EPA/ROD/R02-92/171
1992

EPA Superfund
Record of Decision:

PASLEY SOLVENTS & CHEMICALS, INC.
EPA ID: NYD991292004
OU 01
HEMPSTEAD, NY
04/24/1992

ROD FACT SHEET

SITE

Name: Pasley Solvents
Location/State: Hempstead, Nassau Co., New York
EPA Region: II
HRS Score (date) : 39.65 (6/86)
NPL Rank (date) : 510

ROD

Date Signed: April 24, 1992

Selected Remedy

Groundwater: Pump and treat (air stripping with vapor phase GAC of off-gas followed by GAC polishing of treated water, if necessary) ground water with goal of achieving ARARs. Treated groundwater to be recharged if necessary.

Capital Cost: $ 4,280,000
O & M: $ 829,000
Present Worth: $ 12,095,000

Soil: Soil vacuuming; soil flushing with treated groundwater if necessary.

Capital Cost: $ 921,000
O & M: $ 407,000
Present Worth: $ 1,649,000

LEAD

Enforcement, PRP Lead

Primary Contact (phone): Sherrel Henry (212-264-8675)
[4/1/92 thru 10/1/92]>> Mark Granger (212-264-9588)
Secondary Contact (phone): Melvin Hauptman (212-264-7681)
Main PRP: Commander Oil Co.
PRP Contact (phone): Gregory Pikul (908-685-4762)

WASTE

Type: Groundwater -- VOCs and Semi-VOCs.
Soil -- VOCs and Semi-VOCs.

Medium: Groundwater, soil.

Origin: Up until 1969 the Site was operated as a fuel oil distribution facility. The Site was a chemical distribution and storage facility for oils and solvents from 1969-1982.

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Pasley Solvents and Chemicals Site
Town of Hempstead
Nassau County, New York

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Pasley Solvents and Chemical Site (Site), 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 the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document summarizes the factual and legal basis for selecting the remedy for this Site.

The New York State Department of Environmental Conservation (NYSDEC) concurs with the selected remedy. A letter of concurrence from NYSDEC is appended to this document.

The information supporting this remedial action decision is contained in the administrative record for this Site, an index of which is attached as Appendix 5.

ASSESSMENT OF THE SITE

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

DESCRIPTION OF SELECTED REMEDY

The remedy presented in this document addresses the treatment of soils and the ground water at the Pasley Solvents and Chemicals Site.

The major components of the selected remedy include:

- Treatment of approximately thirteen thousand (13,000) cubic yards of contaminated soil by soil vacuuming and/or by soil flushing;
- Disposal of treatment residuals at a RCRA Subtitle C facility;
- Remediation of the ground water by extraction/metals precipitation/air stripping with vapor phase granular activated carbon/GAC polishing/recharge;
- Pumping of contaminated ground water from three extraction wells at combined flow rate of approximately 450 gpm. The actual pumping rate will be determined during the Remedial Design;
- Implementation of a long-term monitoring program to track the migration and concentrations of the contaminants of concern; and
- Implementation of a system monitoring program that includes the collection and analysis of the influent and effluent from the treatment systems and periodic collection of well-head samples.

DECLARATION OF STATUTORY DETERMINATIONS

This 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 technologies to the maximum extent practicable for this Site. Because treatment is being used to address the principal threats at the Site, this remedy satisfies the statutory preference for treatment as a principal element of the remedy.

Due to the existence of an upgradient source of contamination, the selected ground water remedy, by itself, will not meet chemical-specific ARARs nor be capable of restoring the area ground water to applicable ground water quality standards until these upgradient source areas are removed.

As the remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted within five (5) years after commencement of the remedial action, and every five years thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment.

TABLE OF CONTENTS

DECISION SUMMARY

PASLEY SOLVENTS AND CHEMICALS SITE

TOWN OF HEMPSTEAD, NEW YORK

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

NEW YORK

I. SITE LOCATION AND DESCRIPTION

The Pasley Solvents and Chemicals Site (Site) is located at 556 Commercial Avenue, Town of Hempstead, Nassau County, New York. The Site lies between the borders of the political subdivisions of the Village of Garden City and Uniondale, in the Town of Hempstead (see Figure 1). The immediate area has light industrial and commercial properties; residential communities are located within 1/4 mile of the Site. The Site measures 75' by 275', and is fenced on the north, east and south. A building and loading platform border the Site to the west (see Figure 2).

According to the Town of Hempstead's Public Information Division, the population of the Town of Hempstead is approximately 735,000. The predominant form of land use in the vicinity is industrial with the nearest off-site building adjacent to the Site. It is estimated that 75 homes are located within a 1/4 mile radius of the Site and 1,800 homes within one mile of the Site. The only source of drinking water for residences in the Town of Hempstead is ground water. All public water supply wells in the Site area draw water from the deeper aquifer, the Magothy Aquifer. Four public water supply well fields are located within approximately 2 miles of the Site.

There are no surface water bodies or wetlands within the vicinity of the Site. There is no designated New York State Significant Habitat, agricultural land, historic or landmark site directly or potentially affected. There are no endangered species or critical habitats within close proximity to the Site.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Site History

The Site is a former tank farm used for the storage of oils, solvents and chemicals. From 1969 to 1982 the Site was occupied by Pasley Solvents and Chemicals Company (Pasley) and was used as a chemical distribution facility. The principal activity at the Site included the delivery of various chemicals to the Site, storage of chemicals in the tanks located there and eventual transfer of the chemicals to 55-gallon drums for delivery to customers. These chemicals reportedly included a wide range of aromatic and halogenated aliphatic hydrocarbons, various solvents, ketones and alcohols. Pasley also operated as a "scavenger" that transported waste and sludge, containing hazardous substances that may have been transported to the Site. The Site is owned by Commander Oil Corporation (Commander). Prior to 1969, the Site was occupied by Commander, which distributed fuel oils.

In response to Pasley's request for a New York State Department of Environmental Conservation (NYSDEC) permit to store and remove chemicals, the Nassau County Department of Health (NCDH) conducted a preliminary site inspection in 1980 and collected soil samples from the area beneath the above-ground storage tanks at depths ranging from six to 36 inches. The soil collected was contaminated with halogenated and non-halogenated hydrocarbons, including trichloroethene (TCE), tetrachloroethene (PCE), 1,1,1-trichloroethane, xylene and toluene. These chemicals were being stored on-site at the time. NCDH then referred the Site to NYSDEC. NCDH and NYSDEC recommended that Pasley submit a plan for a Phase I and Phase II remedial investigation and a cleanup plan.

Lakeland Engineering of Port Washington (Lakeland), New York was hired by Pasley to perform a limited well drilling and ground water sampling program. In August 1981, Lakeland, through its subcontractor, Slack Well Drilling Company installed five (5) on-site monitoring wells. One additional monitoring well was installed off-site. Ground water samples were collected and samples from wells 2, 5, and 6 were analyzed by the NCDH as well as by Lakeland. Contaminants including methylene chloride, PCE, benzene, toluene and xylene were detected at levels exceeding State Drinking Water Standards.

A comparison of the two sets of data from NCDH and Lakeland showed widely divergent results. In February, 1982 Commander was notified by NCDH that the site investigation would continue. In May 1982, Pasley operations ceased when the company filed for bankruptcy.
NYSDEC and NCDH were unsuccessful in their efforts to persuade Commander and Pasley to do additional work at the Site. In 1983, NYSDEC issued a Notice of Hearing and Complaint alleging violations of the New York State Environmental Conservation Law, Articles 17, 27 and 71.

On June 10, 1986, the Site was placed on the National Priorities List (NPL). NYSDEC was the lead agency until January 1987. Then, with NYSDEC's concurrence, EPA assumed responsibility for the cleanup of the Site.

B. History of Surrounding Sites

Two major ground water contamination sites are adjacent to the Site. One is Roosevelt Field, a former airfield that is now a large shopping mall. The Roosevelt Field site was extensively studied by the United States Geological Survey (USGS) from 1982 to 1984. As a result of this study, the USGS identified three volatile organic ground water contamination plumes. Two of the contamination plumes exist in the Upper Glacial aquifer, and the third is present in both the Upper Glacial aquifer and the Magothy Formation. The plumes were reported in 1986 to extend at least 1,000 feet to the southsouthwest of Roosevelt Field, and within 400 feet of the Pasley Site. The report states that the ground water in the Upper Glacial aquifer flows at approximately 1 ft./day. At that rate, it is likely that the plume is responsible for the contamination detected in the upgradient Pasley well cluster. The Roosevelt Field Site was listed as a Class II site on the New York State Registry in July1991.

The Purex/Mitchell Field Transit Facility site (Purex) is the second major ground water contamination site in the area and is approximately 800 feet east of the Site. An investigation conducted by Camp, Dresser and McKee in 1984 showed that contaminants in the upper Magothy aquifer associated with the Purex Site include: PCE; TCE; 1,1-dichloroethene; and methylene chloride. The ground water contamination from this site is currently being remediated by the Purex company pursuant to a New York State Consent Order.

C. Enforcement

EPA identified two potentially responsible parties (PRP's) as owners and/or operators. Special notice letters informing the PRPs of their potential liabilities were mailed on February 12, 1988 to Commander and Pasley for conducting a Remedial Investigation and Feasibility Study (RI/FS) for the Site. Several negotiations were held to discuss technical and legal issues relating to the Administrative Order on Consent (AO) for the conduct of the RI/FS.

On August 19, 1988, EPA entered into an AO, Index NO. II-CERCLA80212, with Commander. The AO required Commander to perform an RI/FS to determine the nature and extent of contamination at the Site and to remove the 12 above-ground tanks that were located on-site. Pasley declined to participate in the settlement.

The tank farm removal was completed in November of 1988 by ABC Demolition and was supervised by EA Engineering, a former consultant of Commander. Metcalf & Eddy, Inc. performed the RI/FS for Commander. The RI Report was approved by EPA in November, 1991. The revised FS Report was submitted to EPA February, 1992.

In February, 1992 EPA sent information request letters regarding generation of wastes found at the Site to 20 parties.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI/FS Reports and the Proposed Plan for the Site were released to the public for comment on February 14, 1992. These two documents were made available at two information repositories maintained at the EPA Region II Office in New York City and the Nassau Library System. The notice of availability for these documents was published in Newsday on February 14, 1992. A public comment period on the documents was held from February 14, 1992 through March 15, 1992. In addition, a public meeting was held on March 5, 1992. At this meeting, representatives from EPA answered questions about problems at the Site and the remedial alternatives under consideration. Responses to the comments and questions are included in the Responsiveness Summary, which is attached as Appendix 4.

IV. SCOPE AND ROLE OF RESPONSE ACTION

The objective of this remedy is to address the source of contamination at the Site, the contamination in the surface soils, and ground water contamination attributable to the Site. The selected remedy will treat ground water until the influent contaminant concentrations at the extraction wells equal the upgradient concentrations. For the soil remediation alternative, the contaminated soil will be treated until the recommended soil cleanup objectives as outlined in Table 13 are met or until no more VOCs can be effectively removed from the unsaturated zone.

Contamination upgradient of the Site is suspected to be contributing to the ground water contamination at the Site. The Roosevelt Field site, which is one of the major suspected sources of contamination detected in the Pasley upgradient Glacial aquifer ground water well, was listed as a Class II site on the New York State Registry in July 1991. The EPA and NYSDEC will ensure that any sources contributing to contamination at the Site are addressed. In addition, during the remedial design process, EPA and NYSDEC will also ensure that the effectiveness of the Pasley remediation is not influenced by the ground water recovery system at the adjacent Purex Site.

V. SUMMARY OF SITE CHARACTERISTICS

A. Site Geology and Hydrology

Based on soil borings performed during the field investigation, borings for the 30 foot monitoring wells and borings for the 60 foot monitoring wells, revealed only unconsolidated sands and gravels with some silty material at depth. The unconsolidated sediments encountered to a depth of 60 feet belong to the upper Pleistocene undifferentiated glacial outwash deposits or Upper Glacial aquifer. All of the 90 foot wells were screened in the upper portion of the Magothy aquifer (Upper Cretaceous). The Magothy formation consists of fine sand often containing thin, discontinuous layers of silt and clay. The thickness of the Magothy aquifer is estimated at 400 to 500 feet in the Pasley study area. The Upper Glacial aquifer overlies the Magothy aquifer and the two may act as distinct aquifers, or as one, depending upon the degree of hydraulic connection between the two. It is also reported that there is a downward ground water flow direction from the Glacial aquifer to the Magothy aquifer. This downward flow was not always evident throughout the Site. However, in the Site area, it is believed that the two are hydraulically connected. Ground water flows in the Upper Glacial aquifer in a southwesterly direction. The ground water in the Upper Magothy aquifer has a more southerly flow direction than in the Glacial aquifer.

B. Nature and Extent of Contamination

1. Ground Water

Eighteen monitoring wells were installed to evaluate ground water conditions. The monitoring wells were clustered in six locations (three wells each, screened at depths of 30, 60, and 90 feet). The ground water quality of the aquifer underlying the Site, downgradient and upgradient of the Site was assessed by two rounds of water quality sampling in 1990 and a third round of partial sampling in 1991. The on-site shallow ground water monitoring well (MW-2S) indicated highest contamination as compared to the other seventeen monitoring wells. Tables 1 through 3 present the results of the three rounds of ground water sampling. As Tables 1 through 3 present the results of the three rounds of ground water sampling. As shown in these Tables, the most prevalent Volatile Organic Compound (VOC) was trans - 1,2-dichloroethene at a maximum concentration of 37,000 parts per billion (ppb).

A contaminant plume could not be defined by plotting the Total Volatile Organic Compounds (TVOC) associated with the Site study area. This was due in part to the fact that contamination was detected entering the Site at the upgradient well cluster, MW-1 (Figure 3). Therefore, a group of VOCs which were found at the Site but which were not detected in upgradient well cluster well MW-1 were chosen to define the plume associated with the Site.

The total volatile organic index compounds (TVOIC) chosen to define the plume for the Site are the following: chloroform, 1,1 dichloroethene, 1,1 dichloroethane, trans - 1,2-dichloroethene, 1,1,1 trichloroethane, ethylbenzene, toluene, chlorobenzene, and xylene. The TVOIC compounds were found to contribute a major part (88%) of the contamination found in the monitoring well cluster located on-site (MW-2). However, the use of TVOIC does not imply that non-index compounds (TCE, PCE) are absent from the Site.

Through the use of the index compounds, a well defined contaminant plume could be identified for the Site. Figures 4 through 6 display the plume detected based on the data collected.

Figure 4 is a map of the TVOIC plume for the 20 to 30 foot depth in the Upper Glacial aquifer. It appears that the contaminant plume extends approximately 400 feet to the southwest, parallel to the ground water flow direction and the contaminant plume is approximately 390 feet wide. The maximum level of TVOC contamination detected was 37,000 ppb for trans - 1,2, dichloroethene, 370 times the Federal MCL. TCE, although not part of the TVOIC plume, was also detected at a maximum concentration of 320 ppb, 64 times the federal MCL.

Figure 5 is a map of the TVOIC plume for the 50 to 60 foot depth in the Lower Glacial aquifer. The areal extent of the plume at this depth was found to be much smaller, and centered on MW-4I, directly downgradient of the Site. The maximum level of TVOIC contamination in this portion of the plume was 15 ppb for trans-1,2, dichloroethene. TCE was also detected at 15 ppb.

Figure 6 is a map of the TVOIC contamination plume for the 80 to 90 foot depth in the Upper Magothy aquifer, directly downgradient of the Site. No TVOIC contamination was found directly downgradient or on-site. However, 13 ppb of a TVOIC (trans-1,2, dichloroethene) was found at the eastern edge of the study area at monitoring wells MW-3D and MW-5D. This contamination did not appear to result from the Site and did not follow the south southwesterly direction of ground water flow from the Site.

Samples collected from upgradient off-site monitoring wells showed a maximum level of 27 ppb of PCE (monitoring well location MW-1S) and 15 ppb for TCE (monitoring well location MW-1D). Benzene was also detected at a maximum level of 38 ppb (monitoring well location MW-1I). Semi-volatile compounds were detected at low levels in the ground water. The only metal detected above the MCL was chromium at 255 ppb.

2. Soils

Fifty (50) surface soil grab samples were collected and analyzed for volatile organic compounds. These samples were collected from an approximate 30 foot grid pattern at a depth of 6 to 12 inches below grade. Samples were then collected and composited for metals and semi-volatile organic analyses. Each composite sample consisted of soil from five adjacent discrete sample locations. Figure 7 illustrates surface soil sampling locations. There were eight VOCs that appeared at high concentrations in the surface soil that were also detected in the ground water. These were trans-1,2-dichloroethene, 1,1,1-trichloroethane, TCE, PCE, toluene, xylenes, ethylbenzene and chloroform.

Data from the surface soil samples revealed elevated levels of VOCs originating from three primary locations. The concentrations of TVOCs, primarily PCE and trans-1,2-dichloroethene, were detected in concentrations of 1,000 ppb up to concentrations of 603,000 ppb. Additionally, total semi-volatile organic compounds were detected in composite samples collected from ten locations. The highest concentrations of total semi-volatiles were detected in composite samples 8 and 9 (204,000 ppb and 126,500 ppb, respectively) collected on the eastern edge of the Site. The results of the analyses for the soil samples collected are presented in Table 4.

Subsurface samples were also collected from eight locations on-site and five locations off-site. On-site, two samples were collected from each of eight borings at depths of 12 to 14 feet and 23 to 25 feet (or the first two feet below the water table). A total of sixteen samples were collected. These boring locations are identified on Figure 8. Boring BH-8 was subsequently converted into a 90 foot deep monitoring well (MW-2D).

Table 5 contains the results of the on-site subsurface soil samples. Elevated levels of total VOCs (greater than 1,000 ppb) were detected in six of the sixteen samples. Table 6 identifies the boring number, depth, primary contaminant detected and total VOC concentrations.

Analytical results for semi-volatile compounds indicated that two of eight samples collected at the 12 to 14 foot depth exhibited elevated total semi-volatile concentrations (12,500 ppb at BH-2A, and 18,000 ppb at BH-3A). There was only one location (BH-7B) that exhibited a total semivolatile concentration greater than 10,000 ppb (12,710 ppb) at the 23 to 25 feet depth. This data suggest limited downward migration of semi-volatile compounds. The ground water data supports this. MW-2S (the 30 foot shallow well) exhibited 380,000 ppb of total semi-volatile compounds but MW-21 (the 60 foot intermediate well) and MW-2D (the 90 foot well) did not exhibit any semivolatile contamination.

The levels of metals in the subsurface on-site samples were within the common range for soil and were not significantly different from the offsite results.

VI. SUMMARY OF SITE RISKS

EPA conducted a Risk Assessment of the "no-action" alternative to evaluate the potential risk to human health and the environment associated with the current conditions. The Risk Assessment began by selecting chemicals of concern that would be representative of site risks. These chemicals were identified based on factors such as potential for exposure to receptors, toxicity, concentration and frequency of occurrence. Table 7 summarizes the chemical of potential concern selected for each sampled media at the Site. The frequency of detection and concentration range for the contaminants of concern are referenced in Table 8.

EPA's Risk Assessment identified several potential exposure pathways by which the public may be exposed to contaminants released from the Pasley site under current and future land-use scenarios. The actual and potential pathways and population potentially affected are shown in Table 9.

Since access is restricted to the public and the Site is covered by gravel, it is not considered likely that direct contact with the contaminated soil would occur. Therefore, the only complete exposure pathway under current land use conditions is inhalation exposure to chemicals that volatilize from the soil. The reasonable maximum exposure was evaluated. The following pathways were selected for evaluation under the future land use conditions:

- direct contact and incidental ingestion exposure with chemicals present in surface soils,

- ingestion exposures to chemicals present in ground water,

- ingestion and inhalation exposures during home use to chemicals present in ground water, and

- inhalation exposures to chemicals that have volatilized from surface soils.

The potentially exposed populations in all cases were the residents (adult and children) of the neighborhood surrounding the Site and future workers on -site.

Under current EPA guidelines, the likelihood of carcinogenic (cancer causing) and non-carcinogenic effects due to exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site related chemicals would be additive. Thus, carcinogenic and non-carcinogenic risks associated with exposures to individual compounds of concern were added to indicate the potential risks associated with mixtures of potential carcinogens and non-carcinogens, respectively.

Non-carcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake, or Reference Doses (RfDs). RfDs have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of mg/kg-day, are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (e.g., the amount of achemical ingested from contaminated drinking water) are compared with the RfD to derive the hazard quotient for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds across all media that impact a common receptor.

An HI greater than 1 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. The RfDs for the chemicals of potential concern at the Pasley site are presented in Table 10.

A summary of the non-carcinogenic risks associated with the chemicals of potential concern across various exposure pathways is found in Table 11. It can be seen from Table 11 that the greatest non-carcinogenic risk from the Site is associated with ingestion of on-site Upper Glacial aquifer water by on-site workers. The noncarcinogenic effects, exceed 1.0 due primarily to chromium and TCE. The hazard index for soil was calculated to be less than 1.0.

Potential carcinogenic risks were evaluated using the cancer slope factors (Sfs) developed by EPA for the chemicals of potential concern. Sfs have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor (CRAVE) for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. Sfs, which are expressed in units of (mg/kg-day)[-1], are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SF for each indicator chemical is presented in Table 8.

For known or suspected carcinogens, EPA considers excess upper bound individual lifetime cancer risks of between 10[-4] to 10[-6] to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of site related exposure to a carcinogen over a 70-year period under specific exposure conditions at the Site. The total cancer risks at the Pasley Site are outlined in Table 9. The total cancer risk for on-site occupants is 4 x10[-4], based on ingesting untreated ground water from the Upper Glacial aquifer in the vicinity of the Site The total cancer risk for children is 9 x10[-4] in the vicinity of the Site, based on ingesting untreated ground water from the Upper Glacial aquifer.

The cumulative upperbound risks at the Site for on-site occupants under a future potential land use scenario associated with ground water is 9 x10[4], which exceed EPA's risk criteria. In addition, MCLs are currently exceeded for several hazardous substance in ground water. Although the risk posed by the soils are within EPA's acceptable risk criteria, contaminants in the soils, if not addressed, will likely continue to contribute to further contamination of the ground water at the Site.

UNCERTAINTIES

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of potential concern, the period of time over which such exposure would occur, and in the models used, to estimate the concentrations of the chemicals of potential concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper bound estimates of the risk to populations near the site.

A specific uncertainty inherent in the Site risk assessment is that the methodology used to calculate the site risks are site-wide averages, which give a clear overall understanding of site risks. However, as previously stated, EPA has taken into account the sensitivity of the on-site and neighboring populations and has determined that the target risk for the site should be on the order of 10[-6].

Therefore, actual or threatened releases of hazardous substances from this site, if not addressed by the selected alternative or one of the other remedial measures considered, may present an imminent and substantial endangerment to the public health, welfare, and the environment. More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment which can be found in the Administrative Record.

VII. DESCRIPTION OF ALTERNATIVES

Two media-specific remedial actions are required to protect human health and the environment because of the nature of the contamination at the Site. They are numbered to correspond with their presentation in the FS report. On-site soil has been determined to be a source of contamination. Contaminants were found to move from the unsaturated soil to the ground water. Once in the ground water, the contaminants, under the influence of the ground water gradient, migrate from the Site to potential receptors.

Specific remedial action objectives for this Site include:

Ground water - Restoration of ground water quality to its intended use (Class IIb and GA-potential of drinking water) by reducing contaminant levels below State and Federal drinking water standards where possible (see Table 12). In the case where upgradient concentrations prohibit such restoration for a particular compound, the contaminant level will be reduced to the upgradient level.

Soil - In order for the soil not to be a contributor to ground water contamination, the degree to which the contaminants have to be reduced is different for each component (see Table 13). For VOCs (components of interest, trans-1,2-dichloroethene, 1,1,1-trichloroethane, TCE, PCE, toluene and, xylenes), the contaminated soil will be treated until the recommended soil cleanup objectives are met or until no more VOCs can be effectively removed from the unsaturated zone. For the semi- volatile compounds of interest, the contaminants di-n-butyl phthalate, naphthalene, bis-(2-ethylhexyl) phthalate and floranthene have to be reduced below 50 ppm.

The time to implement refers only to the actual construction and remedial action (time to achieve clean up) time and excludes the time needed to design the remedy, procure contracts, and negotiate with the PRPs, all of which can take 15-30 months. The alternatives identified for both soil and ground water are presented below:

Soil Remediation Alternatives:

Alternative 1: No Action

CERCLA requires EPA to consider the "No Action" alternative at every Superfund site to provide a baseline of comparison among alternatives. Under this alternative, the contaminated soil would be left in place without treatment. A long-term monitoring program would be implemented to track the migration of contaminants from the soil into the ground water. In accordance with Section 121 of CERCLA, remedial actions that leave hazardous substances above health-based levels at a site are to be reviewed at least once every five years to assure that the action is protective of human health and the environment. Accordingly, the no action alternative would have to be reviewed by EPA at least once every five years.

Capital cost: $0
Annual Operation
& Maintenance: $7,000
30-year Present
Worth: $66,000

Time to Implement:
  Construction: 2 Months
  Remedial Action: 30 years

Alternative 2- Excavation with Off-site Disposal

This alternative involves the excavation and off-site disposal of the contaminated soil from the eastern and western portions of the Site.

The soil excavation would extend to a depth of 2 feet on the eastern section of the Site, and to a depth of 20 feet on the western portion of the Site, where the soils are highly contaminated. Approximately 10,083 cubic yards of soil contaminated with volatile organic and semi-volatile organic compounds would be excavated and the excavated soil would then be disposed of off-site at a RCRA-permitted landfill.

However, the soil will be tested using the Toxicity Characteristic Leaching Procedure (TCLP), to determine if treatment is necessary prior to disposal to insure that RCRA land disposal restrictions are met. The Land Disposal Restrictions set treatment standards which are based on the best demonstrated available technology (BDAT) for treatment of a given waste. In the case of VOCs in soil, the BDAT treatment method is generally incineration. If incineration is necessary to meet the Land Disposal Restriction's, a dry ash material would be produced which may require further RCRA-permitted disposal to protect the environment. This alternative would then be essentially equivalent to Alternative 3. The actual quantity of soil requiring treatment would be refined during the remedial design.

Capital cost: $8,675,000
Annual Operation
& Maintenance: $0
Present Worth: $8,675,000

Time to Implement: 1-2 Months

Alternative 3- Excavation with Off-site Incineration

This alternative involves the same excavation of contaminated soil as described in Alternative 2. However, the excavated soil would be transported to an off-site facility for incineration. This alternative produces a dry ash material high in metals that would require further RCRA-permitted disposal to protect the environment.

Capital cost: $43,970,000
Annual Operation
& Maintenance: $0
Present Worth: $43,970,000

Time to Implement: 1-2 Months

Alternative 4- Excavation with Solidification/Stabilization

This alternative involves the same excavation of contaminated soil described in Alternatives 2 and 3. However, instead of transporting the soil off-site for treatment/disposal, the solidification/ stabilization process would involve construction of a treatment facility on-site.

The process would involve mixing of the excavated contaminated soils with a solidifying matrix to bind chemically the contaminants to form a "soil concrete." A solidifying matrix might include the use of lime, fly ash or cement to bind the contaminants in a solid block of treated soil. After the soils have been mixed with the solidification matrix, the resulting concrete-like substance would be placed back on the Site for hardening and final compaction.

Before the treatment technology is applied to the area, a treatability study would be performed on the soil to determine the effectiveness of different binders and to obtain additional information required for the development of preliminary design considerations.

Capital cost: $2,108,000
Annual Operation
& Maintenance: $0
Present Worth: $2,108,000

Time to Implement: 6 - 8 Months

Alternative 5- Soil Flushing

This alternative would work in conjunction with the selected ground water remedial alternative. This alternative entails installation of an infiltration system to effect soil flushing for removing the VOCs and semivolatile organics from the soil. This process would involve injection of water or an aqueous solution into the area of soil contamination utilizing infiltration trenches. The injected water would flush the soil contamination into the ground water. The contaminated ground water would be pumped to the surface, treated and recharged to continue the process.

The infiltration trench system would consist of 3 excavated trenches approximately 2 feet in depth backfilled with a coarse stone aggregate. The treated water from the ground water treatment system would be distributed through the gravel trenches by a 4 inch PVC perforated pipe. The 3 trenches would transverse the length of the site and have 20 foot spacing between each trench. The aggregate fill material for the infiltration trenches would be completely surrounded with filter fabric to prevent soil movement into the aggregate. An observation well would be installed in each infiltration trench.

The organic contaminants in the soil at the Site have high solubilities in water and are therefore expected to be flushed from the soil using treated ground water as the washing agent.

Capital cost: $137,000
Annual Operation
& Maintenance: $15,000
Present Worth: $185,000

Time to Implement:
  Construction: 6 Months
  Remedial Action: 4 Years

Alternative 6- Soil Vacuuming

Soil vacuuming would involve the installation of vents in the contaminated unsaturated soil zone. A vacuum would be applied through these vents to volatilize and extract organic compounds from the soil. The organic vapors would be drawn into a collection system where they would be removed through an activated carbon off-gas treatment system. Circulation of air through the soil also would enhance the biodegradation of semi-volatiles in the unsaturated zone.

A small amount of liquid condensate would be generated during the vapor extraction process. With an on-site ground water treatment alternative operating in conjunction with ground water remediation, the condensate may be treated on-site at minimal cost. Off-site disposal of condensate would be necessary if this alternative was implemented before a ground water treatment system was constructed.

Under this alternative approximately thirteen thousand (13,000) cubic yards of contaminated soil would be treated until no more VOCs can be effectively removed from the unsaturated vadose zone.

Subsurface soil sampling would be required to monitor the progress of the soil vapor extraction process.

Capital cost: $882,000
Annual Operation & Maintenance: $664,000
Present Worth: $1,562,000

Time to Implement:
  Construction: 6 Months
  Remedial Action: 2 Years

Alternative 7- Soil Vacuuming and Soil Flushing

This alternative combines Alternatives 5 and 6. The soil flushing technology would remove most volatile and semi-volatile compounds but may not be as effective in removing a group of volatile compounds known as monocyclic aromatic hydrocarbons. Soil vacuuming, however, would perform well in removing monocylic and aliphatic hydrocarbons but may not be as effective for semivolatile compounds. However, it should be noted that the circulation of air through the soil as part of the vacuuming procedure would enhance the biodegradation of the semi-volatiles in the soil.

Under this alternative, soil vacuuming would be performed initially to remove the volatile and semi-volatile compounds. A soil sampling and analysis program would then be implemented to evaluate the success of the soil vacuuming. Soil flushing, used to flush any remaining water-soluble contaminants from the soil, would be performed after soil vacuuming to achieve soil cleanup goals. However, if it is found after the soil vacuuming that concentrations of semi-volatile compounds are decreasing in the soil and are not impacting ground water, the soil flushing technique may be abandoned. Periodic subsurface soil sampling and analysis would be required to monitor the progress of both processes.

Capital cost: $921,000
Annual Operation & Maintenance: $407,000
Present Worth: $1,649,000

Time to Implement:
  Construction: 1 Year
  Remedial Action: 6 Years

Ground Water Treatment Alternatives:

All of the remedial ground water alternatives, except the No Action alternative, involve extraction, treatment and recharge of the treated water to the ground water. The contaminated ground water is recovered using extraction wells at the downgradient end of the contaminant plume. The extracted ground water is treated and returned to the aquifer via a series of recharge wells located upgradient of the contaminant plume and/or infiltration trenches located in the area of soil contamination.

Recent studies have indicated that pumping and treatment technologies may contain uncertainties in achieving the ppb concentrations required under ARARs over a reasonable period of time. However, these studies also indicate significant decreases in contaminant concentrations early in the system implementation, followed by a leveling out. For these reasons, the selected ground water treatment alternative stipulates contingency measures, whereby the groundwater extraction and treatment system's performance will be monitored on a regular basis and adjusted as warranted by the performance data collected during operation. Modifications may include any or all of the following:

a) at individual wells where cleanup goals have been attained, pumping may be discontinued;

b) alternating pumping at wells to eliminate stagnation points;

c) pulse pumping to allow aquifer equilibration and to allow adsorbed contaminants to partition into groundwater; and

d) installation of additional extraction wells to facilitate or accelerate cleanup of the contaminant plume.

If it is determined, on the basis of the preceding criteria and the system performance data, that certain portions of the aquifer cannot be restored to their beneficial use in a reasonable time frame, all or some of the following measures involving long-term management may occur, for an indefinite period of time, as a modification of the existing system:

a) engineering controls such as physical barriers, source control measures, or long-term gradient control provided by low level pumping, as containment measures;

b) chemical-specific ARARs may be waived for the cleanup of those portions of the aquifer based on the technical impracticability of achieving further contaminant reduction;

c) institutional controls, in the form of local zoning ordinances, may be recommended to be implemented and maintained to restrict access to those portions of the aquifer which remain above remediation goals;

d) continued monitoring of specified wells; and

e) periodic reevaluation of remedial technologies for groundwater restoration.

The decision to invoke any or all of these measures may be made during a periodic review of the remedial action, which will occur at intervals of no less often than every five years.

Alternative 1- No Action

CERCLA, as amended, requires that the "no-action" alternative be consideredat every site. Under this alternative, no remediation measures would be implemented at this time. This alternative allows for natural attenuation of the contaminants and includes institutional controls and monitoring. This alternative also would include restrictions on future ground water use and a pubic awareness program.

Periodic ground water sampling and analysis would be required to monitor the progress of natural attenuation. In effect, this no action alternative is essentially equivalent to the no action alternative under the soil remediation alternative section of this ROD.

Capital cost:	$0
Annual Operation & Maintenance:	$7,000
10-year	$43,000
30-year Present Worth:	$66,000

Time to Implement:	
Construction:	2 Months
Remedial Action:	30 Years

Alternative 2- Metals Precipitation/ Powdered Activated Carbon Treatment (PACT)/GAC Polishing

This alternative utilizes three collection wells for the extraction of contaminated ground water followed by on-site treatment. To contain and remove ground water from the contamination plume, it is estimated that it would be necessary to pump 450 gallons per minute (GPM) from three extraction wells placed at depths of 60 feet. Ground water would be pumped from the extraction well system to a holding/equalization tank. The pumped ground water would then enter the treatment plant where it would go through an initial two stage precipitation and clarification/filtration unit for the removal of all heavy metals. The heavy metals treatment would be followed by powdered activated carbon treatment (PACT) to remove volatile organic and semivolatile organic compounds.

The granular activated carbon (GAC) adsorption system that follows the PACT would be used, if necessary, as a final polishing step to remove any remaining organic compounds in order to achieve ARARs. Carbon adsorption would remove organic compounds from waste water onto the activated carbon. The exact amount of treated water that would be recharged to the ground water either by the recharge wells or by the infiltration trenches would be determined in the remedial design.

The by-products resulting from the treatment system include metals sludge, filtered solids, and spent granular activated carbon. The sludge would be transported off-site for treatment and disposal at a RCRA-permitted facility.

Periodic sampling and analysis of the influent and effluent would be required to monitor the progress of this treatment alternative.

Capital cost: $6,465,000
Annual Operation
& Maintenance: $1,623,000
10-year Present Worth: $16,438,00
30-year Present Worth: $21,765,000

Time to Implement:
  Construction: 6 Months
  Remedial Action: 10-40 Years

Alternative 3- Metals Precipitation/Air Stripping with Fume Incineration/Granular Activated Carbon(GAC) Polishing

Under this alternative, the same extraction system is used to withdraw the contaminated ground water as that of Alternative 2. This alternative differs in that after metals removal, the effluent from the metals system would be pumped into an air stripper that would be effective in removing the VOCs from the water. Air stripping is a mass transfer process in which volatile contaminants in water are transferred to the gaseous phase.

Fume incineration would be used to treat any gaseous discharge from the air stripper. Fume incineration units are chambers heated by supplemental fuel which provide high enough temperatures and retention time to combust the contaminants in the off-gas. Temperatures in the combustion chamber range from 1200 F to 1800 F.

The liquid phase from the air stripper would be pumped into the granular activated carbon (GAC) adsorption system that would be used as a final polishing step to remove any remaining organic compounds. Treatment residuals include spent carbon from the fume incinerator and spent carbon from the liquid phase carbon polishing.

Periodic sampling and analysis of the influent and effluent would be required to monitor the progress of the treatment alternative. During the periodic sampling and analyses of the influent, if it is determined that metals concentrations are below standards and low enough not to cause malfunction of the air stripper, the metals precipitation portion of the treatment train may be eliminated.

Capital cost: $3,199,000
Annual Operation
& Maintenance: $1,069,000
10-year Present Worth: $9,768,00
30-year Present Worth: $13,276,000

Time to Implement:
Construction: 2 Years
Remedial Action: 10-40 Years

Alternative 4-Metals Precipitation/Air Stripping with Vapor Phase Granular Activated Carbon/GAC Polishing

This treatment alternative is the same as Alternative 3 except that the off-gas emissions from the air-stripper would be treated by passing the air stream through vapor phase carbon adsorption columns, instead of the fume incinerator. In this alternative, contaminated air flows through the columns or carbon bed, and organics adsorb onto the carbon. The treated air then leaves the carbon bed with reduced concentrations of contaminants until the carbonadsorbent cannot take on additional organics. Removal efficiencies utilizing vapor phase activated carbon have been reported at greater than 98 percent.

Additional sludges would be generated from the carbon adsorption columns.

Capital cost: $4,280,000
Annual Operation
& Maintenance: $829,000
10-year Present Worth: $9,374,000
30-year Present Worth: $ 12,095,000

Time to Implement:
Construction: 2 Years
Remedial Action: 10-40 Years

Alternative 5- Metals Precipitation/UV Peroxidation

Under this alternative, the same extraction system is used to withdraw the contaminated ground water as that of Alternative 2. UV Peroxidation is an innovative technology for cleanup and destruction of organic compounds in ground water. In this process, ultraviolet light reacts with hydrogen peroxide to form hydroxyl radicals. These powerful chemical oxidants then react with the organic contaminants in water. The end products of the oxidation process are carbon dioxide (CO[2]), water, and hydrochloric acid. Chemical oxidation would reduce the toxicity and volume of contaminated ground water at the Site.

Periodic sampling and analysis of the influent and effluent would be required to monitor the progress of this treatment alternative.

Capital cost: $4,421,000
Annual Operation
& Maintenance: $1,459,000
10-year Present Worth: $13,386,000
30-year Present Worth: $18,175,000

Time to Implement:
Construction: 1 Year
Remedial Action: 10-40 Years

VIII. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

In accordance with the NCP, a detailed analysis of each alternative is required. The purpose of the detailed analysis is to assess objectively the alternatives with respect to nine evaluation criteria that encompass statutory requirements and include other gauges of the overall feasibility and acceptability of remedial alternatives. This analysis is comprised of an individual assessment of the alternatives against each criterion and a comparative analysis designed to determine the relative performance of the alternatives and identify major trade-offs, that is, relative advantages and disadvantages, among them.

The nine evaluation criteria against which the alternatives are evaluated are as follows:

Threshold Criteria - The first two criteria must be satisfied in order for an alternative to be eligible for selection.

1. Overall Protection of Human Health and the Environment:
This criterion addresses whether or not a remedy provides adequate protection and describes how risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with ARARs:
This criterion addresses whether or not a remedy will meet all the ARARs of other federal or State environmental statutes and/or provide grounds for invoking a waiver.

Primary Balancing Criteria - The next five "primary balancing criteria" are to be used to weigh major trade-offs among the different hazardous waste management strategies.

3. Long-term Effectiveness and Permanence:
This criterion refers to the ability of the remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

4. Reduction of Toxicity, Mobility, or Volume:
This criterion addresses the degree to which a remedy utilizes treatmenttechnologies to reduce the toxicity, mobility, or volume of contaminants.

5. Short-term Effectiveness:
This criterion considers the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are met.

6. Implementability:
This criterion examines the technical and administrative feasibility of a remedy, including availability of materials and services needed to implement the chosen solution.

7. Cost:
This criterion includes capital and O&M costs.

Modifying Criteria - The final two criteria are regarded as "modifying criteria," and are to be taken into account after the previous criteria have been evaluated. They are generally to be focused upon after public comment is received.

8. State Acceptance:
This criterion indicates whether, based on its review of the FS and Proposed Plan, the State concurs with, opposes, or has no comment on the proposed alternative.

9. Community Acceptance:
This criterion indicates whether, based on its review of the FS and Proposed Plan, the public concurs with, opposes, or has no comment on the proposed alternative. Comments received during this public comment period, and the EPA's responses to those comments, are summarized in the Responsiveness Summary which is appended to this ROD.

The following is a summary of the comparison of each alternative's strengths and weaknesses with respect to the nine evaluation criteria.

1. Overall Protection of Human Health and the Environment

Soil Remediation Alternatives

All the soil remediation alternatives are considered protective of human health and the environment except Alternative 1. Alternative 1 is not protective of human health and the environment because it does not eliminate, reduce or control the contaminants at the Site. Since it does not meet this threshold criterion, Alternative 1 will not be discussed further.

Alternatives 2 and 3 would not require any long term maintenance or deed restrictions. However, Alternatives 2 and 3 involve transportation of contaminated soil off-site, and increase the potential risks associated with dust generated during excavation and/or transportation. Alternative 4 would require long-term monitoring to ensure the stability of the solidification/stabilization process. Alternatives 5, 6, and 7 reduce potential human health risks by utilizing treatment to remove contaminants from the soil.

Ground Water Treatment Alternatives

All the ground water alternatives, except the No Action alternative, are considered protective over the long term and would provide overall protection by effectively removing contaminants so that the ground water could be used for potable purposes, if desired. All the treatment alternatives would result in permanent protection of human health and the environment through the reduction in toxicity, mobility, and volume of the contaminants.

However, Alternative 2, by using the PACT system, has a disadvantage over Alternatives 3, 4, and 5, namely, additional sludges would be produced with the activated carbon system thus posing an added minor risk to workers and the environment, especially during the transportation of the sludges for disposal off-site.

Alternatives 3 and 4 pose additional risks associated with air emissions. However, the vapor phase treatment would eliminate any risk associated with air emissions. Alternative 5, by using UV peroxidation has certain advantages over the other alternatives, since it would provide complete destructionof VOCs, thus reducing waste sludges that would otherwise require further treatment and disposal.

2. Compliance With ARARs

Soil Remediation Alternatives

There are no chemical-specific ARARs for soils. It is anticipated that any action specific ARARs associated with soil treatment can be met by each alternative. However, Alternative 4 would require that treated soil be tested using the Toxicity Characteristic Leaching Procedure (TCLP), before backfilling, to insure that RCRA land disposal restrictions are met. At this point in time, a determination cannot be made whether these levels can be met. If levels cannot be met, a treatability variance may be required.

Ground Water Treatment Alternatives

Alternatives 2 through 5 achieve ARARs to a similar degree. None of the alternative would achieve chemical-specific ARARs for ground water as a potential drinking water supply. Achieving chemical-specific ARARs for ground water is dependent on remediation of upgradient sources. This is due to the fact that regardless of the Site cleanup, upgradient sources will continue to be a source of contamination to the ground water beneath the Pasley Site. EPA believes that the proposed remedial action will result in attainment of chemical specific ground water ARARs providing upgradient sources are remediated so that they no longer impact the Upper Glacial aquifer.

EPA may invoke a technical waiver of the chemical-specific ARARs if the remediation program indicates that reaching MCLs in the glacial aquifer is technically impracticable due to the presence of upgradient sources.

Until upgradient sources are remediated so that they no longer impact the Site, EPA will attain ground water cleanup levels which are equal to upgradient concentrations. The remedial action will attain ground water cleanup levels equal to upgradient concentrations for certain contaminants.

Alternatives 2 through 5 would meet action-specific ARARs as outlined in Table 2-1 of the FS Report. Under these alternatives, treated ground water would meet pertinent federal and state ARARs.

3. Long-term Effectiveness

Soil Remediation Alternatives

Alternatives 5, 6 and 7 afford a greater degree of long-term effectiveness and permanence than Alternatives 2 or 4. Alternative 4 would require institutional controls for land use, which would need to be enforced for complete effectiveness.

Alternative 3 is the only alternative that removes all contaminants from the Site and provides total destruction of the contamination sources.

Ground Water Treatment Alternatives

Long-term effectiveness of the ground water alternatives requires the remediation of upgradient contamination. Alternatives 2 through 5 provide long-term effectiveness because these alternatives are designed to reduce contaminant concentrations in the treated ground water to levels that are protective of human health and the environment before discharge. Alternative 1 may present a long-term risk because it relies on natural attenuation to reduce contaminant concentrations.

4. Reduction of Toxicity, Mobility, or Volume

Soil Remediation Alternatives

Alternative 2 does not utilize treatment to reduce the toxicity, mobility or volume of the contaminants. Alternative 3, excavation and off-site incineration, would provide the greatest degree of destruction of contaminants and therefore, the greatest degree of reduction of toxicity, mobility, and volume. However, Alternative 3 would produce ash that would require disposal. In addition, Alternative 4 would not cause a reduction in toxicity but would result in a reduction in mobility. Alternative 4 would increase the soil volume by the introduction of a solidifying matrix.

Alternatives 5 and 6 may not provide as great a degree of contaminant destruction or reduction in contaminant mobility as Alternatives 3 and 4, respectively. However, they are expected to provide an adequate degree of contaminant destruction by gradual reduction of mobility, toxicity and volume. Alternatives 5 and 7 involves soil flushing and must be done in conjunction with ground water extraction and treatment. These technologies used in combination would provide sufficient reduction of mobility, toxicity and volume.

Ground Water Treatment Alternatives

Alternatives 2 through 5 would control the mobility of contaminants contributed by the Site. These alternatives also would significantly reduce or eliminate the toxicity and volume of contaminated ground water by treatment to remove metals, semi-volatile and volatile organic compounds.

However, Alternative 5 by utilizing the UV peroxidation is more advantageous than Alternatives 2 through 4 because it provides a total chemical breakdown of the VOCs into less toxic compounds without any accumulation of sludges and waste residuals.

5. Short-term Effectiveness

Soil Remediation Alternatives

Alternatives 2, 3, and 4, the excavation alternatives, may potentially increase the risk to the community during their implementation because they remove contaminants and create new potential exposure routes not identified in the Risk Assessment. However, necessary measures, such as implementation of proper safety procedures and on-site monitoring would be taken to minimize any significant risk from exposure to the contaminants. Alternatives 5, 6 and 7 would have the least short-term effect on the community during implementation, since they would be conducted in-situ. All the alternatives have minor short-term effects on the surrounding community, including increased vehicular traffic, a slight increase in noise level from construction equipment, and fugitive dust emissions.

Ground Water Treatment Alternatives

The extraction and treatment alternatives for ground water involve little disturbance to contaminated subsurface areas; therefore the potential risks to site workers and the surrounding community are minor and can be managed. The potential short-term risks to human health and the environment are also anticipated to be low for each of these alternatives.

6. Implementability

Soil Remediation Alternatives

All the alternatives are technically and administratively feasible. Of the soil remediation alternatives, Alternatives 2 and 3 would require the least time to implement. Alternative 4 would take more time to implement since it would require a treatability study and special equipment to treat the soils.

The potential impacts that Alternatives 5 and 7 may have on ground water flow regimes make these alternatives more complex and difficult to implement than Alternative 6. The soil flushing alternatives, Alternatives 5 and 7, require coordination with the ground water treatment alternative.

Ground Water Treatment Alternatives

The treatment components of Alternatives 2 through 4 are proven effective for all contaminants of concern and should be easiest to implement because they rely on well understood and readily available commercial components. Alternative 5 relies on an innovative technology for treatment. Treatability studies would be required to determine the level of effectiveness that can be provided by this technology.

7. Cost

Individual cost breakdowns are included in the Description of Alternatives section of this ROD. Capital cost is the value for building the remedial action. Annual operation and maintenance (O&M) costs are used to quantify the yearly expense of O&M. The 30 year present worth cost is then calculated and expressed in current value terms.

Soil Remediation Alternatives

The present worth cost of Alternative 7 for soils is approximately $1,649,000. The estimated cost range of the alternatives is from a present worth of $66,000 (no action alternative) to $43,970,000 (excavation and off-site incineration).

Ground Water Alternatives

The 30-year present worth cost of Alternative 4 for ground water is approximately $12,095,000. The estimated cost range of the alternatives is from a 30-year present worth of $66,000 (no action alternative) to $21,765,000 (PACT).

8. State Acceptance

The State of New York supports the selected remedy presented in this ROD. A copy of their concurrence letter is appended to this ROD.

9. Community Acceptance

The local community accepts the selected remedy. All comments that were received from the public during the public comment period are addressed in the attached Responsiveness Summary.

IX. THE SELECTED REMEDY

Based upon consideration of the results of the RI/FS reports and after careful consideration of all reasonable alternatives, EPA recommends the following alternative for cleaning up the contaminated soils and ground water at the Pasley Solvents and Chemicals Superfund Site:

Soil Remediation Alternative 7: Soil Vacuuming and Soil Flushing in conjunction with Ground Water Treatment Alternative 4: Extraction/Metals Precipitation/Air Stripping with Vapor Phase Granular Activated Carbon/GAC Polishing/Recharge.

The soil remediation alternative, soil vacuuming, has been demonstrated to be effective primarily for removal of VOCs from the unsaturated zone. Circulation of air through the soil during the vacuuming process also would enhance the biodegradation of semi-volatiles in the unsaturated zone. If sampling after the conclusion of soil vacuuming demonstrates that concentrations of semi-volatile compounds are decreasing in the soil and are still not impacting ground water, the soil flushing portion (for the removal of semi-volatiles in soil) of Alternative 7 may be eliminated.

Specifically, the preferred alternatives will involve the following:

1) Treatment of approximately thirteen thousand (13,000) cubic yards of contaminated soil by soil vacuuming and/or by soil flushing, as necessary, until the recommended soil cleanup objectives are met or until no more VOCs can be effectively removed from the unsaturated (vadose) zone;

2) Disposal of treatment residuals at a RCRA Subtitle C facility;

3) Remediation of the ground water by extraction/metals precipitation/air stripping with vapor phase granular activated carbon/GAC polishing/ and recharge to meet Federal and State drinking water MCLs, except in those cases where upgradient concentrations are above such standards;

4) Pumping of contaminated ground water from three extraction wells at a combined flow rate of approximately 450 gpm. The actual pumping rate will be determined during the Remedial Design;

5) Long-term monitoring to track the migration and concentrations of the contaminants of concern;

6) Implementation of a system monitoring program that includes the collection and monthly analysis of the influent and effluent from the treatment systems and periodic collection of well-head samples.

7) Evaluation of Site conditions at least once every five years to determine if a modification to the selected alternative is necessary; and

8) The option for EPA to invoke a technical waiver of the ground water ARARs if the remediation program indicates that reaching MCLs in the glacial aquifer is technically impracticable.

The selected ground water alternative also stipulates contingency measures, outlined under Ground Water Treatment Alternatives in the Description of Alternatives section of this ROD, whereby the groundwater extraction and treatment system's performance will be monitored on a regular basis and adjusted as warranted by the performance data collected during operation. If it is determined, in spite of any contingency measures that may be taken, that portions of the aquifer cannot be restored to its beneficial use, ARARs may be waived based on technical impracticability of achieving further contaminant reduction. The decision to invoke a contingency measure may be made during periodic review of the remedy, which will occur at intervals of no less often than every five years.

X. STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, Section 121 of the CERCLA establishes several other statutory requirements and preferences. These specify that, when complete, the selected remedial action for a site must comply with applicable or relevant and appropriate environmental standards established underfederal and state environmental laws unless a statutory waiver is justified. The selected remedy also must be cost effective and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Finally, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous substances as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

1. Protection of Human Health and the Environment

The selected remedy for ground water is protective of human health and the environment. The selected ground water remedy eliminates all outstanding threats posed by the Site. The selected ground water remedy reduces contamination to health based levels except in those cases where upgradient concentrations exceed those levels. Contamination upgradient of the Site is suspected to be contributing to the ground water contamination at the Site. The Roosevelt Field Site, which is one of the major suspected sources of the contamination detected in the Pasley upgradient ground water monitoring well, was listed as a Class II site on the New York State Registry in July 1991. The EPA and NYSDEC will ensure that any sources contributing to contamination of the Site are addressed.

The selected remedy for soils is also fully protective of human health and the environment. The soil remedy removes a continuing threat to ground water posed by the on-site contaminated soils.

2. Compliance with Applicable or Relevant and Appropriate Requirements

At the completion of response actions, the selected remedy will have complied with the following ARARs and considerations:

Action-specific ARARs:

Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (40 CFR 141.11-141.16) and 6 NYCRR Ground Water Quality Regulations (Parts 703.5, 703.6, 703.7) and the NYS Sanitary code (10 NYCRR part 5) provide standards for toxic compounds for public drinking water supply systems. The recharge process for treated ground water will meet underground injection well regulations under 40 C.F.R. 147. The extracted ground water will be treated to meet the above referenced drinking water standards prior to recharge.

Spent carbon from the ground water treatment system for removal of organics will be disposed of off-site, as well as any treatment residuals, consistent with applicable RCRA land disposal restrictions under 40 C.F.R. 268.

Chemical-specific ARARs:

Since the ground water at the Site is classified as IIb (GA by NYSDEC), drinking water standards are relevant and appropriate. Again, these include SWDA MCLs and 6NYCRR Ground Water Quality Regulations. However, achieving chemical-specific ARARs for ground water is dependent on remediation of upgradient sources. This is due to the fact that regardless of the Site cleanup, upgradient sources will continue to be a source of contamination to the ground water beneath the Site. EPA believes that the proposed remedial action will result in attainment of chemical specific ground water ARARs providing upgradient sources are remediated so that they no longer impact the Upper Glacial aquifer.

EPA may invoke a technical waiver of the chemical-specific ARARs if the remediation program indicates that reaching MCLs in the Upper Glacial aquifer is technically impracticable.

Until upgradient sources are remediated so that they no longer impact the Site, the remedial action will attain ground water cleanup levels equal to upgradient concentrations for certain contaminants.

3. Cost Effectiveness

The selected remedy is cost effective and provides the greatest overall protectiveness proportionate to costs. Soil vacuuming and soil flushing, at a present worth of $1,649,000 is more cost effective than excavation with off-site disposal, at a present worth of $8,675,000, and offers an equivalent degree of protectiveness. The $12,095,000, 30-year present worth cost associated with the selected ground water treatment, is the most cost effective of all the alternatives. The $12,095,000 cost associated with ground water treatment is cost effective in that the remedy provides the greatest overall protectiveness compared with the $66,000 cost associated with no action, which is not considered to be protective.

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

The selected remedies represent the maximum extent to which permanent solutions and alternative treatment technologies can be utilized in a cost effective manner for the Site. This is evident by the selection of soil vacuuming, clearly an innovative technology. After treatment is complete, the soil will no longer be contributing contaminants to the underlying aquifer.

The ground water treatment used in the selected remedy will reduce the contaminants of concern to levels protective of human health prior to recharge. In addition, of those alternatives which are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. The modifying considerations of State and community acceptance also played a part in this determination.

The long-term effectiveness and permanence of the selected soil remedy is very high in that the surface soils would be treated and the contaminated areas restored. Ground water treatment also offers long-term effectiveness and permanence in that the remedial goal is to achieve ARARs except in those cases where upgradient concentrations prohibit such restoration.

Reduction of toxicity, mobility, or volume is also evident in the selected remedy. The treatment of on-site soil by soil vacuuming and/or soil flushing will effectively reduce the mobility of contaminants in surface soils. Ground water treatment has the goal of reducing contaminant concentrations in the aquifer to meet ARARs, effectively diminishing both toxicity and volume.

The short-term effectiveness and implementability of the selected soil remedy is high in that it would be conducted in-situ. The short-term effectiveness and implementability of the ground water treatment alternative is high in that there is no exposure to contaminated ground water during implementation and the remedy employs standard equipment and well developed technologies. As stated above, the cost associated with the selected remedy is the least costly of each alternative that is protective of human health and the environment and provides for treatment of the most hazardous substances.

5. Preference for Treatment as a Principal Element

By treating the VOC contaminated soils and ground water by means of in- situ soil vacuuming and/or soil flushing, and air stripping respectively, the selected remedy addresses the principal threat posed by the Site through the use of treatment technologies. Therefore, the statutory preference for remedies that employ treatment as a principal element is satisfied.

XI. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Pasley Solvents and Chemicals Site was released to the public on February 14, 1992. The Proposed Plan identified soil remediation Alternative 7 and ground water remediation Alternative 4 as the preferred alternatives. EPA reviewed all comments submitted. Upon review of the comments, it was determined that no significant changes to the preferred remedy, as it was originally identified in the Proposed Plan, were necessary.

APPENDIX 1

APPENDIX 2

APPENDIX 3

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 - 7010

Thomas C. Jorling
Commissioner

MAR 18 1992

Ms. Carole Petersen
Chief
NY/Caribbean Superfund Branch II
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Dear Ms. Petersen:

Re: Pasley Solvents & Chemicals Site ID No. 130016 Draft Record of Decision

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the March 13, 1992 draft Record of Decision (ROD) for the Pasley Solvents and Chemicals site, as telexed to us on March 16, 1992.

The remedy presented in the draft ROD includes treating contaminated soil via soil vacuuming followed by soil flushing, if necessary, and treating groundwater via metals precipitation/air stripping with vapor phase granular activated carbon/GAS polishing.

As per conversations between our respective staff, this March 13 draft reflects the several changes made to the March 5, 1992 draft. Consequently, the NYSDEC concurs with the draft ROD for the Pasley Solvents and Chemicals site.

Sincerely,

Edward O. Sullivan
Deputy Commissioner

cc: M. Hauptmann, USEPA-Region II
S. Henry, USEPA-Region II

Document Number: PAI-001-0001 To 0112

Date: 08/30/88

Title: Final Field Operations Plan for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Blanar, Edward W: ICF Technology
Recipient: none: US EPA
Document Number: PAI-001-0113 To 0275

Date: 08/30/88

Title: Final Work Plan for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Blanar, Edward W: ICF Technology
Recipient: none: US EPA

Document Number: PAI-001-0276 To 0341

Date: 09/01/88

Title: Final Work Plan for Tank Demolition and Removal at the Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Russell, William 6: EA Engineering Science & Technology
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-0342 To 0616

Date: 03/01/89

Title: Soil Vapor Contaminant Assessment for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Schultz, James A: EA Engineering Science & Technology
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-0617 To 0762

Date: 10/01/91

Title: Remedial Investigation Report - Pasley Solvents & Chemicals Site, Town of Hempstead, Long Island NY

Type: REPORT
Author: none: Metcalf & Eddy
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-0763 To 0783

Date: 11/08/90

Title: (Letter forwarding attached EPA comments on the Draft Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-0784 To 1009

Date: 03/14/91

Title: (Letter forwarding data, received from the Nassau County Department of Public Works for the Mitchel Field site, to be incorporated into the Pasley Remedial Investigation Report, and transmitting attached Monitoring Program Sampling Report)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1010 To 1013

Date: 03/21/91

Title: (Letter forwarding attached analytical results of groundwater samples from existing wells at the former Texaco service station, Garden City NY)

Type: CORRESPONDENCE
Author: Brooker, Lauren J: Star Enterprise
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-1014 To 1017

Date: 05/30/91

Title: (Letter forwarding attached comments from EPA about Metcalf & Eddy's Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1018 To 1018

Date: 07/19/91

Title: (Letter requesting information about any hazardous waste site located near Stewart Avenue which may be upgradient of the Pasley Solvents & Chemicals site)

Type: CORRESPONDENCE
Author: Henry, Sherrel D: US EPA
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-1019 To 1031

Date: 10/04/91

Title: (Letter forwarding attached EPA comments on the third revision of the June 1991 Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1032 To 1032

Date: 12/05/91

Title: (Letter approving the revised Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1033 To 1326

Date: 02/01/92

Title: Feasibility Study Report - Pasley Solvents and Chemicals Site, Town of Hempstead, Nassau County NY

Type: REPORT
Author: Roth, Robert J: Metcalf & Eddy
Recipient: none: US EPA

Document Number: PAI-001-1327 To 1346

Date: 02/01/92

Title: Superfund Proposed Plan - Pasley Solvents and Chemicals Site, Town of Hempstead NY

Type: PLAN
Author: none: US EPA
Recipient: none: none

Document Number: PAI-001-1347 To 1357

Date: 10/24/91

Title: (Letter forwarding attached EPA comments on the Draft Feasibility Study Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1358 To 1360

Date: 12/18/91

Title: (Letter forwarding attached comments on the Feasibility Study Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1361 To 1362

Date: 12/27/91

Title: (Letter containing NYSDEC and NYSDOH comments on the EPA Proposed Plan for the site)

Type: CORRESPONDENCE
Author: O'Toole, Michael J Jr: NY Dept of Environmental Conservation
Recipient: Hauptman, Mel: US EPA

Document Number: PAI-001-1363 To 1364

Date: 05/31/91

Title: (Letter stating what has to be done to stop the dissolved product plume from moving onto the property of the Texaco service station)

Type: CORRESPONDENCE
Author: Mirza, Misbahuddin K: NY Dept of Environmental Conservation
Recipient: Brooker, Lauren J: Star Enterprise

Document Number: PAI-001-1365 To 1366

Date: 06/17/91

Title: (Letter containing response to NYSDEC correspondence regarding the former Texaco service station at the site)

Type: CORRESPONDENCE
Author: Brooker, Lauren J: Star Enterprise
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-1367 To 1384

Date: 08/19/88

Title: Administrative Order on Consent in the Matter of Commander Oil Corporation

Type: LEGAL DOCUMENT
Author: Muszynski, William J: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1385 To 1385

Date: 07/11/91

Title: (Letter regarding the Mitchel Field facility that Purex has constructed pursuant to a consent judgment)

Type: CORRESPONDENCE
Author: Smith, Jeffrey M: Purex Industries Inc
Recipient: Henry, Sherrel D: US EPA

Document Number: PAI-001-1386 To 1395

Date: 05/01/91

Title: Engineering Bulletin: In Situ Soil Vapor Extraction Treatment

Type: CORRESPONDENCE
Author: none: US EPA

Recipient: none: none

Document Number: PAI-001-1396 To 1437

Date: 03/10/92

Title: (Transcript of the 03/05/92 Public Meeting for the Pasley Solvents & Chemicals site)

Type: LEGAL DOCUMENT
Author: Lewis, Virginia E: court reporter
Recipient: none: US EPA

Document Number: PAI-001-1367 To 1384

Date: 08/19/88

Title: Administrative Order on Consent in the Matter of Commander Oil Corporation

Type: LEGAL DOCUMENT
Author: Muszynski, William J: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-0001 To 0112

Date: 08/30/88

Title: Final Field Operations Plan for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Blanar, Edward W: ICF Technology
Recipient: none: US EPA

Document Number: PAI-001-0113 To 0275

Date: 08/30/88

Title: Final Work Plan for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Blanar, Edward W: ICF Technology
Recipient: none: US EPA

Document Number: PAI-001-0276 To 0341

Date: 09/01/88

Title: Final Work Plan for Tank Demolition and Removal at the Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Russell, William G: EA Engineering Science & Technology
Recipient: none: Commander Oil Corporation
Document Number: PAI-001-0342 To 0616

Date: 03/01/89

Title: Soil Vapor Contaminant Assessment for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Schultz, James A: EA Engineering Science & Technology
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-0763 To 0783

Date: 11/08/90

Title: (Letter forwarding attached EPA comments on the Draft Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-0784 To 1009

Date: 03/14/91

Title: (Letter forwarding data, received from the Nassau County Department of Public Works for the Mitchell Field site, to be incorporated into the Pasley Remedial Investigation Report, and transmitting attached Monitoring Program Sampling Report)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1010 To 1013

Date: 03/21/91

Title: (Letter forwarding attached analytical results of groundwater samples from existing wells at the former Texaco service station, Garden City NY)

Type: CORRESPONDENCE
Author: Brooker, Lauren J: Star Enterprise
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation
Document Number: PAI-001-1386 To 1395

Date: 05/01/91

Title: Engineering Bulletin: In Situ Soil Vapor Extraction Treatment

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: PAI-001-1014 To 1017

Date: 05/30/91

Title: (Letter forwarding attached comments from EPA about Metcalf & Eddy's Remedial Investigation Report for the site)

Type: CORRESPONDENCE

Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1363 To 1364

Date: 05/31/91

Title: (Letter stating what has to be done to stop the dissolved product plume from moving onto the property of the Texaco service station)

Type: CORRESPONDENCE
Author: Mirza, Misbahuddin K: NY Dept of Environmental Conservation
Recipient: Brooker, Lauren J: Star Enterprise

Document Number: PAI-001-1365 To 1366

Date: 06/17/91

Title: (Letter containing response to NYSDEC correspondence regarding the former Texaco service station at the site)

Type: CORRESPONDENCE
Author: Brooker, Lauren J: Star Enterprise
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-1385 To 1385

Date: 07/11/91

Title: (Letter regarding the Mitchell Field facility that Purex has constructed pursuant to a consent judgment)

Type: CORRESPONDENCE
Author: Smith, Jeffrey M: Purex Industries Inc
Recipient: Henry, Sherrel D: US EPA

Document Number: PAI-001-1018 To 1018

Date: 07/19/91

Title: (Letter requesting information about any hazardous waste site located near Stewart Avenue which may be upgradient of the Pasley Solvents & Chemicals site)

Type: CORRESPONDENCE
Author: Henry, Sherrel D: US EPA
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-0617 To 0762

Date: 10/01/91

Title: Remedial Investigation Report - Pasley Solvents & Chemicals Site, Town of Hempstead, Long Island NY

Type: REPORT
Author: none: Metcalf & Eddy
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-1019 To 1031

Date: 10/04/91

Title: (Letter forwarding attached EPA comments on the third revision of the June 1991 Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1347 To 1357

Date: 10/24/91

Title: (Letter forwarding attached EPA comments on the Draft Feasibility Study Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1032 To 1032

Date: 12/05/91

Title: (Letter approving the revised Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1358 To 1360

Date: 12/18/91

Title: (Letter forwarding attached comments on the Feasibility Study Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1361 To 1362

Date: 12/27/91

Title: (Letter containing NYSDEC and NYSDOH comments on the EPA Proposed Plan for the site)

Type: CORRESPONDENCE
Author: O'Toole, Michael J Jr: NY Dept of Environmental Conservation
Recipient: Hauptman, Mel: US EPA

Document Number: PAI-001-1033 To 1326

Date: 02/01/92

Title: Feasibility Study Report - Pasley Solvents and Chemicals Site, Town of Hempstead, Nassau County NY

Type: REPORT
Author: Roth, Robert J: Metcalf & Eddy
Recipient: none: US EPA

Document Number: PAI-001-1327 To 1346
Date: 02/01/92

Title: Superfund Proposed Plan - Pasley Solvents and Chemicals Site, Town of Hempstead NY

Type: PLAN
Author: none: US EPA
Recipient: none: none

Document Number: PAI-001-1396 To 1437

Date: 03/10/92

Title: (Transcript of the 03/05/92 Public Meeting for the Pasley Solvents & Chemicals site)

Type: LEGAL DOCUMENT
Author: Lewis, Virginia E: court reporter
Recipient: none: US EPA

Document Number: PAI-001-0617 To 0762

Date: 10/01/91

Title: Remedial Investigation Report - Pasley Solvents & Chemicals Site,

Type: REPORT
Author: none: Metcalf & Eddy
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-1327 To 1346

Date: 02/01/92

Title: Superfund Proposed Plan - Pasley Solvents and Chemicals Site, Town of Hempstead NY

Type: PLAN
Author: none: US EPA
Recipient: none: none

Document Number: PAI-001-1386 To 1395

Date: 05/01/91

Title: Engineering Bulletin: In Situ Soil Vapor Extraction Treatment

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: PAI-001-0001 To 0112

Date: 08/30/88

Title: Final Field Operations Plan for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Blanar, Edward W: ICF Technology
Recipient: none: US EPA

Document Number: PAI-001-0113 To 0275

Date: 08/30/88

Title: Final Work Plan for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Blanar, Edward W: ICF Technology
Recipient: none: US EPA

Document Number: PAI-001-1010 To 1013

Date: 03/21/91

Title: (Letter forwarding attached analytical results of groundwater samples from existing wells at the former Texaco service station, Garden City NY)

Type: CORRESPONDENCE
Author: Brooker, Lauren J: Star Enterprise
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-1365 To 1366

Date: 06/17/91

Title: (Letter containing response to NYSDEC correspondence regarding the former Texaco service station at the site)

Type: CORRESPONDENCE
Author: Brooker, Lauren J: Star Enterprise
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation
Document Number: PAI-001-1018 To 1018

Date: 07/19/91

Title: (Letter requesting information about any hazardous waste site located near Stewart Avenue which may be upgradient of the Pasley Solvents & Chemicals site)

Type: CORRESPONDENCE
Author: Henry, Sherrel D: US EPA
Recipient: Mirza, Misbahuddin K: NY Dept of Environmental Conservation

Document Number: PAI-001-1396 To 1437

Date: 03/10/92

Title: (Transcript of the 03/05/92 Public Meeting for the Pasley Solvents & Chemicals site)

Type: LEGAL DOCUMENT

Author: Lewis, Virginia E: court reporter
Recipient: none: US EPA

Document Number: PAI-001-1363 To 1364

Date: 05/31/91

Title: (Letter stating what has to be done to stop the dissolved product plume from moving onto the property of the Texaco service station)

Type: CORRESPONDENCE
Author: Mirza, Misbahuddin K: NY Dept of Environmental Conservation
Recipient: Brooker, Lauren J: Star Enterprise

Document Number: PAI-001-1367 To 1384

Date: 08/19/88

Title: Administrative Order on Consent in the Matter of Commander Oil Corporation

Type: LEGAL DOCUMENT
Author: Muszynski, William J: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1361 To 1362

Date: 12/27/91

Title: (Letter containing NYSDEC and NYSDOH comments on the EPA Proposed Plan for the site)

Type: CORRESPONDENCE
Author: O'Toole, Michael J Jr: NY Dept of Environmental Conservation
Recipient: Hauptman, Mel: US EPA

Document Number: PAI-001-0763 To 0783

Date: 11/08/90

Title: (Letter forwarding attached EPA comments on the Draft Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-0784 To 1009

Date: 03/14/91

Title: (Letter forwarding data, received from the Nassau County Department of Public Works for the Mitchell Field site, to be incorporated into the Pasley Remedial Investigation Report, and transmitting attached Monitoring Program Sampling Report)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1014 To 1017

Date: 05/30/91

Title: (Letter forwarding attached comments from EPA about Metcalf & Eddy's Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1019 To 1031

Date: 10/04/91

Title: (Letter forwarding attached EPA comments on the third revision of the June 1991 Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1032 To 1032

Date: 12/05/91

Title: (Letter approving the revised Remedial Investigation Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1347 To 1357

Date: 10/24/91

Title: (Letter forwarding attached EPA comments on the Draft Feasibility Study Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1358 To 1360

Date: 12/18/91

Title: (Letter forwarding attached comments on the Feasibility Study Report for the site)

Type: CORRESPONDENCE
Author: Petersen, Carole: US EPA
Recipient: Shapiro, Joseph G: Commander Oil Corporation

Document Number: PAI-001-1033 To 1326

Date: 02/01/92

Title: Feasibility Study Report - Pasley Solvents and Chemicals Site, Town of Hempstead, Nassau County NY

Type: REPORT

Author: Roth, Robert J: Metcalf & Eddy
Recipient: none: US EPA

Document Number: PAI-001-0276 To 0341

Date: 09/01/88

Title: Final Work Plan for Tank Demolition and Removal at the Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Russell, William G: EA Engineering Science & Technology
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-0342 To 0616

Date: 03/01/89

Title: Soil Vapor Contaminant Assessment for Remedial Investigation/Feasibility Study - Pasley Solvents and Chemicals Site, Town of Hempstead, Long Island NY

Type: PLAN
Author: Schultz, James A: EA Engineering Science & Technology
Recipient: none: Commander Oil Corporation

Document Number: PAI-001-1385 To 1385

Date: 07/11/91

Title: (Letter regarding the Mitchell Field facility that Purex has constructed pursuant to a consent judgment)

Type: CORRESPONDENCE
Author: Smith, Jeffrey M: Purex Industries Inc
Recipient: Henry, Sherrel D: US EPA