

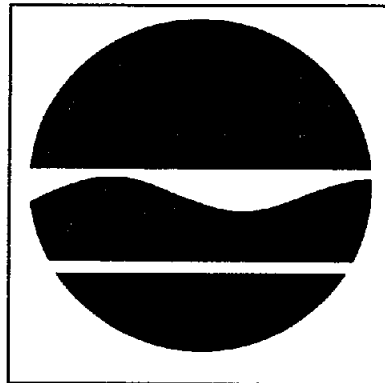
**KAY-FRIES, INC.
OPERABLE UNIT 2
INACTIVE HAZARDOUS WASTE SITE**

STONY POINT, ROCKLAND COUNTY

SITE NO. 344023

RECORD OF DECISION

NOVEMBER 1997



PREPARED BY:

**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION**

DECLARATION STATEMENT - RECORD OF DECISION

**Kay-Fries, Inc. Inactive Hazardous Waste Disposal Site
Operable Unit 2
Stony Point, Rockland County, New York
Site Number: 344023**

Statement of Purpose and Basis

The selected remedial actions for Operable Unit 2 of the Kay-Fries, Inc. Inactive Hazardous Waste Disposal Site are presented in this Record of Decision (ROD). These remedial actions were selected by the New York State Department of Environmental Conservation (NYSDEC) in conformance with the New York State Environmental Conservation Law (ECL) and the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR Part 300).

This decision is based upon the Administrative Record developed by the NYSDEC for this site and upon public input to the Proposed Remedial Action Plan (PRAP) which was issued by the NYSDEC. A bibliography of the documents which have been incorporated into the Administrative Record for this site is presented in Appendix B to this ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response actions which have been selected for this site, pose a current or potential threat to public health and the environment.

Description of the Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for Operable Unit 2 of the Kay-Fries, Inc. Site and an evaluation of the remedial alternatives against the criteria set forth in 6 NYCRR Part 375, the NYSDEC has selected the following remedial actions for this site:

- A groundwater collection sump will be installed between seep sample locations SS-6 and SS-7. The water that is collected in this sump will be treated. This groundwater collection system will be operated, under the NYSDEC's review, until groundwater standards are achieved and/or it is no longer practical or feasible to remove additional VOCs from the groundwater.

- A groundwater monitoring program will be developed and implemented in order to determine the effectiveness of the remedy. Seven monitoring wells on OU2 and one seep will be sampled on a regular basis over a thirty-year period.

Periodic reviews of the data generated during the monitoring program will be conducted in order to evaluate any trends in the data. Standard statistical analyses will be used during these evaluations. These reviews will be conducted annually during the first five years of the monitoring program and at a frequency of at least once every five years thereafter.

- A legal instrument (deed notification) which will contain a description of the remaining groundwater contamination on site will be filed with the County Clerk's office.


New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedial actions which have been selected for this site as being protective of human health.

Declaration

The selected remedial actions are protective of human health and the environment, and are in compliance with State and federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practical, and are cost effective. To the maximum extent practical, permanent solutions and alternative treatment or resource recovery technologies were incorporated into the selected remedial actions. A preference for remedial actions which would result in a reduction of the toxicity, mobility, or volume of the wastes at the site was incorporated into the selection process.

11/28/97
Date



Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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RECORD OF DECISION

KAY-FRIES, INC. - OPERABLE UNIT 2 Stony Point, Rockland County, New York Site Number 344023 November 1997

SECTION 1: INTRODUCTION

The purpose of this Record of Decision (ROD) is to set forth the remedy selected by the State of New York for Operable Unit 2 of the Kay-Fries, Inc. Inactive Hazardous Waste Disposal Site located in Stony Point, Rockland County. This ROD was developed based upon the results obtained from the Remedial Investigation conducted at the Site by Hüls America, Inc. and the Focussed Feasibility Study conducted by the New York State Department of Environmental Conservation (NYSDEC). The selected remedy for this site is:

- A groundwater collection sump will be constructed at the base of the escarpment at the northern boundary of the Site in between two groundwater seeps where tetrachloroethene was detected. The sump will be emptied periodically, and the contents will be treated.
- A long-term monitoring program will be implemented. Groundwater and seep samples will be collected at regular intervals over a thirty-year period.
- A legal instrument which will contain a description of the remaining groundwater contamination on site will be filed with the County Clerk's office.

Brief descriptions of the site, the surroundings, and the site history are presented in Sections 2 and 3 of this document. Summaries of the results of the Remedial Investigation (RI) are presented in Section 4. The reader is referred to the Remedial Investigation Report (June 1997) for a more complete description of the results of the RI. The goal of the remedial program for OU2 is presented in Section 5. In addition to a description of the selected remedy referenced above, descriptions of the other three remedial alternatives which were considered during the Focussed Feasibility Study are presented in Section 6. Evaluations of each of the four remedial alternatives against the seven criteria set forth in 6 NYCRR Part 375 are presented in Section 7. A summary of the selected remedy is presented in the final section of this document.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Kay-Fries, Inc. Inactive Hazardous Waste Disposal Site (Number 344023) is located in the Town of Stony Point, Rockland County, New York (Figure 1). The Site, as it is currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State (Registry), is 22 acres in area. The Site is located to the east of Route 9W at the southern boundary of the Town of Stony Point. The Site is bounded to the north by Cedar Pond Brook and a wetland; to the east by property owned by the Stony Point Technical Park, Inc. and U.S. Gypsum; to the south by the Town of Haverstraw Landfill; and to the west by several industrial properties. The area is zoned commercial/industrial; however, there are several residential areas nearby, including the West Haverstraw Elementary School which is located southwest of the site. The Site is currently owned by several industrial businesses.

The Kay-Fries, Inc. Site has been divided into two operable units. An operable unit is designated to represent a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit No. 2 (OU2), which is the subject of this PRAP, consists of seven acres that are west of the Conrail railroad tracks (see Figure 2). The owner of this parcel is the Diplomat Juvenile Corporation. The Kay-Fries, Inc. Site was divided into operable units in order to expedite the implementation of a groundwater treatment remedy on the Operable Unit 1 (OU1) parcel. A Record of Decision for the OU1 parcel was issued by the NYSDEC in March of 1994.

Operable Unit No. 1 is 15 acres in area and is located to the east of the Conrail railroad tracks and is currently owned by the INSL-X Products Corporation. OU1 is further described in Section 3.2.

Physiographically, the Kay-Fries, Inc. Site is divided by a terrace escarpment into upland and lowland areas. OU2 is located in the upland area west of OU1. The former plant facilities and production areas are located in the upland area within OU1.

The site is underlain by a thick sequence of glacial deposits that overlie Triassic-age sedimentary bedrock. These glacial deposits constitute several water-bearing and semi-confining hydrogeologic units beneath the site. While no one unit is clearly continuous across the entire site, the predominant lithology in OU2 consists of stratified drift and lake deposited silts and clays overlying glacial till. The groundwater (10 - 18 feet below ground surface) in OU2 generally has flow components to the north, northwest, and east. The velocity of the groundwater (and contaminants in the groundwater) through these silt and clay deposits is extremely slow.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Kay-Fries, Inc. Site was the site of chemical production operations from 1930 to 1987 under the name of Kay-Fries, Inc. The site was owned and operated by Charles Tennet Ltd., a British Holding Corporation, through the late 1970s when it was purchased by Dynamit Nobel of America. During 1987, Dynamit Nobel of America sold the site to Universal Process Equipment. Dynamit Nobel of America was merged into Hüls America, Inc. in December 1987 and Hüls America, Inc. has maintained the responsibility for compliance with the NYSDEC Consent Order requiring site investigation and remediation. Chemical production operations at the site ceased in 1987 when Hüls America, Inc. moved the manufacturing operations to Mobile, Alabama.

Materials produced or stored at the site included general organic compounds and intermediate organic chemicals such as chlorosilanes, orthoesters, and phthalates. Materials stored at the site for use in production included toluene, methyl vinyl ether, diethyl benzene, cyanide, benzene, methyl isobutyl ketone (MIBK), acids, and petroleum fuels. Even though spills occurred in many parts of the main plant site (OU1) where chemicals were used, stored and transported, there are no records of any spills on OU2. According to plant personnel, only small quantities of chemicals were handled west of the railroad tracks in OU2 and all manufacturing and bulk chemical storage was located east of the railroad tracks in OU1.

No underground storage tanks were used for storage of raw hazardous materials, products or wastes in OU2. Additionally, underground storage tanks are not being used by the current property owners for storage of hazardous materials.

3.2: Remedial History

The Operable Unit No. 2 parcel was first listed in the Registry in March 1994. These seven acres were added to the Kay-Fries, Inc. Site due to the existence of a potential groundwater divide or mound discovered during the Groundwater Flow Direction Confirmation Study conducted in 1993 as a part of the OU1 RI. The site is listed in the Registry as a Class 2 site due the presence of volatile organic compounds (VOCs) in the groundwater. A Class 2 site is a site that poses a significant threat to the public health or the environment and action to remediate the site is required.

The OU1 parcel has been a part of the Kay-Fries Site since it was first listed in the Registry as a Class 2 site in 1987. The OU1 parcel was the subject of a lengthy and thorough RI/FS that was completed in 1994 when a Record of Decision (ROD) was issued by the NYSDEC. The primary component of the remedy presented in the Record of Decision for OU1 was the design, construction and operation of three groundwater collection trenches and a treatment system to remediate the contaminated groundwater. That system was constructed in 1995 and is currently operating. Prior to that ROD, six Interim Remedial Measures (IRMs) consisting of

tank and soil removal actions were completed for OU1. All of the reports and the ROD relating to OU1 can be found in the document repositories listed in Section 3.4 of this ROD.

3.3: Enforcement History

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potentially Responsible Party for this site is Hüls America, Inc.

The NYSDEC and Kay-Fries, Inc. entered into a Consent Order on February 11, 1983. The Order obligates the responsible party to implement a full remedial program. This Order has been carried out by Hüls America, Inc. who, through various acquisitions, has acquired the responsibility for compliance with the consent order.

3.4: Community Participation History

The citizen participation activities are part of the NYSDEC's ongoing effort to ensure full two-way communication with the public regarding the identification, investigation, and remediation of inactive hazardous waste disposal sites. The following activities were conducted in this regard:

1. Information repositories have been established and maintained at the Stony Point Town Hall, the NYSDEC Region 3 Office in New Paltz, and the NYSDEC Central Office in Albany.
2. Documents and reports which pertain to the Kay-Fries, Inc. Site have been placed into the aforementioned repositories.
3. A "contact list" of interested parties (e.g. - local citizens, media, public interest groups, and elected government officials) has been developed and maintained.
4. Fact sheets regarding Operable Unit 2 were distributed to the people on the contact list in April 1994, May 1994, November 1995, and September 1997.
5. Public Meetings were held on March 2, 1993, April 21 and June 6, 1994, and October 9, 1997.
6. A Citizen's Advisory Committee was formed in November 1994 and held monthly meetings until the summer of 1996. The State sent representatives to these meetings for approximately one year.
7. State representatives attended several meetings of the West Haverstraw Civic Association during which they answered questions regarding the Site.

8. State representatives met several times with Congressman Gilman, Senator Holland, Assemblywoman Calhoun, and Assemblyman Gromack at their request to discuss matters relating to the Site.

SECTION 4: CURRENT STATUS

Pursuant to the Consent Order referenced above in Section 3.3, Hüls America conducted a Remedial Investigation (RI) in order to determine the nature and extent of the contamination at the site.

4.1: Summary of the Remedial Investigation

The RI at OU2 was conducted in three phases. The first and second phases were conducted between February 1994 and May 1994, and the third phase in March 1995. A Supplemental RI was implemented in November 1995. A report entitled Final Remedial Investigation Report for Operable Unit Two, dated June 1997, was prepared in which the field activities and findings of the RI are described in detail.

The following activities were conducted during the RI:

- A site background review was conducted that included obtaining historical information regarding past usage of the property, interviews with former Kay-Fries employees, preparing up-to-date topographic maps and review of historical aerial photographs.
- Six existing monitoring wells at OU2 were sampled for the full NYSDEC Target Compound List (TCL)/Target Analyte List (TAL), and cyanide.
- Twelve samples were collected from seeps and springs along the face of the escarpment north of OU2 and in the swampy area just north of the escarpment and analyzed for TCL/TAL analytes and cyanide.
- Twenty groundwater samples were collected from hydropunch wells and analyzed as a screening process to aid in selecting the locations for new monitoring wells that were used to further delineate the extent of VOCs in groundwater and groundwater flow direction.
- Installation of soil borings and seven new monitoring wells for analysis of soils (VOCs) and groundwater (TCL/TAL) as well as physical properties of soil and hydrogeologic conditions.
- During the Supplemental RI, one additional deep monitoring well was installed to determine the vertical extent of VOC contamination.

- A third round of groundwater samples were collected from 12 monitoring wells and analyzed for VOCs. Water level measurements for groundwater flow direction confirmation were also part of the Supplemental RI.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data were compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for Operable Unit No. 2 of the Kay-Fries Site were based upon NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of the NYS Sanitary Code. NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Number 4046 soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil.

A summary of the analytical data generated during the RI is presented in Table 1. Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, SCGs are presented for each medium.

4.1.1: Nature of Contamination

As described in the Final RI Report, groundwater, soil, and groundwater seep samples were collected at OU2 to characterize the nature and extent of contamination.

Volatile Organic Compounds (VOCs): Three VOCs were detected above the SCGs in groundwater. They were tetrachloroethene (PCE), 1,1,1 trichloroethane (TCA) and chloroform. PCE was detected in surface water seeps at concentrations greater than the SCG. Chloroform was detected in the field blanks and is therefore considered to be a sampling artifact. There were no exceedances of SCGs for VOCs in soils.

Semi-Volatile Organic Compounds (SVOCs): No SVOCs were detected above the SCGs in groundwater. Soil samples were not analyzed for SVOCs because these compounds were not detected above SCGs in the groundwater.

Inorganics (metals): Three inorganic analytes were detected at concentrations greater than the SCGs in groundwater. These analytes were iron, manganese, and sodium. The soils in the area are rich in iron. Manganese and sodium are commonly found in groundwater in the form of salt compounds. This is not surprising at this site due to the proximity of the Hudson River which is brackish in nature. Manganese and sodium salts are common in salt water. Metals were not detected in the groundwater seep samples. Soil samples were not analyzed for inorganics because none of the heavy metals (e.g. - arsenic, cadmium, etc.) were detected above SCGs in groundwater.

Pesticides/PCBs: There was one detection above SCGs of one PCB (Arochlor 1248) in a groundwater seep sample collected in April 1994. PCBs were not detected in a confirmation sample collected at that location in November 1996. PCBs were not detected in any

groundwater or soil samples. There were no detections of pesticides in the groundwater seeps or the groundwater.

Cyanide: There were no detections of cyanide in groundwater or groundwater seeps. Soil samples were not analyzed for cyanide because cyanide was not detected at concentrations greater than SCGs in groundwater.

4.1.2: Extent of Contamination

A summary of the extent of contamination for the contaminants identified above in groundwater, soils and groundwater seeps and the corresponding remedial action levels (SCGs) for the site is presented in Table 1. The following are the media which were investigated and a summary of the findings of the investigation.

Soil

Five soil samples were collected from split spoons during monitoring well construction. These samples were analyzed for TCL volatile organic compounds. The NYSDEC recommended soil cleanup objectives were not exceeded in any of these samples.

Groundwater

Shallow groundwaters at the site are contaminated with chlorinated volatile organic compounds at concentrations greater than the 5 parts per billion (ppb) groundwater standard. There are two areas of concern on the OU2 parcel.

The first area is along the railroad tracks in the area of monitoring well cluster MW-60. The primary contaminant that was observed at this location was perchloroethene (PCE) which was detected at a maximum concentration of 130 ppb. Trichloroethane (TCA) was also detected at this location but at concentrations of less than 15 ppb. The presence of the PCE may be due to a spill that could have occurred at the loading dock which is located adjacent to this well cluster. The TCA may be a breakdown product of the PCE. Microorganisms that live in soil and groundwater can, under certain conditions, convert PCE to TCA.

Based upon a review of the piezometric maps that have been developed to date at the Kay-Fries, Inc. Site, it appears that the contamination observed at the MW-60 cluster will migrate to the east and will be captured in one of the groundwater collection trenches on the OU1 parcel. Therefore, no additional remedial alternatives for addressing this plume were developed during the Focussed Feasibility Study.

The second area is located to the north of Building 3. The most impacted wells are MW-53 and MW-55S. PCE is the primary contaminant in this plume which is migrating northward. The maximum concentration of PCE that has been detected in this plume was 110 ppb in 1994. It appears that the PCE concentration is attenuating in this plume (see Table 2). The source of the

PCE contamination is believed to be a spill(s) that occurred north of Building 3. TCA has also been detected in this plume, but at concentrations less than 10 ppb. The TCA may be a breakdown product of PCE as described above.

Groundwater Seeps

The second plume (north of Building 3) has migrated to an area along the base of the escarpment which exists along the northern boundary of OU2. This was determined by collecting samples from groundwater seeps in that area. These seeps are small in area (generally less than 2 square feet in area). The flow rates of water through these seeps are so slow that they would be nearly impossible to measure. The PCE concentrations in these seeps ranged from non-detectable levels to approximately 120 ppb. The surface water sample where PCE was detected at a concentration of 120 ppb was a seep that was approximately 2 square feet in area that was located at the base of the escarpment. There is no surface water standard for PCE, however the NYSDEC has developed a guidance value of 0.7 ppb for PCE in surface water. Low concentrations (1-4 ppb) of other chlorinated ethenes and ethanes were also detected in some of these samples.

Arochlor 1248 (a PCB) was detected at 1.6 ppb in SS-5 in April 1994 (the SCG is 0.1 ppb). PCBs were not detected in a confirmation sample collected at that location in November 1996.

In conclusion, the horizontal and vertical extent of TCA and PCE in the groundwater of OU2 has been defined and is considered to be limited. The total mass of the contaminants in the groundwater has been estimated to be 1.4 pounds, which is equivalent to a pint of pure PCE. Over the four rounds of groundwater sampling, it appears that the concentrations of these compounds are naturally reducing (see Table 2). For example, the PCE concentrations at MW-53 have dropped from 110 ppb in April 1994 to 37 ppb in November 1996. No sources (soils contamination) of any contaminants were found that would require remediation.

4.2: Interim Remedial Measures

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. No IRMs were conducted at OU2.

4.3: Summary of Human Exposure Pathways

The types of human exposures that may present added health risks to persons at or around the site are described in this section. A more detailed discussion of the health risks can be found in Appendix F of the Final RI Report.

An exposure pathway is a manner in which an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of

exposure; and 5) the receptor population. These elements of an exposure pathway may be based upon past, present, or future events.

The only media that are contaminated that a person could be exposed to on the OU2 parcel are groundwater and the seeps where the ground surface is intersected by the groundwater table. The primary pathway for human exposure to groundwater for this operable unit is through ingestion of contaminated groundwater or surface water. However, this pathway is incomplete due to the presence of a public water supply for the surrounding area and the location of the contaminated seep which is located in a generally inaccessible and heavily overgrown area. Based upon the results of a well survey conducted in the area, it appears that no one uses groundwater in the immediate area. The site is zoned commercial/industrial and one would not expect that it would be residentially developed in the future. However, if it was residentially developed, public water is available and would most likely be used, again making this an incomplete exposure pathway.

4.4: Summary of Environmental Exposure Pathways

The types of environmental exposures which may be presented by the site are summarized in this section. A more detailed discussion of the potential impacts from the site to fish and wildlife resources is presented in the "Fish and Wildlife Impact Analysis for the former Kay-Fries Site."

The potential for ecological exposures to contaminants from OU2 is minimal. There are no surface water bodies on OU2, therefore direct exposure of aquatic organisms to contaminants at OU2 is not a potential pathway. There are, however several surface water bodies near OU2 (Cedar Pond Brook and Minisceongo Creek) which may receive surface water runoff or groundwater infiltration of contaminants from OU2. While these transport pathways represent potential indirect exposure routes for aquatic and riparian receptors (e.g.: benthic invertebrates, fish and piscivorous birds), they will be minimal due to the low to moderate levels of contamination in OU2. The groundwater seeps are small in area (generally less than 2 square feet) and the risks posed to flora and fauna are minimal. Terrestrial exposures to contaminants in OU2 are expected to be minimal due the fact that the majority of the site is paved or occupied by buildings, and no contaminants were detected in surface soils.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

The goals for the remedial program have been established through the remedy selection process outlined in 6 NYCRR Part 375-1.10. These goals were established under the guidelines of meeting all Standards, Criteria, and Guidance values (SCGs) and protecting human health and the environment. The contaminant- and media-specific clean-up goals are presented in Table 1.

At a minimum, all significant threats to public health and to the environment posed by the disposal of hazardous waste at the site should be reduced to the maximum extent practicable

through the proper application of scientific and engineering principles. The remedy implemented at each site must be one which is protective of human health and the environment.

The remedial goal for this site is:

- The protection of the environmental receptors (flora and fauna) that could come into contact with contaminated groundwater seeps.

SECTION 6: SUMMARY OF THE REMEDIAL ALTERNATIVES

Different technologies for achieving the goal for this project were considered in developing the potential remedial alternatives for remediating OU2 of the Kay-Fries, Inc. Site. Four alternatives were developed and evaluated during the Focussed Feasibility Study that was conducted by the NYSDEC. Brief descriptions of these alternatives are presented below.

Construction, rental, and engineering costs are incorporated into the capital cost estimates. The average yearly costs for operating treatment systems and cost for maintaining the remedy are incorporated into the O&M cost estimates. As presented below, present worth is defined as the amount of money needed now (in 1997 dollars at 5% interest) in order to fund the construction and operation and maintenance (O&M) costs for each alternative.

Alternative 1 - No Action

Capital Cost:	\$ 1,000
O&M Cost:	0
Present Worth:	1,000

No remedial actions would be incorporated under this alternative. A legal instrument (deed notification) which would contain a description of the remaining groundwater contamination on site would be filed with the County Clerk's office. The plume would be allowed to attenuate naturally through dilution, dispersion, bioremediation, and aeration.

Alternative 2 - Long-term Monitoring

Capital Cost:	\$ 1,000
O&M Cost:	8,800
Present Worth:	135,300

A 30-year monitoring program is proposed under this alternative. Seven existing on-site wells and one groundwater seep would be sampled semi-annually for the first ten years, and then on an annual basis thereafter. These samples would be analyzed for volatile organic compounds (VOCs).

Periodic reviews of the data generated during the monitoring program would be conducted in order to evaluate any trends in the data. Standard statistical analyses would be used during these evaluations. These reviews would be conducted annually during the first five years of the monitoring program and at a frequency of at least once every five years throughout the remainder of the program.

The plume would be allowed to attenuate naturally. The mechanisms by which this would be accomplished are dilution, dispersion, bioremediation, and aeration.

In addition, a legal instrument (deed notification) which would contain a description of the remaining groundwater contamination on site would be filed with the County Clerk's office.

Alternative 3 - Groundwater Collection and Treatment - Collection Trench Option

Capital Cost:	\$	39,780
O&M Cost:		16,760
Present Worth:		298,000

A groundwater collection trench would be constructed under this alternative. This trench would be approximately 30 feet long, 8 feet deep, and 4 feet wide and would extend parallel to the bottom of the escarpment between seeps SS-6 and SS-7 (see Figure 2). The trench would be constructed such that the water collected would flow towards a collection sump. When the water in the collection sump reached a specified level, a pump would be activated and the water would be transferred to a 500 gallon storage tank and treated. This tank would be located at the bottom of the escarpment.

For the purposes of developing a cost estimate for this alternative, it was assumed that when the 500 gallon storage tank is full, the contents would be transferred to a tanker truck and hauled to the OUI treatment system. It is estimated that this would be done nine times per year. Alternative treatment schemes would be evaluated during the remedial design phase of this project.

This groundwater collection system would be operated, under the NYSDEC's review, until groundwater standards are achieved and/or it is determined that it is no longer practical or feasible to remove additional VOC's from the groundwater.

A groundwater and seep monitoring program is also incorporated into this alternative (see Alternative 2).

In addition, a legal instrument (deed notification) which would contain a description of the remaining groundwater contamination on site would be filed with the County Clerk's office.

Alternative 4 - Groundwater Collection and Treatment - Collection Sump Option

Capital Cost: \$ 27,560
O&M Cost: 14,400
Present Worth: 249,000

A groundwater collection sump would be constructed under this alternative. This sump would be approximately six feet in diameter and 8 feet deep and would be located between seeps SS-6 and SS-7 (see Figure 2). The water collected in this sump would be treated to remove the chlorinated VOCs. For the purposes of developing a cost estimate, it was assumed that this treatment would occur at the groundwater treatment system on the OU1 parcel. When the water level reaches a specified level, the contents of the sump would be transferred to a tanker truck and hauled to the OU1 treatment system. For the purposes of developing a cost estimate, it was assumed that this sump would be emptied on a quarterly basis. Based upon the hydrogeologic conditions at the base of the escarpment, approximately 500 gallons of water would be collected in this sump every three months.

This groundwater collection system would be operated, under the NYSDEC's review, until groundwater standards are achieved and/or it is determined that it is no longer practical or feasible to remove additional VOC's from the groundwater.

A groundwater and seep monitoring program is also incorporated into this alternative (see Alternative 2).

In addition, a legal instrument (deed notification) which would contain a description of the remaining groundwater contamination on site would be filed with the County Clerk's office.

SECTION 7: EVALUATION OF THE ALTERNATIVES

The criteria used to evaluate the remedial alternatives are defined in 6 NYCRR Part 375. For each criterion, a brief description of that criterion is presented followed by evaluations of the remedial alternatives against that criterion.

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

7.1 Protection of Human Health and the Environment - This criterion is an overall evaluation of the human health and environmental impacts to assess whether each alternative is protective. This evaluation is based upon a composite of factors assessed under other criteria, especially short/long-term effectiveness and compliance with Standards, Criteria, and Guidance values (SCGs).

All four alternatives are protective of public health and the environment. Alternatives 3 and 4 are the most protective of the four alternatives due to the groundwater collection/treatment and

long-term monitoring components which are incorporated into these alternatives. Alternative 2 is more protective than Alternative 1 due to the long-term monitoring component which is incorporated into Alternative 2.

7.2 Compliance with New York State Standards, Criteria, and Guidance values (SCGs) - Under this criterion, the issue of whether a remedial alternative would meet all of the federal or State environmental laws and regulations is addressed. If these laws and regulations would not be met upon the implementation of a remedial alternative, then grounds for invoking a waiver must be provided.

Groundwater and surface water standards would not be met (at least in the short term) if Alternative 1 or Alternative 2 were implemented. Considering the small mass of the contaminants in the plume, and that the public is not being exposed to these contaminants, the risks posed to public health and to the environment are minimal.

Groundwater standards would be met beyond the collection trench/sump under Alternatives 3 or 4. Surface water standards would eventually be met due to the decreased contaminant loading as a result of the groundwater treatment component to this remedy and natural attenuation.

Primary Balancing Criteria: The next five criteria are used to compare and contrast the positive and negative aspects of the various alternatives.

7.3 Short-term Effectiveness - Under this criterion, the potential short-term impacts of the remedial action upon the community, the workers, and the environment are evaluated. The period of time required to achieve the remedial objectives is also estimated and compared against the other alternatives.

There are no short-term impacts to the community or the environment that would be associated with the implementation of Alternatives 1 and 2.

There would be some potential short term impacts to on-site workers if Alternatives 3 or 4 were implemented. Workers constructing a trench or sump could come into contact with contaminated groundwater or contaminant vapors. There are sufficient safeguards that could be implemented to mitigate risks posed from these exposures. In addition, there would be physical risks posed to these workers during trench or sump construction. There are OSHA standards which must be followed in order to safely construct a trench or sump. There would be potential short-term impacts to the community, but there are sufficient engineering controls (such as methods for dust suppression) that could be used to mitigate these risks.

There would be short-term impacts to flora and fauna due to the construction activities that would be associated with Alternatives 3 or 4.

7.4 Long-term Effectiveness and Permanence - The long-term effectiveness of the remedial alternatives after implementation is evaluated. If wastes or residuals will remain at the site after implementation, then the following items are evaluated: 1) the magnitude and nature of the risks posed by the remaining wastes; 2) the adequacy of the controls intended to limit said risks; and 3) the reliability of these controls.

There would be small amounts of wastes remaining in the groundwater after implementing any of the alternatives under consideration here. Remaining wastes would not pose a significant risk to the community or to the environment. The deed notification provision which is incorporated into each of these alternatives would be adequate to warn future owners of the site regarding the limited magnitude of the contamination remaining at the site.

7.5 Reduction of Toxicity, Mobility, and Volume - Preference is given to alternatives where the toxicity, mobility, or volume of the wastes at the site are permanently and significantly reduced.

The reduction of the toxicity, mobility, and volume of the waste material in the aquifer would be greater if Alternatives 3 or 4 were implemented as opposed to Alternative 1 or Alternative 2. However, considering the total mass of contamination in the plume (1.4 pounds of contaminants), the difference in the mass removal rates among the alternatives is almost negligible.

7.6 Implementability - The technical and administrative feasibilities of implementing each of the alternatives are evaluated. For technical feasibility, the difficulties associated with the construction and operation of the alternative and the ability to effectively monitor the effectiveness of the remedy are evaluated. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with the potential difficulties in obtaining special permits, rights-of-way, etc.

Alternative 1 would be easy to implement as there are no construction tasks associated with this alternative. Deed notifications are not difficult documents to prepare or file with the County Clerk's office.

Alternative 2 would be easy to implement because the wells that would be sampled on a regular basis already exist. There are no anticipated administrative problems with implementing this alternative.

Alternatives 3 or 4 would not be easy to implement technically due to anticipated difficulties associated with the construction and operation of a collection system. The knowledge gained in constructing and operating the trenches on the OU 1 parcel would make it easier to construct and operate a collection trench/treatment system on OU 2. Administratively, approval from Conrail would be required prior to commencing the field activities associated with this alternative.

7.7 Cost - Capital and operational and maintenance costs are estimated for each of the alternatives and compared on a present worth basis. Although cost is the last criterion evaluated, where two or more alternatives have met the requirements of the other criteria, cost effectiveness can be used as the basis for the final remedy selection.

The costs for the four remedial alternatives under consideration here are presented in Table 3.

Modifying Criterion - This final criterion is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan (PRAP) have been received.

7.8. Community Acceptance - Under this criterion, the concerns of the community regarding the RI and FS Reports and the PRAP were evaluated. The concerns of the community are presented along with the NYSDEC's responses to these concerns in a Responsiveness Summary (Appendix A to this Record of Decision).

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS conducted at the Kay-Fries, Inc. Site, the NYSDEC has selected the following remedy:

- A groundwater collection sump will be installed between seep samples SS-6 and SS-7. The water that is collected in this sump will be treated. This groundwater collection system will be operated, under the NYSDEC's review, until groundwater standards are achieved and/or it is no longer practical or feasible to remove additional VOCs from the groundwater.
- A groundwater monitoring program will be developed and implemented in order to determine the effectiveness of the remedy. Seven monitoring wells on OU2 and one seep will be sampled on a regular basis over a thirty-year period.

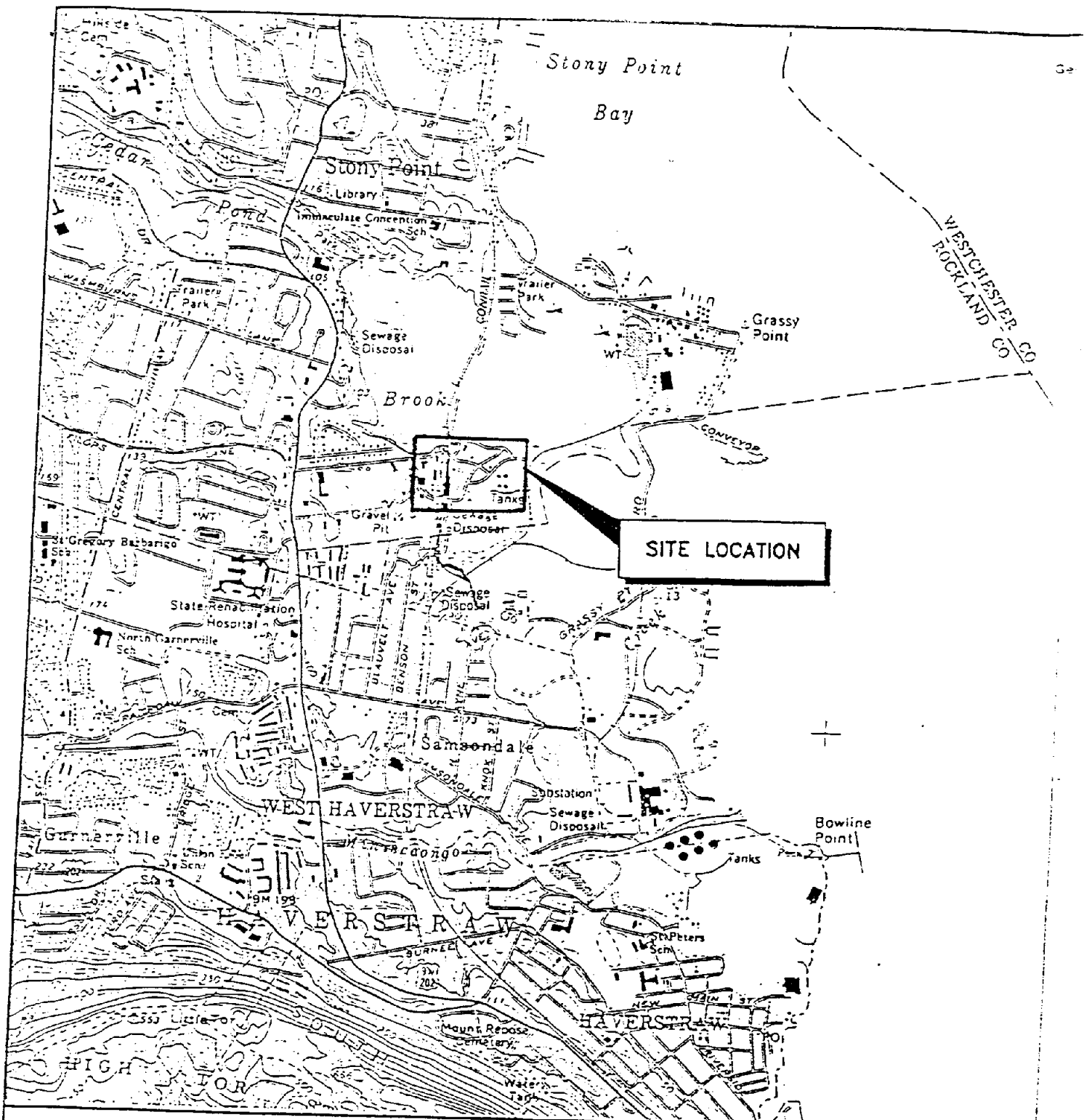
Periodic reviews of the data generated during the monitoring program will be conducted in order to evaluate any trends in the data. Standard statistical analyses will be used during these evaluations. These reviews will be conducted annually during the first five years of the monitoring program and at a frequency of at least once every five years thereafter.

- A legal instrument (deed notification) which will contain a description of the remaining groundwater contamination on site will be filed with the County Clerk's office.

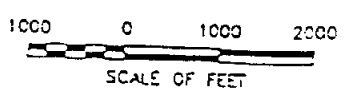
The estimated capital cost for this remedy is \$27,560. The annual operation and maintenance costs are estimated to be \$14,400 per year over 30 years. The estimated present worth cost for this remedy is \$249,000.

GLOSSARY OF ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
ECL	Environmental Conservation Law (New York State)
EQBA	Environmental Quality Bond Act
IRM	Interim Remedial Measure
6 NYCRR	Title 6 of the Official New York Compilation of Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PCE	Perchloroethene
ppb	parts per billion
ppm	parts per million
PRAP	Proposed Remedial Action Plan
PRPs	Potentially Responsible Party(ies)
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments Reauthorization Act
SCGs	Standards, Criteria, and Guidance values of NYS
SPDES	State Pollution Discharge Elimination System
SVOCs	Semi-volatile Organic Compounds
TAL	Target Analyte List
TAGM	Technical and Administrative Guidance Memorandum
TCL	Target Compound List
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds



SOURCE: USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP, HAVERSTRAW, N.Y. QUADRANGLE 1967



REV. NO.	DATE	DESCRIPTION OF REVISION	REV. BY	CHKD. BY	DATE
PROJECT NUMBER	S. GERY		J.R. DANZA		1 DATE 2/15/54

ITC INTERNATIONAL TECHNOLOGY CORPORATION

FIGURE 1
SITE LOCATION MAP
 Prepared For:
HULS AMERICA INC.
FORMER KAY FRIES FACILITY
STONY POINT, NEW YORK
JULY 1995

PROJECT NO.	FILE NO.	DATE	ISSUANCE NUMBER	REV. NO.
529341	A1	04	529341-A1	

529341A1 02/16/94 3:20pm J.R.D.

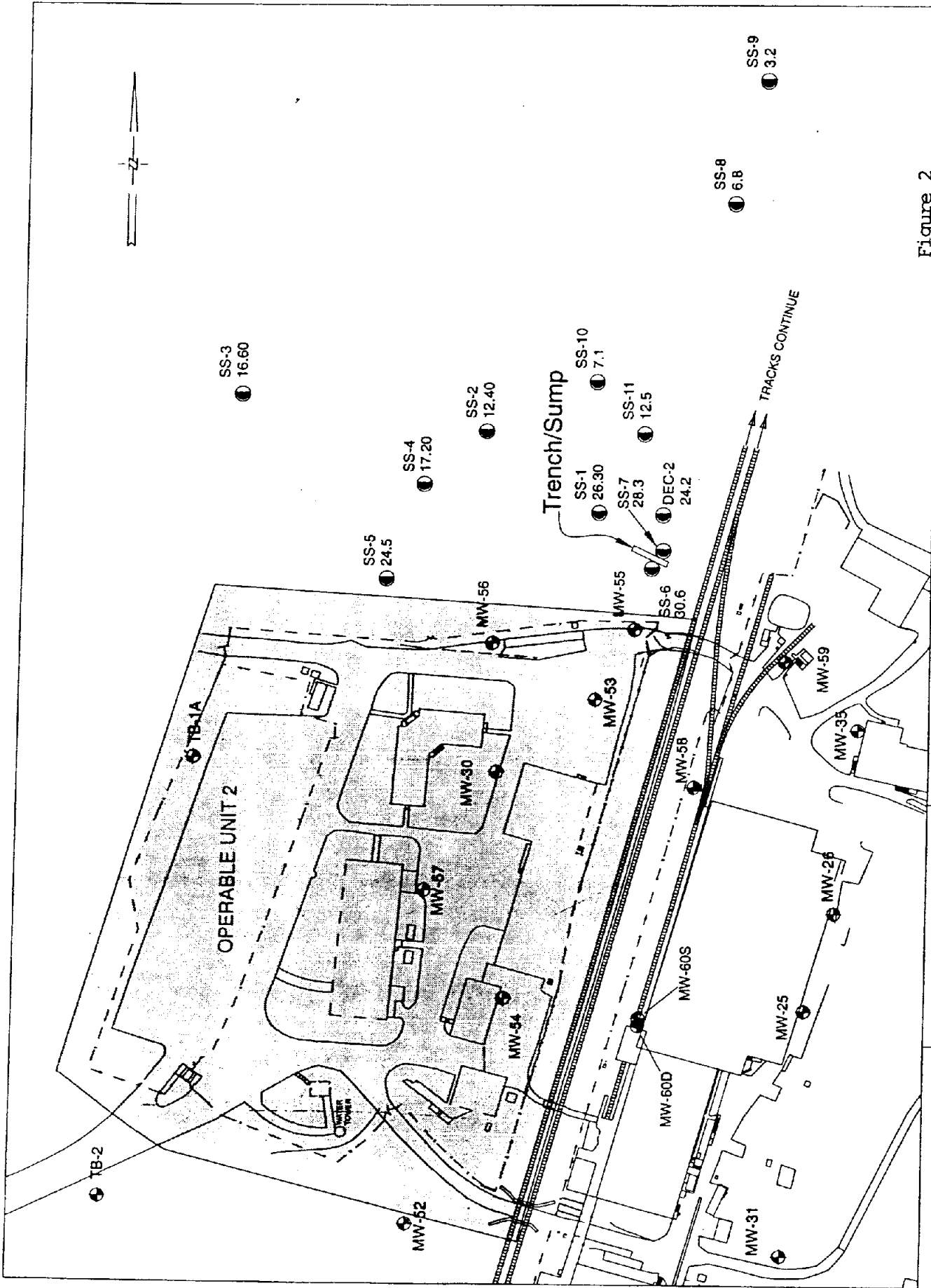
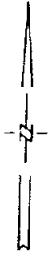


Figure 2



SS-10 Soil Sample
 ● 7.1

MW-28 ● Monitoring Well

Kay Fries Operable Unit 2

**Table 1
Nature and Extent of Contamination**

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of EXCEEDING SCGs	SCG (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Tetrachloroethene (PCE)	ND - 130	11 of 23	5
		1,1,1 Trichloroethane (TCA)	ND - 16	7 of 23	5
		Chloroform	ND - 12	3 of 23	7
	Inorganic Compounds (Metals)	Iron	ND - 12,600	7 of 13	300
		Manganese	ND - 1,500	2 of 13	300
		Sodium	ND - 81,000	6 of 13	20,000
Groundwater soils	Volatile Organic Compounds (VOCs)	TCA	ND - 1	0 of 12	5
		PCE	ND - 120	4 of 12	3
		Trichloroethene (TCE)	ND - 16	4 of 12	0.7
		Dichloroethenes (DCE)	ND - 17	1 of 12	5

= Estimated concentrations

ND = Non-detect

Table 2
Reduction of PCE and TCA Concentrations over Time

Well Number	MW-53		MW-55S		MW-60D	
	PCE	TCA	PCE	TCA	PCE	TCA
4/94	110	7	NS	NS	NS	NS
4/95	NS	NS	67	6	43	7
11/95	89	4	84	4	130	13
11/96	37	2	17	2	5	ND

Note: Concentrations are in parts per billion (ppb)

Abbreviations

MW monitoring well
PCE perchloroethene
TCA 1,1,1-trichloroethane
NS well not sampled
ND contaminant not detected

TABLE 3
Costs of the Remedial Alternatives

REMEDIAL ALTERNATIVE	CAPITAL COST	O&M COST (per year)	PRESENT WORTH COST
#1 - No Action	\$1,000	0	\$1,000
#2 - Long-term Monitoring	\$1,000	\$8,800	\$135,300
#3 - Groundwater Collection and Treatment - Collection Trench Option	\$39,780	\$16,760	\$298,000
#4 - Groundwater Collection and Treatment - Collection Sump Option	\$27,560	\$14,400	\$249,000

Note:

Discount rate of 5% was used to determine present worth of the O&M costs over a 30-year period.

**APPENDIX A
RESPONSIVENESS SUMMARY
PROPOSED REMEDIAL ACTION PLAN
KAY-FRIES, INC., OPERABLE UNIT 2
SITE NUMBER: 344023**

A public meeting was held on October 9, 1997 at the Stony Point Elementary School, Rockland County. The purposes of the meeting were to present the Proposed Remedial Action Plan (PRAP) for the site to the public and to receive comments from the public on the PRAP for consideration during the final selection of a remedy. Additionally, the results of the off-site Preliminary Site Assessment (PSA) and the cancer incidence surveys were presented. The meeting was very well attended. A copy of the written transcript of the public meeting has been incorporated into the Administrative Record for this site (Appendix B) and is available for public review at the document repositories. The public comment period for the PRAP extended from September 26, 1997 through October 31, 1997. No written or verbal comments were received regarding the PRAP for Operable Unit 2 of this site. The comments received were in regard to the PSA and the cancer incidence surveys.

**APPENDIX B
ADMINISTRATIVE RECORD
KAY-FRIES, INC.
OPERABLE UNIT 2
SITE NUMBER: 344023**

Note: Many of the documents that are incorporated into the Administrative Record for the March 1994 Record of Decision for Operable Unit 1 of the Kay-Fries, Inc. Inactive Hazardous Waste Disposal Site were used as resources during the course of the Remedial Investigation/Feasibility Study that was conducted for the Operable Unit 2 parcel. These documents are not specifically incorporated into the Administrative Record for the Operable Unit 2 parcel that is presented below.

A. Reports

1. History of Kay-Fries Chemicals, Inc., 1923 - 1978.
2. Phase I Remedial Investigation Work Plan dated February 22, 1994.
3. Phase I Remedial Investigation Work Plan Addendum, dated February 6, 1995.
4. Final Remedial Investigation Report, dated June 23, 1997.
5. Focussed Feasibility Study, Kay-Fries, Inc., Operable Unit 02, dated September 1997.
6. Proposed Remedial Action Plan, Operable Unit No. 2, dated September 1997.
7. Transcript of the Public Meeting of October 9, 1997.
8. Record of Decision, dated November 1997.

B. Legal Instruments

1. Order on Consent, Index #367A0217, dated February 11, 1983.
2. Registry Site Classification Decision dated March 9, 1994.

C. Correspondence

1. Letter to Mr. Brian M. Gibson from Mr. James A. Quinn, P.E. (NYSDEC) dated March 16, 1993.
2. Letter to Ms. Sandra Derby (IT Corporation) from Mr. James A. Quinn, P.E. dated March 26, 1993.

3. Letter to Mr. John Wnek (Hüls America, Inc.) from Mr. James A. Quinn, P.E. dated March 26, 1993.
4. Letter to Ms. Sandra M. Derby from Mr. James A. Quinn, P.E. dated May 20, 1993.
5. Letter to Ms. Sandra M. Derby from Mr. James A. Quinn, P.E. dated June 10, 1993.
6. Letter to Mr. James Quinn, P.E. from Ms. Sandra M. Derby dated June 17, 1993.
7. Letter to Ms. Sandra M. Derby from Ms. Susan D. McCormick, P.E. (NYSDEC) dated October 20, 1993.
8. Letter to Mr. Richard A. Cohen, P.E. (County of Rockland Drainage Agency) from Ms. Susan D. McCormick, P.E. dated October 29, 1997.

Attachment: Letter to Ms. Susan D. McCormick, P.E. from Mr. Richard A. Cohen, P.E. dated October 22, 1993.

9. Notice of Public Meeting and Update, dated April 1994.
10. Letter to Ms. Frances Mullin (Clerk, Town of Stony Point) from Mr. John Helmeset (NYSDEC) dated April 6, 1994.
11. Fact Sheet dated April 1994.
12. Letter to the citizens of Stony Point and Haverstraw from the NYSDEC (New Paltz) dated May 25, 1994.
13. Fact Sheet dated May 1994.
14. Letter to Mr. John Wnek from Ms. Susan D. McCormick, P.E. dated July 6, 1994.
15. Letter to Ms. Sue McCormick, P.E. from Mr. John Wnek dated July 20, 1997.
16. Letter to Ms. Sandra Derby from Mr. John Helmeset dated October 17, 1994.
17. Letter to Ms. Sandra Derby from Mr. John Helmeset dated November 28, 1994.
18. Letter to Ms. Sandra Derby from Mr. John Helmeset dated January 4, 1995.
19. Letter to Ms. Carol L. Lynes (IT Corporation) from Mr. John A. Helmeset dated July 14, 1995.
20. Letter to Ms. Sandy Derby from Mr. John A. Helmeset dated August 24, 1995.

21. Letter to Ms. Sandra M. Derby from Ms. Susan D. McCormick, P.E. dated October 25, 1995.
22. Fact Sheet, dated November 1995.
23. Letter to Ms. Susan D. McCormick from Ms. Sandra M. Derby dated February 29, 1996.
24. Letter to Mr. Vimal S. Minocha (NYSDEC) from Mr. Mark E. VanValkenburg (NYSDOH) dated March 21, 1996.
25. Letter to Ms. Sandra M. Derby from Mr. Vimal S. Minocha, P.E. dated March 22, 1996.
26. Letter to Ms. Susan D. McCormick, P.E. from Ms. Sandra M. Pezzillo (Derby) dated February 19, 1997.
27. Letter to Ms. Frances C. Mullin from Mr. John D. Barnes, P.E. (NYSDEC) dated May 12, 1997.

Attachment: Cancer Incidence Report prepared by the NYSDOH dated May 9, 1997.
28. Letter to Ms. Susan D. McCormick from Ms. Sandra M. Pezzillo dated June 23, 1997.
29. Letter to Ms. Frances C. Mullin from Mr. John D. Barnes, P.E. dated June 26, 1997.
30. Letter to Ms. Frances C. Mullin from Mr. John D. Barnes, P.E. dated September 12, 1997.
31. Letter to Mr. Michael J. O'Toole, Jr., P.E. (NYSDEC) from Dr. G. Anders Carlson (NYSDOH) dated September 12, 1997.
32. Letter to Ms. Susan D. McCormick from Ms. Sandra M. Pezzillo dated September 24, 1997.
33. Letter to Ms. Frances C. Mullin from Mr. John D. Barnes, P.E. dated September 26, 1997.
34. Notice of Public Meeting (September 1997).
35. Fact Sheet, dated September 1997.
36. Letter to Ms. Sandy Pezzillo from Ms. Susan D. McCormick, P.E. dated October 2, 1997.

37. Letter to Mr. Dennis Munhall (USEPA) from Mr. John D. Barnes, P.E. dated October 2, 1997.
38. Letter to Mr. Dennis Munhall (USEPA) from Mr. John D. Barnes, P.E. dated October 8, 1997.