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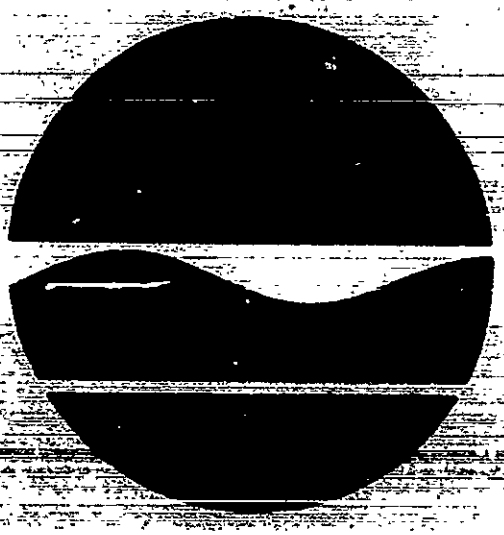
Kerry Chemical Company Site

Delaware County, New York

Site Number 4-13-001

New York State Superfund

Record of Decision



December 1990

PREPARED BY:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road, Albany, New York 12233
THOMAS C. JORLING, *Commissioner*

KERRY CHEMICAL COMPANY SITE

Delaware County, New York
Site Number 413001

NEW YORK STATE SUPERFUND
RECORD OF DECISION

December 1990

New York State Department of Environmental Conservation

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Kerry Chemical Company Site, Route 268, Town of Hancock, Delaware County, New York - Site ID #413001.

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Kerry Chemical Company Site, developed in accordance with the New York State Environmental Conservation Law (ECL), and is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USL Section 9601, et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Appendix A of this record lists the documents that comprise the Administrative Record for the Kerry Chemical Company Site. The documents in the Administrative Record are the basis for the selected remedial action.

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, present a current or potential threat to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedy for this site consists of excavation followed by thermal destruction of the wood tar that presently exists on-site in lagoons and surface flows. Thermal destruction will take place on-site using a commercial transportable incineration of the rotary kiln or circulating bed combustion technology. The unit will be transported to, and assembled on-site to operate until all wood tar waste has been excavated and destroyed.

The components of the selected remedy are as follows:

- Improvement of the site access road to allow passage of heavy vehicles and equipment.
- Construction of a surface water diversion swale to intercept and divert around excavation areas the spring water which flows across the site.
- Demolition and removal of the existing, unstable buildings and stack on-site.
- Construction of a groundwater drain to lower the groundwater table below levels needed for excavation of the wood tar.
- Installation of a rip rap system along the near bank of the adjacent Cadosia Creek for protection against releases during construction.

- Excavation and placement in a contained, temporary storage area of the wood tar pits and tar flow areas after the clearing of vegetation. Excavated areas filled, graded and seeded. Wood tar deposits removed from the Cadosia Creek bed using hand tools and temporarily contained in the storage area.

- A rotary kiln or circulating bed combustor transported to the site, assembled and operated until all waste on-site is destroyed. (The thermal destruction process will be designed to operate with all the required air pollution controls).

- Based on chemical analysis of the resultant ash, and upon regulatory requirements and a cost analysis - ash transported off site for disposal, or disposal in a small landfill cell constructed on-site.

- Final grading and restoration.

DECLARATION

The selected remedy is designed to be protective of human health and the environment, is designed to comply with applicable State environmental quality standards and is cost effective. This remedy satisfies the Department's preference for treatment that reduces the toxicity, mobility or volume of hazardous substances, pollutants or contaminants as the principal goal.

Edward O. Sullivan

Date

Edward O. Sullivan
Deputy Commissioner
Office of Environmental Remediation

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I. SITE LOCATION AND DESCRIPTION

The Kerry Chemical Company Site is located 3/4 miles north of the Hamlet of Cadosia, in the Town of Hancock, Delaware County. The site encompasses approximately 10 acres and is 4/10 miles long in a north-south direction, bounded on the east by the Cadosia Creek and on the west by an abandoned railroad grade and steep hillside.

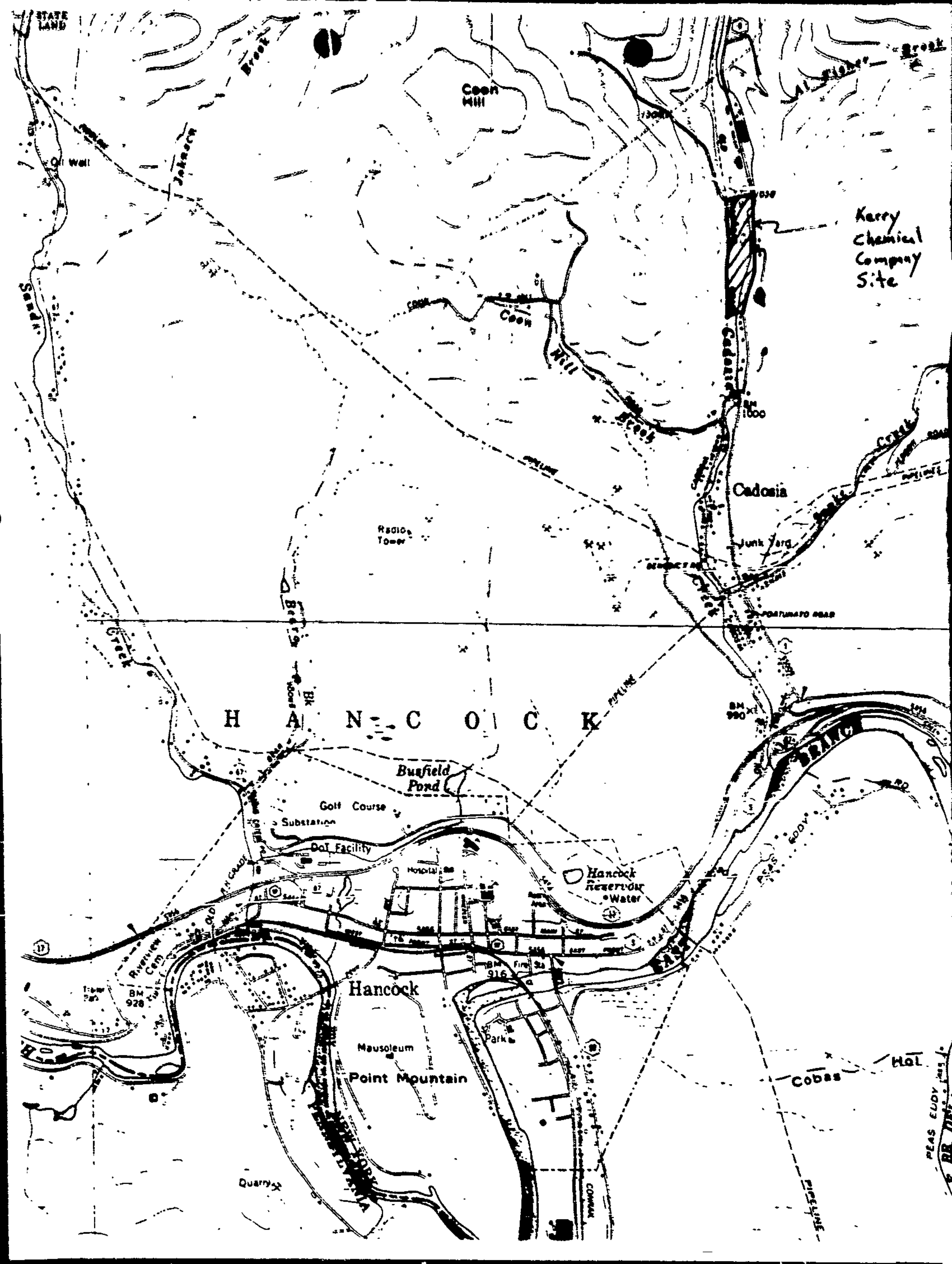
The site vicinity is a sparcely populated rural area of steep hills and glacial valleys, defined as part of the Appalachian Plateau. There are less than 10 residences within a half mile radius of the site. The adjacent Cadosia Creek flows into the East Branch Delaware River two miles downstream of the Kerry Site.

II. SITE HISTORY

The Kerry Chemical Company operated at this site from 1908 to 1949. The original intent of the plant operation was to utilize local hardwood trees to produce charcoal through a pyrolysis process. As chemical technology advanced, the process was improved to collect gasses liberated from the wood during heating. Condensing and distilling these gasses resulted in the production of methanol, methyl acetate, acetic acid, formaldehyde and acetone. The waste products of this process consisted of black or brownish tar-like substances which were pumped while hot to one of three on-site lagoons or directly into the Cadosia Creek. The facility was made up of at least nine buildings at that time.

Today, there are three decrepit buildings and a large smokestack still standing at the Kerry Chemical Site. The tar waste exists in five on-site lagoons ranging from 3-10 feet in depth. The waste is also seen in areas where it is flowing slowly overland as a thin surface layer. The total volume of waste on-site is estimated to exceed 3000 cubic yards. The waste has a viscous tar-like consistency which is almost solid in cold weather, yet decreases in viscosity and behaves more like a liquid in warm weather. Where exposed to air, the tar-waste emits a creosote odor. The intensity of odor emission is also temperature dependent. The smell of the tar on-site is strongest in warm weather.

In 1965, while a contractor for the NYS Department of Transportation (NYSDOT) was working to realign the Cadosia Creek adjacent to the Kerry Chemical Site during a highway project, a backhoe operator excavating along the creek's west bank inadvertently penetrated a tar lagoon. The large volume of tar that was released to the creek resulted in a major fish kill in both the Cadosia Creek and 2 miles downstream in the East Branch Delaware River. A ten foot high, 70 foot long sheet pile retaining wall was installed afterward by NYSDOT and remains in-place to support the creek bank and hold back the buried tar lagoon. Tar from on-site had also been released slowly to the creek over a period of several years through an old buried culvert. The culvert was plugged to prevent further discharge to the



STATE LAND
Coon Hill
Oil Well
Kerry Chemical Company Site
Cadosia
Junk Yard
Radio Tower
H A N C O C K
Buxfield Pond
Golf Course
Substation
DoT Facility
Hancock Reservoir
Water
Hospital
Riverview Cem
BM 928
BM 916
Fire Sta
Hancock
Park
Mausoleum
Point Mountain
Quarry
PIPELINE
Cobas
Hol

creek in 1986. The culvert was permanently cut off in Summer, 1989. At the far southern end of the site, the leading edge of the tar flowing overland has now reached the Cadosia Creek.

Historically, pets, domestic and wild animals had regularly been trapped and killed in the deeper tar lagoons in warm weather. Children had also become trapped in the tar occasionally, although no deaths were reported. Therefore, the known deep tar lagoons were fenced in 1985. Wild animals and pets are still killed in the tar lagoons.

III. CURRENT STATUS

In 1986, GHR Engineering Associates was hired by the NYSDEC to carry out a Remedial Investigation/Feasibility Study (RI/FS) at the Kerry Chemical Site. The purpose of a Remedial Investigation is to determine the nature and extent of contamination at a site and to assess the associated risk to public health and the environment. To accomplish this at the Kerry Chemical Company Site, the following site investigation tasks were carried out during the RI: 29 exploratory test trenches were excavated, a detailed geophysical investigation was conducted, 21 groundwater monitoring wells were installed, and 11 soil samples, 6 surface water samples from the Cadosia Creek, 2 sediment samples, 21 on-site groundwater samples, 5 homeowner well samples and 6 tar samples were collected and analyzed for pollutant compounds.

A Feasibility Study is carried out using the data collected in the Remedial Investigation to identify and evaluate potentially applicable remedial actions. In the Kerry Chemical Site FS, each alternative was evaluated based on:

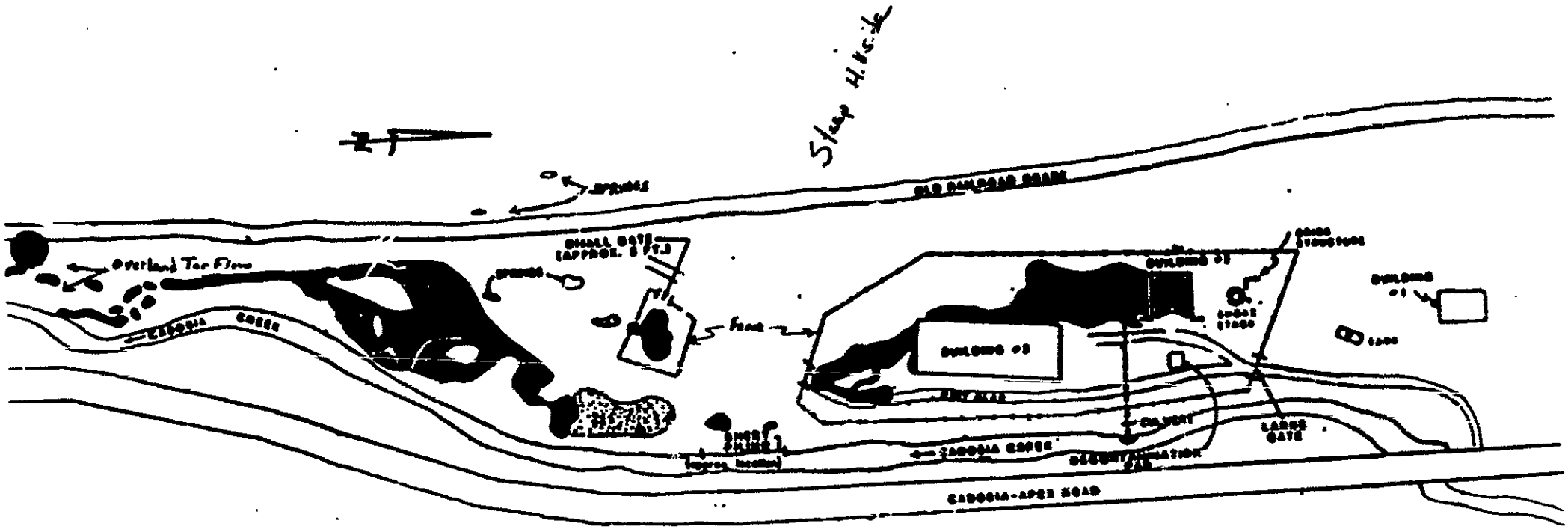
- Technical Factors including Performance
  Reliability
  Implementability/constructibility
  Safety
- Institutional Analysis Factors (compliance with standards)
- Public Health Analysis Factors
- Environmental Analysis Factors
- Cost Factors

A. Major Findings of the Remedial Investigation

- The Kerry Chemical Site contains approximately 3500 cubic yards of wood tar waste. The waste is found in thin layers flowing overland and in five lagoons up to 10 feet in depth.

- The wood tar is made up of dozens of different organic chemicals including polycyclic aromatic hydrocarbons (PAHs), and several phenolic compounds in high concentrations (thousands of parts per million). The wood tar has a very high heat content: in excess of 8700 BTU/lb.

- The wood tar waste has been designated a hazardous waste by NYSDEC based on the chemical process by which it was generated.



SUBSURFACE TAR DEPOSITS

SURFACE TAR DEPOSITS
(DETERMINED BY [illegible])

WOOD WASTE/TAR MIXTURE

Scale 1" = 200'

EXTENT OF CONTAMINATION

Its designation according to 6 NYCRR Part 371.4 is as a K035 waste.

- Despite existing in direct contact for 50 to 80 years, groundwater underlying the site (usually found 4 to 8 feet below ground surface) has not been significantly contaminated by leaching from the tar deposits (found up to 10 feet below ground surface). The highest concentration of a Hazardous Substance List (HSL) compound detected in a well on-site was 21 parts per billion of dimethyl phenol. No chemical compounds were found in any of the five off site homeowner wells sampled. The conclusion drawn is that the tar matrix, which contains long chain polymers, prevents its chemical constituents from entering into water solution.

- The analysis of soil samples taken at the Kerry Chemical Site has shown that the wood tar's presence has not resulted in the contamination of site soils. Eleven soil samples were taken during test pit excavation and monitoring well installation. When analyzed, each of these soil samples, which were free of visible wood tar particles, were found to be clean. No Hazardous Substance List compounds were detected. Only those samples taken nearby which did contain visible tar were found to contain the dozens of organic chemical compounds characteristic of the tar. The conclusion is that the wood tar's chemical constituents do not "mix" with. or otherwise contaminate soil. When the clumps or pieces of wood tar are separated from soil, the adjacent remaining soil is clean.

- Surface water samples taken from the Cadosia Creek, which forms the site's eastern boundary and flows into the Delaware River 2 miles to the south, show that water in the stream is free of contamination. Samples taken of Cadosia Creek sediments however exhibit the presence of many of the chemical compounds found in the wood tar. As discussed above, these compounds were detected because the sediment samples contained visible clumps or particles of the wood tar.

- Contaminant migration off-site is not yet a major concern at this site. Wood tar constituents have not gone into solution in the water of the Cadosia Creek, nor to a significant extent in the groundwater. Low levels of HSL compounds were detected only in two wells, both upgradient of the site's bounaaries. Since downgradient wells near the border of the site, and off-site wells, are free of contamination despite over 50 years of wood tar disposal, groundwater is not considered a route of contaminant migration. Warm weather overland flow of wood tar, however, is just now begining to result in off-site contamination. The leading edge of the tar flow is now entering the Cadosia Creek at the southeastern boundary of the site. A former route of contaminant migration was a buried culvert which originates under one of the tar lagoons and carried tar to its outfall at the Cadosia Creek. This was the source of much of the tar found in Cadosia Creek

sediments. Until it was temporarily plugged in 1986 and permanently cut-off in 1989, tar would seep onto the creek bank through this culvert during warm weather.

B. Risk Assessment

A human health risk assessment conducted was in the RI. The calculations in the risk assessment show that the greatest health risk would exist if groundwater in the area where the low contaminant levels were detected was used as a source of household water. This is not now the case, nor is it likely to be in the future. A significant carcinogenic health risk (estimated excess carcinogenic risk of 2.17EE-2) was shown to exist in the case of adults eating fish caught in the Cadosia Creek, adjacent to the Kerry Site every day of the summer fishing season for their lifetimes. This is based on the assumption that contaminant levels in the fishes' flesh would be in equilibrium with those in the creek sediments.

Therefore, a quantifiable human health risk has been shown to result from releases to the Cadosia Creek from waste sources on the Kerry Chemical Site. As it slowly flows into the creek, the insoluble tar hardens and breaks down into small particles which join with creek sediments. Six of the polycyclic aromatic hydrocarbon (PAH) compounds which are found in the tar waste are suspected human cercinogens. When creek sediment is taken up by fish while feeding, the PAH compounds in the tar particles may be absorbed by the fish and may bioaccumulate.

Less readily quantified are two other human health risks whose source is the exposed tar lagoon surfaces at the Kerry Site. The first is posed by the continuous emission of air contaminants, especially during warm weather. Previous attempts to quantify air contaminant concentrations have failed, precluding risk calculations. Creosote-type odors from the waste are often noticeable on-site, and sometimes at the nearest homes, however, and may pose some risk. (Recent improvements in air analysis technology will be utilized during the Design and Construction phases to quantify air contaminant emissions.) Lastly, a serious human health impact would result from direct skin contact with the tar waste due to entrapment in an exposed lagoon. The odds of this event occuring are difficult to calculate, precluding risk calculation, but would likely be low due to warning signs and site fencing.

C. Need For Remedial Action

Long term risks to human health and the environment are posed by the Kerry Chemical Site if left in its present state. The threats range from catastrophic to slow-flow releases of tar to the Cadosia Creek, and from summertime air contaminate emissions to physical entrapment of animal and human trespassers in the tar lagoons.

- The sheet pile retaining wall installed in 1965 to hold back an on-site tar deposit, was inspected by a NYSDOT engineer in July 1987, and was found to be structurally sound. However, due to the fact that the site lies in the flood plain of the Cadosia Creek, the tar behind this wall and

several of the other deep tar lagoons are susceptible to catastrophic release during a severe spring flood. The result would be another major fishkill in the Cadosia and in the Delaware River downstream.

- The tar which flows over the ground surface in warm weather from the lagoon areas SSE to the creek, follows the path eroded by water from springs on the hillside along the site's boundary. The leading edge of the overland tar flow is presently reaching the creek bank. Successive years of scouring by spring water flow and warm weather tar movement is resulting in a slow continuous release of waste to the creek. The result is PAH contamination of the creek sediments.

- Although air monitoring attempts failed to quantify the vapor phase release of contaminants from the exposed tar lagoons, it is well documented that the odor of emissions from the tar are strong enough to cause dizziness and headaches for persons on-site during warm weather. Under these conditions the contaminant odors are sometimes detectable from some of the properties adjacent to the site. Although uncalculated, a risk may be posed by this route of exposure.

- Although the tar lagoons exposed at the surface are presently fenced to prevent access, wild and domestic animals are still regularly trapped and killed in them. In the long term, this can be expected to continue. The possibility also exists for human trespassers to inadvertently come in physical contact with the tar.

IV. DESCRIPTION AND EVALUATION OF REMEDIAL ALTERNATIVES

In order to address the need for remediation at the Kerry Chemical Site, GHR Engineering carried out a Feasibility Study which involved the formulation and evaluation of eight alternative remedial action plans. Because groundwater and surface water have not been significantly impacted by the site, groundwater and surface water remediation technologies are not considered in the FS. However, to varying degrees, all the remedial alternatives except No. 1 offer some reduction in the likelihood of any future impact on these resources.

A. Remedial Action Plan Alternatives

Alternative No. 1 - No Action. Consideration of no action is the baseline for evaluation of other alternatives. It was included in the detailed evaluation in accordance with program requirements. The only action envisioned under this alternative is continued Site monitoring.

Alternative No. 2 - Limited Response. Actions envisioned for this alternative would solve immediately pressing needs. The drainage run-on to the Site would be diverted away from tar areas, tar areas would be covered with soil and additional fencing would be provided. The stack and buildings would be removed from the Site. Monitoring would continue.

Alternative No. 3 - Containment. Implementation of this alternative would involve installation of a groundwater drain along the west side of the Site, placement of steel sheet piling and gabions on the west bank of Cadosia Creek, diversion of Site run-on, capping of tar areas with earth, removal of the stack and buildings, additional fencing, and continued monitoring.

Alternative No. 4 - Excavation With Off-Site Disposal. This alternative entails excavation of the tar, with disposal off-site. To ensure that releases to the Cadosia Creek are not experienced, sheet piling on the west side of the Cadosia Creek would be installed prior to excavation. The soil of the creekbank, and that seperating the creek from excavation areas, will also be protected with rock riprap. A groundwater drain would be installed and the buildings and stack would be removed. Surface water run-on would be diverted. The Site would be re-graded with clean soil. A monitoring program would continue for a limited time period. Off-Site disposal would be at a permitted hazardous waste landfill (Alt. No. 4a) or incineration facility (Alt. No. 4b).

Alternative No. 5 - Excavation With On-Site Landfill. This alternative is the same as Alternative No. 4 except that the excavated tar would be landfilled on-Site in a designed landfill facility.

Alternative No. 6 - Excavation With Solidification and Off-Site Disposal. This alternative involves the same actions envisioned for alternative No. 4 except that the excavated tar soils would be solidified with lime and cement on-Site prior to transport off-Site for disposal.

Alternative No. 7 - Excavation With Solidification and On-Site Landfill. This alternative is the same as alternative No. 6 except that the excavated tar would be solidified with lime and cement prior to landfill on-Site in a designed landfill.

Alternative No. 8 - Excavation With On-Site Incineration. With this alternative, the elements of alternative No. 4 would be undertaken, but a mobile incinerator would be used at the Site to destroy the excavated tar.

B. Description of Evaluation Factors

The alternatives considered for remediation of the Kerry Chemical Company Site, including the NYSDEC's chosen alternative, are in compliance with the New York State Environmental Conservation Law (ECL). The goal of the Feasibility Study was to identify the alternative which best satisfies the following evaluation factors.

Technical Factors

In performing technical assessments of each alternative four criteria were addressed. These criteria are: performance, reliability, implementability and safety as discussed below.

Performance. Each alternative was judged both for its expected effectiveness and its useful life. Effectiveness addresses the ability of a measure to accomplish its design objectives, that is, its potential for success in alleviating the type of contamination problem which it is intended to remedy. Effectiveness of an alternative also is a function of how well components of the action can be integrated to provide an overall solution at the Site. Useful life of a measure is its anticipated service life without consideration for replacement, given that proper operation and maintenance procedures are performed.

Reliability. Key considerations for this criterion include operation and maintenance (O&M) requirements and the demonstrated success of the action at similar sites. O&M requirements include the availability of labor and materials for tasks as well as the frequency and complexity of the tasks necessary to keep the action effective once the original activities have been completed. Field tested methods have preference over technologies that have not been applied to actual site cleanup operations.

Implementability/Constructability. This factor deals with both the constructability of the alternative and time to achieve remediation. Constructability refers to the relative ease of installing or completing an action based on site-specific constraints such as waste characteristics, site access, or water table elevations. It requires an evaluation of the ability of a contractor to actually build, construct, or position the measure under consideration. The time to achieve the desired result covers the period from startup of the remediation until beneficial results are realized, irrespective of any measures taken initially to provide temporary protection to local citizenry or the environment.

Safety. This criterion addresses major threats posed to the contractor, Site personnel and the Site vicinity from activities related to remedial actions proposed. Major threats considered are potentials for fire or explosion and exposure to hazardous substances. At the Kerry Site a primary concern is health and safety protection of on-Site personnel during any remediation activity. Off-site impact due to remediation activities is unlikely.

Institutional Analysis Factors

The primary focus of the institutional analysis is the identification of potentially applicable Federal, state or local laws, regulations, policies and guidelines and the determination of, for each alternative, compliance and/or non-compliance with applicable requirements. Also considered as part of the institutional analysis are community needs and public policies as expressed in adopted plans such as zoning and long-term resources management programs.

PRESENT WORTH COST ESTIMATES FOR
REMEDIAL ALTERNATIVES AT THE KERRY CHEMICAL CO. SITE

NO.	ALTERNATIVES DESCRIPTION	ESTIMATED CAPITAL COSTS	O&M COSTS AS PRESENT WORTH	TOTAL ESTIMATED COST (PRESENT WORTH)
1	No Action	0	93,000	$ 93,000
2	Limited Response	357,600	93,000	456,000
3	Containment	1,452,400	93,000	1,545,400
4	Excavation with Off-Site Disposal			
	a. - with off-Site landfill	3,108,700	0-37,700	3,146,400
	b. - with off-Site incineration	7,595,700	0-37,700	7,633,400
5	Excavation with On-Site Landfill	1,932,900	240,000	2,173,000
6	Excavation with Solidification and Off-Site Disposal	4,902,500	0-36,400	4,939,000
7	Excavation with Solidification and On-Site Landfill	3,024,000	240,000	3,264,000
8	Excavation with On-Site Incineration			
	- with rotary kiln	4,875,000	0-238,000	5,113,000
	- with CBC	5,830,000	0-238,000	6,068,000

Public Health Analysis Factors

Public health considerations were an integral part of the Kerry Study. The primary criteria developed and used in the public health risk assessment were: Carcinogenic Risk (for contaminants identified as carcinogenic); and Fraction of Acceptable Daily Intake (ADI) for non-carcinogens. The primary health concern posed by the Kerry Site results from on-Site direct (dermal) contact with the tar and contaminant releases to the air under hot weather conditions. Safety issues were also addressed in this part of the evaluation.

Environmental Analysis Factors

The environmental analysis of alternatives addresses, as applicable, potential beneficial and adverse impacts on surface water, groundwater and the air. Also addressed were impacts on the natural and biological environment including wetlands, habitats and floodplains, along with human use aspects such as recreational resources.

Cost Factors

Analyses of alternatives require both technical and economic evaluation in order to develop the most cost-effective remedial action. In the cost analysis estimates of expenditures required to complete each measure were developed in terms of both capital and O&M costs. Once these figures were determined for each alternative, present work and annual costs were calculated to facilitate comparative evaluation. Two EPA guidance documents were used for reference in the cost analysis. These EPA documents are:

1. "Remedial Action at Waste Disposal Sites", (10/85), and
2. "Remedial Action Costing Procedures manual", (9/85).

The accuracy of costs developed for feasibility studies are typically in a range of +50 to -30 percent. Estimates developed for this feasibility study were targeted to fall in this range.

C. Comparison of Remedial Alternatives

The greatest complexities in carrying out remediation of the Kerry Chemical Site will result from any activity where handling of the tar is involved. Excavation and movement of the tar will be physically difficult due to its viscosity and stickiness. But more importantly, detailed calculations in the Remedial Investigation have predicted that the emissions of air contaminants from the tar will increase when the tar is disturbed. All of the remedial alternatives from Alternative No. 4 through No. 8 involve excavation of the tar and its associated difficulties. These difficulties must be offset by a resultant benefit in the form of reduced or eliminated risk to human health or the environment posed by the site once a chosen remedy is carried out. Otherwise, the remedy will not have been worth the difficulties and potential air contaminant releases involved in disturbing the tar.

Alternatives Nos. 4, 6 and 8 all result in the site being free of tar at the project's completion. This complete removal of the contaminant source from the site addresses all of the issues listed above under the "Need For Remedial Action" and justifies the difficulties of excavation of the tar. Alternative No. 8 and Alternative No. 4b, the incineration alternatives, both have the added benefit of being "permanent remedies." Permanent remedies, those that permanently reduce the toxicity, volume, and/or mobility of the hazardous waste are preferred for choice under state and federal regulations. Alternative No. 6 and Alternative No. 4a, both with off-site landfill, are therefore less attractive because the waste would still exist, buried now in a permitted landfill elsewhere. Recent legislation banning the land burial of certain hazardous wastes may apply to the Kerry Chemical tar, and if so would proclude the choice of Alternatives 6, 4a, and also Nos. 5 and 7.

Alternative Nos. 5 and 7 would result in the entire volume of tar being still present on the Kerry Site at the project's completion. With the contaminant source still on-site, some of the issues listed in the "Need For Remedial Action" would still be potential concerns. Although Alternative No. 5 is a technical improvement over no action because the tar is reburied in a designed landfill facility on-site, and Alternative No. 7 has the added improvement of removing the mobility of the tar through solidification prior to reburying in an on-site landfill, neither has removed the source from the site and may not justify the complexities and difficulties of excavation of the tar.

Alternative No. 7, solidification and on-site landfilling of the tar, and Alternative No. 6, solidification and off-site landfill, are meant to be improvements on Alternative Nos. 5 and 4a, respectively, which are equivalent remedies without the solidification step. The benefit of carrying out the on-site process of heating the excavated tar, mixing it with lime and cement, and pouring the mixture into block molds to solidify, is that the stickiness and flowability of the tar is absent from the solid tar blocks which result. GHR Engineering, using tar samples from the Kerry Site, concluded that their lime and cement solidification method provided the best results after experimenting with various chemical mixtures and investigating commercially available solidification techniques.

There are, however, many drawbacks to both the solidification process and the properties of the solidified tar which severely detract from the attractiveness of these remedies:

* The solidification process would greatly increase the amount of waste handling to take place on-site, and therefore increase the difficulties associated with handling this tar. The greatest of these will be the further increase in air contaminant emissions which will result from the heating and mixing of the tar in a large mixing vessel on-site.

* Solidification would approximately double the volume of tar material. This would lead to far greater costs for the ultimate disposal of the solidified tar, whether that disposal involved the construction of an on-site landfill or transport off-site for disposal at a permitted hazardous waste landfill.

* The solidified tar has no noticeable reduction in odor from air contaminant emissions. Bench scale solidification of tar samples from the site were carried out during the Feasibility Study and the properties of solidified tar were examined. There was no noticeable difference in the phenolic smell given off by solidified and unsolidified tar samples. The conclusion drawn is that solidification will provide no benefits in terms of air concerns.

* The solidified tar samples from the F.S. bench scale tests were of a light, porous, crumbly, chalk-like consistency. Although leachability tests were inconclusive, it seems intuitively likely that the tar in this form would be more able to leach contaminants into water solution than pure tar. The pure tar has not leached significant contaminants into groundwater despite 50-70 years of its existence on-site. With increased surface area due to its porosity and crumbliness, the solidified tar would have a much greater potential for leaching contaminants to water.

Solidification alternatives can be ruled out as discussed above, due to the added cost, complexity and risk involved in the process of solidification, and due to the lack of improvement in properties of the resultant tar. If the goals of source removal and permanancy of remedy were not considered important, Alternative No. 3, containment of the wastes at their present locations, would be the most attractive remedy. For a low cost, the waste would be stabilized and protected from further movement, surface water contact and flood waters without the materials handling and air contaminant issues involved in excavation of the tar.

Understanding the necessity of source removal, but continuing to ignore the preference for a permanent remedy. Alternative No. 4, excavation with off-site landfill, would be considered the most attractive remedy. Its cost is the lowest of the remaining alternatives and the goal of source removal is accomplished. However, NYSDEC's policy on chosing a remedial technology encourages use of permanent rather than containment-oriented remedies. This policy is aimed at restoring sites to productive use and eliminating long term monitoring and operation and maintenance costs. Considering this, the Remedial Alternatives involving off-site and on-site incineration appear to provide the greatest benefit and justification for excavation of the tar at the Kerry Chemical Site. Of the two incineration alternatives, on-site incineration, Alternative No. 8, is preferable based on the analysis of cost factors.

The Feasibility Study carried out a detailed evaluation of Remedial Alternatives based on the five evaluation factors and the facts discussed above. The Feasibility Study Report contains the complete evaluation details for each alternative.

At NYSDEC's request, GHR Engineering investigated the feasibility of alternative methods of disposal of the Kerry Chemical tar. As part of the Post-Feasibility Study Tasks assigned by NYSDEC, GHR researched and contacted the operators of dozens of active cement kilns, refuse incinerators, conventional oil burners, and industrial incinerators to determine if any would be willing to utilize the high BTU value of the Kerry tar as a free fuel supplement to their existing incineration operations. Despite an extensive search, no interested parties were found. These efforts are documented in GHR's Report on Post-Feasibility Study tasks. NYSDEC also investigated, without success, the possibility of destroying the Kerry tars in the coal burning incinerator of a New York State utility company along with the coal tar the utility is excavating from a hazardous waste site of its own.

V. SELECTED REMEDY

After extensive investigation, examination, and internal review, the Remedial Alternative chosen by NYSDEC as most appropriate for implementation at the Kerry Chemical Site is excavation and destruction of the tar using on-site incineration: Alternative No. 8. In this alternative, thermal destruction of the waste may be carried out using circulating bed combustion (CBC) technology or rotary kiln technology. The choice of incineration technology will be made during the Remedial Design phase of this project. These two technologies were both found to be the most appropriate and technically applicable incineration technologies available for the Kerry Chemical Site waste.

A more detailed summary of the tasks to be carried out as part of the chosen Remedial Alternative is contained below. The associated costs of this remedy are summarized in the table included within.

A. Rationale For Selection

The high BTU value of the tar waste makes it an excellent incineration candidate and will reduce incineration costs by eliminating the need for significant auxiliary fuel. Both of the incineration technologies recommended can and would be fitted with effluent gas treatment systems to comply with all requirements placed on the quality of stack gas. In terms of air emissions during remedial action, those emanating from disturbed tar exposed to air will be of greater magnitude, and more difficult to control, than any resulting from incineration of the tar. There are several options available for containing air emissions from the tar excavations: flooding the excavations with water during tar removal, use of vapor suppressing foams, conducting excavation within framed, tent-like enclosures having air continuously removed from inside and treated, excavation in cold weather, etc. This choice will also be part of Remedial Design. Lastly, a small landfill cell could be constructed on-site for disposal of the incinerator ash. The other option for ash disposal is to transport it off site for disposal.

During the Remedial Design process, specific methods and equipment for carrying out all of the tasks outlined below will be determined by conducting all the research, calculations, benchscale testing and trial burns necessary to design an efficient, environmentally sound remedial program which meets or exceeds all applicable or relevant and appropriate regulations and standards. Valuable information will be provided by the U.S. Environmental Protection Agency's experiences remediating the Westline Site in Westline, Pennsylvania, approximately 15 miles from the New York border at Cattaraugus County. This National Priority List site contained wood tar waste identical to that of the Kerry Chemical Site, which was successfully destroyed using rotary kiln technology. The experience gained by USEPA's efforts at the Westline Site will prove invaluable in designing and conducting the Kerry Chemical Site cleanup both in terms of their successful excavation and handling of the tar and their successful use of rotary kiln incineration to destroy the tar.

In summary, this choice of remedy complies with the laws which provide the basis for the New York State remedial program: Article 27, Title 13 of the New York State Conservation Law, Public Law 96-510 (the Comprehensive Environmental Response, Compensation and Liability Act of 1980) and Public Law 99-499 (the Superfund Ammendments Reauthorization Act of 1986). These laws include guidance for the choice of remedies for hazardous sites and define types of remedies which must be given preference.

A preference must be given to remedies which are permanent; that is, remedies which result in the reduction of mobility, toxicity and volume of the waste. The incineration remedy chosen for the Kerry Site meets this requirement on all counts. Solidification, which was part of several remedial alternatives not chosen for this site, is not considered a permanent remedy for wastes with high organic content like the Kerry Chemical Company's wood tar. In addition, the laws require that when a non-permanent remedy is chosen for a site, the remedial action must be reviewed every five years to determine if human health and the environment are being adequately protected, and whether a permanent remedy is available.

A preference must also be given to remedies which utilize treatment technologies that have been successfully utilized at other inactive hazardous waste sites. As discussed above, this requirement is met by the chosen remedy for this site since rotary kiln incineration was successfully used to destroy identical waste from the Westline Federal Superfund Site.

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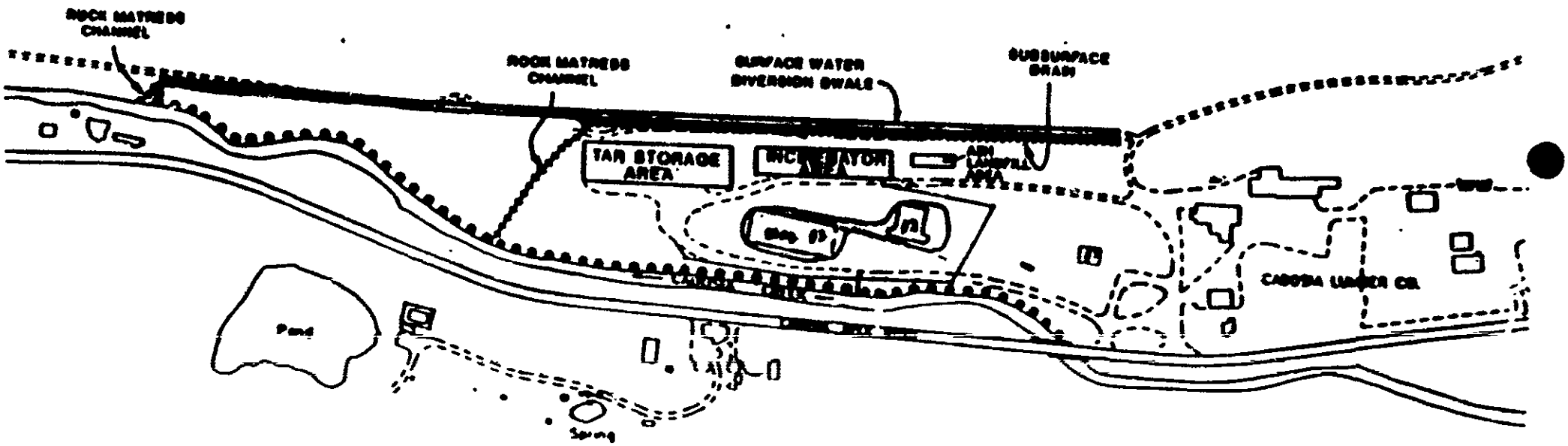


LEGEND

- SURFACE WATER DIVERSION SWALE
- SUBSURFACE DRAIN
- STREAM BANK RIP-RAP
- ROCK MATTRESS CHANNEL
- CAPPED AREAS

SCALE IN FEET

0 200 400

CONCEPTUAL SITE PLAN
ALTERNATIVE No. 8

GHR Engineering Associates Inc.
KERRY CHEMICAL CO SITE
HANOVER, NEW YORK

B. Detailed Description and Cost Estimate of Remedy

The remedial action plan chosen (Alternative No. 8) for the Kerry Chemical Company Site will involve a number of components. In brief, the plan is comprised of the following:

1. Improvement of the Site access road from Cadosia-Apex Road to allow passage of heavy vehicles and equipment.

2. Construction of surface water diversion swale along the west side of the site. This swale will intercept surface water that now runs across the Site area at certain times of the year, especially in the spring. Diversion of these waters will assist in eliminating water-tar contact and potential for tar releases and will also afford dry conditions for further remedial work.

3. Demolition and removal of the existing deteriorated stack and buildings that are present on the site. This will eliminate long term safety hazards and will also facilitate the cleanup work that would otherwise be precluded in the proximity of structures due to the safety hazards they present.

4. Construction of a subsurface groundwater drain along the western side of the site. This drain will permanently lower the high groundwater table at the Site which will be highly beneficial in subsequent tar removal activities.

5. Installation of a riprap system along the west bank of Cadosia Creek. The riprap installation proposed will include, for purposes of protection against releases during construction, temporary steel sheet piling and rock riprap. A filter fabric material will be installed under the riprap. Installation of this system will reduce potential further tar releases to Cadosia Creek.

6. Excavation and removal of tar from tar pits and tar flow areas. After vegetation is cleared from areas to be excavated, the tar will be carefully removed from pits and tar flow areas and will be placed in a contained storage area on the western side of the Site. Excavated areas will be filled, graded and seeded. Wood tar deposits will be removed from the Cadosia Creek bed using hand tools and will be placed in the contained storage area.

7. Thermal destruction of the tar collected in the contained starage area using a commercial transportable incinerator of the rotary kiln or circulating bed combustion (CBC) technology, assembled and operated on-site.

COST SUMMARY - ALTERNATIVE NO. [redacted]
EXCAVATION WITH ON-SITE INCINERATION

COST ITEM	ESTIMATED CAPITAL COST
1. Improve Site Access	$ 8,000.00
2. Demolition of Stack and Building with Off-Site Disposal	102,000.00
3. Remove Culvert with Off-Site Disposal	28,900.00
4. Surface Water Diversion Swale	48,000.00
5. Tree and Brush Clearing	9,400.00
6. Remove Fencing	1,400.00
7. Containment Along Cadosia Creek	440,000.00
8. Upgradient Subsurface Drain	80,000.00
9. Steel Sheet Piling Around Tar Pits	130,000.00
10. Dewatering	32,000.00
11. Excavate Tar and Stockpile	224,000.00
12. On-Site Incineration (CBC Unit) (Rotary Kiln	(3,114,000.00) (1,959,000.00)
13. Backfill, Grade and Seed	63,000.00
14. Wastewater Disposal from Scrubber (CBC Unit) (Rotary Kiln)	(0.00) (200,000.00)
15. Landfill for ash disposal	20,000.00
SUBTOTAL CBC UNIT SUBTOTAL ROTARY KILN	4,300,000.00 3,345,000.00
16. Engineering Costs @ 20%	765,000.00
17. Contingency Costs @ 20%	765,000.00
TOTAL CAPITAL COSTS - CBC UNIT TOTAL CAPITAL COSTS - ROTARY KILN	5,830,000.00 4,875,000.00

TASK/ITEM (LEVEL OF PROTECTION)	QUANTITY	UNIT COST	TOTAL COST
O & M Costs As Present Worth			
1. Fence maintenance for 30 years	30 years	$1,500/YR	$14,000.
2. Monitor semi-annually: 5 water samples	30 years	$19,200/YR	$180,000.
3. Collect leachate semi-annually			
Labor	30 years	$1,400/YR	$13,000.
Disposal	4 drums/yr	$210/Drum	$8,000.
4. Regrade and seed after 10 years of settlement	24,000 SF	$2.41/SF	$22,000.
Mob and demob costs	2 pieces	$600/piece	$460.
TOTAL O & M COSTS - ALTERNATIVE NO. 8			$238,000.
	CBC UNIT		$6,068,000.00
	ROTARY KILN		$5,113,000.00

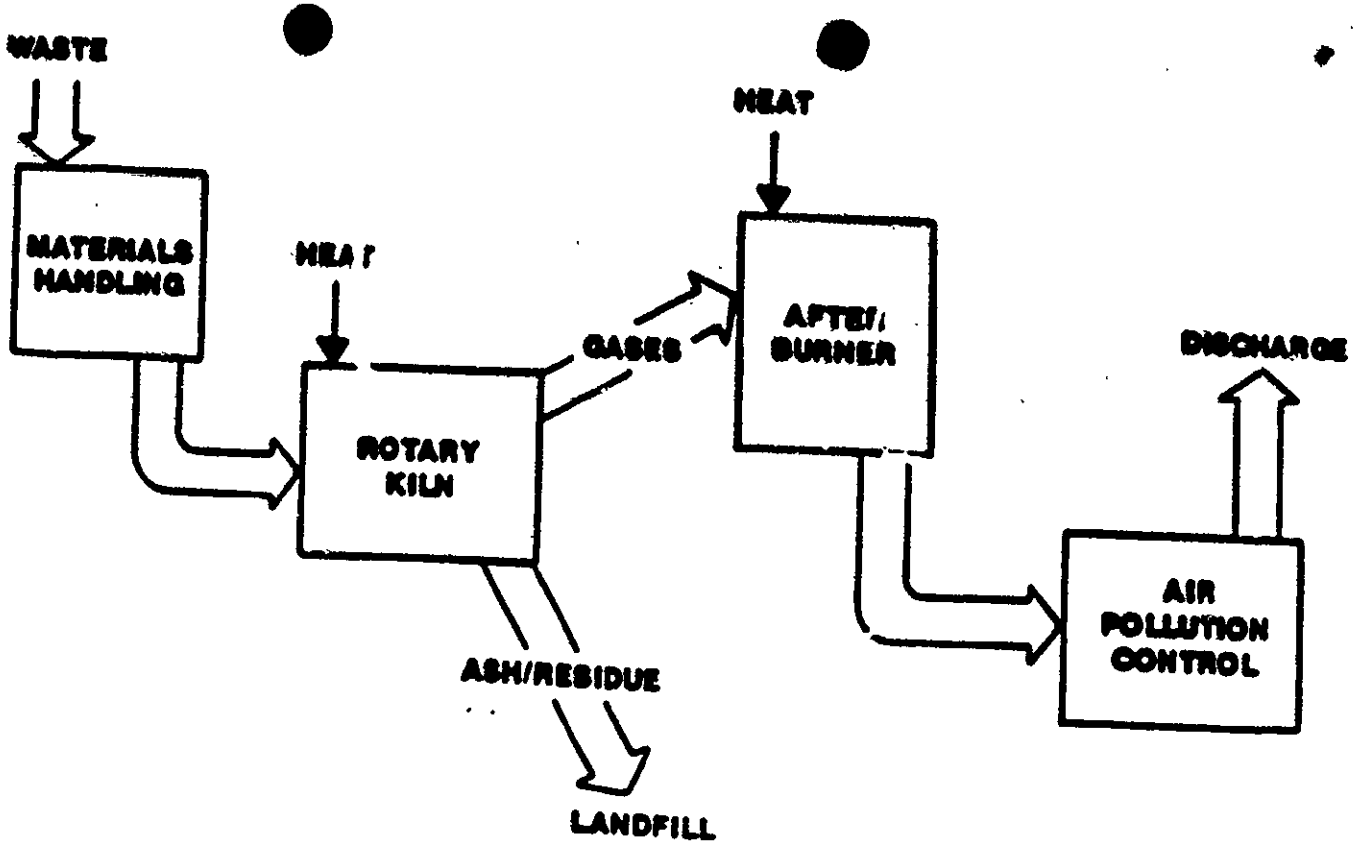
8. Disposal of incinerator ash in an on-site landfill. A landfill cell could be constructed on-site for disposal of ash which results from thermal destruction of the tar. The landfill cell could be designed with double composite liner and cap to prevent infiltration of precipitation. Alternately, the ash could be transported off site for disposal. This decision will be made based on chemical analysis of the ash generated, regulatory requirements and cost analysis.

9. Final grading and restoration. Residual foundation areas near the former locations of buildings and the materials storage and process areas would be filled, graded and seeded. On-site drainage would be provided by grading and disturbed areas would be seeded.

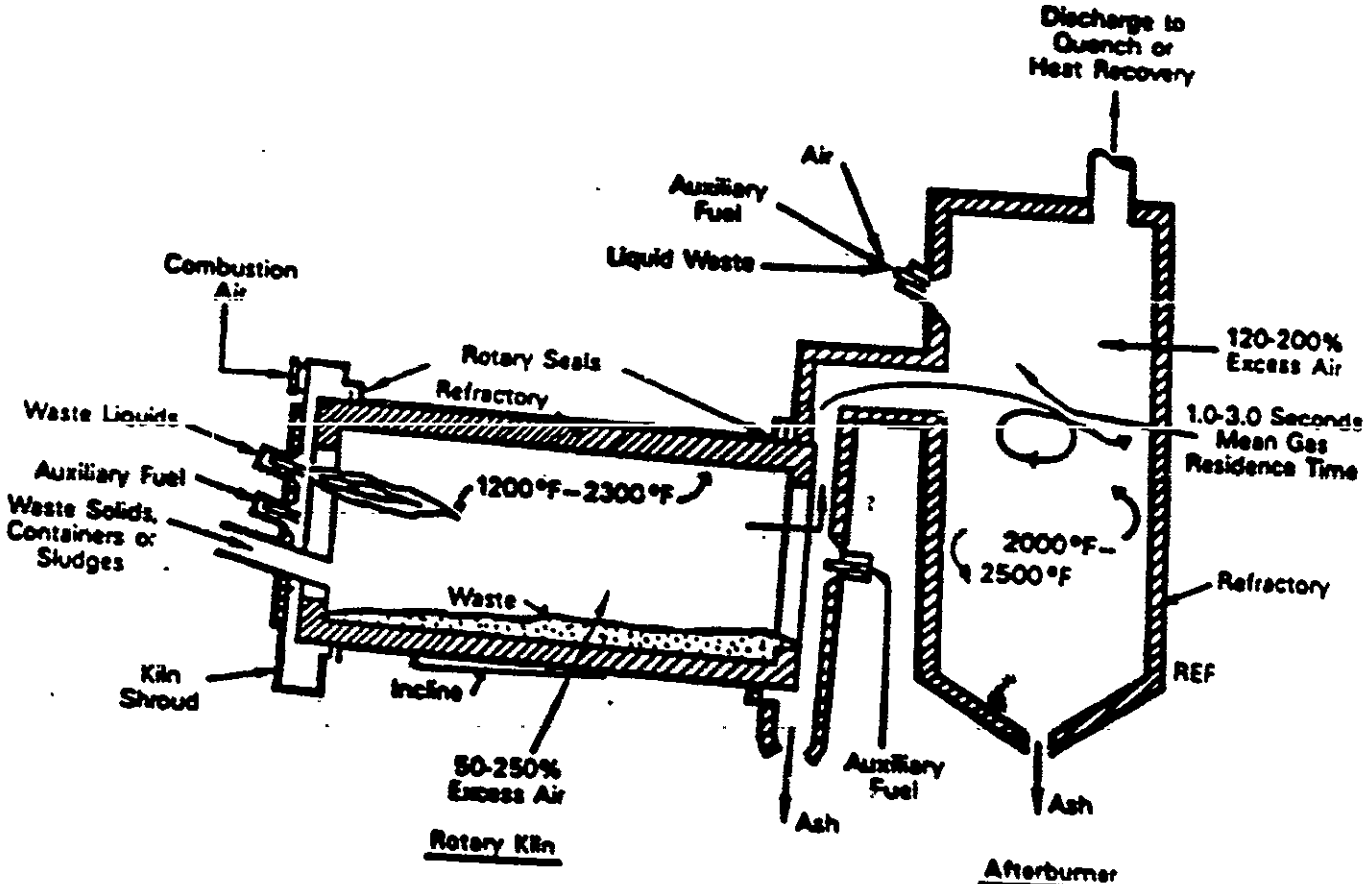
CANDIDATE INCINERATION TECHNOLOGIES

As discussed above, the use of the rotary kiln and fluidized bed (specifically, the circulating bed combustor) technologies were selected as the most appropriate for thermal destruction of the Kerry tar. Vendors of these technologies report mobile or transportable units are available for on-Site use.

Rotary Kiln. The rotary kiln has a long-term record of use for commercial applications (i.e., cement kilns) and more recently, for hazardous waste destruction. Rotary kilns are perhaps the most versatile and widely used systems for destruction of hazardous wastes, having the capability for handling a wide range of liquids, solids and sludges. The rotary kiln system would consist of four major components: the materials handling system; the rotary kiln unit; an after burner and an air pollution control system. Included herein is a schematic process diagram for a rotary kiln system. A wet venturi scrubber air pollution control device would be used to control air emissions, particulates and acid gases, prior to discharge through the stack. It is estimated that effluent from a scrubber used on a rotary kiln at the Kerry Site would receive treatment prior to discharge. Based on soils contaminated with similar wastes, also containing polynuclear aromatic hydrocarbons (PAHs), the results of analytical tests on bottom ash from incineration show that PAHs were not detected in the ash residues. Test burns and actual bottom ash testing would be required, but the bottom ash from incineration of the Kerry Waste is expected to be free of hazardous materials, primarily the inert soil fraction of the incinerated material. If test results or regulatory requirements dictate that a secure landfill would be required, then such a design would be implemented, for costing, it was assumed that a secure landfill would be required on-Site. The location of the landfill is shown in the conceptual site plan diagram.



SCHEMATIC PROCESS DIAGRAM – ROTARY KILN INCINERATION SYSTEM



ROTARY KILN SCHEMATIC

Circulating Bed Combustor (CBC). The CBC is a modification of the fluidized bed technology. As in the CBC diagram included herein, waste is introduced into the combustor loop where it is entrained in high velocity air which carries it upward through the combustor. The hot cyclone separates the gasses from the solids. The gasses pass through a flue gas cooler and then to a baghouse where particulates are removed from the gas stream prior to exhausting through the stack. Solids carried downward in the cyclone are reintroduced to the combustor via a proprietary seal system. Heavier solids are removed from the lower bed by a water cooled ash conveyor. It is expected that the ash from the Kerry waste would be inert and amenable to filling on-Site. Because high turbulence is maintained in the combustion zone, temperatures are relatively constant in the entire loop and temperatures can be maintained at relatively low temperatures, with very high destruction efficiency maintained.

Limestone may be added to the process to neutralize acid gasses. CO and NOx emissions are controlled by thorough mixing, lower combustion temperatures and the introduction of secondary air at higher locations in the combustor. According to vendor information, needs for afterburners and scrubbers are eliminated. This will be more closely examined, however, in the Remedial Design Phase.

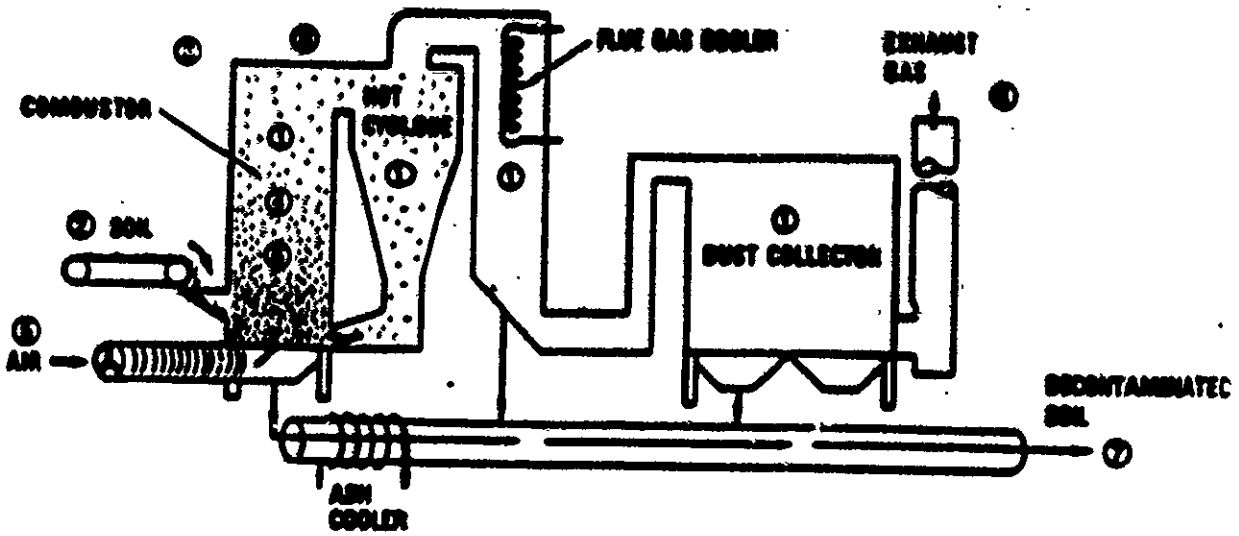
The 36-inch CBC transportable unit is relatively compact, having outside dimensions of about 50 feet by 30 feet in total. A plant layout drawing by the vendor is provided.

VI. PUBLIC PARTICIPATION

As part of the RI/FS, a public participation and community relations plan was developed for the Kerry Chemical Company Site in April 1989. The principal objectives of the Citizen Participation Plan were:

1. To provide area residents with an understanding of the New York State Superfund process. Such an understanding promotes realistic public expectations about the activities, complexities and time involved with site investigations.

2. To provide accurate, understandable information concerning all phases of the Kerry Chemical Site RI/FS program to intersted citizens. NYSDEC worked with elected officials of the area to identify and fulfill the information needs of the community. Information was disseminated through public access to documents, through press releases and a public meeting.

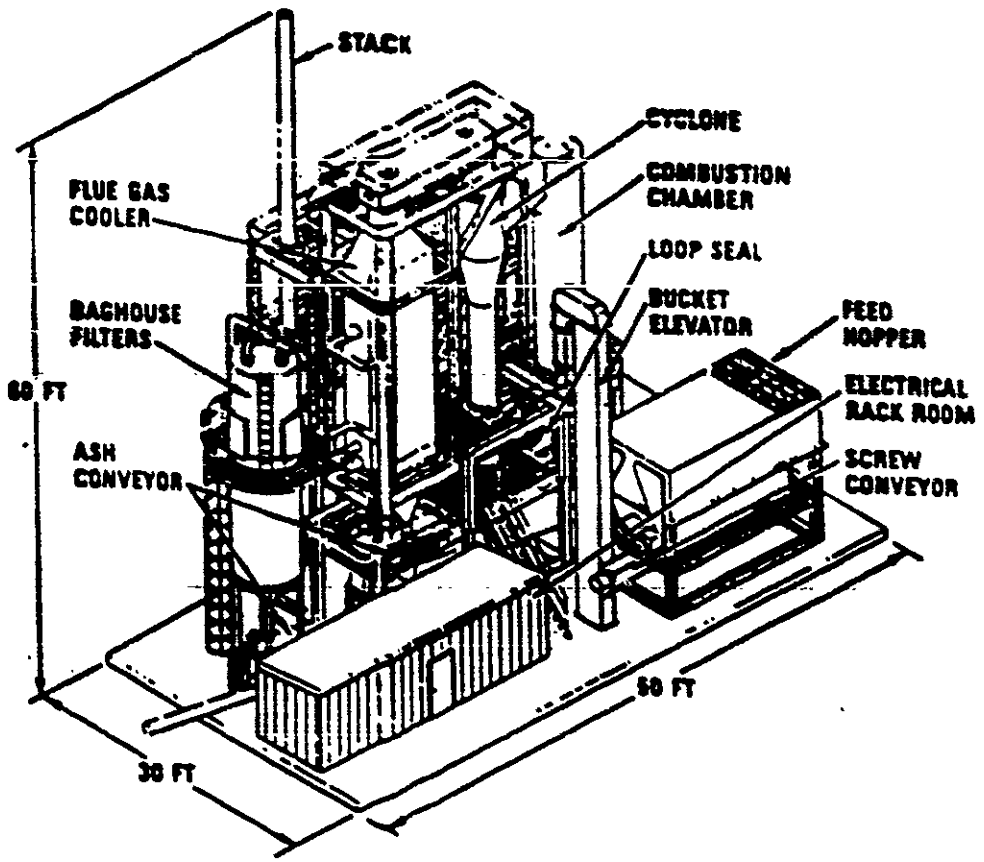


CIRCULATING BED COMBUSTOR (CBC)

SCHEMATIC

SOURCE: OGDEN ENVIRONMENTAL SERVICES

36-IN. TRANSPORTABLE STANDARD SOILS PLANT



3. To provide the community the information needed to express their views and to discuss issues of concern with NYSDEC during the RI/FS process. Documents and data were made available for public review. Citizens and town officials were asked to express their views and discuss issues of concern with NYSDEC. Then at key milestones, community input was colicited from area residents and town officials.

4. To establish a good relationship with the local media so that accurate information about RI/FS activities would be reported. An important goal of the public particpation program was to keep media informed about the project and to obtain accurate newspaper, television and radio coverage of RI/FS activities.

A State Superfund contract was signed in July 1986 with GHR Engineering Associates to perform a Remedial Investigation/Feasibility Study. The following public particpation activities have since been carried out:

1. Document repositories were established at Hancock Town Hall, Read Public Library in Hancock and the NYSDEC Region 4 sub-office in Stamford. All pertainent reports and documents related to the RI/FS have been promptly placed there throughout the project.

2. Upon completion of the Remedial Investigation and again for the Feasibility Study, the draft reports prepared by GHR Engineering were provided to town officials and placed in the repositories. The town officials and area residents were asked to provide input for revision of these draft reports. The final RI Report and final FS Report which resulted were then also provided for review.

3. On July 19, 1990 a Public Meeting was held in Hancock to discuss the findings and conclusions of the RI/FS, to present the proposed remedial alternatives for the site and solicit public comment on NYSDEC's chosen remedial alternative. Questions and answers recorded during this meeting are used to develop the Responsiveness Summary, presented in Appendix B of this document.

VII. ENFORCEMENT STATUS

Contamination at this site is the result of operations between 1908 and 1949 of the Kerry Chemical Company (a.k.a. the Thomas Keery Chemical Company.) Investigation carried out by NYSDEC's Division of Environmental Enforcement failed to uncover any living owner or operator related to the Kerry Chemical Company, or any subsequent owner of the property, capable of funding the site's remediation.

VIII. SUMMARY OF THE STATE DECISION

The chosen remedial alternative outlined in this document will provide a permanent solution to the contamination problems at this site. The removal of the wood tar waste from the flood plain and banks of the Cadosia Creek will eliminate the continuous slow flowing of the waste into the trout waters of the Cadosia Creek, and eliminates the possibility of another catastrophic release to the creek. Also eliminated with the excavation and destruction of the tar lagoons and tar flows on-site, is the long term source of air contaminant emissions and the physical entrapment hazard to wildlife and others that the exposed tar pits pose.

Thermal destruction of the wood tar using rotary kiln or CBC incineration provides permanent elimination of the waste from the environment. Design of an incineration system which has been proven highly effective for identical waste elsewhere, fitted with all the necessary air pollution controls, will result in safe, clean and efficient destruction of the waste. Conducting this thermal destruction on-site will accomplish the objectives above at a savings of millions of dollars over off-site incineration.

The remedial program as carried out thus far for the Kerry Chemical Company Site, and the chosen remedy outlined in this document, comply with Article 27, Title 13 of the New York State Environmental Conservation Law, and with Public Law 96-510 and Public Law 99-489, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Ammendments Reauthorization Act of 1986 (SARA), respectively. These laws provide the legal basis for the New York State hazardous site remedial program.

APPENDIX A

List of Documents in the Administrative Record

1. "Technical Proposal to Conduct a Remedial Investigation/Feasibility for the Kerry Chemical Company Site, Delaware County, New York," GHR Engineering - November 1985

2. "Phase II Engineering Investigation of the Kerry Chemical Company Site, Delaware County, New York," Wehran Engineering - July 1986

3. "Feasibility Study Report, Westline Site, Westline, Pennsylvania," NUS Corporation (for U.S. Environmental Protection Agency) - July 1986

4. "Contract Document for a Remedial Investigation/Feasibility Study at the Kerry Chemical Company Site," New York State Department of Environmental Conservation - July 1986

5. "Interim Investigative Work Plan, Site Safety Plan and Quality Assurance/Quality Control Plan for the Kerry Chemical Company Site," GHR Engineering - August 1986

6. "Final Investigative Work Plan, Site Safety Plan and Quality Assurance/Quality Control Plan for the Kerry Chemical Company Site," GHR Engineering - October 1986

7. "Supplemental Agreement to the Remedial Investigation/Feasibility Study Contract for the Kerry Chemical Company Site," New York State Department of Environmental Conservation - February 1987

8. "Raw Data Package from the Remedial Investigation for the Kerry Chemical Company Site," Compuchem - March 1987

9. "Draft Remedial Investigation Report for the Kerry Chemical Company Site, Volumes I and II," GHR Engineering - April 1987

10. "Final Remedial Investigation Report for the Kerry Chemical Company Site, Volumes I and II," GHR Engineering - June 1987

11. "Draft Feasibility Study Report for the Kerry Chemical Company Site," GHR Engineering - November 1987

12. "Final Feasibility Study Report for the Kerry Chemical Company Site," GHR Engineering - May 1988

13. "Citizen Participation Plan, Kerry Chemical Site," New York State Department of Environmental Conservation - April 1989

14. "Report on Post Feasibility Study Tasks, Kerry Chemical Company Site," GHR Engineering - July 1989

15. "Proposed Plan for the Remediation of the Kerry Chemical Company Site," New York State Department of Environmental Conservation - July 199[illegible]

16. "Public Meeting for the Kerry Chemical Company Site Remedial Investigation/Feasibility Study and Proposed Remedial Action Plan," Transcript Prepared by Czenenda Court Reporting, - August 1990

APPENDIX B

RESPONSIVENESS SUMMARY

The New York State Department of Environmental Conservation (NYSDEC) held a public meeting on July 19, 1990 in Hancock Central Schools' Auditorium to discuss the findings of the Kerry Chemical Company site Remedial Investigation/Feasibility Study (RI/FS) and the Proposed Remedial Action Plan. The studies were performed by GHR Engineering Associates under contract to NYSDEC. A list of those in attendance at the meeting is found at the end of the Responsiveness Summary.

The RI/FS documents were available for public review since April 1989 at the following locations:

* Read Library, Hancock, New York
* Hancock Town Hall, Hancock, New York
* NYSDEC Region 4 Sub-office, Stamford, New York
* NYSDEC Central Office, Albany, New York

Summary of Public Concerns and NYSDEC Responses

The following is a list of the questions asked during the public meeting, and NYSDEC's responses to those questions.

Q1. What do you do with the residue after incineration?

A. Since we have not yet conducted a trial burn of the Kerry wood tar waste, we do not know yet what the exact composition of the resulting ash will be. Trial burns to determine ash composition and stack gas content will be conducted during the upcoming Design phase of the project. From data already collected on the composition of the tar, however, it is possible to say two general things about the ash. First, because of the high organic, low inorganic content of the tar, the volume reduction due to incineration will be great; a relatively small amount of ash will be generated. Secondly, the inorganic analysis of the tar shows very low levels of the metals which would be of greatest concern: mercury (not detected in tar), lead (5.7 parts per million), cadmium (not detected), chromium (not detected), and zinc (5.4 ppm.) These low concentrations make it more likely that the heavy metal content of ash will be in a range that may easily be dealt with.

Once trial burns have generated ash from incineration of the Kerry tar, the ash will be analyzed. Based on these results, specifically the Toxicity Characteristic Leaching Procedure (TCLP) analysis and based on regulatory definitions, a determination will be made as to whether the ash will be designated hazardous. If the ash is hazardous, it will be disposed in a double-composite liner landfill. This could be done on-site in a small landfill cell that would be located above

the flood plain of the Cadosia Creek. There are areas on-site 25 feet above the creek grade which could be used. If hazardous, the ash could also be transported off-site to a secure hazardous waste disposal facility. The decision for on-site or off-site hazardous disposal could be based on a cost analysis of the two methods. If the volume of ash generated is small, off-site disposal may be the least expensive choice.

If the ash is designated non-hazardous, its disposal would again be carried out in the least expensive manner, on-site or off-site. With the ash non-hazardous, either method would be fairly inexpensive and subject to less regulatory restrictions.

Q2. How can you guarantee the scrubbing process will be sufficient to remove any toxic materials going up the stack and how can you guarantee that activated charcoal will remove anything in the scrubber water?

A. It had been stated previously in the public meeting that one method of air pollution control for rotary kiln incineration involves use of a wet scrubber on gasses leaving the afterburner, followed by activated carbon treatment of the scrubber water. This is the most commonly used combination of treatment technologies for air pollution control (APC) on rotary kiln incinerators. The air pollution controls for incineration of the Kerry Chemical Company waste will be custom-designed to the products of combustion which result from trial burns of the waste. Design of an appropriate air pollution control system, followed by detailed analysis of the resulting stack gasses to determine the efficiency of the APC system, will ensure that operation of the incineration meets all regulatory requirements for quality of air emissions. Similarly, if a wet scrubber or other APC technology that generates waste water is used, a waste water treatment system will be designed and operated to ensure that all regulatory requirements are met before any water is discharged.

Q3. Is there any chance that the mobile incinerator proposed would be replaced by a permanent installation?

A. No. The incinerator would be set up at the Kerry Chemical Company Site only to destroy the waste present on the Kerry Site and will be disassembled and taken away once the Kerry waste is gone. The entire operation, once begun, will take less than one year.

Q4. Can the owner of this property use it for something else once this project is complete?

A. Yes. The property owner was determined to have insufficient funds to pay for the study or cleanup of the Kerry Chemical Site, so the State of New York is not attempting to recover costs from him. The land will remain his at the completion of this project,

although NYSDEC's Division of Fish and Wildlife has proposed requesting that he agree to an access easement so that public access to the Cadosia Creek for fishing could be provided. One other change in the property would take place. The decrepit buildings and concrete stack still standing on site would be destroyed to remove the hazard they pose in the event of their failure during on-site work.

Q5. Is the tar carcinogenic?

Of the hundreds of chemical compounds contained in the Kerry Chemical tar, six were identified that are considered suspected carcinogens. All six fall within the category of polycyclic aromatic hydrocarbons (PAH's). Therefore, the tar can be said to be carcinogenic. The route by which humans are most likely exposed to the carcinogens was determined in the Remedial Investigation to be ingestion of fish which have absorbed the PAH compounds from sediments in the Cadosia Creek. No other route of exposure is likely expect direct contact through entrapment in a tar lagoon since the PAH's do not significantly volatilize into the air, nor have they dissolved into surface water or groundwater.

There were no written questions or comments received during the 30 day comment period following the public meeting, nor since.

KERRY CHEMICAL COMPANY SITE

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

Public Meeting

Hancock Central Schools Auditorium

July 19, 1990

7:00 PM

Karan Vetrone	Hancock Resident
Patty Vetrone	Hancock Resident
Harold Swartwout	Hancock Resident
Shaun Goethardt	Hancock Resident
Ed Pavilonis	Hancock Resident
John Evanitsky, Jr.	Property Owner
Ralph Hunter	Cadosia Resident
Mary Ann Hunter	Cadosia Resident
Leonard E. Sienko, Jr.	Hancock Resident
Edward Juba	Hancock Resident
Alan Ramburg	Cadosia Resident
Karen Ramburg	Cadosia Resident
Mike Ramburg	Cadosia Resident
Mrs. Raymond Swartwout	Cadosia Resident
John R. Price	Cadosia Resident
Mrs. John Price	Cadosia Resident
Robert Newman	Hancock Resident
Oliver D. Hewitt	Hancock Resident
Chris Jones	Press, Walton
Sally Zegers	Press, Hancock
Scott Foti	NYSDEC, Central Office
Bob Edwards	NYSDEC, C.O.
Darwin Roosa	NYSDEC, Region 4
Eric Hamilton	NYSDEC, Region 4
Ray Lupe	NYSDEC, C.O.
Russ Shaver	NYSDEC, Region 4