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1994

EPA Superfund
Record of Decision:

**GCL TIE AND TREATING INC.
EPA ID: NYD981566417
OU 01
VILLAGE OF SIDNEY, NY
09/30/1994**

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

GCL Tie & Treating
Sidney, Delaware County, New York

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selection of the remedial action for the GCL Tie & Treating site in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §§9601-9675 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. An administrative record for the site, established pursuant to the NCP, 40 CFR 300.800, contains the documents that form the basis for EPA's selection of the remedial action (see Appendix III).

The New York State Department of Environmental Conservation (NYSDEC) has been consulted on the planned remedial action in accordance with section 121(f) of CERCLA, 42 U.S.C. §9621(f), and concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantialpublic health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy pertains to the first of two operable units for the site and addresses the contaminated soils and debris located on the GCL property. The second operable unit addresses the contamination in the soils on the remainder of the site (referred to as non-GCL property), as well as contaminated groundwater, surface water, and surface water sediments.

The major components of the selected remedy include:

- Excavation and treatment of approximately 36,100 cubic yards of contaminated soils and debris (with the possible exception of wood debris as noted below) on-site through a thermal desorption process, the expected depth of excavation ranges from 2 to 8 feet below grade, and will include excavation of non-native soils and debris located below the water table which exceed health-based cleanup levels;

- Replacement of the treated soils (mixed with clean fill as necessary) to the excavated areas, following by grading and revegetating; and

- Demolition and off-site disposal of existing structures on the GCL property which are either contaminated or would interfere with the remediation of the GCL-property soils.

Residual waste from the treatment process and excavation activities (e.q., wastewater collected during dewatering-operations or dense nonaqueous phase liquids encountered during excavation) would be treated on-site and/or disposed off-site at a facility permitted to handle such wastes. As a contingency, wood debris classified as nonhazardous under the Resource Conservation and Recovery Act (RCRA) could also be disposed off-site at a facility permitted to burn creosote-treated wood for energy generation. In addition, EPA will recommend to local agencies that institutional control measures be undertaken to ensure that land use of the property continues to be industrial/commercial.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in section 121 of CERCLA, 42 U.S.C. §9621: (1) it is protective of human health and the environment; (2) it attains a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements (ARARs) under federal and state laws; (3) it is cost-effective; (4) it utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maxirum extent practicable; and (5) it satisfies the statutory preference for remedies that empty treatment to reduce the toxicity, mobility, or volume of the hazardous substances, pollutants or contaminants at a site.

A five-year review of the remedial action pursuant to section 121(c) of CERCLA, 42 U.S.C. §9621(c), will not be necessary, because this remedy will not result in hazardous substances remaining on-site above health-leased levels.

/s/Jeanne M. Fox Regional Administrator	Date

RECORD OF DECISION
DECISION SUMMARY
Operable Unit 1

GCL Tie & Treating

Sidney, Delaware County, New York

United States Environmental Protection Agency
Region II
New York, New York
September 1994

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SITE NAME, LOCATION AND DESCRIPTION

The GCL Tie and Treating site occupies approximately 60 acres in an industrial/commercial area in the Village of Sidney, on the southwest side of Delaware County, New York (see Figure 1). The site includes an inactive sawmill and wood-treating facility known as GCL Tie & Treating (the GCL property), and three active, light-manufacturing companies located on adjacent parcels of land.

The site is bordered on the north by a railroad line. A warehouse and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue delineate the eastern and southern borders of the site, respectively. A drainage ditch and woodland area lie between Delaware Avenue and the site. The western portion of the property abuts a small impoundment and wetlands area. The site eventually drains via overland flow to the Susquehanna River, which is located within one mile of the site. In general, groundwater in the area flows in the north-northwesterly direction, toward the Susquehanna River.

The GCL property encompasses approximately 26 acres and includes four structures (see Figure 2). The primary building housed the wood pressure treatment operations including two treatment vessels (50 feet long by 7 feet in diameter), an office, and a small laboratory. Wood (mostly railroad-ties) and creosote were introduced into the vessels which were subsequently pressurized in order to treat the wood. The remaining three structures housed a sawmill and storage space.

Approximately 1,100 people are employed in a nearby industrial area. About 5,000 people live within 2 miles of the site and depend on groundwater as their potable water supply. The nearest residential well is within 0.5 mile of the site. Two municipal wells, which supply the Village of Sidney with potable water, are located within 1.25 miles of the site. A shopping plaza consisting of fast-food restaurants and several stores is located approximately 300 feet south of the site. Other facilities (i.e., a hospital, public schools, senior citizen housing, and child care centers) are located within 2 miles of the site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

According to an analysis of historical photographs conducted by the U.S. Environmental Protection Agency (EPA) and accounts by local residents, wood-preserving activities at the site date as far back as the 1940's.

The site first came to the attention of the New York State Department of Environmental Conservation (NYSDEC) in 1986, after one of the pressure vessels used at the GCL facility malfunctioned, causing a release of an estimated 30,000 gallons of creosote. GCL representatives excavated the contaminated surface soil and placed it in a mound; no further action was undertaken at the time.

In September 1990, NYSDEC requested that EPA conduct a removal assessment at the site to determine whether it was eligible for a response action pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). To assess conditions at the site, EPA conducted sampling of the GCL Tie and Treating facility in August 1990 and October 1990, which complemented sampling conducted in December 1989. The sampling data and other information obtained during the assessment process led EPA to conclude that site conditions warranted the initiation of a Removal Action which was initiated by EPA in March 1991.

The removal action activities included: site stabilization (e.g., runoff and dust control), delineation of surface contamination, installation of a chain-link fence, identification and disposal of containerized (e.g., tanks and drums) and uncontainerized (e.g., wastes in sumps) hazardous wastes, segregation and staging of approximately 6,000 cubic yards of contaminated soil and wood debris for disposal, and development of a pilot study to determine the effectiveness of composting for bioremediation of creosote-contaminated soils.

The site was proposed for inclusion on the National Priorities List (NPL) in February 1994 and was added to the NPL in May 1994.

EPA has been conducting a search for Potentially Responsible Parties (PRPs). EPA has identified one PRP to date, and is investigating to determine whether there may be other PRPs. After EPA completes its investigation, EPA plans to take appropriate enforcement action to recover its response costs pursuant to section 107(a) of CERCLA, 42 U.S.C. §9607(a).

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Focused Feasibility Study (FFS) report and the Proposed Plan for the site were released to the public for comment on July 30, 1994. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, NY and the information repository at the Sidney Memorial Library in Sidney, NY. The notice of availability of the above-referenced documents was published in the Tri-Town News and the Oneonta Daily Star on August 3, 1994 and August 5, 1994, respectively. The public comment period on these documents was held from July 30, 1994 to August 29, 1994.

On August 9, 1994, EPA and NYSDEC conducted a public meeting at the Civic Center in Sidney, NY, to inform local officials and interested citizens about the Superfund process, to review current and planned remedial activities at the site, and to respond to any questions from area residents and other attendees.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

SCOPE AND ROLE OF OPERABLE UNIT

The GCL Tie & Treating site was selected as a pilot project for the Superfund Accelerated Cleanup Model (SACM) initiative. Under this pilot, activities which would normally have been performed sequentially (e.g., site assessment, NPL placement, removal assessment) were performed concurrently. In June 1993, while attempting to determine if the site would qualify for inclusion on the NPL, EPA initiated a remedial investigation and feasibility study (RI/FS) and FFS activities to delineate further the nature and extent of contamination at the site.

The remediation of the GCL-property soils represents the first of two planned operable units for the site, as described below.

- Operable unit 1 addresses only the contaminated soils on the GCL-property portion of the site and is the focus of this document.

- Operable unit 2 addresses the contamination in the soils on the remainder of the site (referred to as non-GCL property), and in the groundwater, surface water, and sediments at the site. To assess the contamination in these media and identify remedial alternatives, EPA is conducting an RI/FS which is scheduled for completion by the end of 1994.

SUMMARY OF SITE CHARACTERISTICS

A detailed assessment of the nature and extent of soil contamination on the GCL-property portion of the site was performed as part of the FFS. Approximately 200 trenches, ranging from 2 to 14 feet in depth, were excavated (see Figure 3). Soil samples were collected from the trenches and analyzed for organic and inorganic contaminants. The soil investigation focused on contaminants typically associated with the creosote wood-preserving process. These contaminants include numerous polyaromatic hydrocarbons (PAHs), dibenzofuran, carbazole, and phenol. Table 1 presents a summary of the contaminants most frequently detected as part of the FFS and removal assessment investigations. Table 2 presents a comprehensive summary of the contaminants detected at the site and their corresponding statistics.

Nature and Extent of Contamination

The site investigation data showed numerous occurrences and high concentrations of PAHs in the

GCL-property soils. The locations with the highest-concentrations of contaminants corresponded to areas in the vicinity of the former process building. Maximum concentrations for the total PAHs were generally higher in the surface soils (up to 37,700 parts per million [ppm]), than in the subsurface layers (971 ppm). Some of the PAHs detected include: benzo[a]anthracene (2,400 ppm), chrysene (2,200 ppm), benzo[b]fluoranthene (1,200 ppm), benzo[k]fluoranthene (470 ppm), benzo[a]pyrene (700 ppm), indeno[l,2,3-c,d]pyrene (93 ppm), and dibenzo[a,h]anthracene (44 ppm).

In comparison to the PAHs, there were few occurrences of volatiles, noncreosote-related semi-volatiles, pesticides or PCBs. For these contaminant groups, methylene chloride (0.2 ppm), chloroform (0.5 ppm), 2-butanone (1 ppm), 1,1,1-trichloroethane (1 ppm), benzene (0.1 ppm), toluene (3 ppm), xylenes (8 ppm), dibenzofuran (33 ppm), and total volatiles (17.8 ppm) were detected in significant concentrations. The highest concentrations of these non-PAH organics were generally present in the same sample locations as the highest PAH concentrations. Inorganics were rarely present at concentrations greater than twice their respective background concentrations. The exception was one sampling location (SA35) where lead (346 ppm) and chromium (115 ppm) were detected at the highest concentrations.

Creosote compounds are known to contribute to dense nonaqueous phase liquid (DNAPL) contamination at wood-preserving sites. Although the presence of DNAPL wal noted at three soil sampling locations (Trench A, stations 13, 14 and 15) out of more than 200, total PAH levels in the remaining locations did not indicate the presence of DNAPL. The discovery of free creosote product in only one of the monitoring wells installed at the site indicates the limited presence of a DNAPL area.

Contaminants concentrations were compared with soil cleanup levels developed to protect human health. Benzo[a]pyrene was the contaminant which exceeded its health-based soil cleanup level most frequently. Generally, the concentrations of other contaminants exceeded their respective health-based cleanup levels in locations where the health-based cleanup level for benzo[a]pyrene was exceeded.

Volume of Contaminated Soil

During the long history of operations at this site, portions of the GCL property (i.e., areas formerly occupied by wetlands) were backfilled with non-native materials. The results of the soil investigations indicate that the fill consisted predominantly of dirt, but also included wood debris (creosote-treated and untreated), sawdust, rocks, metal parts, old tires, and other assorted debris. The fill material thickness ranges from 2 to 6 feet, increasing in thickness as it gets closer to the wetlands. In some areas of the site, the non-native fill material lies below the groundwater table, which ranges from 5 to 8 feet below grade. Cross sections of the fill material are presented on Figures 4 through 8.

It is estimated that approximately 36,100 cubic yards of soil and debris contain contaminants in concentrations exceeding health-based cleanup levels. Wood debris is estimated to account for one third of the total volume of this material.

SUMMARY OF SITE RISKS

Based upon the results of the soil investigation, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the site, if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Hazard Identification--identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. Exposure Assessment--estimates - the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated soil) by which humans are potentially exposed. Toxicity Assessment--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization--summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

EPA conducted a baseline risk assessment to evaluate the potential risks to human health and the environment associated with the GCL property in its current state. The Risk Assessment focused on contaminants in the soil which are likely to pose significant risks to human health and the environment. A summary of the contaminants of potential concern in soils is listed in Table 3.

An exposure assessment was conducted for reasonable maximum exposures to estimate the magnitude, frequency, and duration of actual and/or potential exposures to the contaminants of potential concern present in soils. Reasonable maximum exposure is defined as the highest exposure that is reasonably expected to occur at the site for individual and combined pathways. The baseline risk assessment evaluated the current health effects which could potentially result from ingestion, inhalation and dermal contact of soils by site trespassers, and the inhalation and dermal contact of soils by off-site residents and workers (see Table 4). The future-use scenario evaluated the same scenarios and also evaluated the potential health impacts resulting from ingestion, inhalation and direct contact by future on-site workers (see Table 5). The current land use of the property is industrial/commercial. Input from the community and local officials, indicated that industrial/commercial use of the property would continue to be the preferred use of the property in the future. Therefore, it was assumed that future land use of the property would continue to be industrial/commercial.

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

Potential carcinogenic risks were evaluated using the cancer slope factors developed by EPA for the contaminants of concern. Cancer slope factors (SFs) have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. SFs, which are expressed in units of (mg/kg-day)-1, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SFs for the compounds of concern in the soil are presented in Table 6.

For known or suspected carcinogens, EPA considers excess upper-bound individual lifetime cancer risks of between 10-4 to 10-6 to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of site-related exposure to a carcinogen under the specific exposure conditions at the site. The total potential current and future carcinogenic health risks from exposure to site soil are: 6.3 x 10-4 for off-site children residents, 2.7 x 10-4 for off-site adult residents, 9.6 x 10-4 for off-site workers, 2.7 x 10-4 for children trespassers, and 2.7 x 10-4 for adult trespassers. In addition, under the future-use scenario, the potential carcinogenic health risk to the on-site workers is 9.6 x 10-4. These risk numbers mean that approximately one worker out of a thousand would be at risk of developing cancer if the site were not remediated. Hence, the risks to workers from carcinogens at the site are outside the acceptable risk range of 10-4 to 10-6 (see Table 7). The estimated total risks are primarily due to PAHs, which contributed over 95% to the carcinogenic risk calculations. These estimates were developed by taking into account various conservative assumptions about the likelihood of a person-being exposed to the soil (see Tables 5 to 16 of the FFS Risk Assessment Report, dated April 1994). For example, it was assumed that a children trespasser would ingest 200 mg/day of contaminated soils, 130 days a year, for 6 years.

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of milligrams/kilogram-day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). The reference doses for the compounds of concern at the site are presented in Table 6. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared to the RfD to derive the hazard quotient for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds across all media-that impact a particular receptor population. An HI greater than 1.0 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

It can be seen from Table 8 that the HIs for noncarcinogenic effects from ingestion, inhalation, and dermal contact (reasonable maximum exposure) is less than 1.0, therefore, noncarcinogenic effects are unlikely to occur from the exposure routes evaluated in the Risk Assessment.

Ecological Risk Assessment

The ecological risks associated with this site will be addressed as part of the second operable unit RI/FS. The second operable unit will evaluate, among other things, impacts to nearby surface water (wetlands) as well as terrestrial receptors.

Uncertainties

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

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

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

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

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

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment Report.

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

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

The following remedial action objectives were established:

- Prevent public exposure to contaminant sources that present a significant health threat (contaminated dust and soils); and,

- Reduce the concentrations of contaminants in the soils to levels which are protective of human health and the environment to allow for continued industrial/commercial use of the property. The health-based cleanup levels for carcinogenic PAHs and total PAHs are presented in Table 9. These cleanup levels were developed, based on the risk assessment, to be protective of human health for future industrial/commercial uses of the property. If these levels are achieved, individuals would have less than a one in a hundred thousand chance of developing cancer as a result of exposure to the contaminated soils over a 25-year period under specific exposure conditions at the site.

DESCRIPTION OF REMEDIAL ALTERNATIVES

Section 121(b)(1) of CERCLA, 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. Section 121(d) of CERCLA 42, U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to section 121(d)(4) of CERCLA, 42 U.S.C. §9621(d)(4).

Eight alternatives, namely, no action, limited action, capping, thermal desorption, off-site incineration, on-site incineration, composting, and bioslurry treatment were evaluated during the screening phase of the FFS. In the spirit of the SACM initiative and relying on the Agency's technology selection guidance for wood-treating sites, EPA considered technologies which have been consistently selected at wood-preserving sites with similar characteristics (e.g., types of contaminants present, types of disposal practices, environmental media affected) during the development of remedial alternatives. The historical information acquired from evaluating and cleaning up these sites, combined with specific data for the GCL property (e.g., soil cleanup goals) was used to streamline the investigation and the identification of remedial activities. Technologies such as bioremediation (e.g., composting, bioslurry) and incineration, although frequently selected at wood-preserving sites, were eliminated during the alternative screening phase. A site-specific pilot-scale treatability study concluded that composting would not meet the health-based cleanup goals developed for the GCL-property soils. Bioslurry and incineration were screened out because they would be much more costly to implement than the preferred alternative, while achieving similar levels of protectiveness. As a result, this ROD evaluates in detail, two remedial alternatives for addressing the contaminated soil and debris associated with the GCL-property portion of the site. As referenced below, the time to implement-a remedial alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate with responsible parties, procure contracts for design and construction, or conduct operation and maintenance at the site.

The remedial alternatives are:

Alternative 1: No Action

Capital Cost:	Not Applicable
O & M Cost:	$54,600 per year, $20,000 for each five-year review

Present Worth Cost: $720,700 (over 30 years)
Implementation Time: Not Applicable

The Superfund program requires that the No Action alternative be considered as a baseline for comparison with other alternatives. The No Action alternative for the soil at the GCL site would consist of a long-term monitoring program. Soil in the contaminated area would be monitored semi-annually for total PAHs and benzo[a]pyrene. For cost-estimation purposes, it was assumed that ten surface soil samples would be collected and analyzed semi-annually.

Because this alternative would result in contaminants being left on-site above health-based levels, the site would have to be reviewed every five years per the requirements of CERCLA. These five-year reviews would include the reassessment of human health and environmental risks due to the contaminated material left on-site, using data obtained from the monitoring program.

Alternative 2: Thermal Desorption

Capital Cost:	$14,839,000
O & M Cost:	Not Applicable
Present Worth Cost:	$14,839,000
Implementation Time:	12 months

Under this alternative, a total of 36,100 cubic yards of contaminated soil and wood debris would be excavated and treated by a thermal desorption process. The total treatment volume includes 30,100 cubic yard of excavated material in addition to 6,000 cubic yards of previously staged soil/debris. Institutional controls would be recommended to ensure that in the future the property is used for industrial/commercial purposes.

A typical thermal desorption process would consist of a feed system, thermal processor, and gas-treatment system (consisting of an afterburner and scrubber, a carbon adsorption system or a condenser). Screened soil and shredded/crushed materials would be placed in the thermal processor feed hopper. Because of the combustible nature of the wood chips, nitrogen or steam may be used as a transfer medium for the vaporized PAHs to minimize the potential for fire. The gas would be heated and then injected into the thermal processor at a typical operating temperature of 700°F - 1000°F. PAH contaminants of concern and moisture in the contaminated soil would be volatilized into gases, then treated in an off-gas treatment system. Treatment options for the off-gas include burning in an afterburner (operated to ensure complete destruction of the PAHs), adsorbing contaminants onto activated carbon or collection through condensation followed by off-site disposal. If an afterburner were used, the treated off-gas would be treated further in the scrubber for particulate and acid-gas removal. Thermal desorption typically achieves approximately 98 to 99 percent reduction of PAHs in soil.

The contaminated soil/debris would be thermally treated at a rate of approximately 30 tons per hour. This treatment rate would be accomplished with a single high-capacity unit or two or more smaller units operating concurrently. The treatment unit configuration would depend on the residence time and other operating-parameters determined during the treatability-study stage of the design. Actual treatment of the contaminated soils is expected to take approximately one year.

A post-treatment sampling and analysis program would be instituted in order to ensure that contamination in the soil had been reduced to below the risk-based cleanup levels. Treated soils which still exceeded the action levels would be recirculated through the treatment unit in order to further reduce contamination. Treated soil achieving action levels would be redeposited in excavated areas. To replace any volume lost by thermal destruction of wood debris, treated soil would be mixed with clean fill obtained from an off-site source, which would also serve to restore the geotechnical stability to the soils. The homogenized mixture would then be covered with a 6-inch layer of topsoil. After the excavated areas are filled, the surface would then be graded to promote drainage and seeded to prevent erosion. Site structures (e.a., former process buildings) would be decontaminated, demolished and disposed of off-site. Residual waste from the treatment process and excavation activities (e.g., wastewater collected during dewatering operations or DNAPLs encountered during excavation) would be treated on-site and/or disposed off-site at a facility permitted to handle such wastes. As a contingency, wood debris classified as nonhazardous under the Resource Conservation and Recovery Act (RCRA) could also be disposed off-site at a facility permitted to burn creosote-treated wood for energy generation (See Public Acceptance and Documentation of Significant Changes sections below).

It is assumed that both F034 and U051 RCRA listed hazardous wastes are present at the GCL property. However, once the soils are treated to health-based levels, they would no longer contain listed hazardous wastes and could be safely redeposited on-site without triggering land disposal restrictions (LDRs) or delisting issues. The GCL property would be considered a corrective action management unit for the purpose of implementing this alternative. A list of ARARs and To-Be-Considered (TBC) guidance pertinent to this alternative is provided in Table 10.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in section 121 of CERCLA, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following "threshold" criteria must be satisfied by any alternative in order to be eligible for selection:

1. Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with ARARs addresses whether or not a remedy would meet all of the applicable (promulgated by a state or federal authority), or relevant and appropriate requirements (that pertain to situations sufficiently similar to those encountered at a Superfund site such that their use is well suited to the site) of federal and state environmental statutes or provide grounds for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

3. Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. Reduction of toxicity, mobility, or volume via treatment refers to a remedial technology's expected ability to reduce the toxicity, mobility, or volume of hazardous substances, pollutants or contaminants at the site.

5. Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.

6. Implementability refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

7. Cost includes estimated capital and operation and maintenance costs, and the present-worth costs.

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. State acceptance indicates whether, based on its review of the RI/FS and the Proposed Plan, the State supports, opposes, and/or has identified any reservations with the preferred alternative.

9. Community acceptance refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports. Community acceptance factors to be discussed below include support, reservation, and opposition by the community.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

- Overall Protection of Human Health and the Environment

Alternative 1 would not meet any of the remedial action objectives and thus would not be protective of human health or the environment. Contaminated soils would remain on-site and risks associated with exposure to the soils would remain unaltered.

Alternative 2, involving excavation and thermal desorption of contaminants, would reduce the public health risks associated with direct contact, ingestion, and inhalation of contaminated soil. This alternative would also minimize the potential leaching of contaminants from the soil into groundwater and surface water. Treated material is expected to meet the cleanup levels and would be considered nonhazardous. This alternative would result in overall protection of human health and the environment, since risk-based cleanup levels would be achieved.

- Compliance with ARARs

Alternative 1 would comply with all associated action-specific ARARs, since no action will be taken.

Alternative 2 would be designed and implemented to satisfy all the ARARs identified for the site. Excavation activities would be conducted in compliance with the Occupational Safety and Health Administration (OSHA) standards, soil erosion and sediment control requirements, stormwater discharge requirements and air pollution control regulations pertaining to fugitive emissions and air quality standards. Residual waste from the treatment process would be treated on-site and/or disposed off-site at an EPA-approved treatment, storage and disposal facility (TSDF). The remedy will comply with other applicable ARARs, including: RCRA Standards Applicable to Transport of Hazardous Waste, NY Air Quality Standards, NY Hazardous Waste Manifest System Rules, and NY Hazardous Waste Treatment, Storage, and Disposal Facility Permitting Requirements. A full list of ARARs and TBCs (e.g., advisories, criteria, and guidance) pertinent to this alternative is provided in Table 10.

- Long-Term Effectiveness and Permanence

Alternative 1 would only involve monitoring of contamination at the site and does not provide for removal and/or treatment of contaminants. Therefore, this alternative would not reduce the long-term risks to human health and the environment associated with the GCL portion of the site.

Alternative 2 would provide long-term protection by permanently reducing contaminant levels in site soils to health-based cleanup levels. This alternative would reduce the levels of PAH contaminants in soils by 98 percent to 99 percent. Soil cover and revegetation would provide protection against erosion. No long-term monitoring would be required.

- Reduction in Toxicity. Mobility or Volume via Treatment

Alternative 1 would not reduce toxicity, mobility or volume of PAHs in site soils; minimal reduction in contaminant levels may be achieved by natural attenuation.

It is expected that Alternative 2, thermal desorption, would remove 98 to 99 percent of the PAHs from the soils, thereby significantly reducing the toxicity, mobility and volume of contaminants. Residuals (e.g., scrubber water or spent carbon) generated from the thermal desorption process would be treated on-site or transported off-site to a TSDF for treatment and/or disposal. If feasible and cost-effective, creosote contaminated wood debris would be utilized as a resource via burning in a facility permitted to burn creosote-treated wood for energy generation, thereby reducing the mobility, toxicity or volume of the contaminants in this material.

- Short-Term Effectiveness

The implementation of Alternative 1 would not pose any additional risks to the community, since this alternative does not involve any major construction. Workers involved in periodic sampling of site soils would be exposed to minimal risks because appropriate health and safety protocols would be followed for this activity. For purposes of this analysis, monitoring of the site would occur for 30 years.

Alternative 2 includes activities such as excavation, screening, shredding and handling of contaminated soils and debris which could result in potential exposure of workers and residents to fugitive dust. In order to minimize potential short-term impacts, the area would be secured and access would be restricted to authorized personnel only. In addition, dust control measures such as wind screens and water sprays would be used to minimize fugitive dust emissions from material handling. The risk to workers involved in the remediation would also be minimized by establishing appropriate health and safety procedures and preventive measures, (e.g., enclosed cabs on backhoes and proper personal protection equipment) to prevent direct contact with contaminated materials and ingestion/inhalation of fugitive dust. All site workers would be OSHA certified and would be instructed to follow OSHA protocols.

Under Alternative 2, short-term impacts on the environment from removal of vegetation and destruction of habitat are expected to be minimal. Erosion and sediment control measures such as silt curtains and berms would be provided during material handling activities to control migration of contaminated materials to surface waters via runoff from the site. Some increase in traffic and noise pollution would be expected from site activities. Short-term impacts may be experienced for about a year which is the estimated time for construction and remedial activities.

- Implementability

Alternative 1 does not involve any major site activities other than monitoring and performing five-year reviews. These activities are easily implemented.

Alternative 2 can be easily implemented, as the technology is proven and readily available. The enhanced volatilization component of this alternative has been shown to be effective for destruction of PAHs and is commercially available. Sufficient land is available at the site for operation of a mobile thermal desorption system and supporting facilities. Performance tests would be required for the thermal desorption process to define optimum operating conditions. Thermally treated soils would be placed back into the excavated areas. The treated soils may need to be mixed with clean fill to restore geotechnical stability and restore existing grades on the property. Implementation of this alternative requires the restriction of access to the site during the remediation process. Coordination with state and local agencies would also be required during remediation. The availability of facilities permitted to burn creosote-treated wood for energy generation at the time of the remediation can not be ascertained at this time, however, it is likely that one would be available to treat segregated wood debris. If a facility is not available or if it is not cost-effective, the wood debris would treated in the on-site thermal unit.

- Cost

Alternative 1 is the less expensive alternative, but does not provide treatment of contaminated soils. Alternative 1 has a present worth cost of $720,700 which is associated with conducting a sampling and analyses program and five-year reviews over a 30-year period. The present worth cost of $14.8 million for Alternative 2 provides for the on-site treatment of 36,100 cubic yards of contaminated soil using a proven technology.

- State Acceptance

The State of New York has concurred with the selected remedy.

- Community Acceptance

The public has generally accepted the selected remedy, however, some members also have urged that materials on site be used as a resource if possible and have suggested that creosote-treated wood debris be separated and burned at a facility permitted to burn creosote-treated wood for energy generation (See discussion under Documentation of Significant Changes section below).

SELECTED REMEDY

EPA and NYSDEC have determined, after reviewing the alternatives and public comments, that Alternative 2 is the appropriate remedy for the site, because it best satisfies the requirements of section 121 of CERCLA, 42 U.S.C. §9621, and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR §300.430(e)(9). The capital and present worth costs for this remedy are $14,839,000. There are no operation and maintenance costs associated with the remedy.

The major components of the selected remedy are as follows:

- Excavation and treatment of approximately 36,100 cubic yards of contaminated soils/debris (with the possible exception of wood debris as noted below) on-site through a thermal desorption process; the expected depth of excavation ranges from 2 to 8 feet below grade, and will include excavation of non-native soils and debris located below the water table which exceed health-based cleanup levels:

- Replacement of the treated soils (mixed with clean fill as necessary) to the excavated areas, followed by cover with 6 inches of clean fill, grading and revegetating; and

- Demolition and off-site disposal of existing structures on the GCL property which are either contaminated or would interfere with the remediation of the GCL property soils.

Residual waste from the treatment process and excavation activities (e.g., wastewater collected during dewatering operations or DNAPLs encountered during excavation) would be treated on-site and/or disposed off-site at a facility permitted to handle such wastes.

As a contingency, wood debris classified as nonhazardous under the Resource Conservation and Recovery Act (RCRA) could also be disposed off-site at a facility permitted to burn creosote-treated wood for energy generation.

In addition, EPA will recommend to local agencies that institutional control measures be undertaken to ensure that land use of the property continues to be industrial/commercial.

Remediation Goals

The purpose of this response action is to control rising posed by direct contact with soils and to minimize migration of contaminants to surface water and groundwater. The results of the risk assessment indicate that existing site conditions pose an excess lifetime cancer risk of 9.6 x 10-4 to workers exposed to contaminated soils. This risk is due to the PAH concentrations in soils. This remedy will address all soils contaminated with PAHs in excess of the health-based soil cleanup levels developed for this site and listed in Table 9. PAH contamination remaining in soils after treatment corresponds to an excess lifetime cancer risk for future site workers of 10-5. Since no federal or state ARARs exist for soil, the cleanup level for the PAHs in soil was determined through a site-specific analysis to be protective at the 10-5 excess cancer risk level for each contaminant of concern. It was assumed that future land use of the site will continue to be industrial/commercial. The health-based cleanup levels for the soils area as follow:

Contaminant	Concentration
Benzo[a]anthracene	78
Benzo[a]pyrene	8
benzo[b]fluoranthene	78
Benzo[k]fluoranthene	78
Dibenzo[a,h]anthracene	8
Indeno[1,2,3-c,d]pyrene	78
Total PAHs	500

STATUTORY DETERMINATIONS

As previously noted, section 121(b)(1) of CERCLA, 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. Section 121(d) of CERCLA, 42 U.S.C. §9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to section 121(d)(4) of CERCLA, 42 U.S.C. §9621(d)(4). As discussed below, EPA has determined that the selected remedy meets the requirements of section 121 of CERCLA, 42 U.S.C. §9621.

Protection of Human Health and the Environment

The selected remedy is considered fully protective of human health and the environment. The treatment of the contaminated soils and debris through a thermal desorption process will remove the organic contaminants from the soil. Treatment of the soils will result in the elimination of the potential direct human health threats posed by the soils, and will eliminate potential long-term sources of groundwater and surface water contamination.

Compliance with ARARs

At the completion of the response action, the selected remedy will have complied with all applicable ARARs, including:

Action-Specific ARARs:

- National Ambient Air Quality Standards for Hazardous Air Pollutants
- RCRA - Land Disposal Restrictions
- RCRA - Standards Applicable to Transport of Hazardous Waste
- RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities
- RCRA - Preparedness and Prevention
- RCRA - Contingency Plan and Emergency Procedures
- DOT - Rules for Transportation of Hazardous Materials
- New York State Hazardous Waste Manifest System Rules
- New York State Hazardous Waste Treatment Storage and Disposal facility Permitting Requirements

- OSHA - Safety and Health Standards

- OSHA - Record keeping, Reporting and related Regulations

Chemical-Specific ARARs:

- None applicable.

Location-Specific ARARs:

- None applicable.

A full list of ARARs and TBCs (e.g., advisories, criteria, and guidance) being utilized is provided in Table 10.

Cost-Effectiveness

The selected remedy is cost-effective in that it provides overall effectiveness proportional to its cost. The total capital cost of the remedy is $14,839,000; no long-term operation and maintenance costs are expected. With respect to the total cost, approximately 50% of the cost is attributed to excavation, backfilling, soil conditioning (e.g., crushing, dewatering), and other miscellaneous activities (e.g., building demolition and disposal); the remaining 50% is attributed to processing the waste in the thermal desorption unit. A breakdown of the costs associated with this remedy is provided in Table 11.

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

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable via the use of the thermal desorption technology. The option to burn creosote contaminated wood debris at a facility permitted to burn creosote-treated wood for energy generation complies with the preference for remedies that incorporate resource-recovery. The selected remedy provides the best balance of trade-offs among the alternatives with respect to the evaluation criteria.

Preference for Treatment as a Principal Element

In keeping with the statutory preference for treatment as a principal element of the remedy, the remedy provides for the treatment of contaminated soils and debris which constitute the principal threat known to exist at the site.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the preferred alternative presented in the Proposed Plan. However, based upon suggestions raised by members of the public, the preferred remedy has been modified to reflect the public preference that contaminated soil or debris be utilized as a resource to the greatest extent practicable. The selected remedy calls for creosote-contaminated wood debris to be segregated and burned off-site at a facility permitted to burn creosote-treated wood for energy generation pending the availability of such a facility and assuming this would still be a cost-effective measure at the time the remedial action is undertaken.

APPENDIX I

FIGURES

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APPENDIX II

TABLES

TABLE 1

SUMMARY OF CONTAMINANTS MOST FREQUENTLY DETECTED DURING THE FFS AND REMOVAL ASSESSMENT

CONTAMINANT	CONCENTRATION (PPM)	
	Focused Feasibility Study	Removal Assessment
Methylene Chloride	0.2	-
2-Butanone	1	-
1,1,1-Trichloroethane	1	-
Benzene	0.1	-
Toluene	3	-
Xylenes	8	-
Choloroform	0.5	-
Dibenzofuran	33	-
Naphthalene	170	1,600
2-Methylnanhthalene	59	580
Acenaphthene	110	2,500
Fluorene	150	4,700
Phenanthrene	100	10,000
Anthracene	630	6,400
Fluoranthene	540	11,000
Pyrene	520	8,200
Benzo(a)anthracene	160	2,400
Chrysene	140	2,200
Benzo(b)fluoranthene	46	1,200
Benzo(k)fluoranthene	13	470
Benzo(k)fluoranthene	120	-
Benzo(a)pyrene	76	700
Indeno(1,2,3-cd)pyrene	22	93
Dibenzo(a,h)anthracene	44	38
Benzo(g,h,i)perylene	20	1,600
Total PAHs	2,323	37,700
Cadmium	1.0	-
Chromium	29.3	-
Lead	33.5	-

TABLE 2

CHEMICAL SUMMARY STATISTICS - PAH SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95
Naphthalene	420	191	229	112	14	0.45	12.00	6.792E+07	230.00	602.70	323966.82	4.177E+06	6.401	2.449	420.000	115.516	3144.564	18449.583
Acenaphthylene	418	122	296	86	14	0.29	22.00	410000.00	165.00	435.17	13560.85	83616.79	6.076	1.928	418.000	118.477	1598.382	3698.814
Acenaphthene	421	186	235	100	13	0.44	20.00	4.037E+07	220.00	703.26	239987.59	2.718E+06	6.556	2.484	421.000	131.623	3757.451	23728.015
Fluorene	425	201	224	109	9	0.47	18.00	3.682E+07	280.00	721.21	208926.10	2.258E+06	6.581	2.474	425.000	135.905	3827.287	23607.814
Phenanthrene	424	254	170	98	10	0.60	18.00	8.695E+07	500.00	1030.36	517173.80	5.549E+06	6.938	2.575	424.000	181.368	5853.512	44957.381
Anthracene	426	257	169	108	8	0.60	27.00	1.665E+07	500.00	990.06	134633.60	975555.66	6.898	2.618	426.000	169.231	5792.160	48995.781
Fluoranthene	423	307	116	94	11	0.73	25.00	5.535E+07	1000.00	1920.73	436210.44	3.900E+06	7.560	2.791	423.000	292.190	12626.003	161076.429
Pyrene	422	301	121	91	12	0.71	19.00	4.535E+07	960.00	1725.76	342587.70	3.096E+06	7.453	2.730	422.000	273.508	10889.107	119934.988
Benzo (a) anthracene	420	254	166	95	14	0.60	4.20	1.363E+07	500.00	1035.35	102795.77	948188.55	6.942	2.376	420.000	208.419	5143.248	26016.303
Chrysene	428	299	129	90	6	0.70	14.00	1.403E+07	790.00	1501.57	95264.79	781812.19	7.314	2.473	428.000	283.146	7963.075	48936.132
Benzo (b/k) fluoranthene	263	160	103	69	8	0.61	44.00	120000.00	250.00	523.39	2059.05	8089.10	6.260	1.453	263.000	196.384	1394.898	1887.825
Benzo (b) fluoranthene	163	117	47	10	0	0.72	110.00	7.061E+06	5000.00	7012.62	158217.58	7.214E+05	8.855	2.605	163.000	1209.462	40660.130	464163.383
Benzo (k) fluoranthene	163	58	105	11	0	0.36	70.00	2.109E+06	2400.00	2944.97	51672.36	2.232E+05	7.988	2.277	163.000	633.912	13681.436	73641.013
Benzo (a) pyrene	419	231	188	84	15	0.55	24.00	4.398E+06	500.00	1038.57	36336.32	2.875E+05	6.946	2.242	419.000	228.879	4712.618	18419.809
Indeno (1,2,3-cd) pyrene	415	191	224	85	19	0.46	40.00	1.018E+06	650.00	876.05	20408.39	1.116E+05	6.775	2.026	415.000	223.250	3437.651	9274.271
Dibenzo (a, h) anthracene	421	128	293	78	13	0.30	49.00	474000.00	260.00	708.87	17996.64	96366.31	6.564	2.007	421.000	183.051	2745.087	7160.811
Benzo (g, h, i) perylene	411	185	226	100	23	0.45	6.70	1.600E+06	440.00	760.65	23686.47	1.417E+05	6.634	2.070	411.000	188.230	3073.820	8919.044

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - SEMI-VOLATILE ORGANIC SAMPLES (EXCLUDING PAHS)
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Phenol	29	2	27	0	0	0.07	1.398E+06	2.643E+06	190.00	556.45	139898.10	546819.57	6.322	2.424	29.000	108.448	2855.127	83513.681	
bis(2-Chloroethyl)ether	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.683	705.554	x
2-Chlorophenol	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.683	705.554	x
1,3-Dichlorobenzene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
1,4-Dichlorobenzene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
1,2-Dichlorobenzene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2-Methylphenol	29	3	26	1	0	0.10	95.00	1.221E+06	190.00	499.34	64506.21	251578.74	6.213	2.260	29.000	108.692	2293.994	39708.290	
2,2'-oxybis(1-Chloropropane)	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
4-Methylphenol	29	2	27	0	0	0.07	1.887E+06	3.348E+06	190.00	566.83	181070.52	702523.75	6.340	2.488	29.000	105.787	3037.263	110463.642	
N-Nitrosodi-n-propylamine	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
Hexachloroethane	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
Nitrobenzene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
Isophorone	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2-Nitrophenol	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2,4-Dimethylphenol	29	2	27	0	0	0.07	1.040E+06	1.673E+06	190.00	542.18	94105.00	359749.82	6.296	2.333	29.000	112.346	2616.579	56908.181	
bis(2-Chloroethoxy)methane	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2,4-Dichlorophenol	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
1,2,4-Trichlorobenzene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
4-Chloroaniline	29	2	27	0	0	0.07	6000.00	28000.00	190.00	394.18	1725.69	5276.13	5.977	1.324	29.000	161.318	963.152	1940.073	
Hexachlorobutadiene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
4-Chloro-3-Methylphenol	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2-Methylnaphthalene	27	13	14	10	0	0.48	27.00	56000.00	190.00	268.55	2445.74	10716.53	5.593	1.469	27.000	99.648	723.737	1934.543	
Hexachlorocyclopentadiene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2,4,6-Trichlorophenol	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2,4,5-Trichlorophenol	27	0	27	0	0	0.00	0.00	0.00	460.00	740.61	1480.93	3035.99	6.607	0.924	27.000	396.981	1381.694	1746.461	x
2-Chloronaphthalene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2-Nitroaniline	29	2	27	0	0	0.07	2000.00	16000.00	465.00	852.09	1999.48	3977.27	6.748	1.070	29.000	413.906	1754.164	2520.501	
Dimethylphthalate	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
2,6-Dinitrotolouene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
3-Nitroaniline	29	2	27	0	0	0.07	34000.00	42000.00	465.00	971.33	3999.48	9919.29	6.879	1.350	29.000	390.681	2414.985	5063.044	
2,4-Dinitrophenol	27	0	27	0	0	0.00	0.00	0.00	460.00	740.61	1480.93	3035.99	6.607	0.924	27.000	396.981	1381.694	1746.461	x
4-Nitrophenol	27	0	27	0	0	0.00	0.00	0.00	460.00	740.61	1480.93	3035.99	6.607	0.924	27.000	396.981	1381.694	1746.461	x
Dibenzofuran	29	15	14	10	0	0.52	19.00	3.010E+07	190.00	670.76	2.052E+06	7.667E+06	6.508	3.286	29.000	73.079	6156.686	5.910E+06	
2,4-Dinitrotoluene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
Diethylphthalate	29	2	27	0	0	0.07	10000.00	10000.00	190.00	387.19	1242.93	2679.37	5.959	1.259	29.000	165.536	905.626	1657.315	x
4-Chlorophenyl phenylether	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
4-Nitroaniline	28	1	27	0	0	0.04	0.00	0.00	460.00	662.73	1429.21	2991.78	6.496	1.081	28.000	319.619	1374.178	2023.108	x
4,6-Dinitro-2-Methylphenol	29	2	27	0	0	0.07	47000.00	53000.00	465.00	990.15	4827.07	12874.60	6.898	1.404	29.000	383.872	2553.967	5848.510	
N-Nitrosodiphenylamine	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
4-Bromophenylphenylether	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
Hexachlorobenzene	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.638	705.554	x
Pentachlorophenol	27	1	26	1	0	0.04	180.00	180.00	460.00	697.75	1454.26	3044.44	6.548	0.962	27.000	364.527	1335.598	1751.136	x
Carbazole	29	13	16	10	0	0.45	21.00	9700E+06	210.00	574.28	411101.52	1832533.40	6.353	2.768	29.000	88.742	3716.392	377826.772	

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - SEMI-VOLATILE ORGANIC SAMPLES (EXCLUDING PAHS)
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Di-n-butylphthalate	27	1	26	1	0	0.04	53.00	53.00	190.00	289.71	588.81	1183.48	5.669	0.971	27.000	150.462	557.820	737.787	x
Butylbenzylphthalate	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.683	705.554	x
3,3'-Dichlorobenzidine	27	0	27	0	0	0.00	0.00	0.00	190.00	304.31	594.26	1181.26	5.718	0.914	27.000	164.289	563.683	705.554	x
bis(2-Ethylbexyl)phthalate	27	2	25	2	0	0.07	26.00	550.00	190.00	299.47	618.74	1187.82	5.702	1.050	27.000	147.477	608.113	875.064	x
Di-n-octylphthalate	27	5	22	5	0	0.19	19.00	230.00	190.00	233.32	566.67	1191.70	5.452	1.212	27.000	103.021	528.405	932.744	x
Analine	2	2	0	0	0	1.00	67000.00	166000.00	126500.00	105460.89	116500.00	70003.57	11.566	0.642	2.000	68409.008	162580.928	9.457E+09	x
N-Phenylbenzylamine	2	2	0	0	0	1.00	31000.00	152000.00	91500.00	68644.01	91500.00	85559.92	11.137	1.124	2.000	32151.426	146556.487	2.193E+20	x

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - INORGANIC SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Alumininum	27	27	0	0	0	1.00	3490.00	14700.00	10900.00	9138.15	9722.22	3125.32	9.120	0.381	27.000	7064.674	11820.183	11293.527	
Antimony	27	9	18	9	0	0.33	3.50	6.50	1.95	1.94	2.53	1.86	0.663	0.742	27.000	1.176	3.200	3.504	
Arsenic	27	27	0	14	0	1.00	1.70	9.70	5.10	5.19	5.65	2.25	1.647	0.438	27.000	3.861	6.975	6.726	
Barium	27	27	0	0	0	1.00	26.80	84.90	49.00	48.16	50.61	16.12	3.874	0.324	27.000	38.698	59.927	56.979	
Beryllium	27	22	5	0	0	0.81	0.27	0.57	0.41	0.32	0.36	0.15	-1.136	0.570	27.000	0.219	0.471	0.472	
Cadmium	27	8	19	0	0	0.30	0.25	1.00	0.30	0.32	0.38	0.26	-1.154	0.582	27.000	0.213	0.467	0.471	
Calcium	27	27	0	0	0	1.00	212.00	6370.00	904.00	959.18	1485.56	1603.73	6.866	0.938	27.000	509.272	1806.543	2313.994	
Chromium	27	27	0	6	0	1.00	4.10	115.00	16.50	16.53	20.58	20.66	2.805	0.591	27.000	11.094	24.639	24.907	
Cobalt	27	27	0	0	0	1.00	2.30	16.30	10.50	9.36	9.91	2.90	2.236	0.382	27.000	7.232	12.115	11.577	
Copper	27	27	0	1	0	1.00	4.40	32.80	18.80	18.58	19.88	6.68	2.922	0.408	27.000	14.108	24.479	23.478	
Iron	27	27	0	0	0	1.00	5180.00	32900.00	22200.00	19510.83	20764.44	6336.23	9.879	0.398	27.000	14913.610	25525.161	24442.967	
Lead	27	27	0	24	0	1.00	5.40	33.80	12.50	13.51	14.74	6.83	2.603	0.417	27.000	10.193	17.896	17.188	
Magnesium	27	27	0	0	0	1.00	442.00	4490.00	3130.00	2697.01	2927.11	974.08	7.900	0.477	27.000	1954.998	3720.661	3619.246	
Manganese	27	27	0	5	0	1.00	152.00	890.00	426.00	417.57	464.11	211.46	6.034	0.482	27.000	301.629	578.080	563.076	
Mercury	27	0	27	0	0	0.00	0.00	0.00	0.05	0.04	0.04	0.02	-3.207	0.367	27.000	0.032	0.052	0.049	x
Nickel	27	27	0	0	0	1.00	4.10	41.10	23.90	21.14	22.82	7.71	3.051	0.450	27.000	15.602	28.640	27.684	
Potassium	27	26	1	0	0	0.96	360.00	1370.00	584.00	607.37	643.09	238.30	6.409	0.336	27.000	484.138	761.981	724.975	
Selenium	27	6	22	4	0	0.22	0.22	0.59	0.18	0.21	0.24	0.15	-1.578	0.508	27.000	0.146	0.291	0.285	
Silver	27	1	26	0	0	0.04	0.46	0.46	0.34	0.30	0.32	0.10	-1.208	0.339	27.000	0.238	0.375	0.357	
Sodium	27	27	0	0	0	1.00	29.70	65.40	47.70	47.69	48.69	10.00	3.865	0.210	27.000	41.390	54.939	52.401	
Thallium	27	0	27	0	0	0.00	0.00	0.00	0.16	0.17	0.18	0.04	-1.765	0.215	27.000	0.148	0.198	0.189	x
Vanadium	27	27	0	2	0	1.00	5.00	24.10	15.90	14.28	15.15	4.91	2.659	0.366	27.000	11.158	18.287	17.442	
Zinc	27	27	0	1	0	1.00	14.40	81.40	55.60	51.23	53.47	13.79	3.936	0.329	27.000	41.016	63.976	60.846	
Cyanide	26	2	24	1	0	0.08	3.20	15.90	1.18	1.08	1.69	2.97	0.077	0.766	26.000	0.644	1.810	2.030	

Concentrations are given in units of mg/kg (ppm).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - PESTICIDE SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Alpha-BHC	23	0	23	0	4	0.00	0.00	0.00	1.00	1.05	1.10	0.43	0.052	0.262	23.000	0.883	1.258	1.206	x
Beta-BHC	23	0	23	0	4	0.00	0.00	0.00	1.00	1.05	1.10	0.43	0.052	0.262	23.000	0.883	1.258	1.206	x
Delta-BHC	23	0	23	0	4	0.00	0.00	0.00	1.00	1.05	1.10	0.43	0.052	0.262	23.000	0.883	1.258	1.206	x
Gamma-BHC	23	0	23	0	4	0.00	0.00	0.00	1.00	1.05	1.10	0.43	0.052	0.262	23.000	0.883	1.258	1.206	x
Heptachlor	25	6	19	5	2	0.24	2.00	22.00	1.00	1.40	2.21	4.18	0.338	0.711	25.000	0.868	2.266	2.471	
Aldrin	23	0	23	0	4	0.00	0.00	0.00	1.00	1.05	1.10	0.43	0.052	0.262	23.000	0.883	1.258	1.206	x
Heptachlor epoxide	24	3	21	3	3	0.13	2.50	24.00	1.00	1.32	2.25	4.71	0.274	0.750	24.000	0.793	2.181	2.462	
Endosulfan I	23	0	23	0	4	0.00	0.00	0.00	1.00	1.05	1.10	0.43	0.052	0.262	23.000	0.883	1.258	1.206	x
Dieldrin	21	0	21	0	6	0.00	0.00	0.00	1.90	2.05	2.15	0.84	0.720	0.265	21.000	1.719	2.457	2.369	x
DDE	23	2	21	1	4	0.09	5.00	5.00	1.90	2.34	3.00	3.63	0.852	0.554	23.000	1.613	3.408	3.471	
Endrin	23	0	23	0	4	0.00	0.00	0.00	1.90	2.04	2.13	0.80	0.714	0.254	23.000	1.721	2.425	2.325	x
Endosulfan II	24	2	22	2	3	0.08	3.70	39.00	1.90	2.37	3.73	7.56	0.862	0.658	24.000	1.519	3.690	3.927	
DDD	23	1	22	0	4	0.04	5.80	5.80	1.90	2.14	2.29	1.11	0.762	0.334	23.000	1.710	2.684	2.583	
Endosulfan sulfate	23	1	22	0	4	0.04	4.40	4.40	1.90	2.12	2.23	0.93	0.750	0.300	23.000	1.729	2.591	2.487	
DDT	20	2	18	2	7	0.10	7.20	48.00	1.88	2.48	4.63	10.31	0.908	0.794	20.000	1.451	4.238	5.184	
Methoxychlor	23	0	23	0	4	0.00	0.00	0.00	10.00	10.54	11.00	4.34	2.355	0.262	23.000	8.831	12.576	12.059	x
Endrin ketone	23	0	23	0	4	0.00	0.00	0.00	1.90	2.04	2.13	0.80	0.714	0.254	23.000	1.721	2.425	2.325	x
Endrin aldehyde	23	0	23	0	4	0.00	0.00	0.00	1.90	2.04	2.13	0.80	0.714	0.254	23.000	1.721	2.425	2.325	x
alpha-Chlordane	21	1	20	1	6	0.05	0.21	0.21	1.00	0.98	1.06	0.49	-0.023	0.444	21.000	0.724	1.319	1.308	x
gamma-Chlordane	23	1	22	1	4	0.04	2.20	2.20	1.00	1.08	1.14	0.49	0.079	0.303	23.000	0.882	1.327	1.274	
Toxaphene	23	0	23	0	4	0.00	0.00	0.00	100.00	105.38	110.00	43.43	4.658	0.262	23.000	88.310	125.759	120.587	x
Aroclor-1016	23	0	23	0	4	0.00	0.00	0.00	19.00	20.43	21.26	8.00	3.017	0.254	23.000	17.211	24.249	23.252	x
Aroclor-1221	23	0	23	0	4	0.00	0.00	0.00	38.50	41.50	43.26	16.83	3.726	0.258	23.000	34.866	49.388	47.357	x
Aroclor-1232	23	0	23	0	4	0.00	0.00	0.00	19.00	20.43	21.26	8.00	3.017	0.254	23.000	17.211	24.249	23.252	x
Aroclor-1242	23	0	23	0	4	0.00	0.00	0.00	19.00	20.43	21.26	8.00	3.017	0.254	23.000	17.211	24.249	23.252	x
Aroclor-1248	23	2	21	2	4	0.09	8.30	160.00	19.00	21.65	26.95	30.20	3.075	0.538	23.000	15.055	31.122	31.498	
Aroclor-1254	23	0	23	0	4	0.00	0.00	0.00	19.00	20.43	21.26	8.00	3.017	0.254	23.000	17.211	24.249	23.252	x
Aroclor-1260	23	0	23	0	4	0.00	0.00	0.00	19.00	20.43	21.26	8.00	3.017	0.254	23.000	17.211	24.249	23.252	x

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2
CHEMICAL SUMMARY STATISTICS - PAH BACKGROUND SAMPLES
GCL Tie and Treating Site

							Minimum	Maximum											
						Frequency	Concentration	Concentration		Geometric	Arithmetic	Standard				Lower	Upper		
Compound	Valid	Occur	Undetect	Estimated	Reject	Detected	Detected	Detected	Median	Mean	Mean	Deviation	mean(y)	stdev(y)	n(y)	Quartile	Quartile	Upper 95	
Naphthalene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Acenaphthylene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Acenaphthene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Fluorene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Phenanthrene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Anthracene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Fluoranthene	4	1	3	1	0	0.25	24.00	24.00	165.00	104.85	134.75	74.43	4.653	0.984	4.000	53.967	203.727	7129.465	x
Pyrene	4	2	2	2	0	0.50	23.00	76.00	120.50	85.47	112.25	76.06	4.448	0.960	4.000	44.716	163.357	4752.658	x
Benzo (a) anthracene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Chrysene	4	2	2	2	0	0.50	36.00	82.00	123.50	97.43	117.00	70.03	4.579	0.755	4.000	58.547	162.138	1214.929	x
Benzo (b,k) fluoranthene	2	1	1	1	0	0.50	160.00	160.00	162.50	162.48	162.50	3.54	5.091	0.022	2.000	160.113	164.884	174.924	x
Benzo (b) fluoranthene	2	2	1	1	0	1.00	42.00	42.00	113.50	88.15	113.50	101.12	4.479	1.048	2.000	43.453	178.814	2.57E+15	x
Benzo (k) fluoranthene	2	2	1	1	0	1.00	54.00	54.00	119.50	99.95	119.50	92.63	4.605	0.871	2.000	55.547	179.848	1.76E+11	x
Benzo (a) pyrene	4	2	2	2	0	0.50	36.00	250.00	175.00	128.74	159.00	89.67	4.858	0.867	4.000	71.708	231.144	3482.854	x
Indeno (1,2,3-cd) pyrene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Dibenzo (a,h) anthracene	4	0	4	0	0	0.00	0.00	0.00	175.00	174.71	175.00	11.55	5.163	0.066	4.000	167.099	182.676	190.093	x
Benzo (g,h,i) perylene	4	1	3	1	0	0.25	200.00	200.00	185.00	183.32	183.75	14.36	5.211	0.079	4.000	173.799	193.389	203.185	x

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - VOLATILE ORGANIC BACKGROUND SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Chloromethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Bromomethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Vinyl Chloride	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Chloroethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Methylene Chloride	2	2	0	0	0	1.00	26.00	26.00	26.00	26.00	26.00	0.00	3.258	0.000	2.000	26.000	26.000	26.000	
Acetone	2	0	2	0	0	0.00	0.00	0.00	7.25	7.04	7.25	2.47	1.951	0.348	2.000	5.562	8.899	142.554	x
Carbon Disulfide	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1,1-Dichloroethene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1,1-Dichloroethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1,2-Dichloroethene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Chloroform	2	2	0	2	0	1.00	4.00	4.00	4.00	4.00	4.00	0.00	1.386	0.000	2.000	4.000	4.000	4.000	
1,2-Dichloroethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
2-Butanone	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1,1,1-Trichloroethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Carbon tetrachloride	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Bromodichloromethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1,2-Dichloropropane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
e-1,3-Dichloropropene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Trichloroethene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Dibromochloromethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1,1,2-Trichloroethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Benzene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
1-1,3-Dichloropropene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Bromoform	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
4-Methyl-2-pentanone	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
2-Hexanone	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Tetrachloroethene	2	2	0	0	0	1.00	13.00	15.00	14.00	13.96	14.00	1.41	2.636	0.101	2.000	13.043	14.951	20.778	x
1,1,2,2-Tetrachloroethane	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Toluene	2	2	0	2	0	1.00	3.00	3.00	3.00	3.00	3.00	0.00	1.099	0.000	2.000	3.000	3.000	3.000	
Chlorobenzene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Ethylbenzene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Styrene	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x
Xylenes	2	0	2	0	0	0.00	0.00	0.00	5.50	5.50	5.50	0.00	1.705	0.000	2.000	5.500	5.500	5.500	x

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - VOLATILE ORGANIC SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Chloromethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Bromomethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Vinyl Chloride	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Chloroethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Methylene Chloride	27	8	19	2	0	0.30	9.00	200.00	12.50	16.63	67.54	229.54	2.811	1.226	27.000	7.273	38.014	68.436	
Acetone	27	1	26	0	0	0.04	41.00	41.00	17.00	18.65	89.80	263.08	2.926	1.394	27.000	7.285	47.770	111.752	x
Carbon Disulfide	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
1,1-Dichloroethene	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
1,1-Dichloroethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
1,2-Dichloroethene	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Chloroform	27	20	7	20	0	0.74	2.00	480.00	3.00	4.77	34.81	112.30	1.563	1.396	27.000	1.861	12.240	28.733	
1,2-Dichloroethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
2-Butanone	27	1	26	1	0	0.04	1500.00	1500.00	5.50	9.02	105.80	361.03	2.199	1.460	27.000	3.368	24.139	63.385	
1,1,1-Trichloroethane	27	1	26	1	0	0.04	0.00	0.00	5.50	9.02	105.80	361.03	2.199	1.460	27.000	3.368	24.139	63.385	x
Carbon tetrachloride	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Bromodichloromethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
1,2-Dichloropropane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
c-1,3-Dichloropropene	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Trichloroethene	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Dibromochloromethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
1,1,2-Trichloroethane	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Benzene	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
t-1,3-Dichloropropene	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
Bromoform	27	0	27	0	0	0.00	0.00	0.00	5.50	8.79	78.02	265.97	2.173	1.370	27.000	3.488	22.139	49.733	x
4-Methyl-2-pentaone	26	0	26	0	1	0.00	0.00	0.00	5.50	8.95	80.81	270.84	2.191	1.393	26.000	3.495	22.908	54.733	x
2-Hexanone	26	0	25	1	1	0.00	0.00	0.00	5.50	9.19	109.65	367.61	2.218	1.485	26.000	3.374	25.029	70.557	x
Tetrachloroethene	26	16	10	14	1	0.62	1.00	120.00	5.50	7.35	84.63	270.69	1.995	1.748	26.000	2.261	23.900	166.977	
1,1,2,2-Tetrachloroethane	26	0	26	0	1	0.00	0.00	0.00	5.50	8.95	80.81	270.84	2.191	1.393	26.000	3.495	22.908	54.733	x
Toluene	26	15	11	15	1	0.58	1.00	3500.00	5.50	8.34	160.58	688.24	2.121	1.647	26.000	2.745	25.351	99.118	
Chlorobenzene	26	0	26	0	1	0.00	0.00	0.00	5.50	8.95	80.81	270.84	2.191	1.393	26.000	3.495	22.908	54.733	x
Ethylbenzene	26	2	24	2	1	0.08	2.00	4100.00	5.50	9.19	209.52	827.28	2.218	1.655	26.000	3.008	28.058	111.480	
Styrene	26	1	25	1	1	0.04	1300.00	1300.00	5.50	9.14	101.96	338.28	2.213	1.466	26.000	3.400	24.566	66.782	
Xylenes	26	3	23	3	1	0.12	1.00	6800.00	5.50	9.37	313.54	1343.51	2.237	1.758	26.000	2.862	30.667	153.658	

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - SEMI-VOLATILE ORGANIC BACKGROUND SAMPLES (EXCLUDING PAHS)
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
N-Nitrosodiphenylamine	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
4-Bromophenyl phenylether	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
Hexachlorobenzene	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
Pentachlorophenol	2	0	2	0	0	0	0.00	0.00	447.50	447.49	447.50	3.54	6.104	0.008	2.000	455.114	449.885	459.465	x
Carbazole	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
Di-n-butylphthalate	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
Butylbenzylphthalate	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
3,3'-Dichlorobenzidine	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
bis(2-Ethylhexyl)phthalate	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
Di-n-octylphthalate	2	0	2	0	0	0	0.00	0.00	185.00	185.00	185.00	0.00	5.220	0.000	2.000	185.000	185.000	185.000	x
Analine	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
N-Phenylbenzylamine	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	

Concentrations are given in units of ug/kg (ppb).
The "NR" means not analyzed.
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - INORGANIC BACKGROUND SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Almininum	2	2	0	0	0	1.00	10200.00	10400.00	10300.00	10299.51	10300.00	141.42	9.240	0.041	2.000	10204.544	10395.369	10785.964	x
Antimony	2	0	2	0	0	0.00	0.00	0.00	1.65	1.65	1.65	0.07	0.500	0.043	2.000	1.176	3.200	3.504	
Arsenic	2	2	0	2	0	1.00	7.30	8.50	7.90	7.88	7.90	0.85	2.064	0.108	2.000	7.326	8.470	12.102	x
Barium	2	2	0	0	0	1.00	66.90	76.80	71.85	71.68	71.85	7.00	4.272	0.098	2.000	67.112	76.557	104.809	x
Beryllium	2	2	0	0	0	1.00	0.38	0.44	0.41	0.41	0.41	0.04	-0.894	0.104	2.000	0.381	0.439	0.616	x
Cadmium	2	0	2	0	0	0.00	0.00	0.00	0.25	0.25	0.25	0.01	-1.387	0.057	2.000	0.240	0.260	0.360	
Calcium	2	2	0	0	0	1.00	1660.00	15400.00	8530.00	5056.09	8530.00	9715.65	8.523	1.575	2.000	1747.024	14632.881	1.760E+34	x
Chromium	2	2	0	0	0	1.00	14.60	16.20	15.40	15.38	15.40	1.13	2.733	0.074	2.000	14.635	16.161	20.175	x
Cobalt	2	2	0	0	0	1.00	11.70	13.90	12.80	12.75	12.80	1.56	2.546	0.122	2.000	11.746	13.845	21.116	x
Copper	2	2	0	0	0	1.00	19.70	26.20	22.95	22.72	22.95	4.60	3.123	0.202	2.000	19.829	26.029	65.511	x
Iron	2	2	0	0	0	1.00	19700.00	20900.00	20300.00	20291.13	20300.00	848.53	9.918	0.042	2.000	19726.738	20871.671	23474.926	x
Lead	2	2	0	0	0	1.00	6.70	11.20	8.95	8.66	8.95	3.18	2.159	0.363	2.000	6.779	11.069	235.240	x
Magnesium	2	2	0	0	0	1.00	3770.00	4220.00	3995.00	3988.66	3995.00	318.20	8.291	0.080	2.000	3779.764	4209.099	5374.214	x
Manganese	2	2	0	0	0	1.00	632.00	715.00	673.50	672.22	673.50	58.69	6.511	0.087	2.000	633.791	712.979	936.622	x
Mercury	2	0	2	0	0	0.00	0.00	0.00	0.05	0.05	0.05	0.00	-3.101	0.000	2.000	0.045	0.045	0.045	x
Nickel	2	2	0	0	0	1.00	23.50	24.40	23.95	23.95	23.95	0.64	3.176	0.027	2.000	23.520	24.379	26.218	x
Potassium	2	2	0	0	0	1.00	716.00	723.00	719.50	719.49	719.50	4.95	6.579	0.007	2.000	716.160	722.839	736.207	x
Selenium	2	0	2	0	0	0.00	0.00	0.00	0.15	0.15	0.15	0.00	-1.897	0.000	2.000	0.150	0.150	0.150	x
Silver	2	0	2	0	0	0.00	0.00	0.00	0.33	0.33	0.33	0.02	-1.102	0.053	2.000	0.321	0.344	0.401	x
Sodium	2	2	0	0	0	1.00	57.50	75.20	66.35	65.76	66.35	12.52	4.186	0.190	2.000	57.855	74.738	171.660	x
Thallium	2	0	2	0	0	0.00	0.00	0.00	0.15	0.15	0.15	0.00	-1.897	0.000	2.000	0.150	0.150	0.150	x
Vanadium	2	2	0	2	0	1.00	12.30	13.20	12.75	12.74	12.75	0.64	2.545	0.050	2.000	12.320	13.179	15.200	x
Zinc	2	2	0	0	0	1.00	53.60	57.00	55.30	55.27	55.30	2.40	4.012	0.043	2.000	53.676	56.920	64.347	x
Cyanide	2	0	2	0	0	0.00	0.00	0.00	1.03	1.02	1.03	0.04	0.024	0.034	2.000	1.001	1.049	1.154	x

Concentrations are given in units of mg/kg (ppm).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 2

CHEMICAL SUMMARY STATISTICS - PESTICIDE BACKGROUND SAMPLES
GCL Tie and Treating Site

Compound	Valid	Occur	Undetect	Estimated	Reject	Frequency Detected	Minimum Concentration Detected	Maximum Concentration Detected	Median	Geometric Mean	Arithmetic Mean	Standard Deviation	mean(y)	stdev(y)	n(y)	Lower Quartile	Upper Quartile	Upper 95	
Alpha-BHC	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Beta-BHC	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Delta-BHC	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Gamma-BHC	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Heptachlor	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Aldrin	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Heptachlor epoxide	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Endosulfan I	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Dieldrin	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
DDE	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
Endrin	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
Endosulfan II	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
DDD	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
Endosulfan sulfate	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
DDT	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
Methoxychlor	2	0	2	0	0	0.00	0.00	0.00	9.50	9.50	9.50	0.00	2.251	0.000	2.000	9.500	9.500	9.500	x
Endrin ketone	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
Endrin aldehyde	2	0	2	0	0	0.00	0.00	0.00	1.85	1.85	1.85	0.00	0.651	0.000	2.000	1.850	1.850	1.850	x
alpha-Chlordane	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
gamma-Chlordane	2	0	2	0	0	0.00	0.00	0.00	0.95	0.95	0.95	0.00	-0.051	0.000	2.000	0.950	0.950	0.950	x
Toxaphene	2	0	2	0	0	0.00	0.00	0.00	95.00	95.00	95.00	0.00	4.554	0.000	2.000	95.000	95.000	95.000	x
Aroclor-1016	2	0	2	0	0	0.00	0.00	0.00	18.50	18.50	18.50	0.00	2.918	0.000	2.000	18.500	18.500	18.500	x
Aroclor-1221	2	0	2	0	0	0.00	0.00	0.00	37.25	37.25	37.25	0.35	3.618	0.009	2.000	37.011	37.488	37.300	x
Aroclor-1232	2	0	2	0	0	0.00	0.00	0.00	18.50	18.50	18.50	0.00	2.918	0.000	2.000	18.500	18.500	18.500	x
Aroclor-1242	2	0	2	0	0	0.00	0.00	0.00	18.50	18.50	18.50	0.00	2.918	0.000	2.000	18.500	18.500	18.500	x
Aroclor-1248	2	0	2	0	0	0.00	0.00	0.00	18.50	18.50	18.50	0.00	2.918	0.000	2.000	18.500	18.500	18.500	x
Aroclor-1254	2	0	2	0	0	0.00	0.00	0.00	18.50	18.50	18.50	0.00	2.918	0.000	2.000	18.500	18.500	18.500	x
Aroclor-1260	2	0	2	0	0	0.00	0.00	0.00	18.50	18.50	18.50	0.00	2.918	0.000	2.000	18.500	18.500	18.500	x

Concentrations are given in units of ug/kg (ppb).
The "x" indicates that the 95% Upper Confidence Limit is greater then the maximum detected concentration.

TABLE 3

GCL TIE & TREATING SITE
CHEMICALS OF POTENTIAL CONCERN

ORGANIC

Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Flouranthene
Fluorene
Indeno (1,2,3-cd)pyrene
Pyrene
Aniline
Bis(2-ethylhexyl)phthalate
4-Chloroaniline
2,4-Dimethylphenol
Di-n-octylphthalate
Napthalene
Chloroform
Phenol
Ethylbenzene
Methylene Chloride
Tetrachloroethene
Toluene
Xylenes
Aroclor 1248 (PCB)
Chlordane
DDE
DDT
Heptachlor
Heptachlor Expoxide

INORGANIC

Arsenic
Chromium

TABLE 4

GCL TIE & TREATING SITE
RISK ASSESSMENT CURRENT USE SOIL EXPOSURE PATHWAYS

Current Use Receptors				Current Use Receptors				
Primary Source	Secondary Source			Off-Site Residents			Site Trespassers	
				Child	Adult	Off-Site Workers	Child	Adult
Industrial and Commercial Activities	Spill/Discharge	Soil	Ingestion	X	X	X	X	X
			Dermal Contact	-	-	-	X	X
			Inhalation	X	X	X	X	X

TABLE 5

GCL TIE & TREATING SITE
RISK ASSESSMENT CURRENT USE SOIL EXPOSURE PATHWAYS

Future Use Receptors

Primary Source	Secondary Source			Off-Site Residents				Site Trespassers	
				Child	Adult	Off-Site Workers	On-Site Workers	Child	Adult
Industrial and Commercial Activities	Spill/Discharge	Soil	Ingestion	X	X	X	X	X	X
			Dermal Contact	-	-	-	X	X	X
			Inhalation	X	X	X	X	X	X

TABLE 6
GCL TIE & TREATING SITE
TOXICITY DATA FOR NONCARCINOGENIC AND CARCINOGENIC RISK EVALUATION

Sheet 2 of 2

Chemical Name		Noncarcinogenic Reference Dose			Carcinogen Slope Factor				
		RfD (oral) (mg/Kg/day)	RfC (inhalation) mg/Cu.m)	RfD (inhalation) (mg/Kg-day)	SF (Oral) (mg/Kg-day)-1	Weight of Evidence	Unit Risk (Inhalation) (ug/Cu.m)-1	SF (Inhalation) (mg/Kg-day)-1	Weight of Evidence
Semi-Volatiles (Cont'd)	Benzo(a)pyrene	-	-	-	7.3E+00	B2	-	6.1E+00	B2
	Dibenz(a,h)anthracene	-	-	-	TEF-1.0	B2	-	-	-
	Bis(2-ethylhexyl)phthalate	2.0E-02	-	-	1.4E-02	B2	-	-	-
	Di-n-octylphthalate	2.0E-02	-	-	-	-	-	-	-
	Phenol	6.0E-01	-	-	-	-	-	-	-
	2,4-Dimethylphenol	2.0E-02	-	-	-	-	-	-	-
	4-Chloroaniline	4.0E-03	-	-	-	-	-	-	-
	Aniline	-	1.0E-2	2.86E-03	-	-	-	-	-
	Heptachlor	5.0E-04	-	-	4.5E+00	-	-	-	-
	Heptachlor epoxide	1.3E-05	-	-	9.1E+00	-	-	-	-
	DDE	-	-	-	3.4E-01	-	-	-	-
	DDT	5.0E-04	-	-	3.4E-01	-	-	-	-
	alpha-Chlordane	6.0E-05	-	-	1.3E+00	-	-	-	-
	Aroclor 1248 (PCBs)	-	-	-	7.7E+00	-	-	-	-
Inorganics	Arsenic	3.00E-04	-	-	1.75E+00	A	4.30E-03	1.50E+05	A
	Chromium III	1.00E+00	-	-	-	-	-	-	-
	Chromium VI	5.00E-03	-	-	-	-	1.17E-02	4.10E+01	A

EPA Weight of Evidence classifications are as follows:

Group A:	Human Carcinogen. Sufficient evidence from epidemiologic studies to support a casual association between exposure and cancer.
Group B1:	Probable Human Carcinogen. Limited evidence of carcinogenicity in human from epidemiological studies.
Group B2:	Probable Human Carcinogen. Sufficient evidence of carcinogenicity in animals. Inadequate evidence of carcinogenicity in humans.
Group C:	Possible Human Carcinogen. Limited evidence of carcinogenicity in animals.
Group D:	Not classified. Inadequate evidence of carcinogenicity in animals.

Note: - No data/Not available.

TABLE 7

CARCINOGENIC RISK LEVELS
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIOS

EXPOSURE TO SOIL	CARCINOGENIC RISK LEVELS (REASONABLE MAXIMUM EXPOSURE)
Adult Trespassers	
1) Inhalation	3.49 x 10-6
2) Ingestion	2.67 x 10-4
3) Dermal Contact	1.98 x 10-7
TOTAL	2.71 x 10-4
Older Child Trespassers	
1) Inhalation	1.09 x 10-6
2) Ingestion	2.67 x 10-4
3) Dermal Contact	5.51 x 10-8
TOTAL	2.68 x 10-4
On-Site Worker	
1) Inhalation	2.60 x 10-6
2) Ingestion	9.54 x 10-4
3) Dermal Contact	5.09 x 10-8
TOTAL	9.57 x 10-4
Off-Site Worker	
1) Inhalation	2.60 x 10-6
2) Ingestion	9.54 x 10-4
TOTAL	9.57 x 10-4

TABLE 8

NONCARCINOGENIC RISK LEVELS
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIO

EXPOSURE TO SOIL	NONCARCINOGENIC EIAZARD INDEX VALUES (REASONABLE MAXIMUM-EXPOSURE)
Adult Trespassers	
1) Inhalation	8.67 x 10-4
2) Ingestion	4.94 x 10-2
3) Dermal Contact	*
TOTAL	5.03 X 10-2
Older Child Trespassers	
1) Inhalation	1.08 x 10-3
2) Ingestion	1.98 x 10-1
3) Dermal Contact	*
TOTAL	1.99 x 10-1
On-Site Worker	
1) Inhalation	6.19 x 10-4
2) Ingestion	1.69 x 10-1
3) Dermal Contact	*
TOTAL	1.70 x 10-1
Off-Site Worker	
1) Inhalation	6.19 x 10-4
2) Ingestion	1.69 x 10-1
TOTAL	1.70 x 10-1

* No noncarcinogenic dermal contact chemicals of concern

TABLE 9

HEALTH-BASED SOIL CLEANUP LEVELS

COMPOUND	RISK-BASED CLEANUP LEVEL (PPM)
Benzo(a)anthracene	78
Benzo(a)pyrene	8
Benzo(b)fluoranthene	78
Benzo(k)fluoranthene	78
Dibenzo(a,h)anthracene	8
Indeno(1,2,3-c,d)pyrene	78
Total PAHs	500

TABLE 10

LIST OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTD (ARARS) AND TO-BE-CONSIDERED (TBC) FOR THE SELECTED REMEDY

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS'	REGULATORY LEVEL
National Ambient Air Quality Standards for Hazardous Air Pollutants (NAAQS) 40 CFR 61	Federal
RCRA- Land Disposal Restrictions (40 CFR 268)	Federal
RCRA- Standards Applicable to Transport of Hazardous Waste (CFR 263.11, 263.20-21 and 263.30-31)	Federal
RCRA- Standards for Owners/Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10-264.18)	Federal
RCRA- Preparedness and Prevention (40 CFR 264.10-264.18)	Federal
RCRA- Contingency Plan and Emergency Procedures (40CFR 264.50-264.56)	Federal
DOT- Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.1-172.558)	Federal
New York State Hazardous Waste Manifest System Rules (6NYCRR 372)	NY State
New York Hazardous Waste Treatment Storage and Disposal Facility Permitting Requirements (6 NYCRR 370 and 373)	NY State
TO-BE-CONSIDERED[2]	REGULATORY LEVEL
New York State Air Emission Requirements (6 NYCRR 364 and 372)	NY State
OSHA- Safety and Health Standards (29 CFR 1926)	Federal
OSHA- Record keeping, Reporting and Related Regulations (29 CFR 1904)	Federal

1 Environmental statutes promulgated by a federal or state authority.
2 Advisories, criteria, and guidance of federal or state origin.

TABLE 11

Sheet 1 of 2

ALTERNATIVE 5: EXCAVATION AND SCREENING/ON-SITE THERMAL DESORPTION/ BACKFILL WITH TREATED SOIL AND CLEAN OFF-SITE SOIL

CAPITAL COST ESTIMATES (1994 DOLLARS)

FACILITY/CONSTRUCTION	ESTIMATED QUANTITIES	MATERIAL UNIT PRICE	MATERIAL COST	INSTALLATION UNIT PRICE	INSTALLATION COST	DIRECT CONSTRUCTION COST*
I. SITE PREPARATION						
1. Warning Signs	31	80	2,500	20	600	3,100
2. Fence Completion	1,200 lf	18	21,600	8	9,600	31,200
3. Equipment Parking and Storage Area	2,500 sy	8	20,000	4	10,000	30,000
II. SUPPORT FACILITIES						
1. Office Trailer	1	14,300	14,300	Included		14,300
2. Decontamination Trailer	1	42,900	42,900	Included		42,900
III. BUILDING DECONTAMINATION, DEMOLITION AND DISPOSAL						
1. Decontamination	84.100 ft^2	Included in installation		11.5	967,200	967,200
2. Demolition	20,900 ft^2	Included in installation		27	564,300	564,300
3. Disposal	148 cf	Included in installation		18	2,700	2,700
IV. CONTAMINATED SOIL EXCAVATION	36,100 cy	Included in installation		25	902,500	902,500
V. SCREENING/SHREDDING	36,100 cy	Included in installation		Included in Item IV		
VI. ON-SITE THERMAL DESORPTION	36,100 cy	Included in installation		200	7,220,000	7,220,000
VII. DISPOSAL	36,100 cy	Included in installation		10	361,000	361,000
VIII. CLEAN OFF-SITE BACKFILL	6,676 cy	Included in installation		28	186,900	186,900

* All numbers are rounded to nearest hundred.

TABLE 11

Sheet 2 of 2

ALTERNATIVE 5: EXCAVATION AND SCREENING/ON-SITE THERMAL DESORPTION/ BACKFILL WITH TREATED SOIL AND CLEAN OFF-SITE SOIL

CAPITAL COST ESTIMATES (1994 DOLLARS)

FACILITY/CONSTRUCTION	ESTIMATED QUANTITIES	MATERIAL UNIT PRICE	MATERIAL COST	INSTALLATION UNIT PRICE	INSTALLATION COST	DIRECT CONSTRUCTION COST*
IX. TOPSOIL COVER	5,324 cy	40	213,000	10	53,200	266,200
X. TREATABILITY STUDY	1	Included in installation		60,000	60,000	60,000
XI. HEALTH AND SAFETY	Lump Sum	Included in installation		250,000	NA	250,000
XII. MOBILIZATION/DEMOBILIZATION	Lump Sum	Included in installation		90,000	NA	90,000
	Total Direct Construction Cost (TDCC)					10,992,300
	Contingency @ 20% of TDCC					2,198,500
	Engineering @ 10% of TDCC					1,099,300
	Legal and Administrative @ 5% of TDCC					549,700
	Total Construction Cost					14,839,800

* All numbers are rounded to nearest hundred.

APPENDIX III
ADMINISTRATIVE RECORD INDEX

GCL TIE & TREATING SITE
OPERABLE UNIT ONE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.3 Work Plans

P. 300001 - 300362	Report: Final Field Operations Plan, Phase I Field Investigation, GCL Tie & Treating Site, Sidney, New York, prepared by Ebasco Services Incorporated, prepared for U.S. EPA, April 1993.
P. 300363 - 300466	Report: Final Work Plan for Remedial Investiqation and Feasibility Study, GCL Tie & Treating Site, Sidney, New York, prepared by Ebasco Services Incorporated, prepared for U.S. EPA, February 1993.

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001 - 400317	Report: Final Focused Feasibility Study Report, GCL Tie & Treating Site, Sidney, New York, prepared by Ebasco Services Incorporated, July 1994.
P. 400318 - 400467	Report: Focused Feasibility Study, Baseline Risk Assessment, GCL Tie & Treating Site, Sidney, New York, prepared by Ebasco Services Incorporated, April 1994.
P. 400468 - 400557	Report: Draft Final Report, Treatability Studies, GCL Tie and Treating Company, Sidney, Delaware County, New York, prepared by Roy F. Weston, Inc., prepared for U.S. EPA/ERT, March 1994

8.0 HEALTH ASSESSMENTS

8.3 Correspondence

P. 800001 - 800007	Memorandum to Ms. Lisa K. Voyce, ATSDR Regional Representative, U.S. EPA - Region II, from Mr. Robert L. Williams, Ph.D., ATSDR, Department of Health and Human Services, and Mr. Allan S. Susten, Ph.D., DABT, ATSDR, Department of Health and Human Services, re: discussion of a number of health related issues relevant to the GCL Tie and Treating Site, July 29, 1991.

10.0 PUBLIC PARTICIPATION

10.2 Community Relations Plans

P. 1000001 - Report: Community Relations Plan, GCL Tie &
1000012 Treating Site, Sidney, New York, prepared by U.S.
EPA, November 1993.

10.3 Public Notices

P. 1000013 - Federal Register, National Priorities List for
1000039 Uncontrolled Hazardous Waste Sites, Final Rule,
Volume 59, No. 103, May 31, 1994.

P. 1000040 - Federal Register, National Priorities List for
1000046 Uncontrolled Hazardous Waste Sites, Proposed Rule
No. 16, Volume 59, No. 11, January 18, 1994.

10.6 Fact Sheets and Press Releases

P. 1000047 - Fact Sheet: Superfund Update, GCL Tie and
1000049 Treating Superfund Site, Sidney, Delaware County,
New York, EPA to Conduct Investigation of GCL Tie
and Treating Site, prepared by U.S. EPA, August 1993.

APPENDIX IV

STATE LETTER OF CONCURRENCE

SEP-23-1994 15:24 FROM NYS.ENUIR CONSERVATION TO 85926872122646607 P.01

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

Langdon Marsh
Commissioner

SEP 25 1994

Ms. Kathleen C. Callahan
Director
Emergency & Remedial Response Division
United States Environmental Protection Agency
26 Federal Plaza - Room 930
New York, NY 10278

Post-it TM brand fax transmittal memo 7671 #of pages< 2

To Carlos Ramos	From Martin Brand
Co. EPA	Co. DEC
Dept.	Phone # 5184575637
Fax# 212264-6607	Fax# 5284571088

Dear Ms. Callahan:

Re: GCL Tie & Treating Site ID # 413011
Draft Record of Decision

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the draft Record of Decision (ROD) for the GCL Tie & Treating site, Operable Unit 1, and in particular the selection of Alternative 2, Thermal Desorption. This alternative will incorporate the following:

1. Thermal desorption of 36,100 cubic yards of contamination soil and debris on the GCL-property portion (Operable Unit 1) of the site;

2. Decontamination, demolition, and off-site disposal of former process buildings:

3. Post-treatment sampling and analysis to ensure attainment of established cleanup levels;

4. Re-deposition of treated soils in excavated areas, placement of clean topsoil over treated soil, grading to promote drainage, seeding to establish vegetation cover;

5. Institutional controls, including deed restrictions, to maintain current industrial land usage, and;

6. Remedial design to determine: plans, operating specifications, and performance parameters (including pilot studies) for the on-site thermal desorption system; engineering controls and mitigation options for emissions, dusts, runoff, contaminated groundwater encountered during excavation, and other residual wastes generated during the remedial action; off-site disposal options for demolition debris and other untreatable residues; sampling and analytical protocols; grading and vegetation plans; and site security and access.

The NYSDEC concurs with the selected remedy fcr Operable Unit 1. Our concurrence is conditioned on the completion of the remedial design proposed for GCL Tie & Treating, Operable Unit 1. As discussed in the section on Implementability, the disposal of creosote-contaminated wood debris at an off-site facility is contingent on the availability of a facility permitted to handle such wastes and the classification of the debris as non-hazardous.

It is understood that a Remedial Investigation/Feasibility Study is underway on Operable Unit 2. This effort will address contaminated soil on the remaining non-GCL property portions of the site, as well as site-wide groundwater, surface water, and sediment issues. Additionally, the New York State Department of Health (NYSDOH) is in the process of preparing a Public Health Assessment (PHA) for the Agency for Toxic Substances and Disease Registry (ATSDR). Available data and information about the site, including the draft Remedial Investigation report for Operable Unit 2, is being reviewed to characterize site conditions and possible existing or potential human exposure to contaminants. NYSDOH concurrence with the draft Record of Decision will be postponed until review of the site information is complete.

If you have any questions, please contact Walter E. Demick, P.E. at (518) 457-5637.

Sincerely,

Ann Hill DeBarbieri
Deputy, Commissioner

APPENDIX V

RESPONSIVENESS SUMMARY

Superfund Proposed Plan

GCL TIE & TREATING SITE

Operable Unit 7

Town of Sidney
Delaware County, New York

EPA
Region 2

July 1994

PURPOSE OF PROPOSED PLAN

This Proposed Plan describes the remedial alternatives considered for the contaminated soils and debris located on a portion of the GCL Tie & Treating site and identifies the preferred remedial alternative with the rationale for this preference. The Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), as lead agency, with support from the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Contingency Plan (NCP). The remedial alternatives summarized here are described in a focused feasibility study (FFS) report which should be consulted for a more detailed description of all the alternatives.

This Proposed Plan is being provided as a supplement to the FFS report to inform the public of EPA's and NYSDEC's preferred remedy and to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred alternative.

more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA has taken into consideration all public comments. We are soliciting public comment on all of the alternatives considered in the detailed analysis section of the FFS because EPA and NYSDEC may select a remedy other than the preferred remedy.

COMMUNITY ROLE IN SELECTION PROCESS

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the FFS report, Proposed Plan, and supporting documentation have been made available to the public for a public comment period which begins on July 30, 1994 and concludes on August 29, 1994.

Dates to remember
MARK YOUR CALENDAR

July 30 to August 29, 1994
Public comment period on FFS report, Proposed Plan, and remedies considered

August 9, 1994

The remedy described in this Proposed Plan is the preferred remedy for contaminated soils and debris on the GCL-property portion of the site. Changes to the preferred remedy or a change from the preferred remedy to another remedy may be made, if public comments or additional data indicate that such a change will result in a

Public meeting at the Civic Center, 21 Liberty Street, Sidney, NY

A public meeting will be held during the public comment period at the Sidney Civic Center on August 9, 1994 at 7:00 p.m. to present the conclusions of the FFS, to elaborate further on the reasons for recommending the preferred remedial alternative, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document which formalizes the selection of the remedy.

All written comments should be addressed to:

Carlos R. Ramos, Remedial Project Manager
U.S. Enviromnental Protection Agency
26 Federal Plaza, Room 29-100
New York:, NY 10278

Copies of the Focused Feasibility Study Report dated July 1994, Proposed Plan, and supporting documentation are available at the following repositories:

Sidney Memorial Library
Main Street
Sidney, NY
Telephone: (607) 563-8021

and

U.S. Environmental Protection Agency
Emergency and Remedial Response Division
Superfund Records Center
26 Federal Plaza, Room 2900
New York, N.Y. 10278
Telephone: (212) 264-8770
Hours: 9:00 a.m. - 5:00 p.m. (M-F)

SITE BACKGROUND

The GCL Tie and Treating site occupies

The site is bordered on the north by a railroad line. A warehouse and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue delineate the eastern and southern borders of the site, respectively. A drainage ditch and woodland area lie between Delaware Avenue and the site. The western portion of the property abuts a small impoundment and wetlands area. The site eventually drains via overland flow to the Susquehanna River, which is located within one mile of the site.

The 26 acre GCL property includes four structures (see Figure 2). The primary building housed the wood pressure treatment operations including two treatment vessels (50 feet long by 7 feet in diameter), an office, and a small laboratory. Wood (mostly railroad ties) and creasote were introduced into the vessels which were subsequently pressurized in order to treat the wood.

Approximately 1,100 people are employed in a nearby industrial area. About 5,000 people live within 2 miles of the site and depend on groundwater as their potable water supply. The nearest residential well is within 0.5 mile of the site. Two municipal wells, supplying the Village of Sidney are located within 1.25 miles of the site. A shopping plaza consisting of fast-food restaurants and several stores is located approximately 300 feet south of the site. Other facilities (i.e., a hospital, public schools, senior citizen housing, and child care centers) are located within 2 miles of the site.

The site first came to the attention of the NYSDEC in 1986, after one of the pressure vessels used at the GCL facility malfunctioned, causing a release of an estimated 30,000-gallons of creosote. GCL representatives excavated the contaminated surface soil and placed it in a mound; no further action was undertaken at the approximately 60 acres in an industrial/ commercial area on the southwest side of Delaware County, New York. The site includes an inactive sawmill and wood-treating facility known as GCL Tie & Treating (the GCL property), and three active light manufacturing companies located on an adjacent parcel of land (see Figure 1). According to an analysis of historical photographs conducted by EPA and accounts by local residents, wood-preserving activities at the site date as far back as the 1940's.

time.

In September 1990, NYSDEC requested EPA to conduct a removal assessment at the site. Consequently, EPA conducted sampling of the GCL Tie and Treating facility in December 1989, October 1990, and August 1990. As a result of the data and information that were obtained as part of the assessment, a Removal Action was initiated by EPA in March 1991.

Activities conducted as part of the removal effort included: site stabilization (e.g., run-off and dust control), delineation of surface contamination, installation of a chain-link fence, identification and disposal of containerized (e.g., tanks, drums) and uncontainerized hazardous wastes (e.g., wastes in sumps); preparation of approximately 6,000 cubic yards of contaminated soil and wood debris for disposal) and development of a pilot study to determine the effectiveness of composting for bioremediation of creosote-contaminated soils.

The site was proposed for inclusion on the National Priorities List (NPL) in February 1994 and was added to the NPL in May 1994.

SCOPE AND ROLE OF ACTION

The GCL Tie & Treating site was selected as a pilot project for the Superfund Accelerated Cleanup Model (SACM) initiative. The purpose of SACM is to make Superfund cleanups more timely and efficient. Under this pilot, activities which would normally have been performed sequentially (e.g., site assessment, NPL placement, removal assessment) were performed concurrently. In June 1993, while attempting to determine if the site would score high enough for inclusion on the NPL, EPA initiated remedial investigation (RI) and FFS activities to delineate further the nature and extent of contamination at the site. These activities would not typically have been initiated until after the site had been proposed to the NPL.

Site remediation activities are sometimes segregated into different phases, or operable units, so that remediation of different environmental media or areas of a site can proceed separately, resulting in an expeditious remediation of the entire site. EPA has designated two operable units for the GCL Tie & Treating site as described below.

contamination in these media and identify remedial alternatives, EPA is conducting an RI/FS which is scheduled for completion by the end of 1994.

SUMMARY OF CONTAMINATED SOIL INVESTIGATION

A detailed assessment of the nature and extent of soil contamination on the GCL-property portion of the site was performed as part of the FFS. The soil investigation focussed on contaminants typically associated with the creosote wood preserving process. Creosote contaminants typically found included numerous polyaromatic hydrocarbons (PAHs) such as benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-c,d]pyrene and dibenzo[a,h]anthracene.

Approximately 200 trenches, ranging from 2 to 14 feet in depth, were excavated. Soil samples were collected from the trenches and analyzed for organic and inorganic contaminants. A summary of the highest concentrations of contaminants most frequently detected during the site investigations (FFS and removal assessment) is presented in Table 1.

The site investigation data showed numerous occurrences and high concentrations of PAHs in the GCL property soils. Maximum concentrations for the total PAHs were generally higher in the surface soils (up to 37,700 parts per million [ppm]), than in the subsurface layers (up to 971 ppm).

In comparison to the PAHs, there were few occurrences of volatiles, noncreosote-related semi volatiles, pesticides or PCBs. For these contaminant groups, methylene chloride, chloroform, 2-butanone, 1,1,1-trichloroethane, benzene, toluene, xylenes, and total volatiles were

- Operable unit 1 addresses only the contaminated soils on the GCL-property portion of the site and is the focus of this Proposed Plan.

- Operable unit 2 addresses the contamination in the soils on the remainder of the site (referred to as non-GCL property), and in the groundwater, surface water, and sediments. To assess the

detected in significant concentrations. The highest concentrations of these non-PAH organics were generally present in the same sample locations as the highest PAH concentrations. Inorganics were rarely greater than twice their respective background concentrations. The highest levels found were for lead and chromium.

Table 1. Summary of Contaminants Detected in the GCL-Property Soils During the FFS and Removal Assessment Investigations

CONTAMINANT	CONCENTRATION (PMM) Focused Feasibility Study	 Removal Assessment
Methylene Chloride	0.2	-
2-Butanone	1	-
1,1,1-Trichloroethane	1	-
Benzene	0.1	-
Toluene	3	-
Xylenes	8	-
Chloroform	0.5	-
Dibenzofuran	33	-
Naphthalene	170	1,600
2-Methylnaphthalene	59	580
Acenaphthene	110	2,500
Fluorene	150	4,700
Phenanthrene	100	10,000
Anthracene	630	6,400
Fluoranthene	540	11,000
Pyrene	520	8,200
Benzo(a) anthracene	160	2,400
Chrysene	140	2,200
Benzo(b)fluoranthene	46	1,200
Benzo(k)fluoranthene	13	470
Benzo(b/k)fluoranthene	120	-
Benzo(a)pyrene	76	700
Indeno(1,2,3-cd)pyrene	22	93
Dibenzo(a,h)anthracene	44	38
Benzo(g,h,i)perylene	20	1,600
Total PAHs	2,323	37,700
Cadmium	1.0	-
Chromium	29.3	-
Lead	33.5	-

- Not available

health. Benzo[a]pyrene was- the contaminant which exceeded its health-based soil cleanup level most frequently. Generally, the concentrations of other contaminants exceeded their respective health-based cleanup levels in locations where the health-based cleanup level for benzo[a]pyrene was exceeded.

It is estimated that approximately 36,100 cubic yards of soil contain contaminants in concentrations exceeding health-based cleanup levels. Wood debris is estimated to account for one-third (33%) of the total volume of this material.

SUMMARY OF SITE RISK

Based upon the results of the investigations, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the site, if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Hazard Identification--identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. Exposure Assessment-estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g, ingesting contaminated well-water) by which humans are potentially exposed. Toxicity Assessment-determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization--

Contaminants concentrations were compared with soil cleanup levels developed to protect human

summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The baseline risk assessment began with selecting contaminants of concern which would be representative of site risks. These contaminants, which are listed in Table 2, are known to cause cancer in laboratory animals and are suspected to be human carcinogens. In addition, since the current land use of the property is industrial, and based on input from the community and local officials, it was assumed that future land uses of the property would continue to be industrial.

The baseline risk assessment evaluated the health effects which could result from exposure to contamination as a result of:

< Ingestion and inhalation of soil by off-site young children and adult residents,

< Ingestion, inhalation and dermal contact with soil by older children and adult trespassers,

< Ingestion and inhalation of soil by off-site workers, and

< Ingestion, inhalation and dermal contact with soil by future on-site workers.

Current federal guidelines for acceptable exposures are an individual lifetime excess carcinogenic risk in the range of 10-4 to 10-5 (e.g., a one-in-ten-thousand to a one-in-a-million excess cancer risk) and a maximum health Hazard Index (which reflects noncarcinogenic effects for a human receptor) equal to 1.0. A Hazard Index greater than 1.0 indicates a potential of noncarcinogenic health effects.

The results of the baseline risk assessment indicate that the contaminated soils at the site pose an unacceptable risk to human health. The total potential future carcinogenic health risks to on-site and off-site workers from exposure to site soil via all exposure pathways (i.e., ingestion, inhalation, and dermal contact) are 1.2 x 10-3 and 1.6 x 10-3, respectively. These risk numbers mean that approximately one worker out of 1,000 would

These cleanup levels were developed, based on the risk assessment, to be protective of human health for future industrial/commercial uses of the property.

Table 2. Health-Based Soil Cleanup Levels

CONTAMINANT	HEALTH-BASED CLEANUP LEVEL (PPM)
Benzo(a)anthracene	78
Benzo(a)pyrene	8
Benzo(b)fluoranthene	78
Benzo(k)fluoranthene	78
Dibenzo(a,h)anthracene	8
Indeno(1,2,3-c,d)pyrene	78
Total PAHs	500

Ecological Risk Assessment

The ecological risks associated with this site will be addressed as part of the second operable unit RI/FS. This operable unit will evaluate, among other things, impacts to nearby surface water (wetlands) as well as terrestrial receptors.

Actual or threatened releases of hazardous substances from this site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare or the environment.

REMIDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment.

be at risk of developing cancer if the site were not remediated. The potential carcinogenic health risks to the other potential receptors are: 8.6 x 10-4 for future young children residents; 2.8 x 10-4 for future adult residents; 3.7 x 10-4 for current older children trespassers; and 2.8 x 10-4 for current adult trespassers. The HI for ingestion, inhalation and dermal contact is less than 1.0 for all receptors.

The health-based cleanup levels for carcinogenic PAHs and total PAHs are presented in Table 2.

These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

Organic contamination has been detected at concentrations above levels determined to be protective of human health in soils at the site. Therefore, the following remedial action objectives have been established for the contaminated soil:

< Prevent public exposure to contaminant sources that present a significant health threat (contaminated dust and soils); and,

< Reduce the concentrations of contaminants in the soils to levels which are protective of human health and the environment such that industrial land-use of the property is not precluded.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

Eight alternatives, including no action, limited action, capping, off-site incineration, on-site incineration, composting, and bioslurry treatment were evaluated during the screening phase of the FFS. In the spirit of the SACM initiative and relying on the Agency's technology selection guidance for wood-treating sites, EPA considered technologies which have been consistently selected at wood-preserving sites with similar characteristics (e.g, types of contaminants present, types of disposal practices, environmental media affected) during the development of remedial alternatives. The historical information acquired from evaluating and cleaning up these sites, combined with specific data for the GCL Tie & Treating site (e.g., soil cleanup goals) was used to streamline the investigation and the identification of remedial activities. Technologies such as bioremediation (e.g., composting, bioslurry) and thermal destruction (e.g., incineration), although frequently selected at wood-preserving sites, were eliminated during the alternatives for addressing the contamination associated with the GCL Tie & Treating portion of the site as discussed below.

The alternatives developed are:

Alternative 1: No Action

Capital Cost:	Not Applicable
O & M Cost:	$54,600 per year, $20,000 for each five-year review
Present Worth Cost:	$720,700 (over 30 years)
Implementation Time:	Not Applicable

The Superfund program requires that the No Action alternative be considered as a baseline for comparison with other alternatives. The No Action alternative for the soil at the GCL site would consist of a long-term monitoring progrnm Soil in the contaminated area would be monitored semiannually for total PAHs and benzo[a]pyrene. For cost-estimating purposes, it was assumed that ten surface soil samples would be-collected and analyzed semi-annually.

Because this alternative would result in contaminants being left on-site above health levels, the site would have to be reviewed every five years for a period of 30 years per the requirements of CERCLA. These five-year reviews would include the reassessment of human health and environmental risks due to the contaminated material left on-site, using data obtained from the monitoring program.

Alternative 2: Thermal Desorption

Capital Cost:	$14,839,000
O & M Cost:	Not Applicable
Present Worth Cost:	$14,839,000
Implementation Time:	12 months (includes contracting and

alternative screening phase. A site-specific pilot-scale treatability study concluded that composting would not meet the health-based cleanup goals developed for the GCL-property soils. Bioslurry and incineration were screened out because they would be much more costly to implement than the preferred alternative, while achieving similar levels of protectiveness. As a result, the FFS report evaluated in detail two remedial

design)

Under this alternative, a total of 36,100 cubic yards of contaminated soil and wood debris would be excavated and treated by a thermal desorption process. The total treatment volume includes 30,100 cubic yard of excavated material in addition to 6,000 cubic yards of previously staged soil/debris. This alternative would also include institutional controls to ensure that land use of the property remains industrial.

A typical thermal desorption process consists of a feed system, thermal processor, and gas treatment system (consisting of an afterburner and scrubber or a carbon adsorption system). Screened soil and shredded/crushed materials are placed in the thermal processor feed hopper. Because of the combustible nature of the wood chips, nitrogen or steam may be used as a transfer medium for the vaporized PAHs to minimize the potential for fire. The gas would be heated and then injected into the thermal processor at a typical operating temperature of 700°F - 1000°F. PAH contaminants of concern and moisture in the contaminated soil would be volatilized into gases, then treated in the off-gas treatment system. Treatment options for the off-gas include burning in an afterburner (operated to ensure complete destruction of the PAHs), adsorbing contaminants onto activated carbon or collection through condensation followed by off-site disposal. Thermal desorption achieves approximately 98 to 99 percent reduction of PAHs in soil. If an afterburner is used, the treated off-gas would then be treated further in the scrubber for particulate and acid gas removal.

In order to accomplish remediation of the estimated volume of contaminated soil/debris on site, the thermal desorption process would operate at a rate of approximately 30 tons per hour. This treatment rate would be accomplished with a single high-capacity unit or two or more smaller units operating concurrently. The treatment unit configuration would depend on the residence time and other operating parameters determined during the treatability study stage of the design. Actual treatment of the contaminated soils is expected to take 1 year.

A post-treatment sampling and analysis program would be instituted in order to ensure that. would also serve to restore geotechnical stability to the soils. The homogenized mixture would then be covered with a 6-inch layer of topsoil. After filling of the excavated areas is completed, the surface would then be graded to promote drainage and seeded to prevent erosion. Site structures (e.g., former process buildings) would be decontaminated, demolished and disposed of off-site. Residual waste from the treatment process and excavation activities (e.g, wastewater collected during dewatering operations) would be treated on-site and/or disposed off-site in accordance with applicable ARARs.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume, short-term effectiveness, implementability, cost, and state and community acceptance.

The evaluation criteria are described below.

< Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

< Compliance with applicable or relevant and appropriate requirements (ARARs) addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

< Long-term effectiveness and permanence

contamination in the soil had been reduced to below the risk-based cleanup levels. Treated soils which still exceeded the action levels would be recirculated through the treatment unit in order to further reduce contamination. Treated soil achieving action levels would be redeposited in excavated areas. To replace any volume lost by thermal destruction of wood debris, treated soil would be mixed with clean off-site fill which

refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

< Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies a remedy may employ.

< Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

< Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

< Cost includes estimated capital and operation and maintenance costs, and net present worth costs.

< State acceptance indicates whether, based on its review of the ITS report and Proposed Plan, the state concurs, opposes, or has no comment on the preferred alternative at the present time.

< Community acceptance will be assessed in the Record of Decision (ROD) following a review of the public comments received on the FFS report and the Proposed Plan.

A comparative analysis of these alternatives based upon the evaluation criteria noted previously follows.

< Overall Protection of Human Health and the Environment

Alternative 1, would not meet any of the remedial objectives and thus would not be protective of human health or the environment. Contaminated soils would remain on-site and exposure risks would remain unaltered.

Alternative 2 involving excavation and thermal desorption of contaminants, would reduce the public health risks associated with direct contact, ingestion, and inhalation of contaminated soil. This alternative would also minimize the

< Compliance with ARARs

Alternative 1 would not comply with any contaminant-specific ARARs, but would comply with all associated action-specific ARARs.

Alternative 2 would be designed and implemented to satisfy all location-specific, action-specific and contaminnut-specific ARARs identified for the site. Excavation activities would be conducted in compliance with the Occupational Safety and Health Administration (OSHA) standards, soil erosion and sediment control requirements, stormwater discharge requirements and air pollution control regulations pertaining to fugitive emissions and air quality standards. Residual waste from the treatment process would be treated on-site and/or disposed off-site in accordance with applicable ARARs.

< Long-Term Effectiveness and Permanence

Alternative 1 would only involve monitoring of contamination at the site and does not provide for removal and/or treatment of contaminants. Therefore, this alternative would not reduce the long-term risks to human health and the environment associated with the GCL portion of the site.

Alternative 2 would provide long-term protection by permanently reducing contaminant levels in site soils to health-based cleanup levels. This alternative would reduce the levels of PAH contaminants in soils by 98 percent to 99 percent. Soil cover and revegetation would provide protection against erosion. No long-term monitoring would be required.

< Reduction in Toxicitv Mobility, or Volume Through Treatment

Alternative 1 would not reduce toxicity, mobility or volume of PAHs in site soils; minimal potential leaching of contaminants from the soil into groundwater. Treated material is expected to meet the cleanup levels and would be considered nonhazardous. This alternative would result in overall protection of human health and the environment, since risk-based cleanup levels would be achieved.

reduction in contaminant levels may be achieved by natural attenuation.

It is expected that Alternative 2, thermal desorption, would remove 98 to 99 percent of the PAHs from the soils, thereby reducing the toxicity, mobility and volume of contaminants. Scrubber water and spent carbon generated from the the thermal desorption process would be treated on-site or transported off-site for treatment and/or disposal.

- < Short-Term Effectiveness

The implementation of Alternative 1 would not pose any additional risks to the community, since this alternative does not involve any major construction. Workers involved in periodic sampling of site soils would be exposed to mininal risks because appropriate health and safety protocols would be followed for this activity. For purposes of this analysis, monitoring of the site would occur for 30 years.

Alternative 2 includes activities such as excavation, screening, shredding and handling of contaminated soils which could result in potential exposure of workers and residents to fugitive dust. In order to minimize potential short-term impacts, the area would be secured and access would be restricted to authorized personnel only. In addition, dust control measures such as wind screens and water sprays would be used to minimize fugitive dust emissions from material handling. The risk to workers involved in the remediation would also be minimized by establishing appropriate health and safety procedures and preventive measures, (e.g, enclosed cabs on backhoes and proper personal protection equipment) to prevent direct contact with contaminated materials and ingestion/ inhalation of fugitive dust. All site workers would be OSHA certified and would be instructed to follow OSHA protocols.

Under Alternative 2, short-term impacts on the environment from removal of vegetation and destruction of habitat are expected to be minimal. Erosion and sediment control measures such as silt curtains and berms would be provided during

- < Implementability

Alternative 1 does not involve any major site activities other than monitoring, and performing five-year reviews. These activities are easily implemented.

Alternative 2 can be easily implemented, as the technology is proven and readily available. The enhanced volatilization component of this alternative has been shown to be effective for destruction of PAHs, and is commercially available. Sufficient land is available at the site for operation of a mobile thermal desorption system and supporting facilities. Performance tests would be required for the thermal desorption process to define optimum operating conditions. Thermally desorbed materials would be placed on site.

Implementation of this alternative requires restriction of access to the site during the remediation process. Coordination with state and local agencies would also be required during remediation.

- < Cost

Alternative 1 is the less expensive alternative, but does,not provide treatment of contaminated soils. Alternative 1 has a present worth cost of $720,700 which is associated with conducting a sampling and analyses program and fiveyear reviews over a 30-year period. The present worth costs of $14.8 million for Alternative 2 provides for the on-site treatment of 36,100 cubic yards of contaminated soil using a proven technology.

- < State Acceptance

NYSDEC concurs with the preferred remedy.

- < Community Acceptance

material handling activities to control migration of contaminated materials to surface waters via runoff from the site. Some increase in traffic and noise pollution would be expected from site activities. Short-term impacts may be experienced for about a year which is the estimated time for construction and remedial activities.

Community acceptance of the preferred alternative will be assessed in the ROD following review of the public comments received on the FFS report and the Proposed Plan.

PREFERRED ALTERNATIVE

Based upon an evaluation of the various alternatives, EPA and NYSDEC recommend Alternative 2 as the preferred alternative for remediation of contaminated soils on the GCL-property portion of the site. Alternative 2 would address the contamination by excavating and treating contaminated soils on-site through a thermal desorption process, followed by replacement of the treated soils on-site. In addition, debris generated from the demolition of structures (ie., buildings) and other untreatable materials would be decontaminated and/or sent off-site for disposal. Institutional control measures would also be recommended to ensure that land use of the property continues to be industrial.

The preferred alternative would provide the best balance of trade-offs among alternatives with respect to the evaluating criteria EPA and the NYSDEC believe that the preferred alternative would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedy also would meet the statutory preference for the use of treatment as a principal element.

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APPENDIX B
PUBLIC NOTICES

Tri-Town News

EPA

THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
Invites
PUBLIC COMMENT ON THE
PROPOSED CLEANUP OF THE GCL TIE & TREATING
SUPERFUND SITE
at

DELAWARE AVENUE, SIDNEY, NEW YORK

The U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) will hold a public meeting to discuss the findings of the Focused Feasibility Study (FFS) and the Proposed Plan (PP) for the GCL Tie & Treating Superfund site.

The meeting will be held on Tuesday, August 9, 1994 at 7 pm in the Sidney Civic Center, 21 Liberty Street, Sidney, NY. The release of the Proposed Plan and the scheduled public meeting are in accordance with EPA's public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980.

Site remediation activities at this site were segregated into two different phases, or operable units, so that remediation of different environmental media of areas of a site can proceed separately, resulting in an expeditious remediation of the entire site. Operable unit 1 (OU-1) addresses only the contaminated soils on the GCL-property portion of the site and is the focus of this FFS and PP. Operable unit 2, currently underway, addresses the contamination in the soils on the remainder of the site (referred to as non-GCL property), and in the groundwater, surface water, and sediments.

Based on the available information, the preferred remedy for CU-1 is to excavate and treat the approximately 36,100 cubic yards of contaminated soil and debris on site using a thermal desorption process, followed by replacement of the treated soils on-site.

EPA in consultation with NYSDEC may modify the preferred alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified herein. Documentation of the project findings is presented in the site file. These documents are available at the:

Sidney Memorial Library
Main Street
Sidney, NY

Comments on the Proposed Plan will be summarized and responses provided in the Responsiveness Summary section of the Record of Decision. The Record of Decision is the document that presents EPA's final selection for response actions. Written comments on this Proposed Plan should be sent by close of business, August 29, 1994 to:

Carlos R. Ramos, Remedial Project Manager
U.S. Environmental Protection Agency
26 Federal Plaza, Room 29-100
New York, New York 10278

Oneonta Daily Star - 8/5/94

ONEONTA DAILY STAR
8/5/94

EPA

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY Invites PUBLIC COMMENT ON THE PROPOSED CLEANUP OF THE GCL TIE & TREATING SUPERFUND SITE at

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Based on the available information, the preferred remedy for OU-1 is to excavate and treat the approximately 36,100 cubic yards of contaminated soil and debris on-site using a thermal desorption process, followed by replacement of the treated soils on-site.

EPA, in consultation with NYSDEC, may modify the preferred alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified herein. Documentation of the project findings is presented in the site file. These documents are available at the:

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Carlos R. Ramos, Remedial Project Manager
U.S. Environmental Protection Agency
26 Federal Plaza, Room 29-100
New York, New York 10278

APPENDIX C

AUGUST 9, 1994 PUBLIC MEETING ATTENDANCE SHEETS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
PUBLIC MEETING
FOR
GCL TIE & TREATING SUPERFUND SITE

TUESDAY, August 9, 1994
ATTENDEES

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
PUBLIC MEETING
FOR
GCL TIE & TREATING SUPERFUND SITE

TUESDAY, August 9, 1994
ATTENDEES

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
PUBLIC MEETING
FOR
GCL TIE & TREATING SUPERFUND SITE

TUESDAY, August 9, 1994
ATTENDEES

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U.S. ENVIRONMENTAL PROTECTION AGENCY PUBLIC MEETING

GCL TIE & TREATING SUPERFUND SITE

A public meeting held at the Sidney Civic Center, 21 Liberty Street, Sidney, New York, on Tuesday, the 9th day of August, 1994, commencing at 7:09 p.m.

APPEARANCES: CECILIA ECHOLS
Community Relations Coordinator

DOUG GARBARINI, Chief
New York Caribbean Superfund Section 1

CARLOS RAMOS
Project Manager

BEFORE: Ruth I. Lynch
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MS. ECHOLS: Okay, we're ready to begin. Welcome. My name is Cecilia Echols, I'm the Community Relations Coordinator for the GCL Tie and Treating Superfund Site located here in Sidney. Many of you may have met me before, if not I would just like to thank you all for coming out this evening to hear what we have to say about our cleanup for the site. Your input is very important to us about how you feel EPA is doing with cleaning up the site. We take a lot of your comments -- excuse me, we take a lot of your comments and gather them and go over them to see that our cleanup criteria meets the Town and the citizens in your community.

Right now we're at a cleanup -- well, we're at a operable unit, one, that is addressing contaminated soils on the GCL property. There's two parts of the GCL site, well, there's the non -- nonproperty and the property portion, and right now we're working with the GCL property and we're looking at contaminated soil on that site.

I would like to mention that we have a technical assistance grant which allows a community organization in -- that directly affected to any Superfund site to apply for a grant that's worth $50,000. They hire a technical advisor who reviews documents related to the site, and he goes back to the community and lets people know about EPA's findings in terms of cleanup, feasibility studies and remedial investigations.

I presume everyone signed in, everyone has the handouts, if anyone ever wants to read up about documents related to the site they can go to the Sidney Memorial Library. That's where we have all the documents. Instead of coming all the way to Manhattan you can just go to the library here in town.

We have a stenographer who's recording everything for the record, and a transcript will be placed in the information repository, right? We will also put together a responsiveness summary. Everyone's responses to the meeting, anyone's comments will be gathered, and EPA will do a responsiveness summary for that. That's written or verbal.

At the end we will give questions and answers, and we hope that everyone would raise -- let the stenographer know their name, and possibly their address.

I also forgot to introduce everyone else on the panel. We have Doug Garbarini to my right, he's the chief of the New York State Caribbean Superfund Section 1, he's gonna give an overview of the Superfund process. And to my right is Carlos Ramos, he is the project manager for the sites -- for the site, and he will discuss the Focus Feasibility Study results as well as remedial alternatives.

With us also are two people from the New York State Department of Environmental Conservation; Martin Brand, he's in the back, and Walter Demick? Did I say that right?

MR. DEMICK: Pretty close.

MS. ECHOLS: Okay. And he's -- he's the section chief for the Bureau of Remedial Action, and Mark is an engineering geologist.

And now I'm gonna open up the floor to Doug, and he will give an overview of the Superfund process.

I'm gonna have to turn off the lights for a little while so everyone can see the slides on the overhead.

MR. GARBARINI: Thanks all of you for coming out. As Cecilia said, my name is Doug Garbarini, and I am just gonna give you a brief overview of the Superfund process, give you a little bit of background on, you know, how Superfund was created and basically what it's all about and how we move through the process of discovering a site and then finally cleaning it up. Superfund came about back in 1980 with passage of the Comprehensive Environmental Response Compensation and Liability Act. Otherwise known as CERCLA. And basically what it did is Congress gave us the authority to use the Superfund, or super pot of money, which at the time totaled about one point five billion dollars, to clean up abandoned hazardous waste sites or hazardous waste sites that we knew about where we didn't have -- we didn't have parties who were responsible for the contamination that were viable to pay for the cleanup. Not only did it give us a fund but it also gave us the authority, the enforcement authority, to force those parties that were viable and were responsible for the contamination to clean it up.

Superfund was initially passed for a five-year term at a cost of about one -- with a funding level of about one and a half billion, as I said. As we got into the program, Congress really got a better feel for how complex the program was. And, you know, initially I think the feeling was that well, okay, we'll be in and out of here in five to seven years, something like that, it will be a quick program, we'll clean up all the hazardous waste sites across the country and that will be it. But with the reauthorization of Superfund in 1986, I think they got a better feel for the complexity because they gave us about one point five billion dollars a year over the course of five years.

So we were reauthorized for five years but the funding level went from one point five billion over a five-year term to about one point five billion each individual year over five years.

Basically we have the Act, and then we say okay, what do you do after that. You've got the Act, what you need is regulations to implement the Act, and we have the National Contingency Plan which basically provides us with the regulatory framework to go out and clean up sites.

When you -- when you've got a site that you think needs addressing, you go into the preremedial phase. And the site can come to our attention either from the State, from a local authority, even from an individual resident. They can petition us to actually do what's called a preliminary assessment and see if the site is worthy of being on our national list of -- of sites that need to be cleaned up under the Superfund program. So the first thing that's done in a preremedial phase is discover and rank a site. And we basically go out, we'll do a preliminary assessment and review documents, if necessary we'll go out and do a site inspection where we might actually collect a few different types of samples from different types of media. Just to try and get a better feel for the relative risk posed by the site. We then basically plug all this information into a system called a hazard ranking system. And if all this data generates a number above a predetermined score, the site will be proposed for inclusion on the national priorities list which is -- which is the list of national sites which are worthy of -- of attention via the Superfund program.

That proposal is then commented upon by the public, and assuming that there are no -- there's no reason or there isn't anything that we've overlooked, the sites will be placed on the national priorities list and given final listing status.

There are approximately -- there have been approximately 1300 sites that have been on the list, so we're in the 1200 range right now. About 200 of those are located in the Region 2 auspices; Region 2 handles New York, New Jersey, Puerto Rico and the Virgin Islands. About 80 or so of those are located in New York. So that just gives ya a relative feel for the density of the sites across the country.

There is an initial screening process that we go through which basically we've got a listing of over 30,000 sites, many of them are -- that have gone through an initial preliminary assessment process so far, so you can see the universal sites really gets funneled down to those that require attention via the national priorities list. There's -- those sites that are placed on the national priorities list are eligible for the long-term remediation program which is basically what we're here to discuss, part of what we're here to discuss tonight.

But there's also another part of the program called the removal program. The removal program handles those sites which may have very acute health risk. There's an immediate threat, you need to go out and take quick action. And we've taken -- that's been a very, very successful program. It deals not only with sites on the national priorities list but also sites that are not on the list, and we've taken over two -- 2,500 remedial removal actions on -- on different sites across the country. That's been very successful.

We've also taken, as Carlos will mention later, some removal actions here at the GCL site. And those removal actions focused on the immediate and acute threats that were posed by the site.

Okay. After the site is listed and ranked and it goes into a long-term remedial phase, we get into the remedial studies phase. And that starts with what's called generally a remedial investigation. With the remedial investigation we go out and we collect a whole slew of samples, we sample different media that happen to pose -- may pose a problem at the site; for instance, generally almost always soil and groundwater, but if you have a stream or pond or lagoons you may sample the water and sediments from the lagoons.

We basically collect those samples, send them off to a laboratory, get the results back and try and define the nature of contamination, the different types of contaminants and the extent. You know, how -- how extensive is the contamination, how deep does it go in the soil, how far afield does it go horizontally. We take that information and we try and prepare a risk assessment with it. And the risk assessment is one that touches on human health concerns as well as ecological concerns.

So you've got these contaminants out there, okay, but how nasty are they. What are they gonna do to people, what are they gonna do to plants and animals.

So we basically, you know, go through a plug-in-chug process, and we make some very conservative assumptions about how people will be exposed to these different contaminants. And we -- we generate a series of numbers, and we've got sort of guidelines that we look at and we see whether the numbers that are generated exceed these allowable levels. And if these allowable levels are exceeded, we get into what's called the feasibility study phase of the program.

And the feasibility study phase basically identifies different alternatives for reducing those unacceptable risks to acceptable levels or allowable levels. In certain instances when we're just focusing on a particular aspect of the site and we want to move ahead as quickly as possible, we'll combine the remedial investigation and feasibility steps into what's called a Focus Feasibility Study. And tonight will be a prime example of that, we'll be talking about the Focus Feasibility Study that was done for the soils on the GCL property of the GCL site.

The next thing we do is we go through the feasibility study alternatives and we try and select what we believe to be the most appropriate alternative. We use a series of criteria, and we basically come out with a plan that says okay, public, you know, we've evaluated a number of different things, here are the results that we have for the site, and that is the alternative that we think will be able to reduce the risks that are posed by the site to acceptable levels. And we provide our rationale for that preferred alternative.

We come out, we offer a 30-day comment period, we have a public meeting, we take your responses and basically put them in what's called a responsiveness summary. And so basically it's like a question and answer type document which is part of an overall document called the Record of Decision. And this Record of Decision is signed by the highest ranking official in our regional office, the regional administrator. And it basically defines conceptually what the remedy will be for the site. So this basically gives us the approval to go forward and use -- use additional funds to both design the remedy, now we're moving into the construction phase so you're gonna design the remedy, if you're gonna be excavating soils you'll -- you'll define the limits of excavation, how far you're gonna be excavating. If you're gonna be -- and how deep. If you're gonna be purging and treating groundwater, for instance, you might have a groundwater treatment system, you design that. If it's gonna be a building you'll lay out, you know, exactly how the building will be built. So that's the design phase.

We then get into the remedial action phase. You know, this is where you actually get out there with the earthmoving equipment and take some action. When that remedial action is done we go through a period, there may be some monitoring that's necessary, in any case we'll go through the process of preparing a close-out report for the site, and then we'll propose the site for deletion from the national priorities list. And that's basically the final phase of the remedial process.

Now, throughout the phase, throughout these phases, we concentrate on getting those parties that are responsible for the contamination, the PRPs, to clean up the site. And if they're not willing to clean it up we try to get them to pay for -- for the cleanup. Generally we'll come in here with the remedial investigation study phase and we'll invite all those parties who are responsible for contamination to do the study. And we generally categorize responsible parties, or PRPs, as those people that either owned the site while the generation of wastes was going on, while the contamination was going on, those that currently own the site or have been owners of the site, those who have generated wastes that end up at the site, or those who just basically operated at the facility. If the responsible parties decline to do the work we can order them to do it. Otherwise we can wait and try and come back at a later phase and cost recover for the moneys that we've spent.

We do the same thing at the construction phase right before the remedial design. We'll again send out notice letters to these responsible parties saying this is the work we want to do, you guys are liable, you know, what do you think, are you gonna put the money up, are you gonna do the work or what's the story gonna be here, and you go through a negotiation process. Again, we can order the responsible parties to do the work, otherwise they can -- we can undertake the work ourselves using the Superfund pot of money.

Now, what we want to do generally is get the responsible parties to pay so that we can use the Superfund for other sites where PRPs don't exist. And again, at the end of the process we can come back and go through -- go through the courts and try and cost recover the money through the courts or through another out-of-court settlement.

We've been fairly successful with our enforcement program in the last few years dating back through 1992, I've got some statistics there, we've been able to have settlements for construction on the order of about seven and a half billion dollars worth of work. We've gone back through that same time frame and recovered over a billion dollars for work that had been conducted at sites. And in the -- in 1992 we basically had I think 70 percent of the actions that were being taken, those actions were being conducted by responsible parties. So that's a pretty good ratio there.

Just to give you a general feel for the program, aside from having, you know, 1200 and some odd sites across the country, you can't really say there's a typical Superfund site. You can be dealing with half-acre plating facilities, you can be dealing with landfills, you can be dealing with 200-square-mile mining sites, like we have a few of those outside -- out west.

As far as time frames for cleaning up sites, we're running from the start of an RFS through the construction on the order of 10 years or so. And the costs are running about $25 million per site.

So that's just to give you a little bit of a feel for the program, I think there's -- we're up for reauthorization again this year.

There are a lot of people that are frustrated with the pace of the program, and people are looking at a lot of different measures to try and speed the whole process up. And GCL is one site where we've taken a number of steps, and I think Carlos will touch on that a little bit later as far as the removal action that was conducted and the different sampling that we did. We're basically trying to consolidate things and get things going on early on in the process. We did a lot of work here before the site was actually ever listed on the national priorities site. So that had not been the case in the past, so we're experimenting with some different things, and hopefully some of them will pan out.

And I think I'll turn it over to Carlos, who will tell you about the Focus Feasibility Study.

MR. RAMOS: Thank you.

Hi. My name is Carlos Ramos, I am the Project Manager for this specific site, GCL Tie and Treating Site. All these overheads are in your handout, so if you cannot see well you can just refer to your handout sheets, the one that says public meeting on the front of it.

I'll give you some idea about the site, I know most of you guys are familiar with the site. This is what we call the historic GCL Tie and Treating Site. It's about 60 acres, it's right across Delaware Road, or Gifford Road, it's south of the facility, it's also the airport. To the east you have Route 8 and to the west you have some wetland areas. Part of our purpose is we divide the site into two areas. This western area is what we call the GCL property site. The eastern area is what we call the non GCL property site. The GCL property area is the area which has been more -- most generally used for wood preserving operations. The non GCL property has been more generally used for other purposes, most;y industrial operation, and also a sawmill right there.

If we just focus on the GCL portion of the site, that was that black square, you can see the site consists mostly of four main buildings. The most important building is the process building, and that's where wood preserving operations took place. It was a very simple wood preserving process, basically they have two big vessels where they put wood inside the vessels, there will be creosote inside the vessel, and then they will apply pressure and the creosote will be -- will get into the wood under that high pressure.

And that's -- this is just a blow-up of that process building so you see it in more detail.

Inside that building also there was some -- some laboratory facilities, and some office space also there.

The area around the building is also the area considered to be at the beginning most highly contaminated. Basically due to several instances of spills at the site. At some point of time during the wood treatment process, the vessels used to treat the wood exploded. And this causes the creosote to spread all around this area, including inside the building. At some other point of time there was a spill, approximately 30,000 gallons of creosote which was spilled also on-site. Many of the other areas of the site also have creosote on the soils because after the wood was treated creosote was taken out of the vessels and allowed the creosote, the excess creosote, to drain into the soils. So after the wood was treated, any excess creosote was gonna be dripping on the soils or around the site.

Okay. This refers to the process. Is that focused for you guys, or? No. Where's the focus thing?

It is on your handout, though, so if you cannot see it from the -- I apologize for these.

The first, basically we divided the remedial activities at the site into three different phases. The first phase that we did was the removal action. And that's what Doug Garbarini was referring to. We went to the site to look for those things which constitute the most immediate threat at the site, and those things were mostly creosote wastes in above-the-ground and underground tanks. There were quite a few tanks on the property that contained creosote wastes. Those tanks were found by the condition and were presented a threat if it were to burst.

We also installed fence on the side to keep people from accessing the site so people would not be wandering into the property. We also established run-off control and flows control. So when it rains, when the rainy period, the soil would not wash it into the wetlands or wash it into a nearby drainage ditch. We also took measures to control the dust by putting -- by covering some of the soils with plastic sheets. In addition to that, the removal action took samples from surface soils. We basically went to those areas which looked most contaminated and took some samples from those areas. Concurrent to that we did what we call the Focus Feasibility Study, which is the focus of our meeting today.

Under the Focus Feasibility Study we took additional samples of those soils which were already partially sampled in the removal action. Since the removal action focused on the -- on the soil surface, the Focus Feasibility Study focused on the soil subsurface. Basically what we did is that we went down to the site and we dug about 200 trenches and took samples at different depths to determine the full extent of contamination at the site. We already knew that creosote was the biggest concern there but we didn't know the extent of that contamination. And that was what we did during the Focus Feasibility Study. Right now the Focus Feasibility Study proposes a remedy for those soils already identified in the GCL property as being contaminated with creosote.

Concurrent to that also we began a Remedial Investigation Feasibility Study. The Remedial Investigation Feasibility Study addresses soils outside the GCL property. It also addresses the groundwater, the surface water and also sediments within those surface water bodies. That's all being addressed as part of the Remedial Investigation Feasibility Study. This -- this portion -- this portion of the remedial action, RIFS, call it short, will be finalized by the end of this year, and then we will be back here again also proposing remedy for those areas. So the procedure would be the same again for the other portion of the property.

This is just again a close-up of the GCL property, and those -- those lines here represent areas which were excavated and sampled. Basically what we did is that we dig trenches along these lines, all these lines here, and those were the areas where we actually took samples. That data, in addition to the data already collected in the removal action, gave us a complete picture of the extent and nature of the contamination on that portion of the site.

And now I just want to switch to the -- to the slide. You can see how actually we did the work.

That's a view of the building, of the process building, where the actual vessels are. You can see here, these two are the treatment vessels. Wood was actually carried inside those vessels, and then here in this area they used to be holding area of aboveground tanks holding creosote, and that creosote was pumped inside those vessels, this is a door that was closed, pressure was applied and the creosote would get into the wood. You can see this building is black. That's because when the explosion happened, when these vessels exploded, creosote was spread all around. And the building was all stained with creosote, and creosote was -- was spread all around here. They also have an area down here where creosote was spilled. There is railroad track running down this area, and actually the creosote was brought via railroad into the side and then pumped into the aboveground tanks. And at some point of time a spill of creosote happened also in this area here. Next one.

This is just a close-up again of -- of the building, you can see it's all stained, and the two vessels and the tracks used to move the -- the wood inside the vessels. Next one.

And this is actually the work that we did, we basically on those lines there, we began to dig trenches or pits, and you can see this operator which is wearing some kind of a respiratory protection, and we just excavate -- we excavate, depending where we were, anywhere from 2 feet to 10 to 12 feet deep. Next one.

This is just to give you a view of what's, you know, what a typical trench looks like. You can see soil here which is darker, you saw contamination is higher on the surface. Well, the reason is that because creosote doesn't move much. Creosote really binds towards the soil. So you can see that high concentration of creosote were easily found on the top layers of soils. Next one.

I mentioned before, trenches varied from a few feet deep to 12 feet. This is one of the shallower trenches, you can see two technicians actually getting ready to take a sample, he is monitoring for volatile organic compounds to make sure it is safe to take a sample and also to see whether there is contamination at the site. This is just creating health and safety. Next one.

And this is a sample from the site, the trench, and you can see sometime the workers are wearing respiratory protection, sometimes they're not. That's because this person here using this instrument telling them when it is appropriate to wear respiratory protection and when it's not appropriate or needed. This guy's just getting a sample from this soil here.

For the deep trenches we have to use other techniques to collect samples, like in this specific case the trench is just too deep for a person to jump inside the trench, the trench would collapse, and also working in such deep areas. So we use the device which is a core and a stationed tube to collect a soil sample from the side of the trench. And you can see again different coloring on the sides of the trench.

This is just a closer up of coring device getting into the soil and taking a sample. Some were taken at different depth. You saw the shallow depth, the intermediate depth, and a deeper depth. The deepest one in the trench.

Once a sample was taken out, they screened a sample, they measured to see whether they get any hit from VOCs, volatile organic compounds, and then they proceed to collect the sample.

Which is what they're doing there, they're just retrieving a sample, to see, he has a vial in his hand, he has here kind of like a spoon that will be putting the sample inside that vial.

And this is sideway view of the trenches. As you can see, one thing that we leave there is that -- you want to do that?

MR. GARBARINI: Sure.

MR. RAMOS: Maybe just go back.

MR. GARBARINI: That's what I'm trying to do, go back. All right.

MR. RAMOS: Basically I just want to say on this one, we --

MR. GARBARINI: Want me to turn it upright?

MR. RAMOS: That would work, there you are.

In addition to just collecting samples, we also make other notations; we look for area where there may be high staining, you can identify portions where there are staining, also you can make a notation of the damage here that you find within that trench. And that helps you later on when you're trying to monitor the extent of contamination and to see how you're gonna deal with that. Having all that knowledge and information.

In some of the most deepest trenches we had to put a bridge over the trench for the technician to be able to actually reach into, using that coring device, and then grab a sample. Some of these trenches are very deep, ten feet deep, so it was impossible just from getting close to the trench outside and taking a sample, you actually had to be on top of the subsurface like these. You can see this is a trench line, and you can see inside those trenches we find much more than only soil. As a matter of fact, 30 percent here which we found was wood, which actually contained creosote in some instances. Those kind of material and some of those railroad ties and other criteria that were processed at that facility. So any excess wood was kind of dumped at the site. And they usually use that material to backfill a big portion of the site. All this other area used to be low grade, it used to be deeper, actually some of this used to be a wetland. And so throughout the years these people that operated this facility began to dump excess wood, debris, so, whatever they can find there just to backfill the area and use it later on for their operations. So that's why you see all this down through there.

You can see here, the difference here, you find more soil and less wood. That's because this area wasn't as backfilled as the other area which is further down here.

And you can see some of the stuff that we dug up there looked pretty ugly. Some of these were highly saturated with creosote, some of it was highly saturated with water because it was below the water table. Again because it was a wetland, and once they backfilled that area, all the soils saturated with water. We find all kind of things; wood, metal, big rocks, anything that you can find, you can find it there, you know. Anything you can think of they find it there because they just dump whatever they could find there. Next one.

And this is also sideways. But --

MR. GARBARINI: Want me to turn it? I'll give it a quick turn.

MR. RAMOS: Okay, good. Thanks. And this is just a close-up, some of the materials you find inside, you can see plastic, wood, rocks, metal, and this is one of those trenches where we actually reached the water table. This is toward the west of the siee where it's closer to the wetland, and you can see some of the materials that you find, you know, floating in the water look kind of oily in some -- in some instances. Some of it just looks that way because it is -- you know, it was just kind of a wetland type of water, it's kind of natural degradation in there. But some areas we find creosote there. Many of this wood, that is contaminated with that creosote also.

And this is again a picture, it just shows I guess the sheen in some of those pits which are excavated.

And in addition, one of the nice things that we found on the site is that the soil is very clay, there's a lot of clay in that soil. And that's good because that means that things don't move as fast as they would in other type of soil. The creosote by nature combines with the soil. That's good. When you have this type of material, and this is actually clay, this is clay, I just put this piece of -- these flowers there, you can compare the color. But it is kind of a green-gray kind of material. And that's a natural clay that actually makes the moving of creosote toward the groundwater even more difficult.

Okay. Now we can go back to the overhead.

Okay. After we took all those samples, we sent the samples to the lab, and we get our summary of soil back from the lab. Based from the removal as previously, we anticipated most of the contamination of the site was from creosote type materials. As you might know, creosote is no one pure product, it's purely a combination of hundreds of different petroleum hydrocarbons. And that's what we actually found when we went out to the site and we sampled, we confirmed that mostly what it is on the site is creosote type materials. The first few compounds you see here they call volatile organic compounds. And this compound we found you can see very low concentrations of those compounds. Nothing really that -- that will pose any concern. Once we move into creosote type materials we can see the concentrations increased a lot. And these are these high numbers here. All these are creosote constituents.

We have two -- two different samplings. We have the Focus Feasibility Study sampling and we had a removal action sampling. In general those numbers for the removal assessments were much higher because they focus on the very highly contaminated portion of the site. That's what they look for, they look for immediate threats, so they go to those very high concentrates area. So you see this one is much higher from this one, because on the Focus Feasibility Study we already knew that the highly contaminated areas were already contaminated, but we wanted to see about the rest of the site. And the rest of the site wasn't as contaminated as some of these soils but still was very highly contaminated with creosote type materials. We also found metals, but nothing really of concern, some low concentrations.

Okay. What did we do with that information. Here we are. We did baseline risk assessment, which was what Doug mentioned before. We know how much is there, and we know what is it, the question is what risk does that contamination pose to human beings. And what we did is that we put together scenarios. We say well, these are the difference, these are the different populations for potentially getting in contact with those soils. Then we look at off-site young children which might be exposed to soils, we look at future adult residents. This is -- this is thinking that in the future maybe one possibility for the property is to be converted into some kind of residential use. So if somebody were to actually build a house there, without any kind of cleanup, what would be the result of that. So that's one scenario.

The other thing that we look at are children actually going into the site and trespassing into the site. We have signs, we have a fence there which keep people away from the site but this is always a potential, so-that's one scenario that we look at. The older trespassers, people trespassing into a site. I know in the past before we initiated a removal action some people used to use the site as a shortcut to get to those fast food restaurants there, to Pizza Hut and the Burger King. So that was one also potential scenarios that we wanted to look at.

We also wanted to look at off-site workers, people that actually work and were exposed to those soils there. And the other thing was future on-site workers. Assuming that the site gets developed and there's somebody working there without any kind of cleanup, what would be the exposure to those people.

For people to be exposed they have -- there have to be a pathway, I mean how do people get exposed to contamination. Well, there are two ways you can get exposed to contamination. There is ingestion, you can actually eat the soil; you know, you might be having your lunch break, the dust gets into your sandwich or your hands and then you eat the sandwich, that way you are eating dirt. You can inhale the dirt, actually the wind can suspend the soils and then you can breathe them. And the last way is by dermal contact, simply touching the soil. That's the other way you can get into contact with the contaminants in the soils.

So for different type of scenarios, you know that -- you just assume somebody's gonna be outside, the pathway will be ingestion and inhalation. So the pathway I set for each different scenario. That's why you see some of them only includes ingestion and inhalation or it includes ingestion, inhalation and dermal contact, which would be the case of the people getting on-site, by the trespassers or the workers.

Then what we did is we actually calculated, we quantified what will be the potential threats to the people if they were exposed to those contaminants. And that we expressed that in excess cancer risk. As you know, there is -- in any population there is some kind of cancer risk. So we look at excess cancer risk which might happen if people were exposed to those contaminations. And this is a very -- these are very conservative numbers, basically by nature we tend to be conservative in these estimates. We make some assumptions to be able to come with those numbers.

For example, this -- this big one in particular, say children trespasser, on the scenario we assume that children go out to the site 350 days a year for 6 years. That's a very conservative scenario. But we want -- we want to err it on the conservative side rather than being too leisure and then missing some kind of risk. And the same thing happen with all the different scenarios, we use very conservative assumptions just to be sure we err on the safe side.

And as you can see here, we can calculate different cancer -- potential excess cancer risk for each different scenario. This number doesn't mean that anybody's getting cancer right now or anybody will get cancer in two years. This is just a number that helps you make a decision whether something is to be done or not at the site. We tell you that that is a potential there, doesn't mean that it will happen. Just that there is a potential that it may happen. And we got different numbers for that. We had for off-site young children there's a potential of cancer risk of 9 out of 10,000 individuals; for future adult residents 3 out of 10,000; for older children trespassers 4 out of 10,000; adult trespassers 3 out of 10,000; and workers 1 out of 10,000.

All those scenarios, the ones that actually are significant based on the current guidances that the EPA uses is the last two ones, is the workers. Workers were to get on the site and they were to get into those highly contaminated areas and they were to be there for 25 years working 250 days, 250 days per year, what's the potential threat for those workers. And what this worker will be one out of a thousand in each case. So when they are in the ten thousands means that threats are not significant enough to warrant any kind of -- of action. But these two scenarios mean that yes, there are potential risks which we are warranted to take some kind of action there.

Okay. We have those -- we already know that there's contamination at the site, we already know that some of the contamination might pose, you know, unacceptable threat to workers if they were to get to the site, be in contact with those contaminants. What are the goals, then, for the Agency for this site. Well, we have two goals. One is to prevent public exposure to contaminant surfaces. We don't want -- we want to keep it that way. Right now there are no exposure because the site is fenced off, we have erosion control, we have those measurements. We want to keep that, we want to keep it that nobody's exposed to those contaminants.

Our second goal is to reduce the concentrations of contaminants in the soils to levels which are protective of human health and the environment. We want to treat those soils, we want to make sure that those soils are no longer a threat to people. So that's our second goal.

Having our goals already set up, we develop what we call health-based cleanup levels. These are the levels that you can be exposed to under the assumptions -- under the assumptions of the baseline risk assessment and not be at any significant threat. We have -- if we were to have any concentration of these or below this level at the site, there wouldn't be any significant risk for people, for workers to be there at the site. So this is actually where we want to get. We know that we have concentration, many times higher than these levels, so we want to get to these levels to be able to say that yes, once we get to those levels the soils will be safe. Under those assumptions we're able to eat, able to ingest some of the soils, we'll be able to get in contact with the soils for 25 years and still be safe without being no significant threat.

So we have the numbers that we have to achieve to make the soils safe. So based on that we develop cleanup alternatives. What could we do -- what can we do with the site. And we developed eight alternatives for the site at the very beginning, as our alternatives. The first one we considered was no action. No action is that we do nothing, what would happen. We are required to include that alternative as a baseline. That give you that -- that give you a comparison toward the rest. We have no action, what happen, something, if you do something this is what will happen. So that's like a comparison we are required to have.

The other thing that we look at was access restriction. We put a fence at the site, we put some deed restrictions, nobody will use the property in the future, what would happen. That's one alternative that you can work.

The other one will be capping. Capping is that you put a layer over the site, over the soils so people cannot get in contact with the soils.

We have off-site disposal, which is to excavate all the contaminated soils and we will send that soil somewhere off site for treatment and disposal.

The other one that we look at is incineration; excavate the soils and you put them through an incineration on-site, and we'll incinerate the soils right there.

Next one is on-site treatment composting. We --

we did a pilot study just to look at our alternative, and the principle was no different to the composting that you would do, you know, in your backyard. Basically you take the soil, you put it on the pile, you provide some nutrients, you provide air, temperature controlled and you let the bacteria inside the soil digest, eliminate the contamination. Basically that's a natural process.

The next one that we looked at was bioslurry; it's kind of similar to that, it's the same principle, you let bacteria eliminate the contamination. The only difference there is that you are to suspend the soils in water and then you put that combination of water and soils into a reactor, what we call a bio reactor because the bacteria will be eating the contamination.

And the last one that we look at was thermal desorption, which is different from incineration. In this case you take the soil, you put it through a thermal desorption unit, what you do is you inject hot air, it could be steam, it can be something like nitrogen, you put that hot air to the soil, and when the soil contact -- the gas will absorb the contamination from the soil into the gas phase. Basically it's like you are volatilizing the contamination, you're taking the contamination out of the soil into gas phase, and then you end up with a clean soil because all the contamination was volatilized; and then you have the gas phase which have the contaminants, and you can do many things with that gas phase. You can either burn that gas phase or you can try to recuperate the contaminant from there, you can use a condensor to condense the contaminants back and then you can recycle that or you can burn it. There are many things you can do with the gas phase once the contaminants are out of the soils.

So those were the alternatives that we look at. And we put those alternatives into what we call a screening process. And basically knowing -- knowing the conditions of the site, we -- we look to see how applicable they will be for the site, how effective that will be, how cost effective that will be. Then we end with no action, that one we have to retain again so it's a comparison for anything else. So that one we kept.

Limited action. We eliminated that one through the screening process because it doesn't give us any kind of protection. You can fence the site, you can post signs but still the contamination will be there and will be a threat to the groundwater, to the wetlands, and people might get in contact with that. So that was eliminated.

Capping. Capping works good for -- for correcting the thing about people being exposed to the soils. You put a cover over the soils, then people cannot reach the contaminated soils. Not be able to breathe them or -- or eat them. But the problem is that the groundwater there is such that even if you cap a site the groundwater will still be in contact with those contaminated soils. So yes, it impedes people from actually touching the soils but the soil will still be a source of groundwater contamination and also surface water contamination. So that's why we also eliminated that alternative.

The next one we look at was excavation and off-site disposal. That worked out fine, you can excavate all the soils at the site. There are about 36,000 cubic yards of contaminated soils at the site, so it's a lot of soil. And you can send it out to one incinerator, to treatment facility, there are many facilities that could take those contaminated soils, the problem is that getting rid of those contaminants outside would cost a hundred and thirty million dollars. So that was way too expensive, it wasn't cost effective. So that was also eliminated.

The next one we look at was incineration. That's fine, that will work, bring an incinerator on-site and burn the soils. The problem with that still that it was a very costly alternative, was $34 million. So that was also eliminated because of the cost involved.

We also had some problem with incineration because the communities around incinerators are sometimes opposed to having incinerators nearby. So that's also from the point of view, sometimes it's not recommended.

The next one, composting, which was the one that we did the pile study at the site to see whether that technique would work or not. The problem with that technique was that it would not achieve the cleanup levels that we already established. We already established that we need to clean the soils so much, and composting would only take you so far. It will somehow clean up the soil but it will not clean up the soil good enough to make the soil safe. And since it will not make the soil safe, it was also eliminated from the -- from the potential alternatives.

The next one that we look at was bioslurry, which was some kind of biodegradation. That also would work, the problem with that one is that it's also very expensive. It would cost around $40 million to go that way.

And the last one that we look at was thermal desorption, that would give you clean soils and was to be more cheaper than any of these alternatives here. So what did we ended up with. We ended up with really two alternatives. Two alternatives, really. One of which is the no action, which we had to keep again as a comparison. The other one that make it through the final list was thermal desorption. And just to give you a little more detail how thermal desorption, this remedy, will work is that we will actually go out to the site, we will excavate pretty much most of the site, this 36,000 cubic yards, and that means in areas we just excavate one or two feet of soil, in some areas we might have to go as deep as ten feet of soil. But we're going to excavate pretty much all this here property because most of it has creosote contamination in excess of those cleanup levels we already established.

We will take that soil and we would sort it out. As you saw before, we have wood, we have -- we have big rocks, you have metals, you had different kind of materials. So you have to sort those components out. Things such as metal and things that cannot be treated will be sent off site for disposal, but there's a very small volume. All the wood and all the soils could be treated on-site. The wood would have to be threaded. You put it through a threader, and you -- you make it small enough that you can put it with the soil into the thermal desorption unit, so that will work out fine. You end up only with very small amount of material that has to be sent out for disposal.

Once the soils are treated they're safe, they're clean so that you can put them back to the place where you excavated them. So that that's -- that's just great, you don't have to send the soils off site, you don't have to bring lots of clean soil on-site to backfill, you can use the same material once it's treated and clean to backfill the site.

One of the things also included in this remedy will be -- you can see -- you probably saw, some of those building that we found there are either in very bad condition, they're kind of -- kind of a hazard. So they will have to be demolished because of that. Other of them that are just around very highly contaminated area. So they would have to be demolished to be able for us to excavate the soils and then get rid of those contamination there. So those areas we generated from the building would either be decontaminated on-site and then somewhere like a landfill to be disposed of, or they can be used on-site also. And the last thing that we recommend as part of our remedy is institutional control. Basically the cleanup that we are designing for this property is for industrial use. So we want -- we will like the property to be kept in the same usage as it is right now. During the last meeting that we had here back last summer we have another input in that, people told us that they want to keep that property, put it back into the tax roll, keep it industrial. There were many industry interested in that piece of property which is already surrounded by other industry. We would like to see the same land use kept for that property, and we would be recommending that, you know, to the local.

Let me see, what else do we have here. Okay. The cost of this alternative would be $14.8 million. That's how much it would cost to bring those thermal desorption units to the site and to treat the soil. We estimate that will take approximately 12 months to 18 months to do all the design and all the contracting. It will take about a year to actually treat the soil. So we're talking about two years to two years and a half to be able to say that -- that soils are gonna be clean and the site will be clean. Or that portion of the site will be clean.

And this is just -- just a diagram so you can see how a typical desorption unit might look. As I mentioned to you before, we have pretreatment where you do excavation, you do the sorting the different type of materials, you might do some blending, all those things you do in pretreatment. Then you put the soil through thermal desorption units, there are many types that you could use, and these are just a few of them, and then you end up again with the gas phase and the solid phase. The solid phase is the clean soil, the gas phase are the contaminants, but then you have to put some kind of means of treatment control to be able to address them. A city such as this would have to meet -- you know, would have to have some kind of emission control standards to ensure it meets all federal and state criteria in terms of air pollution. And the same thing would have to be for the rest, handling of the soils off site, any material that has to be sent off site would also be handled in a way to meet the federal and standard regulations. And that's basically what we have here.

So at this point of time we just came to you again with those two options that we have. And we are -- or those two options we are recommending that we go ahead and implement the thermal desorption unit to address the contaminated soils at the site.

MS. ECHOLS: At this time we're gonna open up for questions. Please state your name and your address. Any questions? -

Sir?

MR. DIBBLE: I'm Clarence Dibble, from Sidney here. I don't -- I'm not sure whether or not, is it gonna have any impact on our taxes locally? I'm -- you know, I live here, I don't want 14 and a half million dollars coming from my taxes. Is this all coming from the Superfund or is it coming from -- local tax be paying it too?

MR. GARBARINI: It's all -- it's all going to be coming from the Superfund at this point in time. Unless -- unless we were to go after responsible parties to do the work. It will all come out of the Superfund. It won't affect your taxes individually. There's a certain percentage of the Superfund that is taken from the general tax revenues.

MR. DIBBLE: Well, yeah, I understand.

MR. GARBARINI: But otherwise your local property taxes and things like that won't be affected.

MR. DIBBLE: My other guestion is, I guess, why are we doing anything at all? I mean supposing we build a biq high fence around that area, it's not gonna go anywhere, is it? It's not useable for -- the swamp down there isn't useable for building on or anything else. The material that's in there doesn't migrate other places what I'm asking.

MR. RAMOS: No, actually the materials and anything at the site will migrate into the groundwater and probably through the wetland through runoff. As a matter of fact, as part of the continuing investigation that we're doing, the remedial investigation, that includes groundwater investigation. And we found that one of the wells on-site has high concentrations of creosote. Creosote doesn't move fast, it doesn't move much, but when you have such high concentrations in the soils it's bound to go somewhere. So even if we do nothing, just put a fence around, it will still get into the groundwater and probably will get also into the wetlands further.

MR. DIBBLE: It's not soluble water, is it?

MR. RAMOS: It's not highly soluble but it will move into the well water. It will be like oil into the groundwater and oil into the wet lands.

MR. DIBBLE: Okay.

MS. ECHOLS: Question, sir?

MR. UMBRA: Yeah, my name's Greg Umbra, and I'm from Unadilla. You said you encountered the water table in the west end where you dug up and where they build? Did you encounter the water table underneath the site itself? You know, underneath where the building were itself, did you dig down deep enough to the water table there, was the water table consistent?

MR. RAMOS: No, actually we didn't -- usually the trenches -- let me put a map here. Here we are. This is -- this is -- you see the property, this is the lines where we did the trenches. As we move west we - the trenches became deeper and deeper. The trenches in this area weren't as deep as the one further down here. One of the reason is that the soils around here were mostly native soils. And further down here they were just fill. So as you go further back here we had to go deeper with the trenches.

One of the thing that we did is that we installed monitoring wells. As part of the continuing investigation we have you'll look closer here, over here and over here, and we have also monitoring wells around here and further -- further east on the property. And so -- and we put wells in different depths within the aguifer. We had some shallow, some intermediates and some deep. So yes, the trenches around here didn't encounter the water table, it didn't go as deep as -- as the water table. It went further down west.

MR. UMBRA: Did you encounter contaminants on the far -- on the eastern end of the -- on -- on the eastern end?

MR. RAMOS: Yes, we did.

MR. UMBRA: For the monitoring wells?

MR. RAMOS: Actually, as a matter of fact, the well where we found contaminated with creosote is - we can -- this well right here.

MR. UMBRA: Now, have you determined a direction of the groundwater flow in that area?

MR. RAMOS: That's the focus of that IFS which is not the focus of this investigation. This is only for the soils. But yes, the focus of the remedial investigation that we're going to be releasing at the end of the year, it does address that. We're looking at groundwater contamination, we're looking at how the water is moving, which direction the groundwater is moving, how deep is the contamination. We also have other factors around here, as -- as you might know, they already found groundwater contamination in this area due to other site.

MR. UMBRA: Right.

MR. RAMOS: And so the groundwater picture becomes a little more complicated because you have more than one plume. Which is kind of a --

MR. UMBRA: Right, do you know where the plume is right now? There was a plume encountered on the other site there, but have --- have those two plumes come together at any point that you know of? In your studies?

MR. RAMOS: That we'll know when we complete the Remedial Investigation Feasibility Study. That's the -- that's part of the focus of that other investigation. And we'll have that picture by the end of this year, we'll be able to say yes, this is where the plume of the GCL is, and we have data from these other-plumes so we know how that interact and what events lead down with the plume and also we coordinate to make sure that whatever we do here doesn't affect the remediation already going on to address this other plume. So there are different things we are involved, we want to make sure that that's done correctly.

MR. UMBRA: So that is something else in addition to this, the cost of this, you know, if it does get into the groundwater and if the plume has spread out in that area, along with if you start pumping here, well, they've started pumping over toward Route 8, they could -- they could start drilling that, the creosote, the plume, toward that, toward that other site there too. Spreading the plume out.

MR. RAMOS: That's correct, the 14.8 million we just addressed the source of contamination. Which is the -- which is the soils. And that was -- that will mean that nothing else will be getting into the groundwater. But the groundwater problem we'll know for sure by the end of this year when we have that report. Then we'll be able to tell you this is the extent of the contamination of the groundwater and this is what needs to be done. And taking into consideration all those factors, like existing contamination already from other source, system already in place for that other source, and also this is a very difficult geology, as a matter of fact, what I've seen in the reports is the groundwater in some areas can achieve -- this area might be going this direction, further down might be going a little bit more toward the east, so it's kind of a complex picture for the groundwater. But that's something that we think that we will have a good hold on once we finish the report.

MR. UMBRA: Well, that's something else, you said you encountered clay there. You know, the layer of clay, is it, you know, constant throughout the area or is that just one small lens of clay that you have encountered?

MR. RAMOS: We don't think it is a continuous layer of clay that would constitute a barrier, a complete barrier, for contamination to get further down. I think it's slowing down the contamination. But it will not -- it is not stopping the contamination. But again, we are in the process of analyzing all of this data from the groundwater investigation. And right now until we go ahead, we go and complete this report, we will not have the complete picture of this. This is the kind of a -- in terms of groundwater.

MR. UMBRA: Okay, I have one last question. During the treatment, you said you're gonna excavate, okay. When you excavate the fill area there, you're gonna expose the groundwater. Now, what method are you gonna use to clean out -- clean the groundwater when that is disposed? You're gonna dispose the water that would be like -- that will be -- when you're digging out that will be exposed water, the ground, the water table will be exposed there, where in the pictures that you showed showed the oily film on there.

MR. RAMOS: Yeah.

MR. UMBRA: Are you gonna try to treat that water right there?

MR. RAMOS: We're only -- at this point here, as far as this remedy, when we excavate we will find an area where we have, like what we called that, we have a leap, a phase of creosote coming into an area. We will address that. But we are not addressing the groundwater at this point. We will take care of all the soils which are contaminated, and if we find any creosote in that, you know, concentration of creosote in that area, we will address that as incidental to the excavation. But the ground --

MR. UMBRA: You said -- you said -- you said you encountered it with all those pictures there with the fill, the wood, the plastic and everything else was there.

MR. RAMOS: Yeah.

MR. UMBRA: All right, you're gonna take all that stuff out. Okay? That's gonna expose that water layer there.

MR. RAMOS: Yes. Yes.

MR. UMBRA: And then you said you're gonna put the fill in on top of that. You're gonna treat that water, that contaminated water that's right in that area first before you fill back in.

MR. RAMOS: Well, we will -- we will do as much of the watering and treatment we need to do to do the excavation. And -- and treat the soil. But we will not be pumping the groundwater all the time from the trenches to do that. Probably for the groundwater we do what needs to be done for the groundwater, if we need to do some kind of pump and treatment which is what we do sometimes, this remedy takes 20, 30 years of pumping groundwater and treatment. And so that's something that we cannot address with the soil. We're gonna go out there, we're gonna excavate the soils and in the process of excavating the soils we find areas which are, you know, we see creosote like floating on the water or something? Like that, yes, we'll address that.

MR. UMBRA: This is an added cost that you haven't even establish yet, right?

MR. RAMOS: That's -- we think you would include that as part of the watering process. The final -- the final cost will be done in the design phase, which is the next phase. Now we know what it is that we're gonna be doing, now we have now to design the facility. Which takes into consideration all those things. You excavate the trenches, you find water, you know, how you gonna deal with that. You have to pump out that water, do you have to construct some kind of a barrier to impede the water into getting into the trench? So all those things are worked out during the design phase, all those details are worked out during the design phase.

MR. GARBARINI: Our cost estimates here are usually, you know, plus 50, minus 30 percent, something along that order. So there's a lot of variation. That's what we shoot for in feasibility.

MS. ECHOLS: Any more questions? Craig?

MR. VANCOTT: Craig VanCott with Uni-Lam. Back on your baseline risk assessment summary you mentioned on the older children trespassers, you said that they would have to -- that that study was based on exposure 6 -- 360 times per year for 6 years? And then you - then under the pathway you talk about ingestion and inhalation and dermal contact. What -- how much would they have to ingest 360 times a year for 6 years to be in the 4 out of 10,000 excess risk factor?

MR. RAMOS: For the risk assessment what are the assumptions. Basically, the basic association for use for ingestion is half a gram per day, is 480-something milligrams per day, which is half a gram per day. And I know we spoke about this before.

MR. VANCOTT: Right.

MR. RAMOS: And I think we made a mistake when we transferred the units. It's actually the personal -- a person -- let's put it this way, for a person -- the assumption for ingestion of soils at the site for long term, say like a resident of the site, older trespassers? Generally the chance you have you would have to -- the assumption is that you would be ingesting about half a gram per day, usually for 25 years, for -- for about six years the assumption's involved there. For children it's six years. I mean there are -- there are conservative assumptions assuming that you actually ingest half a gram of dirt for 365 days a year most of the time for 25 years. Most of us will not be doing that, we won't be ingesting a half a gram of dirt for the rest of our life, I guess, but that's the assumption that we are required to use on the baseline risk assessment. And again, to make sure that we donit underestimate the risk associated with the site.

MR. VANCOTT: And then one other thing. The -- and I told you this before in meetings that weren't public, but I'm concerned about the viability of the businesses in the area with -- already one is gonna be leaving the -- that site, the quality hardwoods, and moving across the river, but we would hope that the EPA works with the Village and the local manufacturers in the area to make sure that they're -- the viability of those businesses continues.

MR. RAMOS: Yeah, that's -- that's a point we'll take in. I mean we -- you know, we have been talking with the Town from the very beginning, we had a small meeting last year, I know we have spoken to you and the other businesses around there to make sure that our investigation doesn't interfere with your activities there. We try to coordinate, you know, so we have not, you know, harmed the way to other businesses. The cleanup for this property is designed so that property can continue to be an industrial property or be in the -- turned back into the tax roll, into the tax rolls that could be used for the future again. For another type of commercial or industrial purpose.

MR. DAVIS: Not a tie and treating plant.

THE STENOGRAPHER: I need your name.

MS. ECHOLS: Maynard Davis.

MR. GARBARINI: Just to add to that too, I think we've appreciated the cooperativeness of the businesses that have been down there as well as the town officials here. But obviously we have a job to do in terms of protecting the environment, so we -- we try and keep a balance with it too. But we've got to make sure we get our job done, and you guys have been real cooperative with us to date, so we appreciate that.

MS. ECHOLS: Sir, did you have a question?

MR. CARR: Yeah. Have you detected any plume, Decker Sawmill, in that direction at all?

MS. ECHOLS: Could you give your name for us, please.

MR. CARR: Jim Carr, I'm from Gilbertsville. You have monitoring wells around that property. Have you detected any leaving that area which you are testing there?

MR. RAMOS: Yes, we -- I'm sorry, go ahead.

MR. CARR: Yeah, that's what I was wondering, what have you found there.

MR. RAMOS: We haven't finalized, as mentioned before, you know, right now we are focusing on the source of the contamination, which is the soils on the GCL portions of the site. We are looking at the groundwater, excuse me, and we have the data back from the lab, but we have to make sense of that data. To see, you know, we know that it wasn't really contamination there from before, we have to see where this contamination from GCL and how we gonna deal with. At this point we cannot tell you really, you know, what's -- what's the groundwater picture yet. We'll be able to tell you that when we come back by the end of -- of this year with the report which addresses exactly that point, what kind of contamination is there from GCL.

So at this point I cannot tell you, you know, one way or the other what is in the groundwater other than tell you that there was one well on-site on the GCL property where we found creosote.

MR. CARR: Well, I know testing is really expensive, so, any time, you can just arbitrarily test a lot of area unless you're really going to have a reason to go there, I mean.

MR. RAMOS: Exactly. We -- we were fortunate enough that we were able to use data already generated by -- by the Amphenol Arrowspace because they already -- they have monitoring wells in that area, so we were fortunately enough to save money because we were able to use their data and their wells actually to collect more data. And we just, you know, having already that data we just decided which -- which additional information was needed to fill those data - data gaps. And that's what actually we're tying to do. Because you're right, I mean, you know, in studying wells and sampling wells is a very expensive enterprise, we try to minimize that to the extent that is possible. And in this case we were able to because there were already information available. And we have shared that information also with -- with Amphenol, you know, people. They gave us their data, what they have found, and we gave them our data to see what we have found.

But the whole picture, just I mean the data's just one step, you get all of these analytical results from the lab, you have to make sense of it, what does it mean, I mean what's the picture based on that. It's like small pieces of a puzzle we need to put together. And that's what we're doing right now.

MS. ECHOLS: Sir?

MR. WILRLOW: Couple different questions, my name's Ted Wilklow, I'm from the Town of Sidney. In perspective can you tell us already how much money has been spent at that site?

MR. RAMOS: Between the removal and -- removal action and the remedial investigation we have spent over $2 million at the site.

MR. WILKLOW: Over two million. For the off-site incineration, we have a coal fire generator utility nearby which I understand is certified or licensed for coal tar. Was that considered?

MR. RAMOS: We in conversation, as a matter of fact, from the State, the Department of Environmental Conservation brought that to our attention. And that's one thing that we will be exploring to see whether we could use -- to ask if we can use their facility. Some of the problem here is that the waste that we generate is classified as hazardous waste. And so that limits the number of places where you can deal with that, you know, you can deal with that, the number of places which are licensed to deal with that waste. And we simply want to explore that option to see whether, you know, we could use that facility, and we're gonna keep talking with New York State DEC and also to that utility to see if in substance it could be done to that fact.

MR. GARBARINI: But there's really -- I think it's important to note that we are dealing with hazardous wastes here and they are not permitted to handle hazardous waste at this point. Okay, so that's a very -- it's a permanent process to be able to do that. So that would take some time and some work. So until we reach that point in time they won't be allowed to handle our wastes.

MR. WILKLOW: I guess I was putting coal tar in that general category. And maybe I shouldn't.

MR. GARBARINI: Right.

MR. WILKLOW: One last question. Is -- out of the roughly 15 million, can you break that down at all as how much of that you're estimating is going to private contractors and how much of it's gonna be the overall let's say monitoring by the Government? Or, can you break down the 15 million in any way?

MR. RAMOS: We pretty much -- those 15 millions are for -- that's the cost of getting the remedy there. That doesn't include the cost of the Government and overseeing that remedy. That's because of actually having a private contractor to design, build and run that facility. The EPA and Government costs are not included there.

MR. GARBARINI: The Government costs for oversight would be very small in comparison to that $15 million figure, though.

MR. WILKLOW: So that's the contracting costs to take care of the site.

MR. GARBARINI: Yeah.

MR. WILKLOW: Thank you.

MR. CARR: Again on the classification --

MS. ECHOLS: Your name again?

MR. CARR: -- creosote, coal tar. Jim Carr.

MS. ECHOLS: Okay.

MR. CARR: Isn't creosote considered coal tar? And isn't -- aren't they hazardous? And the power plant in the Southern Tier right now is allowed to handle coal tar soil and burning. Which would be hazardous, I would think. Have you --

MR. GARBARINI. It's probably a hazardous substance, whether it's actually listed as a listed hazardous waste or not I can't tell -- I can't tell you I know that, but I would tend to doubt that it was. And if it is perhaps it's got some sort of specific exemption which allows them to handle the waste at that facility. But it's -- it's not a, quote, unquote, Subtitle C hazardous waste incinerator, which is what we would generally need to send this material to.

MS. ECHOLS: Sir, in the back?

MR. DAY: My name's Keith Day, from Greene, New York. And I'm responsible for NYSEG's coal tar soils program. We are -- the soils that we're permitted to receive are classified as solid waste. Through a process that's been approved by the EPA you can go to these MGP sites, take a hazardous soil, blend it with less hazardous soils, render the whole combination not hazardous. So that's how we're able to receive those materials. Anything coming in to Jensen Station is nonhazardous. So my question would be is if a variance could apply to the same site, the creosote contaminated soils, if they're looking at the analytical dates there are areas on the site that are less contaminated, could that soil be blended with the more contaminated material, the combination of materia1 be rendered not hazardous? Again, NYSEG is only permitted to burn nonhazardous soils at this time. But that's really what our program involves. And, any further question related to that.

MR. GARBARINI: You're actually able to blend hazardous --

MR. DAY: Yeah, EEI document, Edison Electric Institute document, myself and one other gentleman served on that committee in the development of that document, we worked with utilities all over the country because there's so many of these MGP sites across the country, we got together and developed a document for taking hazardous soils on an MGP site, okay, which there are some right here; Oneonta has a site, Norwich has a site. Take those soils, you blend them on the MGP site, the hazardous soils with less hazardous soils or coal or sawdust or fly ash or something of that nature, all this has to take place right on the MGP site, and it renders the material nonhaz' -- nonhazardous, okay. And --

MR. GARBARINI: So basically you're diluting the hazardous nature of the --

MR. DAY: You're diluting the hazardous nature of it, and once it's rendered nonhazardous it can be taken to a utility boiler. And this document was approved by the EPA.

MR. GARBARINI: When was that approved?

MR. DAY: When was it approved?

MR. GARBARINI: Yeah.

MR. DAY: In April of -- I have a copy of the document here.

MR. GARBARINI: Just the year would be fine, I'm just wondering.

MR. DAY: Well, it's right on the front of it, so.

MR. GARBARINI: And were the soils actually -- were those hazardous substances in the soils or were they listed hazardous wastes?

MR. DAY: They're listed hazardous wastes. It was approved by the EPA in April of '93. It's called manufactured gas plant site remediation strategy.

MR. GARBARINI: Okay, well, we can -- maybe we can talk some more about that.

MR. DAY: Just one thing for consideration.

MR. GARBARINI: Okay, can we get a copy of the report?

MR. DAY: Certainly.

MS. ECHOLS: You signed it?

MR. DAY: Yes, I did.

MS. ECHOLS: Okay.

MR. CARR: Jim Carr again, make a comment that NYSEG raises it's rates quite a lot lately, maybe they can use the energy.

MR. DAY: Well-taken.

MR. GARBARINI: But just add one thing there, generally we're pretty much directed to go for permanent treatment remedies, you know, remedies that actually render wastes nontoxic. And one of the things we're generally diverted away from is diluting the hazardous wastes to various guidelines. So that's just a point of clarification from our perspective. But we'd definitely like to talk to you about it.

MR. DAY: Could I comment further? Quickly? I took a look at the site today, and just by looking at the volume of wood on that site that it looks like a lot of it is very, very lightly contaminated wood. And the wood is an excellent product for chipping up and blending that with the nonhazardous material, and that wood is gonna go into your thermal desorption unit anyways. And your thermal desorption units, my understanding, is gonna be about 700 degrees. And I don't know what the temperature of the off gasses is gonna be, but the utility boiler's upwards of around 3,000 degrees. So the level of destruction is certainly there, but you still have the parameter of the material does have to be rendered nonhazardous on your site. If it were to come to us. And right now we're not permitted specifically to receive creosote contaminated soils, just coal tar. So there'd have to be some variance.

MR. GARBARINI: Thank you.

MS. ECHOLS: Any more questions? Sir?

MR. GLEASON: Yes, Sam Gleason from Syracuse. Has a consent order been established for the site?

MR. GARBARINI: No.

MR. RAMOS: No.

MR. GLEASON: Okay, there is -- what about -- there's talk, there's mention in here about community acceptance of the preferred alternative will be assessed in the ROD? Is there gonna be a ROD established?

MR. GARBARINI: Yeah.

MS. ECHOLS: Yes.

MR. GARBARINI: We're hoping to sign a ROD next month, by the end of September, and there will be a responsiveness summary that would be part of that Record of Decision. Which would respond to any public comments we receive during the course of the comment period.

MR. GLEASON: What is the outline for the ROD submittal, is it just a -- is there a 30, 60 and 90 percent submittal?

MR. GARBARINI: No, it's very conceptual; if you were gonna call it a design document it's very, very, very conceptual. Basically we just take the results of the Focus Feasibility Study, summarize them in a shorter document, and then provide the rationale for our selection of one of the alternatives that are described in the document. And then -- then the next stage would most likely be -- there are two types of designs that are processes that we go through, one is the 30, 60, 90, lot of detail designs. Lot of details in the design. Another one is a request for proposal where we basically just have a conceptual design and we ask someone to come on-site, there are people that bid on the project based upon performance-based specifications. For instance, we give them the cleanup numbers that were just went over before, say we want you to bring a thermal desorption unit on the site and we want you to achieve these levels and these emission requirements. Tell us how much it's gonna cost. Give us a bid and also give us detailed designs as to what your unit looks like that you're gonna treat the materials with. So it would end up on this site. We'd probably end up going with the request for proposal with performance-based specifications.

MR. GLEASON: But wouldn't the -- that would also have to include the treatability study, right? I mean 'cause the treatability would have to be incorporated into the ROD.

MR. GARBARINI: No, the ROD would not include treatability studies. Treatability studies work would be incorporated into the design.

MR. GLEASON: So you would have to guarantee that before you did your treatability study?

MR. GARBARINI: Guarantee the process would work?

MR. GLEASON: The process?

MR. GARBARINI: We'd do some treatability study testing just to show that we're confident, yeah.

MR. RAMOS: Just a point there, I mean the technology's actually been proven to work for this kind of contamination. Really what it would do for you at this time would give you the optimal operating conditions for that, for that process. So whoever will be bidding on this system would actually do the study because they want to optimize their design. They'll do it basically for that, but the technology will work. I mean it's been used already at other sites for the same type of contamination. So the question is not whether it will work oi not but the question is what is the most optimal operating system for that parameters. And that's probably what they will do.

MR. GLEASON: Just to establish your blending grades or something like that?

MR. RAMOS: Same pictures, flow rates, blending, you know, water contents, all those, the core of the operation, you want to optimize the operation. That's what you do on your treatability study.

MR. GLEASON: You talked, you just had mentioned about air quality. Have there been -- have there been cleanup levels established for the air emissions?

MR. GARBARINI: We would -- we would follow the New York State air guide. It's a -- it's a guide, basically, it's not -- I don't think it's promulgated regulations but there are guidelines that the State uses. And we'd also use federal regulations. So yes, they have been established.

MR. GLEASON: So then it would be up to the contractor to establish a permit for the site? An air discharge permit?

MR. GARBARINI: On Superfund sites per se you aren't required to obtain permits but you are required to meet the substantive requirements.

MR. GLEASON: Yeah, but for the incineration you'd have to.

MR. GARBARINI: For the thermal desorption? Yeah.

MR. GLEASON: I understand this is Superfund, but you still would have to go through an approval process with the DEC.

MR. GARBARINI: Exactly. But that -- that approval process, a lot of the -- a lot of the paperwork should be cut out of that. You'd still have to go -- when you have the unit on-site you'd have to be aware of the fact that when you put the bid in you'd have to meet certain requirements, and then when the unit is on-site we'd actually go through a testing phase to make sure all the emission requirements were met.

MR. GLEASON: It just seemed like an aggressive schedule you're talking if you mentioned a year to get someone on board and to establish everything and then a year construction.

MR. RAMOS: We're saying a year, year and a half. The reason for that is that these units are mobile units. They are brought on-site, they're already built, they just -- a contractor would just bring it on-site and build, support the facilities and then work out with the, you know, the optimal corporation or safety for that system. So you start from scratch, you know, like you will do for something else. Groundwater pump and treatment facility, you know, you have to start from scratch, you have to build the whole thing from nothing. It's not like you're bringing, you know, a system on-site. This one is not a system where you can bring, you know, bring assembled on-site, all right. It's a mobile unit.

MR. GARBARINI: That assumes we would use the RFP performance-based specifications rather than the detailed approach. If we went through the detailed approach here it would take us two and a half years, probably.

MR. GLEASON: Construction, that would be done during a year, just front end stuff I would think would take more than a year.

MR. GARBARINI: Like Carlos said, a year, year and a half, I'd say probably more toward the year and a half side of things. And if it was detailed design it would definitely be probably over two years. Designs generally are running two years. But since this one is an RFP, a performance based, at least that's our intention, it should be able to be a little bit quicker.

MR. GLEASON: Back to the blending, do you think that with the amount of organic material that is present on-site that you could actually obtain a nonhazardous level in that material? Just through blending, with the absorbed material in the organic?

MR. GARBARINI: I know it sounds like it's basically a -- I mean it's -- if we have enough clean wood around and we blended it.

MR. GLEASON: Yeah, but if you did an extraction, what you're saying is you would blend the material to allow for an extraction level to be nonhazardous? mean would you take an inorganic material and you mix -- you have a hundred yards and you mix another hundred, 200, you've doubled it and you might be able to deem it as nonhazardous, but if you have an organic material --

MR. GARBARINI: I'm not that familiar with what they're doing out there so I'm not exactly sure how they're achieving that. But we're dealing with listed hazardous wastes. If we were dealing with characteristic, it sounds like you're somewhat familiar with the process, if we were dealing with characteristic hazardous wastes and then you blended them and then you did the extract you might be able to achieve it that way.

MR. RAMOS: Two types of listed wastes.

MR. GARBARINI: We're gonna have to get below health-based levels or treatment levels.

MR. RAMOS: You do have hazardous waste contained within the soil. You have to treat to a level where -- to health-based level to say that the soil no longer is a hazardous waste because it isn't hazardous listed waste. And in the case of creosote, this site we have two different types of waste. One, one type is just -- one is processed either -- for those people familiar with the EPA regulations how we classify hazardous wastes, source at the site will be classified two different types of hazardous waste. Because the processes they use at the site.

MR. GARBARINI: So whether we're confident or not, we don't -- we don't know, we're just sort of having a discussion here for the first time about it.

MR. GLEASON: I understand.

MR. GARBARINI: We're not really sure what they're doing but we don't want to just off the bat say forget it.

MR. GLEASON: You're talking incineration versus desorption, that's a whole different process. The reason why the incineration was ruled out in feasibility was cost, not really because of process.

MR. GARBARINI: That's true, yeah.

MR. RAMOS: Yes.

MR. GARBARINI: Yeah, I could see some real road blocks using the approach that they're using, but, you know, we haven't really taken a look at what they've done out there, so.

MR. GLEASON: Well, it is -- like you said, it was just established in '93, so I mean it's fairly - it's fairly new, so.

MR. GARBARINI: Right. And EPA policy regarding the use of incinerators for different types of things has --

MR. GLEASON: Right.

MR. GARBARINI: -- sort of come under some significant attention over the course of the last couple years. I,m not sure exactly where that policy is going either, so that could put up some sort of road block also.

MR. GLEASON: It would just cause you people more paperwork, really.

MR. GARBARINI: Uh-huh.

MS. ECHOLS: Any more questions?

(No response)

MS. ECHOLS: Okay. I guess we're gonna end here. I would just like to let everyone know that the public comment period began on July 30th and it ends on August 29th. If you have any written comments, you can send them to Carlos, his address is in the proposed plan on the second page, and he'll address those comments, questions and questions. On that note, I guess we'll resume. Thanks for coming out.

(Proceedings were adjourned at 8:47 p.m.)

CERTIFICATE

IN THE MATTER OF: Public Meeting
GCL Tie & Treating Superfund Site
ON: Tuesday, August 9, 1994
BEFORE: RUTH I. LYNCH
Registered Professional Reporter

This is to certify that the foregoing is a true and correct transcript, to the best of my ability, of the stenographic minutes of a public hearing held in the above-mentioned matter, on the above-mentioned date, and of the whole thereof, taken by Ruth I. Lynch, Registered Professional Reporter.

EMPIRE COURT REPORTERS

Reprinted this date.

Signed this 19th day of September, 1994
By Ruth I Lynch, RPR
Registered Professional Reporter
Telephone: (607) 724-8724

APPENDIX E

LETTERS SUBMITTED DURING THE PUBLIC COMMENT PERIOD

August 18, 1994
GEMEPA 94-0033

Mr. Carlos R. Ramos
Remedial Project Manager
U.S. Environmental Protection Agency
26 Federal Plaza, Room 2900
New York, NY 10278

RE: Superfund GCL Tie & Treating Site, Operable Unit 1
Town of Sidney, Delaware County, NY

Dear Mr. Ramos:

New York State Electric & Gas Corporation (NYSEG) has reviewed the referenced proposed plan which describes the remedial activities at the GCL Tie & Treating Site. We believe that our power generating stations offer a unique and cost effective permanent disposal option.
for the contaminated material.

NYSEG proposes that the creosote contaminated soil and debris be excavated and transported to our Jennison Generating Station in Bainbridge, NY. The material will then be blended with coal for thermal destruction in the boilers, which operate at approximately 3000°F, and the energy component of the material will be converted to electricity.

Existing NYSEG permits, which contain strict special conditions and regulatory requirements, should be sufficient for creosote contaminated soil and debris to be burned in our utility boilers. NYSEG has New York State Department of Environmental Conservation (NYSDEC) permits to burn coal tar soil (CTS) and tire derived fuel (TDF) at Jennison Station. NYSEG's Hickling Station, located in East Corning, NY, has boilers similar to Jennison Station and has NYSDEC permits to burn CTS. Also, having conducted a very successful test burn, we expect to soon receive a NYSDEC permit to routinely burn creosote treated wood (CTW) at Hickling Station.

From NYSEG's perspective, there is essentially no difference between creosote and coal tar. Creosote is a derivative of coal tar and, as noted above, we are permitted to burn CTS which is the coal tar material from former Manufactured Gas Plant (MOP) sites. To mitigate potential concerns regarding hazardous waste, enclosed is a copy of the EPA approved MGP Site Remediation Strategy document. This approval allows MGP site wastes to be rendered non-hazardous on site if they are destined for a utility boiler.

We look forward to the opportunity of providing this cost effective beneficial service.

Sincerely,

Phillip M. Murphy
Manager, Alternative Methods

PMM/fhl
Enclosures

cc: Steven Hammond - NYSDEC, Albany
Walter Demmick - NYSDEC, Albany
Martin Brand- NYSDEC, Albany
John Cianci - NYSDEC, Albany

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New York State Electric & Gas Corporation Corporate Drive-Kirkwood Industrial Park, P.O. Box 5224, Binghamton, New York 13902-5224 (607) 729-2551

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

APR 26 1993

MEMORANDUM

SUBJECT: Remediation of Historic Manufactured Gas Plant Sites

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Regional Waste Management Division Director

Attached please find a document that describes a strategy for voluntary remediation of historic manufactured gas plant (MOP) sites. There are in excess of 1500 historic manufactured gas plant utilities. The utility industry is interested in initiating voluntary assessment and remediation of the sites. Last year, under the aegis of the Edison Electric Institute, the industry requested the Agency's assistance in clarifying the applicability of existing RCRA regulations to certain remediation activities and materials at these sites. At the direction of the Assistant Administrator, a group was established under the leadership of the Office of Solid Waste to work with Edison Electric Institute (EEI) to clarify the regulations and thereby facilitate early voluntary clean-up. The EPA working group included representatives from various Headquarters offices as well as Region VII, who has had extensive experience in addressing MGP sites.

The attached strategy document was developed by EEI for use by its member companies. Its purpose is to clarify the RCRA regulations and other requirements applicable to MGP sites. It has been reviewed and commented on by the EPA working group.

The strategy document consists of legal interpretations of EPA rules and regulations as well as technical and procedural guidance that either draws directly on published EPA guidance or constitutes EEI's best engineering or technical judgement based on their experience at MGP sites. OSW expects that the strategy would be implemented taking into account site-specific circumstances and that it would not necessarily be appropriate or practical at all sites. The strategy does not supersede existing regulations; it is not intended to be the presumptive remedy under CERCLA; nor can it serve as a shield against enforcement under RCRA or any other statute. Rather, it is intended to provide useful, practical advice on how to address materials at these sites that may exhibit the RCRA characteristics.

It is my view that the strategy described in the document can be implemented in a fashion that is consistent with existing federal RCRA regulations and, thus, protective of human health and the environment. I encourage Regions and States to work with site owners in implementing the strategy, thus promoting early and voluntary clean-up.

The remediation strategy is based cn the fact that contaminated soils generated at these sites are capable of being burned with coal and other fuel in high efficiency utility boilers. Prior to the burning of these materials in utility boilers, remediation waste that exhibits a hazardous characteristic will be rendered non-hazardous before it leaves the generation site. This may be accomplished without the delays caused by RCRA permitting through the use of 90-day tanks, containers, or containment buildings covered by 40 CFR Section 262.34(a). Under federal regulations, waste may be treated in such units during the so-day accumulation period without a permit, and if the waste thereafter no longer exhibits a hazardous characteristic, any further management of the waste, including the burning of such materials in utility boilers, no longer would be subject to Subtitle C of RCRA.

Contaminated soils addressed in this strategy are those that are former Bevill wastes and are hazardous under the characteristics. Land disposal restrictions do not currently apply to these wastes and therefore LDR compliance should not bean issue at this time. However, it should be noted that LDRs will be promulgated in the future. The recent "Third Third" court decision, however, may have an impact on the approach discussed in the strategy sometime in the future. In the development of strategies to conduct remediation activities, it would be appropriate to consider treatment in anticipation of future LDR requirements. I will keep the Regions informed as to the effects of this decision on all aspects of our program.

Throughout the document, reference is made to consultation with and obtaining approvals from appropriate governmental authorities. The assumption underlying the document is that the remediation activities are not being carried out under the Federal Corrective Action or Superfund program but that they are being voluntarily conducted with appropriate state and/or local oversight. The document is not intended to provide detailed procedural guidance on obtaining governmental approvals. And, as always, state requirements can be more stringent than their federal counterpart.

I view the attached remediation strategy as another step in the direction of achieving more risk-oriented and effective application of RCRA regulations to environmental clean-up activities. As the Regional Offices gain experience working with these sites, I would appreciate hearing from you if the recommended strategy is helpful in expediting clean-up and if you encounter any problems that further or more specific guidance would alleviate.

If you have any questions about this strategy document, please call Ed Abrams, Chief, Listing Section at 202-260-4770, or David Bussard, Director, of the Characterization and Assessment Division at 202-260-4637.

Attachment

cc: OSW Division Directors
MGP workgroup

MGP SITE REMEDIATION STRATEGY

1. Introduction.

The manufactured gas industry operated during the period from the early 1800s until the mid-1950s An illustration of a typical manufactured gas plant (MGP) that operated during that period is shown in Figure 1. Included in this illustration are several key structures including the gas generator house, the gas purifier boxes, the gas relief holder, the product gas storage holder, the tar separator and the tar well. These structures were central to the production, purification and storage of the manufactured gas and to the management of the by-product tar and process cooling waters.

There are in excess of 1500 historic MGP sites and a substantial number of these sites will undergo assessment in the near future. The purpose or this document is to provide guidance to facilitate remediation activities involving excavated solid materials generated at these historic MGP sites in a manner consistent with RCRA regulations currently extant. Thus, for example, to the extent these solid materials are classified as hazardous wastes, no land disposal restrictions ("LDRs") currently apply because LDRs have not yet been promulgated for these wastes. Future EPA rulemakings could affect the way cleanup and disposal activities at MGP sites are regulated.

This strategy document will address activities insofar as some of the excavated solid materials may be characterized as hazardous wastes under the Resource Conservation & Recovery Act ("RCRA") and hence may be subject to regulation under Subtitle C of RCRA. The on-site activities are:

- Site characterization -- the assessment of in situ MGP site materials (e.g., sludges, coal tar contaminated soils and sediments) to be excavated in order to determine appropriate materials handling practices and procedures;

- Excavation of materials -- the generation of wastes subject to regulation under RCRA; and

- Accumulation and treatment of excavated wastes in 90-day units excluded from RCRA permit requirements.

In addition, the document will address the off-site transportation of any excavated waste that may remain subject to Subtitle C regulation when it leaves the site of generation. It will not address other site remediation issues at this time. The utility company that has been identified as an entity that may be liable for addressing environmental contamination at the site and for undertaking clean-up activity will be referred to herein either as the "Company" or as the "Generator" of the waste removed from the ground. References in this document to activities taken by a Company may be deemed to include contractors or other Company representatives.

<IMG SRC 0294243L>

II. Purpose of the Strategy Document.

This strategy document is intended to facilitate responsible parties undertaking the source removal of heavily contaminated organic residues (i.e., coal tars) and contaminated soils at historic MGP sites in a manner that is consistent with the RCRA hazardous waste program. This strategy document does not address other remedial actions such as groundwater remediation. To the extent required by existing federal or state regulatory requirements, all removal actions of MGP site contaminated material that exhibits hazardous characteristics must be performed with the oversight of appropriate regulatory agencies. To that end, this document sets forth management strategies consistent with the Federal RCRA regulations that may be used at MGP sites where excavation of waste that is potentially hazardous is expected to occur. As discussed more fully below, this document sets forth procedures under which generators of any hazardous MGP site remediation wastes may manage these wastes in on-site 90-day accumulation units pursuant to 40 C.F.R §262.34. If within the 90-day period contemplated by §263.34 these characteristically hazardous wastes are treated and thereby rendered nonhazardous, they would cease to be subject to regulation under Subtitle C of RCRA and there would be no regulatory barrier under Subtitle C of RCRA for the burning of these materials in utility boilers or similar high efficiency combustion units. The recent decision of the U.S. Court of Appeals in Chemical Waste Management v EPA, 976 F.2d 2 (D.C. Cir. 1992) calls into question EPA's rules regarding application of LDR standards to wastes which exhibited a hazardous characteristic at the point of generation, but no longer exhibit the characteristic. The effects of this ruling are still under consideration at EPA, and may require reconsideration of this remediation approach after LDRs become applicable to MGP wastes. These materials would then be subject only to regulatory requirements applicable to nonhazardous solid wastes or to nonhazardous waste-derived fuels. If the waste cannot be treated within the 90 days, generators must request an extension from the Regional Administrator or will be required to obtain a permit.

It should also be made clear that this document applies only to the management of excavated solid materials that exhibit a hazardous characteristic. The management strategy outlined here does not apply to any listed hazardous wastes that may be excavated from a historic MGP site. The determination of whether listed hazardous wastes are present is to be based on available site information or records, such as manifests, storage records and vouchers, about the source of contaminants, as described by EPA, but in the absence of such information, the Company may assume that no listed hazardous wastes are present. See 53 Fed. Reg. 51394, 51444 (Dec. 21, 1988); 55 Fed. Reg. 8666, 8763 (Mar. 8, 1990). The Company is expected to make a reasonable inquiry into whether listed wastes are present at the site. Where required by applicable federal or state regulatory requirements, this determination is to be made in consultation with overseeing agencies. This strategy also does not apply to materials at an MGP site that may contain regulated levels of polychlorinated biphenyls ("PCBs").

It should be understood that this document is not a detailed procedural manual for dealing with federal, state or local regulatory agencies, but constitutes a general strategy for remediation of historic MGP sites in a manner consistent with RCRA regulations. Except for RCRA, it does not evaluate the remedy for consistency with the Clean Air Act or other statutes, and it does not address other possible remedies that may be more appropriate to the characteristics of a particular site. As a strategy for facilitating voluntary remediation activities, it should not be regarded as supplanting the Superfund process for remedy selection or creating a presumption in favor of this strategy where it may not be appropriate to the characteristics of the site.

III. Characterization of the Excavation Zones.

Since the wastes at these historic MGP sites generally were disposed of before the enactment of RCRA and thus before the November 19, 1980 effective date of EPA's hazardous waste treatment, storage, and disposal facility regulations, the wastes currently at these sites have not been subject to RCRA regulation. 53 Fed. Reg. at 51444; 55 Fed. Reg. at 8762-63. However, if these wastes are excavated and removed from the disposal unit (e.g. the tar separator or well), or if they are managed in tanks, containers, or containment buildings, they are deemed to have been generated and become subject to the requirements of Part 262 of EPA's rules.

Most MGP sites, today, have had the primary gas generation and purification structures razed. Occasionally, one or more gas holders may remain standing although these too have often been demolished to ground level. As a result of the plant operations and these demolition activities, these sites may contain areas where coal tars have accumulated or where coal tars were stored. These locations typically include, but are not limited to, the subsurface portions of gas relief holders that were also known as "pit holders" and the remaining subsurface structures associated with tar separators and tar wells. The tar separators were rectangular wood or concrete basins that were used to separate the tar from the recirculating process cooling waters. The tar wells were similar in shape and construction to the tar separators but were used to store tar prior to its dewatering and sale. These areas of more highly concentrated coal tar contamination are the areas that may pose a potential risk to groundwater and are often targeted for source removal actions. These areas also provide the greatest potential to exhibit the toxicity characteristic for benzene. Figure 2 depicts a plan and elevation view of an MGP site today and the areas that are commonly found and designated as excavation areas. The areas associated with the tar separators and tar wells generally consist of layers of residual coal tar which remained in the structures at the time the plant was closed and which were covered with soil during demolition activities. This contamination is typically located in the shallow subsurface zones. The "pit holder" may be set deeper in the subsurface and may contain larger quantities of coal tar which have been mixed with fill, including demolition debris and soil. The structure of the subsurface holder is often intact, preventing movement of the coal tar and contaminated fill.

As shown in Figure 2, the nature of these areas (e.g., depth, type of contaminated media) dictates the use of different excavation schemes. For example, it is likely that the excavation of the more shallow tar separator and tar well will include the subsurface structures as well as the coal tar and contaminated soil. On the other hand, excavation of the deeper pit holder may be limited to the removal of the contents of the subsurface structure. Sampling should-be designed to develop a three dimensional profile of MGP waste distribution (see Section XI). These profiles will be used to develop excavation work plans and to identify representative samples of the zones of excavation.

Issues to be addressed by the Company:

(1) delineation of excavation zones containing wastes that will require 90-day accumulation management (i.e., those portions of the area to be excavated where there is a reasonable probability that excavated waste will exhibit a hazardous characteristic and therefore will require compliance with Subtitle C regulations).

(2) determination of blending ratios and mixing material to be used during 90-day accumulation.

(3) Establishment of field analysis techniques for the rapid determination of TC hazardous characteristics of concern (e.g., benzene). These field analysis techniques, which include methods such as manual extraction of soil and groundwater samples followed by gas chromatographic analysis of the extracts in the field, permit a rapid determination of the chemical composition of the sample. These rapid determinations are required during the excavation of the source areas and during the subsequent handling and blending processes since they will expedite the field activities and minimize the overall time required on-site. The time on-site is a critical factor since many MGP sites are located in urban or residential settings and it is imperative that the inconvenience and potential disruption caused by the field activities be minimized to the greatest extent possible.

    The burden of ensuring that all excavated solid materials are properly managed on the site and that no hazardous waste leaves the site misclassified is borne by the Company. Therefore, it is critical that the field analysis method provides consistent results with the applicable testing protocols for identifying characteristic hazardous waste. If the materials generated include hazardous wastes, the generator must comply with Part 262 of EPA's rules including the requirement to obtain an EPA identification number.

IV. Development of Excavation Design.

Excavation design will be developed by the Company using accepted engineering and construction practices (see Section V). Issues to be addressed by the Company as part of the development of the excavation design include:

(1) determination of the 3-dimensional excavation boundaries

(2) identification and preparation of the material processing area.

(3) identification and preparation of the staging area

(4) identification and consideration of geotechnical conditions.

(5) determination of whether a vertical barrier is needed for structural support and/or groundwater control.

(6) selection of excavation equipment.

(7) determination of health and safety procedures.

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V. Excavation Procedures.

Contaminated soils should be excavated by the Company (or its representative) using appropriate equipment such as screw augers, back hoe buckets, clamshell, or other similar equipment. When practical to do so, large pieces of demolition debris may be segregated in the excavation pit and handled separately from the soils. Experience at MGP sites indicates that the impact of air emissions and odor from the excavations can be effectively managed by employing excavation practices that minimize the release of gaseous contaminants and by utilizing air monitoring and respiratory protection equipment. Excavation practices to minimize air emissions will include the pacing of the excavation activities and/or the placement of additives or absorbents such as coal fines, wood chips, synthetic foams, or other non-hazardous materials into the excavation. Concurrently, the air space in and around the excavation should be monitored using real-time contaminant detection instruments (e.g., organic vapor analyzers). The site health and safely plan will identify predetermined concentratlon limits which, if exceeded at any time, would reauire the use of air respiratory equipment by site workers. Air monitoring should be conducted at predetermined zones around the perimeter of the excavation to ensure that the excavation activity is protective of human health and the environment.

Should excavation occur in the saturated zone, groundwater management may be required. The management steps may include isolation and dewatering of the zone of excavation and treatment of the wastewaters that are generated. Isolation of the zone of excavation may be accomplished using sheet piles or other barriers. In some instances, the historic structures themselves may serve as an adequate barrier. This is especially true for the subsurface structures associated with the pit holders. These barriers can prevent cross-contamination from occurring due to contaminant migration into or out of the excavation zone. If dewatering is required for the excavation, it should be achieved using conventional construction techniques (e.g., recovery wells or collection trenches set within the isolated zone of excavation). Wastewaters generated in the process of dewatering that exhibit a hazardous characteristic must be managed as a hazardous waste. Additional remedial actions may be required for the site groundwaters; however, these actions are beyond the scope of this document.

VI. Screening.

Material removed from the excavation can be handled in several ways. If it is classified as hazardous pursuant to 40 C F.R. §262.11 and managed offsite, it is subject to all of the applicable requirements of Subtitle C of RCRA. If it is managed on-site, it can be processed through either a stationary or vibrating screen if large items of debris are present. The Company will determine whether the waste materials that have been screened out are hazardous and require management under Subtitle C of RCRA. Waste that is not amenable to screening (i.e., wet clay soils, viscous sludges) may be dewatered and/or enhanced with suitable material to facilitate material handling in a 90-day accumulation unit.
Once the material can be handled it may then be screened.

The screen may be angled to deflect the larger items (i.e., construction debris, wood, concrete) that cannot be segregated in the excavation. Cobbles, bricks and other similar size materials may be conveyed through the screen along with the contaminated soil. If the screened out materials are determined to be hazardous, they will be conveyed to a 90-day accumulation unit (see Section VII). Plans will be prepared to prevent or contain any spillage which may occur during the material handling process.

VII. Accumulation/Blending Stage.

Following segregation from the larger items of debris, the screened material will be accumulated or blended in a 90-day accumulation unit. EPA has interpreted the term "accumulate" in §262.34 to include both storage and treatment. See 55 Fed. Reg. 30798, 30807 (July 27, 1990); 51 Fed. Reg. 10146, 10168 (March 24, 1986). Under current regulations (40 C.F.R. §262.34(a)), three units are eligible for this purpose. Two units are tanks meeting the standards of 40 C.F.R. Part 265, Subpart J, and containers meeting the standards of 40 C.F.R. Part 265, Subpart I. As long as treatment activities are conducted in units meeting the definitions of tank and container, and the time limitations and requirements of §262.34 are met (including contingency planning requirements), treatment activities may be conducted at the site of generation without a permit.

EPA has defined "container" and "tank" in 40 C.F.R. §260.10 as follows:

- Tank: A tank is a "stationary device, designed to contain an accumulation of hazardous waste, which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support."

- Container: A container is "any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled."

This definition of container includes a wide range of items such as cans, drums, boxes, roll-off boxes, container trucks, tanker trucks, rail box-cars, and rail container cars. Some portable process-type units, such as mixers, could also be included within this definition.

EPA recently added a third unit as an eligible 90-day accumulation unit that may facilitate accumulation and blending at MGP sites. This new unit, called a containment building, generally consists of a concrete pad or a similar floor inside a building. According to EPA, this unit must, among other things, be completely enclosed and have self-supporting walls, a primary barrier, designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling equipment in the unit, a secondary containment system (unless the unit manages non-liquid wastes only or has obtained a variance from the secondary containment standard), a liquid collection system and controls for fugitive dust. The floors, the walls, and roof of the unit must be constructed of man-made materials with sufficient structural strength to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit. The unit also must be designed and operated to prevent tracking of materials out of the unit.

> 57 Fed. Reg 37194, 37212 (Aug. 18, 1992). See generally 40 C.F.R. §262.34(a)(1)(iv), 40 C.F.R. §§264.1100-.1102;40 C.F.R. §§265.1100-.1102;57 Fed. Reg. at 37211-18.

The time limitations of §262.34(a) require that all storage and treatment be achieved in 90 days or less. This limitation applies unless an extension of 30 additional days is obtained pursuant to 40 C.F.R. §262.34(b) or the generator qualifies as a conditionally exempt small quantity generator under 40 C.F.R. §261.5.

The blending material may consist of a relatively dry, combustible medium such as coal, coal fines, clean wood chips, corn cobs, less contaminated soil or other suitable material. Blending materials and blending ratios will be determined to ensure that the blended material does not exhibit a hazardous characteristic. Blending ratios will be established after a field testing process aimed at establishing a statistically valid worst-case ratio that will render nonhazardous the most concentrated sample of hazardous site remediation waste and therefore all less concentrated wastes. If the contents of the 90-day accumulation unit are determined not to exhibit a hazardous characteristic after blending, the material further processed on-site using the established blending ratio would no longer be subject to Federal regulation under Subtitle C of RCRA. Thus any crushing, further blending with coal, or other material or off-site transport for ultimate disposal would not be subject to the Federal hazardous waste regulation. Should the contents of the 90-day accumulation unit fail to be rendered nonhazardous, the waste must be managed as a hazardous waste in accordance with applicable state and federal regulations.

VIII. Nonhazardous Waste Storage.

Nonhazardous soils may be stored either off-site or on-site. Sound management practices should be followed for handling and storing nonhazardous soils (e g. dust suppression, etc.). The storage area should be designed to control run-off, leachate generation, dust, etc. All soil storage must comply with any applicable local, state, and federal regulations.

IX. Transportation of MGP Waste to Off-Site Location.

Nonhazardous soils may either be transported off-site or may undergo further blending on-site with a fuel for purposes of utility boiler fuel preparation. If it becomes necessary to transport hazardous MGP waste off-site (e.g., either because site conditions preclude management of excavated wastes in 90-day accumulation units or because mixing activities in such units have not been successful in rendering the waste nonhazardous within the 90-day time period authorized by 40 C.F.R. §262.34), the generator must comply with the requirements for off-site transportation of hazardous waste, including the manifest requirement in 40 C.F.R. §262.20 et seq.

X. Utility Boiler Operation

There are no regulatory requirements under RCRA applicable to utility boilers that burn excavated solid materials from MGP sites as fuel so long as the materials do not exhibit hazardous characteristic and do not contain a listed hazardous waste. The remedial strategy described in this document contemplates that only nonhazardous excavated materials will be bumed in utility boilers along with fossil fuels.

Utility boilers that burn excavated materials may nevertheless be subject to state or Federal regulatory requirements under the Clean Air Act or other environmental statutes. Any required regulatory oversight or approvals will occur under those programs.

Boiler safety and operational issues are specific to the boiler design. Therefore, such issues should be addressed on a case-by-case basis by the Company prior to commencement of burning activities.

XI. Sampling and Analysis Strategy.

Sampling and characterization of the excavated solid material should occur at the four stages of the excavation activities addressed by this guidance:

- Characterizing the soil prior to excavation.
- Characterizing the excavated solid materials pursuant to RCRA generator requirements.
- Determining blending ratios that will ensure that the resulting mixture of excavated remediation material and blending material will not exhibit a hazardous characteristic.
- Confirming the nonhazardous status of mixed materials.

The Company's implementation of this sampling and analysis is intended to achieve the following objectives:

(1) characterize MGP contaminated soils that are targeted for excavation and off-site disposal;

(2) determine which portions of the soils targeted for excavation will require management in 90-day accumulation units (i.e., wastes that are known or determined by the generator to exhibit a hazardous characteristic or wastes for which a determination is not made but which the generator assumes require management under Subtitle C of RCRA);

(3) develop a sampling protocol that statistically addresses the number of samples that have to be taken to establish the characteristic of the excavated waste (Chapter g of EPA's Manual "Test Methods for Evaluating Solid Waste," SW-846, may provide guidance in developing such a protocol). Caution should be taken when developing the sampling protocol because waste may not be homogeneous across the site; and

(4) develop a sampling protocol that statistically determines that all wastes managed in 90-day accumulation units no longer exhibit any hazardous characteristics upon removal.

If an adequate database exists that accurately describes the current characteristics of the contaminated media at that site, it may be unnecessary to undertake an additional assessment of the waste characteristics within the excavation zone. However, in the absence of such a database and if the generator plans to manage any excavated materials under nonhazardous waste standards, in situ sampling will be necessary to ensure compliance with RCRA regulations and for excavation planning purposes.

Sampling activities should be designed to delineate the portions of the excavation zones that can be expected to generate MGP remediation waste that will require (or should be assumed to require) compliance with Subtitle C management standards. TCLP or total analysis methods should be employed to characterize the portions of the excavation zones potentially subject to Subtitle C standards. If the site manager elects to base his excavation zone characterization on total analysis, waste samples will be assumed to be nonhazardous due to toxicity if they exhibit statistically valid concentrations of TC parameters less than twenty times the regulatory levels that are presented in Table 1 of 40 C.F.R. §261.24. See 53 Fed Reg. at 51444 (Dec. 21, 1988) Recent site-specific research conducted by the Electric Power Research Institute indicates that multiples of 40 to 50 may be more appropriate in some instances. The multiple that is selected for a given site will be negotiated with appropriate overseeing agencies on a case-by-case basis using the multiple of 20 as a baseline and considering higher multiples, as appropriate, based upon actual waste characterization and leaching data. In all cases, the multiple will be chosen to ensure that the on-site management of the excavated materials will be consistent with RCRA regulations. If none of the excavated materials exhibits any RCRA hazardous characteristic, these materials may be managed as a nonhazardous waste. Any hazardous waste generated in such an excavation may be managed on-site in 90-day accumulation units authorized by 40 C.F.R §262 34.

Waste that is being managed in 90-day accumulation units may be periodically sampled by means of the surrogate analysis (e.g., total analyte method) to determine if the waste exhibits any toxic characteristic. When it is determined by the Company that a waste in a 90-day accumulation unit no longer exhibits hazardous characteristic, the waste may be removed from the 90-day accumulation unit and may thereafter be managed as a nonhazardous waste (e.g., burning in a utility boiler). Statistically based sampling procedures will be used to determine whether MGP wastes exhibit any hazardous characteristics. The procedures should be documented in the site Sampling and Analysis Plan. See Section XII.2. This plan should be provided to the regulatory agency directing or providing regulatory oversight for the MGP remediation project. If this methodology indicates that the waste exhibits a hazardous characteristic and the generator does not qualify as a conditionally exempt small quantity generator, then the waste will be managed as a hazardous waste in 90-day accumulation units. If there is no indication that the waste is hazardous, the waste may be managed under any permissible regulatory category (e.g., nonhazardous solid waste, fuel supplement, etc.).

As sampling anc analysis experience is acquired at these sites, it may be possible to construct a database from waste matrix information and site characterization data to correlate TC criteria and site specific waste characteristic analysis. Once such a database has been assembled, future Sampling and Analysis Plans may be developed, and to the extent required by federal or state regulation, should be submitted to the appropriate government agency.

XII. Controlling Plans for MGP Waste Excavations

In addition to the foregoing, the remediation activities addressed by this strategy document may require development by the Company of a number of Remedial Design (RD) and Remedial Action (RA) Plans. Examples of such plans are described below and would control all source removal actions to be performed at the site and require any necessary approvals by agencies overseeing the site management.

1. Quality Assurance Project Plan.

A site-specific Quality Assurance Project Plan (QAPP) should be developed in accordance with applicable regulatory criteria. The purpose of this QAPP is to establish Quality Assurance (QA) standards applicable to the specific field and laboratory work to be performed. Documented conformance with these standards during the performance of the remedial action will produce scientifically defensible data which can be used throughout the remedial action and will assure that the objectives of the remedial action are met.

2. Sampling and Analysis Plan.

A site-specific Sampling and Analysis Plan (SAP) should be prepared that contains objectives, site background, evaluation of the zones to be excavated, and identifies chemical constituents of interest, sample types, statistical sampling approach, sampling locations and frequency, sample preparation, sample QA/QC, operations plans for sampling, sampling personnel qualifications, decontamination procedures, and specifications for sampling procedures.

3. Health and Safety Plan.

A site-specific Health and Safety Plan (HSP) should be prepared in accordance with all applicable EPA and other safety regulations (e.g., OSHA regulations). Special emphasis should be given to safety concerns of non-remedial workers at the site and nearby residents. Specifically, the HSP should address air monitoring and odor control procedures that are protective of the on-site workers and general public.

4. Alternative Management Plan for Wastes Remaining in the Subtitle C Program.

A plan should be developed to manage any waste that is not rendered nonhazardous within 90 days (or any extension of the 90-day period granted by the Regional Administrator). These plans should provide for proper storage, transportation, and disposal/treatment of hazardous waste in accordance with Subtitle C of RCRA. If off-site transportation of hazardous waste becomes necessary, the requirements described in Section IX apply.

5. Recordkeeping.

All recordkeeping requirements applicable to generators (and, if necessary, to transporters) of hazardous waste should be complied with.

RECORD OF DECISION FACT SHEET
EPA REGION II

Site:

Site name: GCL Tie & Treating, Operable Unit 1

Site location: Sidney, Delaware County, New York

HRS score: 48.54 (10/14/93)

Listed on the NPL: 5/94

EPA ID #: NYD 981 566 417

Record of Decision (Operable Unit 1):

Date signed: September 30, 1994

Selected remedy: Excavation and Treatment of contaminated soils via a Thermal Desorption Process

Estimated Construction Completion: 1 year

Capital cost: $14,839,000 (in 1994 dollars)

Annual O & M cost: Not Applicable

Present-worth cost: $14,839,000

Lead: EPA, remedial

Primary Contact: Carlos R. Ramos, (212) 637-4276

Secondary Contact: Doug Garbarini, (212) 637-4263

Main PRPs: Harris Goldman

Waste:

Waste type: PAHs

Waste origin: On-site (spills)

Estimated waste quantity: 36,100 yd3

Contaminated medium: Soil