K. Beck, Rockwell International, from Mr. Thomas C. Voltaggio, U.S. EPA, re: Special notice letter, 10/19/89. P. 200721-200722.

126. Letter to Mr. Robert K. Beck, Rockwell International, from Ms. Sarah E. Peachey, U.S. EPA, re: Good Faith Proposal for RI/FS, 11/9/89. P. 200723-200724.

127. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Robert K. Beck, Rockwell International, re: Interest in participating in RI/FS, 11/15/89. P. 200725-200725.

128. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Robert K. Beck, Rockwell International, re: Good Faith proposal to perform the RI/FS, 12/21/89. P. 200726-200729.

129. Letter to Mr. James Snyder, PADER, from Mr. Stephen R. Wassersug, U.S. EPA, re: Administrative Order by Consent, 5/17/90. P. 200730-200758. The Administrative Order by Consent is attached.

130. Administrative Order by Consent In The Matter Of: Recticon/Allied Steel Site, 5/29/90. P. 200759-200783. Appendix A, RI/FS Scope of Work, Recticon/Allied Steel Site, is attached.

131. Handwritten notes on Recticon Hazardous Waste Manifests, (undated). P. 200784-200785.

132. Handwritten Table 1, Groundwater Pumping, (undated). P. 200786-200792. The following are attached:

    a) Figure 1, TCE Concentration Levels - No. 1 well;

    b) Figure 2, 1,2, Dichloroethene Concentration Levels;

    c) Figure 3, TCE Sample Locations - Feb. 1982, Parkerford Area;

    d) Table 2, Parkerford Sample Locations;

    e) Figure 4, TCE Sample Locations - 1979/1980, Parkerford Area;

    f) Table 3, Sample list.

133. Handwritten Recticon Well information, (undated). P. 200793-200793.

134. Recticon Implementation Schedule for Effluent Treatment Facilities, (undated). P. 200794-200795.

135. Hand-drawn Recticon (existing) Plan map, (undated). P. 200796-200796.

136. Hand-drawn Recticon (proposed) Plan, (undated). P. 200797-200797.

137. Handwritten Insert A, Phase I work initiation, (undated). P. 200798-200798.

138. Hand-drawn map of TCE levels, (undated). P. 200799-200799.

Updated Material

Allied Steel

139. Letter to Mr. John Van Dzura, Allied Steel Products Corp., from Mr. Peter W. Schaul, U.S. EPA, re: 104(e) request for information, 11/2/90. P. 200800-200805.

140. Letter to Mr. John Van Dzura, Allied Steel Products Corp., from Mr. Peter W. Schaul, U.S. EPA, re: Request for information, 1/7/91. P. 200806-200807.

141. Letter to Mr. Irving Hirsch, Allied Steel, from Mr. Harry R. Steinmetz, U.S. EPA, re: Mr. Van Dzura's failure to respond to 104(e) letters, 4/30/91. P. 200808-200808.

142. Letter to Mr. Irving Hirsch, Allied Steel, from Ms. Mary E. Rugala, U.S. EPA, re: Confirmation of telephone conversation regarding Mr. Van Dzura, 5/15/91. P. 200809-200809.

Highview Gardens

143. Letter to Ms. Mary Rugala, U.S. EPA, from Mr. David C. Noker, Hamburg, Rubin, Mullin & Maxwell, re: Addition to building on site, 4/16/91. P. 200810-200810.

III. REMEDIAL RESPONSE PLANNING

1. Report: Preliminary Health Assessment for Recticon/Allied Steel Corporation, prepared by the Agency for Toxic Substances and Disease Registry (ATSDR), 1/22/90. P. 300001-300010.

2. Memorandum to Mr. Charles J. Walters, Department of Health and Human Services, from Ms. Lynn C. Wilder, Department of Health and Human Services, re: Addendum to Health Assessment, 3/2/90. P. 300011-300015. The addendum is attached.

3. Report: Remedial Investigation/Feasibility Study Work Plan, Recticon/Allied Steel Superfund Site, Parker Ford, Pennsylvania, prepared by Dames & Moore, 12/3/90. P. 300016-300457.

4. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Monthly progress report for the remedial investigation, 1/3/91. P. 300458-300459.

5. Letter to Mr. Bruce Rundell, U.S. EPA, from Mr. Michael Edelman and Ms. Rosann Park-Jones, Dames & Moore, re: Preliminary TCE Soil Gas Survey results, 1/31/91. P. 300460-300462. Two maps are attached.

6. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Remedial Investigation monthly progress report, 2/6/91. P. 300463-300465. Table 1, Recticon/Allied Steel Remedial Investigation Field Schedule, is attached.

7. Letter to Mr. Michael B. Whaley, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Revision to PADER's Applicable or Relevant and Appropriate Requirements (ARARs), 2/28/91. P. 300466-300473. Three letters regarding PADER ARARs are attached.

8. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Monthly progress report for the remedial investigation, 3/8/91. P. 300474-300476. Table 1, Recticon/Allied Steel Remedial Investigation Field Schedule, is attached.

9. Letter to Mr. Michael Edelman, Dames & Moore, from Mr. David G. Byro, U.S. EPA, re: Transmittal of correspondence, 3/19/91. P. 300477-300500. Four letters regarding Applicable or Relevant and Appropriate Requirements (ARARs) and PADER's ARARs are attached.

10. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Monthly progress report for the remedial investigation, 4/22/91. P. 300501-300503. Table 1, Recticon/Allied Steel Remedial Investigation Field Schedule, is attached.

11. Letter to Mr. David Byro, U.S. EPA, from Mr. Ralph T. Golia and Mr. Michael Edelman, Dames & Moore, re: PADER ARARs, 5/1/91. P. 300504-300505.

12. Letter to Mr. David Byro, U.S. EPA, from Mr. Bruce Beach, Dynamac Corp., re: Analytical results report, 5/1/91. P. 300506-300524. The report is attached.

13. Letter to Mr. David Byro, U.S. EPA, from Mr. Michael J Edelman, Dames & Moore, re: Disposal of monitoring well purge and development water, 5/9/91. P. 300525-300525.

14. Letter to Mr. David Byro, U.S. EPA, from Mr. David J. Carlson, Dames & Moore, re: Quality assurance audit, 5/10/91. P. 300526-300527.

15. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Monthly progress report for the remedial investigation, 5/28/91. P. 300528-300530. Table 1, Recticon/Allied Steel Remedial Investigation Field Schedule, is attached.

16. Memorandum to Mr. David Byro, U.S. EPA, from Ms. Theresa A. Simpson, U.S. EPA, re: Correction to inorganic data validation report, 5/30/91. P. 300531-300553. A memorandum regarding the Region III Data Quality Assurance (QA) Review and the inorganic data review are attached.

17. Letter to Mr. David G. Byro, U.S. EPA, from Mr. M.B. Whaley, Rockwell International, re; Replacement project manager, 6/3/91. P. 300554-300554.

18. Letter to Mr. Phil Edmunds, U.S. Fish and Wildlife Service, from Mr. David G. Byro, U.S. EPA, re: Endangered or threatened species in the study area, 6/4/91. P. 300555-300556.

19. Letter to Mr. David Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Transmittal of data summary tables and quality assurance review reports, 6/4/91. P. 300557-300609. The reports are attached.

20. Letter to Mr. David Byro, U.S. EPA, from Mr. Ralph T. Golia and Mr. Michael Edelman, Dames & Moore, re; Transmittal of ground water sampling analytical results, 6/18/91. P. 300610-300630. The inorganic analysis - analytical results are attached.

21. Letter to Mr. David G. Byro, U.S. EPA, from Ms. Cynthia L. Rice, U.S. Fish and Wildlife Service, re: Endangered or threatened species, 6/20/91. P. 300631-300633. A Federal list of endangered and threatened species in Pennsylvania is attached.

22. Letter to Mr. David Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Ground water monitoring, 7/10/91. P. 300634-300634.

23. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Progress report for June 1991, 8/8/91. P. 300635-300637. Table 1, Field Schedule, is attached.

24. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Progress report for May 1991, 8/8/91. P. 300638-300639.

25. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Progress report for July 1991, 8/19/91. P. 300640-300656. Table 1, Field Schedule, Attachment A, Purge and Development Water Disposal Documentation, and Attachment B, Analytical Data for the Second Ground Water Sampling Round (July 1991), are attached.

26. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Transmittal of letters concerning the presence of endangered or threatened species within the area affected by the site, 8/30/91. P. 300657-300664. The following are attached:

    a) a letter from the U.S. Fish and Wildlife Services regarding a request for information concerning the presence of endangered and threatened species near the site;

    b) a list of Federally Listed Endangered and Threatened Species In Pennsylvania;

c) a letter from PADER regarding a request for information concerning the presence of endangered and threatened species near the site;

d) a Pennsylvania Natural Diversity Inventory Species List.

27. Memorandum to Mr. David Byro, U.S. EPA, from Mr. Frederick Dreisch, U.S. EPA, re: Transmittal of the Volatile Organic Analysis (VOA) report, 9/3/91. P. 300665-300676. The following are attached:

a) the VOA report;
b) Appendix A, Glossary of Data Qualifier Codes;
c) Appendix B, Data Summary;
d) a Chain of Custody Record.

28. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Progress report for August 1991, 9/10/91. P. 300677-300686. Attachment A, Aquifer Test Procedures, and Attachment B, Ground Water Elevation Data for the First Ground Water Sampling Round (April 1991), are attached.

29. Memorandum to Mr. David Byro, U.S. EPA, from Mr. Frederick Dreisch, U.S. EPA, re: Transmittal of the revised metals report, 10/18/91. P. 300687-300712. The following are attached:

a) the revised metals report;

b) a memorandum regarding a report to make laboratory information easier to understand;

c) a Metals and Inorganic Nominal Quantitation Limits and Test Names listing;

d) sample results;

e) a listing of qualifier codes.

30. Letter to Ms. Debbie Whitehawk, East Coventry Township, from Mr. David G. Byro, U.S. EPA, re: Evaluation of soil samples, 10/21/91. P. 300713-300714.

31. Report: Phase I Remedial Investigation Draft Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 1 of 3, prepared by Dames & Moore, 1/2/92. P. 300715-300970. A cover letter is attached.

32. Report: Phase I Remedial Investigation Draft Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 2 of 3, prepared by Dames & Moore, 1/2/92. P. 300971-301408.

33. Report: Phase I Remedial Investigation Draft Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 3 of 3, prepared by Dames & Moore, 1/2/92. P. 301409-301772.

34. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Progress report for October 1991, 1/2/92. P. 301773-301781. A letter regarding the progress report for November 1991 dated January 1, 1992, a letter regarding the progress report for October 1991 dated November 11, 1991, and Table 1, Field Schedule, are attached.

35. Memorandum to Mr. David Byro, U.S. EPA, from Mr. Theresa A. Simpson, U.S. EPA, re: Transmittal of the organic data review, 1/13/92. P. 301782-301788. The organic data validation, and Appendix A: Glossary of Data Qualifier Codes, and Appendix B: Data Summary Forms are attached.

36. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Ralph T. Golia and Mr. Michael Edelman, Dames & Moore, re: Suggestion that Rockwell International consider installing an interim ground water containment system at the site, 1/31/92. P. 301789-301790.

37. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Review and transmittal of comments concerning the Phase I Remedial Investigation Draft Report, 2/7/92. P. 301791-301814. The following are attached:

    a) the review comments on the RI;

    b) Table 1, GAC Lifetime Predictions (Revised) for the Six Units Considered by Dames & Moore;

    c) five site maps;

    d) a letter regarding PADER's comments on the draft RI;

    e) two certified mail receipts.

38. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Progress report for January 1991, 3/31/92. P. 301815-301818. A letter regarding the progress report for February 1992 is attached.

39. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Ralph T. Golia and Mr. Michael J. Edelman, Dames & Moore, re: Submittal of the third revision of the Phase II Work Plan, 5/12/92. P. 301819-301829. The revised Work Plan is attached.

40. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Review of the revised Phase II Work Plan, 5/13/92. P. 301830-301833. A certified mail receipt is attached.

41. Letter to Mr. Michael B. Whaley, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Project team members comments to the RI/FS Work Plan dated June 17, 1990, 8/3/90. P. 301834-301847. The comments are attached.

42. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Comments on the revised Phase II Work Plan, Revision 1, 4/3/92. P. 301848-301852. The comments and two certified mail receipts are attached.

43. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Comments on the revised Phase II Work Plan, Revision 2, 4/20/92. P. 301853-301860. A letter regarding the proposed on-site disposal of contaminated ground water, a letter containing comments on the Phase I Work Plan, and two certified mail receipts are attached.

44. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Comments on the Evaluation of VOC Concentrations in Soil at the Recticon/Allied Steel Site report, 6/19/92. P. 301861-301867. The comments and two certified mail receipts are attached.

45. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Remedial Investigation Progress Report for March 1992, 7/2/92. P. 301868-301885. The following are attached:

a) Remedial Investigation Progress Report for April 1992;

b) Remedial Investigation Progress Report for May 1992;

c) a letter regarding the submittal of the revised Phase II Work Plan;

d) the revised Phase II Work Plan;

e) Table 6-1, Summary of Phase II Scope of Work;

f) Figure 6-1, Proposed Phase II "Deep" Monitoring Well Locations;

g) Figure 6-2, Project Schedule, Phase II Investigation.

46. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Well Schedule, 7/7/92. P. 301886-301892. Two Well Schedules, Figure 5, Ground Water Well Location Map, and two certified mail receipts are attached.

47. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Charles R. Wood, United States Department of the Interior, re: Information on the geophysical logs, 7/13/92. P. 301893-301894.

48. Letter to Mr. John Van Dzura, Jr., Allied Steel Products Corporation, from Mr. David G. Byro, U.S. EPA, re: Notification of EPA's plan to begin implementing the characterization and/or modification of existing pumping wells, 8/31/92. P. 301895-301898. Two certified mail receipts are attached.

49. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Remedial Investigation Progress Report for June 1992, 9/4/92. P. 301899-301900.

50. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Remedial Investigation Progress Report for July 1992, 9/4/92. P. 301901-301902.

51. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Michael Edelman, Dames & Moore, re: Remedial Investigation Progress Report for August 1992, 9/4/92. P. 301903-301904.

52. Letter to Mr. David Byro, U.S. EPA, from Mr. Kevin J. Hess, PADER, re: Review of the June 5, 1992 Work Plan for temporary discharge, 9/10/92. P. 301905-301907. A memorandum regarding temporary discharge is attached.

53. Letter to Mr. David Byro, U.S. EPA, from Mr. Anthony Vellios, Dynamac Corporation, re: Split sampling results for the four ground water sampling rounds of Phase I of the Remedial Investigation, 10/28/92. P. 301908-301914. The split sampling results are attached.

54. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Ralph T. Golia and Mr. Michael J. Edelman, Dames & Moore, re: The results of the step-test portion of the aquifer test for the Phase II investigation 10/29/92. P. 301915-301915.

55. Letter to Mr. Kevin Hess, PADER, from Mr. David G. Byro, U.S. EPA, re: Request for identification of the potential chemical-, location-, and action-specific state ARARs for the site, 12/7/92. P. 301916-301917.

56. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Comments on the draft Phase I Feasibility Study Interim Report dated December 4, 1992, 12/23/92. P. 301918-301924. The comments and two certified mail receipts are attached.

57. Memorandum to Mr. Don Henne, Office of Environmental Affairs, Mr. Peter Knight, U.S. EPA, Mr. Anthony R. Conte, USDI, and Ms. Kirsten L. Erickson, NOAA General Counsel's Office, from Mr. David G. Byro, U.S. EPA, re: Notification of Federal Natural Resource Trustees, 1/13/93. P. 301925-301925.

58. Letter to Mr. Kevin Hess, PADER, from Mr. David G. Byro, U.S. EPA, re: Reiteration of request that PADER identify the potential chemical-, location-, and action-specific state ARARs for the site, 2/8/93. P. 301926-301927.

59. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: EPA's and PADER's review comments on the November 25, 1992 Phase I and Phase II Remedial Investigation Draft Report, 2/12/93. P. 301928-301941. The comments are attached.

60. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: EPA's and PADER's review comments on the January 8, 1993 draft Feasibility Study Report, 3/8/93. P. 301942-301960. The comments and a certified mail receipts are attached.

61. Report: Phase I and Phase II Remedial Investigation Final Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 1 of 4, prepared by Dames & Moore, 3/29/93. P. 301961-302296.

62. Report: Phase I and Phase II Remedial Investigation Final Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 2 of 4, prepared by Dames & Moore, 3/29/93. P. 302297-302763.

63. Report: Phase I and Phase II Remedial Investigation Final Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 3 of 4, prepared by Dames & Moore, 3/29/93. P. 302764-303156.

64. Report: Phase I and Phase II Remedial Investigation Final Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Volume 4 of 4, prepared by Dames & Moore, 3/29/93. P. 303157-303938.

65. Report: Phase I and Phase II Remedial Investigation Final Report, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, Appendix W, prepared by Dames & Moore, 3/29/93. P. 303939-304242.

66. Letter to Mr. David Byro, U.S. EPA, from Mr. Kevin J. Hess, PADER, re: ARAR identification, 4/9/93. P. 304243-304245.

67. Report: Draft Feasibility Study, Recticon/Allied Steel Site, Parker Ford, Pennsylvania, prepared by Dames & Moore, 4/14/93. P. 304246-304551.

68. Letter to Mr. David Byro, U.S. EPA, from Mr. Kevin J. Hess, PADER, re: Comments on draft Proposed Plan, 5/7/93. P. 304552-304553.

69. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Richard L. Zambito, Dames & Moore, re: Corrected pages for the draft Feasibility Study, 5/12/93. P. 304553a-304560. The revised pages (8-11, 8-22, 8-28, 8-32, 8-33, 8-37, and 8-38) are attached.

70. Letter to Ms. Mary Rugala, U.S. EPA, from Mr. Richard L. Zambito, Dames & Moore, re: Comparative Analysis of Alternatives, 5/14/93. P. 304561-304572. The Comparative Analysis of Alternatives and a revised Table of Contents are attached.

71. Letter to Mr. David Byro, U.S. EPA, from Mr. David A. Sherwin, Dames & Moore, re: Revisions to pages 4-22 and 5-7 of the Baseline Risk Assessment, 5/14/93. P. 304573-304581. The revisions are attached.

72. Letter to Dr. Richard Reisenweber, Rockwell International Corporation, from Mr. David G. Byro, U.S. EPA, re: Approval of the RI/FS Reports and comments on their review, 5/19/93. P. 304582-304583.

73. Proposed Plan, Recticon/Allied Steel Site, Parker Ford, Chester County, PA, May 1993. P. 304584-304600.

74. Letter to Mr. David Leinbach, East Coventry Township, from Mr. David G. Byro, U.S. EPA, re: Documentation of telephone conversation on June 2, 1993 concerning information on the proposed remedial action for the site, 6/3/93. P. 304601-304601.

75. Letter to Mr. David G. Byro, U.S. EPA, from Mr. Jerome C. Muys, Jr., Swidler & Berlin, re: Comments on the Proposed Remedial Action Plan, 6/17/93. P. 304602-304605.

76. Report: The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program, prepared by National Oceanic and Atmospheric Administration, (undated). P. 304606-304634.

IV. REMOVAL RESPONSE PROJECTS

1. Letter to Mr. Philip C. Younis, U.S. EPA, from Ms. Deborah Kopsick, Ecology and Environment, Inc, re: Trip report for residential well sampling, 4/15/90. P. 400001-400052. The report is attached.

2. Report: Work Plan Removal Action Recticon/Allied Steel Site, prepared by Dames and Moore, 5/23/90. P. 400053-400085.

3. Report: Analytical Results Report: Water Supply Sampling Survey, Removal Action, Recticon/Allied Steel Site, prepared by Dames & Moore, 10/29/90. P. 400086-400158. A transmittal letter is attached.

4. Report: Analytical Results Report: Water Supply Sampling Survey, Removal Action, Recticon/Allied Steel Site, prepared by Dames & Moore, 3/29/91. P. 400159-400312. A transmittal letter is attached.

V. COMMUNITY INVOLVEMENT/CONGRESSIONAL CORRESPONDENCE/IMAGERY

1. Press Release from the U.S. EPA Environmental News entitled, "Rockwell International Corporation and EPA Sign Consent Order for Removal Activities at the Recticon/Allied Steel Superfund Site," 5/14/90. P. 500001-500003.

2. U.S. EPA Fact Sheet: Recticon/Allied Steel Corporation Superfund Site, 8/90. P. 500004-500009.

3. Letter to Mr. William & Mrs. Mildred Overfield from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500010-500014. An EPA drinking water fact sheet on Trichloroethylene, an analytical report on volatile organics analysis, and a lab report on water samples are attached.

4. Letter to Mr. Herbert Landis and Mr. Paul LeDerer, Leisure Equipment, Inc., from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500015-500023. Sampling results and EPA drinking water fact sheets on Trichloroethylene, CIS-1,2-Dichloroethylene, and 1,1,1, Trichloroethane are attached.

5. Letter to Mrs. Esther Hetrick from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500024-500026. The sampling results are attached.

6. Letter to Mr. Joseph and Mrs. Rose Gelete from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500027-500031. Sampling results and an EPA drinking water fact sheet on 1,1,1-Trichloroethane are attached.

7. Letter to Mr. Karl LeDerer from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500032-500036. Sampling results and an EPA drinking water fact sheet on Trichloroethylene are attached.

8. Letter to Mr. Tony Deluea, Autoquest, from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500037-500043. Sampling results and EPA drinking water fact sheets on Trans-1,2-Dichloroethylene and Trichloroethylene are attached.

9. Letter to Mr. Wilbert and Mrs. Ruth Letter from Mr. David G. Byro, re: Transmittal of well sampling results, 9/19/90. P. 500044-500046. Sampling results are attached.

10. Letter to Mr. Adam and Mrs. Mary DeFrancesco, Keystone Auto Center, Inc., from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500047-500053.

11. Letter to Mr. Robert Elliot from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500054-500056.

12. Letter to Mr. John and Mrs. Dorothy Weaver from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500057-500059. Sampling results are attached.

13. Letter to Mr. Thomas and Mrs. Marian Orosz from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500060-500064. Sampling results and an EPA drinking water fact sheet on 1,1,1-Trichloroethane are attached.

14. Letter to Mr. Tom Lewis, Sr., Total Recovery, Inc., from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500065-500071. Sampling results and EPA drinking water fact sheets on Trichloroeteylene and CIS-1,2,-Dichloroeteylene are attached.

15. Letter to Mr. Richard Heylmun, Longstreth Company, from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500072-500074. Sampling results are attached.

16. Letter to Mrs. Edith Northacker from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, 9/19/90. P. 500075-500077. Sampling results are attached.

17. Report: Community Relations Plan for the Recticon/ Allied Steel Corporation Site, prepared by Dynamac Corporation, 12/12/90. P. 500078-500107.

18. U.S. EPA Fact Sheet, Recticon/Allied Steel Corporation Superfund Site, 1/91. P. 500108-500109.

19. Newspaper article entitled "Superfund Site in Parker Ford to be studied," The Reporter, 1/2/91. P. 500110-500110.

20. U.S. EPA Attendance Sheet, Recticon/Allied Steel Corporation, 1/9/91. P. 500111-500113.

21. Newspaper article entitled "EPA to hold meeting on Superfund site," The Mercury, 1/9/91. P. 500114-500114.

22. Newspaper article entitled "EPA expects to find tainted water," The Mercury, 1/10/91. P. 500115-500115.

23. Newspaper article entitled "Tests to pinpoint Recticon contamination," The Philadelphia Inquirer, 1/13/91. P. 500116-500116.

24. Newspaper article entitled "Testing begins at Parker Ford Superfund site," The Reporter, 1/16/91. P. 500117-500117.

25. U.S. EPA Meeting Agenda, Public Meeting, Recticon/ Allied Steel Superfund Site, (undated). P. 500118-500118.

26. Letter to Mr. Palmer and Mrs. Juanita Williamson from Mr. David G. Byro, U.S. EPA, re: Transmittal of well sampling results, (undated). P. 500119-500121. Sampling results are attached.

27. Report: Community Relations Plan for the Recticon/ Allied Steel Corporation Site, prepared by Dynamac Corporation and PRC Environmental Management, Inc., 10/30/91. P. 500122-500150.

28. U.S. EPA Fact Sheet, Recticon/Allied Steel Corporation Superfund Site, Remedial Investigation and Feasibility Study, Parkerford [sic], Pennsylvania, 8/90. P. 500151-500154.

29. U.S. EPA Superfund Fact Sheet, Recticon/Allied Steel Corporation Site, 5/92. P. 500155-500156.

30. U.S. EPA Public Notice entitled "The United States Environmental Protection Agency Invites the Public to Comment on the Proposed Plan for Cleanup of the Recticon/Allied Steel Superfund Site, Parker Ford, Chester County, PA," Mercury, 5/20/93. P. 500157-500158. A transmittal letter is attached.

31. Transcript of public meeting, Recticon/Allied Steel Site, 5/27/93. P. 500159-500233.

BIBLIOGRAPHY OF SITE SPECIFIC GUIDANCE DOCUMENTS

1. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, prepared by OSWER/OERR, 10/1/88.
   OSWER 9355.3-01

2. Superfund Remedial Design and Remedial Action Guidance, prepared by OERR, 6/1/86.
   OSWER 9355.0-4A

3. The Feasibility Study - Development and Screening of Remedial Action Alternatives [Quick Reference Fact Sheet], prepared by OSWER, 11/1/89.
   OSWER 9355.3-01FS3

4. The Feasibility Study: Detailed Analysis of Remedial Action Alternatives [Quick Reference Fact Sheet], prepared by OSWER, 3/1/90.
   OSWER 9355.3-01FS4

5. A Compendium of Superfund Field Operations Methods, prepared by OERR/OWPE, 12/1/87.
   OSWER 9355.0-14

6. Superfund LDR Guide #5, Determining When Land Disposal Restrictions (LDRs) are Applicable to CERCLA Response Actions, prepared by OERR, 7/1/89.
   OSWER 9347.3-05FS

7. A Guide on Remedial Actions for Contaminated Ground Water [Quick Reference Fact Sheet], prepared by OSWER, 4/1/89.
   OSWER 9283.1-2FS

8. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, prepared by OERR, 12/1/88.
   OSWER 9283.1-2

9. CERCLA Compliance With Other Laws Manual (Draft), prepared by OERR, 8/8/88.
   OSWER #9234.1-01

10. CERCLA Compliance with Other Laws Manual - CERCLA Compliance with State Requirements [Quick Reference Fact Sheet], prepared by OSWER, 12/1/89.
    OSWER 9234.2-05FS

11. Interim Guidance on Potentially Responsible Party Participation in Remedial Investigations and Feasibility Studies, prepared by J.W. Porter/OSWER, 5/16/88.
OSWER 9835.1a