DECLARATION STATEMENT - RECORD OF DECISION

Nepera, Inc. - Harriman Inactive Hazardous Waste Disposal Site
Harriman, Orange County, New York
Site Number: 336006

Statement of Purpose and Basis

The selected remedial actions for the Nepera, Inc. - Harriman inactive hazardous waste disposal site are presented in this Record of Decision (ROD). These remedial actions were selected by the New York State Department of Environmental Conservation (NYSDEC) in conformance with the New York State Environmental Conservation Law (ECL) and the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR Part 300).

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

Assessment of the Site

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

Description of the Selected Remedy

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

- Design and implementation of a soil vapor extraction system for remediating the continuing source of groundwater contamination. A pilot study will be conducted during the design phase of the project in order to properly design this component of the remedy.

- Design and implementation of a drum removal program in Area F. The soils in the drum disposal area will be sampled and analyzed. Any soils contaminated above clean-up goals will also be excavated and disposed of off site as appropriate.

- Design and implementation of a groundwater remediation program to contain the groundwater plume on site.

- Design and implementation of a sediment excavation program on the Avon Parcel (Area K).

- An evaluation, and if required the design and construction of erosional controls or other appropriate remedies to mitigate the migration of mercury into the river will be conducted.

- Restrictions regarding the use of groundwater at the site will be incorporated into the deed(s) for the site. A long-term groundwater and surface water monitoring program will be designed and implemented. Additional sentry wells would be installed between the site and existing or future public drinking water supplies as necessary.

New York State Department of Health Acceptance

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

Declaration

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

3/27/97
Date

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

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RECORD OF DECISION

NEPERA, INC. - HARRIMAN SITE
Harriman, Orange County, New York
Site Number 3-36-006
March 1997

SECTION 1: SITE LOCATION AND DESCRIPTION

The Nepera, Inc. - Harriman site is located on NY Route 17 in the Town of Woodbury, Orange County approximately one mile west of Exit 16 of the New York State Thruway (see Figure 1). The southwest corner of the site is in the Town of Monroe. The site is bounded to the northwest by Route 17, to the northeast by the West Branch of the Ramapo River, and to the south by undeveloped land.

The site is divided into two parcels (see Figure 2). The administrative offices and the waste water lagoon (also referred to as the SPDES lagoon) are located on the 9.74-acre parcel located to the northeast of Arden House Road. The manufacturing activities are conducted on the 18.64-acre parcel to the southwest of Arden House Road.

SECTION 2: SITE HISTORY

Section 2.1: Operational/Disposal History

The Pyridium Corporation (Pyridium) began chemical manufacturing operations at the site in 1942. The Pyridium Corporation, and its affiliate, the former Nepera Chemical Company, continued operations at the site until 1956 at which time the companies were sold to the Warner-Lambert Company and dissolved. Nepera, Inc. was formed in 1957 as a wholly-owned subsidiary of the Warner-Lambert Company. Nepera, Inc. owned and operated the plant from 1957-1976 at which time the company was sold to Schering AG of Germany who in turn sold the company to the Cambrex Corporation in 1986. The Cambrex Corporation is the current owner of Nepera, Inc.

Bulk and fine pharmaceutical chemicals, hydrogels, and pyridine-based industrial chemical products and intermediates have been manufactured at the plant since 1942 and continue to be manufactured today.

Chemical wastes (organic compounds) were incinerated on site from September 1945 through May 1957. This activity was conducted on a regular basis in two areas. During the mid-1940s, a "burn pit" apparently was located near where the SPDES Lagoon is now (see Figure 2). From the late-1940s on, a "burn pit" was located near where the cyano reactor now stands (see Figure 2).

From the late-1940s to approximately 1953, a calcium sulfate sludge was disposed of in a swamp which was located where the administration building and parking lot are now located (see Area B on Figure 2). This calcium sulfate sludge contained mercury which was used as a catalyst in the manufacturing of niacinamide.

Drummed waste were disposed of in an area near Buildings 67 and 75, and in an area near the southern boundary of the site. In addition, there appear to have been some spills or leakage from tanks, etc. in various areas of the site.

Section 2.2: Remedial History

There have been three environmental investigations conducted to date regarding the past disposal practices at the site. The first investigation was completed in March 1986. The second investigation was conducted in 1989 and was a precursor to the Interim Remedial Measure (IRM) which is being conducted at the site (see Section 3.2).

Drums were excavated from an area near Buildings 67 and 75 during the mid-1980s.

In September 1990, Nepera began pumping and treating groundwater from three on-site wells. The purpose of this ongoing IRM is to remove a portion of the groundwater contamination (specifically benzene) while conducting the RI/FS.

The third investigation was the Remedial Investigation/Feasibility Study. A discussion of the results of this investigation is presented in Section 3.

SECTION 3: CURRENT STATUS

Pursuant to the stipulation agreement referenced in Section 4, Nepera and Warner-Lambert conducted a Remedial Investigation/Feasibility Study (RI/FS) in order to determine the nature and extent of the contamination at the site, to assess the risks posed to human health and the environment by the contamination, and to develop a remedy for addressing the contamination.

Section 3.1: Summary of the Remedial Investigation

The Remedial Investigation (RI) was conducted in two phases. The first phase of the RI was conducted between 1988 and 1992. The second phase of the RI was conducted in 1995.

The results of the RI are presented in a report entitled: Remedial Investigation, Harriman Site dated November 1995 (RI Report). A brief summary of the work conducted during the RI is presented in Sections 3.1.1 - 3.1.5.

The following tasks were conducted during the Remedial Investigation:

- A magnetometer survey was conducted to search for areas where metallic drums may have been buried.
- A soil gas survey was conducted as a means to identify areas where disposal activities may have occurred.
- Test pits were dug in order to investigate areas where drums or other waste materials may have been buried.
- Surface and subsurface soil samples were collected and submitted to a laboratory for chemical analyses.
- Four piezometers and six additional monitoring wells were installed. The monitoring wells were used to collect groundwater samples and to measure the groundwater elevation. The piezometers were used to measure the groundwater elevation.
- Groundwater samples were collected from the monitoring well network at the site.

To determine which media (soil, groundwater, etc.) are contaminated at concentrations above levels of concern, the RI analytical data were compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater, drinking water, and surface water SCGs were based upon the NYSDEC Ambient Water Quality Standards and Guidance Values, and Part V of the New York State Sanitary Code. NYSDEC guidance documents were used as sources in developing clean-up goals for soils and sediments.

Based upon the results of the RI in comparison to the SCGs and potential public health and environmental exposure routes, it has been determined that groundwater, soils, and sediments in various areas of the site must be remediated. The areas of concern are described below. For further details, the reader is referred to the RI Report.

Chemical concentrations are reported in parts per trillion (ppt), parts per billion (ppb), and parts per million (ppm). For comparison purposes, SCGs are given for each medium.

The chemical species found in the soil, groundwater, surface water, and sediment at the site can be divided into three classes:

- Volatile Organic Compounds (VOCs) - These are carbon-based compounds which have a boiling point less than that of water. These compounds exist as liquids and/or gases under normal atmospheric conditions at ground level.

- Semi-volatile Organic Compounds (SVOCs) - These are carbon-based compounds which have a boiling point greater than that of water. These compounds exist as liquids under normal atmospheric conditions at ground level.

- Inorganic Compounds - Metals are the primary components of this class. Mercury is the primary metal of concern in this case.

Section 3.1.1: Soils Contamination

Two different sampling techniques were used to determine the nature and extent of contamination in the soils on site:

1. Samples of the soil gas (air which exists in-between soil particles above the water table) were collected and analyzed for VOCs. Based upon the results of this sampling program, it was determined that the soils in Areas A, G, H, and I are significantly contaminated with VOCs (see Figure 2).

2. Approximately 27 soil samples were collected during the RI. Twenty (20) of these samples were collected during the test pit program when trenches were dug using a backhoe so that visual observation of the subsurface was possible and samples could be collected from what appeared to be the most contaminated soils. The other seven samples were collected as boreholes were being drilled for the purposes of installing monitoring wells. These seven samples were collected in order to develop a better understanding of the geologic conditions at the site.

The contaminants of concern along with the respective concentration ranges are presented in Table 1. The proposed clean-up goals are also presented in this table.

The results of the soil gas investigation were confirmed during the soil sampling program. The primary areas of VOC contamination were along the western portion of the property where the manufacturing activities have been conducted. The primary contaminants of concern were benzene, toluene, and xylenes. SVOCs were also detected in these areas. The primary SVOCs were pyridine-based compounds (alpha-picoline and 2-amino-pyridine.)

Mercury was detected in several areas on site. The most severely impacted areas are Areas B and E. Based upon the data generated during this RI and sampling events at other locations in the Village of Harriman, and a review of the process chemistry in which mercury was used, it has been determined that the mercury present at the site exists in a relatively immobile form. In other words, the primary pathways by which mercury would move through the environment are via erosion of soils and particulate migration through the groundwater.

There are approximately 320 drums buried in Area F. Samples from eight (8) drums which were uncovered during the RI were submitted to a laboratory for analyses. High concentrations of alpha-picoline, pyridine, and mercury were detected in these samples. Other contaminants which were detected in these samples included benzene, toluene, xylenes, and 2-amino pyridine (see Table 2).

Section 3.1.2: Groundwater

Thirty-three (33) monitoring wells have been installed at the site (see Figure 3). A summary of the data generated from sampling these wells and two nearby supply wells during the RI is presented in Table 3. The drinking water standards for the compounds of concern are also presented in the table.

There are two aquifers beneath the site. The bulk of the contamination is within the overburden aquifer which consists of sand, gravel, and clay. Benzene is the prevalent contaminant in the overburden aquifer with a maximum concentration of 12,000 ppb at MW-16 (the standard is 5 ppb).

The bedrock aquifer is not as severely contaminated. The most contaminated bedrock well (32 ppb of toluene at MW-20D) is located near the source area. The contamination in the bedrock aquifer is essentially confined to the source area. The depth to bedrock ranges from 25-90 feet below grade.

Mercury was also detected in four of the 35 monitoring wells at concentrations greater than the 2 ppb standard. The highest concentration was in well MW-24 at 45.2 ppb. Ammonia is also present in the overburden aquifer at concentrations greater than 10 ppm.

Section 3.1.3: Surface Water

Surface water samples were collected from the West Branch of the Ramapo River and drainage swales on site and were analyzed for VOCs and SVOCs. No VOCs or SVOCs were detected in surface water samples at concentrations greater than any applicable standards or guidance values.

Surface water samples were collected from the West Branch of the Ramapo River and analyzed for mercury in November 1995. The results of this sampling event are presented in Table 4 (see also Figure 4). No excedances of the surface water standard were observed, however, it does

appear that mercury is entering the river from the site. The highest concentration of mercury was found at sample location #8 (adjacent to the permitted outfall) at 140 parts per trillion (ppt). The drinking water standard is 2,000 ppt.

Mercury was detected in all of the surface water samples at concentrations ranging from 4.66 to 140 ppt. Mercury is a widely distributed trace metal in the soils, which is the likely source of the low level (4-6 ppt) contamination detected in the samples collected upstream of the Nepera site.

Section 3.1.4: Sediments

Sediment samples were collected from the West Branch of the Ramapo River and drainage swales on site and were analyzed for VOCs and SVOCs.

One area of concern was identified in the northwest corner of the Avon Parcel (Area K - Figure 2). The sample in question was collected from a drainage swale which emanates from the plant site. Arochlor 1254 (a polychlorinated biphenyl or PCB) was detected at that location at a concentration of 2900 ppb. At concentrations greater than 400 ppb (a guidance value used by the NYSDEC), detrimental impacts have been observed in benthic organisms.

Sediment samples were collected from the river and analyzed for mercury in November 1995. The results of this sampling event are presented in Table 5 (see also Figure 4). The highest concentration of mercury was 824 ppb in a sample collected near where the mercury-laden calcium sulfate sludge was dumped (Area B). At concentrations greater than 150 ppb, detrimental effects may be observed in those organisms which live in the sediment.

Section 3.1.5: Biota

In November 1995, crayfish and caddis larvae specimens were collected from the West Branch of the Ramapo River and analyzed for mercury. The results of this sampling event are presented in Table 6 (see also Figure 4). There are no SCGs that these data can be compared to. It appears that the mercury concentrations in biota are greater in the specimens collected at and downstream from the Route 17 bridge than the specimens collected at the River Road Bridge. However, this observation may not be statistically significant.

The analytical data obtained during the RI were compared to applicable Standards, Criteria, and Guidance values (SCGs) in determining the need for remedial action goals for the site. Groundwater, surface water, and drinking water SCGs identified for the Nepera, Inc. - Harriman site were based upon the NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of the New York State Sanitary Code. Soil and sediment SCGs identified for the site were based upon NYSDEC screening levels.

Based upon a comparison of the analytical results outlined above with the SCGs for this site, it has been determined that the following areas and media are contaminated above SCGs:

- On-site soils are contaminated with a wide variety of contaminants. These contaminants include VOCs, SVOCs, and metals (see Tables 1 and 2). In addition, there are drums buried in one area of the site.

- The groundwater on site is contaminated with VOCs and SVOCs, and to a lesser extent, metals (see Table 3).

- Sediments on the northwestern portion of the Avon parcel are contaminated with PCBs and other SVOCs.

- Sediments in the West Branch of the Ramapo River are contaminated with mercury along the plant boundary (see Table 5).

Section 3.2: Interim Remedial Measure

In September 1990, Nepera began pumping and treating groundwater from three on-site extraction wells. The purpose of this ongoing Interim Remedial Measure (IRM) is to remove a portion of the groundwater contamination (specifically benzene) while conducting the RI/FS. Approximately 90 gallons of water are pumped from these wells per minute. This water is treated to remove the benzene and other organic compounds prior to discharge into the West Branch of the Ramapo River.

Section 3.3: Summary of Human Exposure Pathways

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are: 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. The elements of an exposure pathway may be based on past, present, or future events.

A baseline human health evaluation/risk assessment was conducted to assess the potential risks to human health which might be related to chemicals originating from the site. In this investigation, the carcinogenic effects were presented as probabilities.

Increased cancer risks were estimated using site-specific information on exposure levels for the contaminants of concern and interpreting them using cancer potency estimates derived for that contaminant by the United States Environmental Protection Agency (USEPA). For known or suspected carcinogens, the NYSDOH considers an individual lifetime cancer risk exceeding one in a million to be unacceptable.

The estimated cancer risks were calculated for the following scenarios:

1. On-site construction worker exposed to sub-surface soils.

2. On-site industrial workers exposed to surface soils.

3. On-site industrial workers exposed to groundwater from an on-site well used as a potable water supply.

4. Local residents exposed to groundwater pumped from a well located on the periphery of the site.

5. Occasional visitors exposed to on-site sediments.

6. Occasional visitors exposed to surface water (West Branch of the Ramapo River).

The estimated cancer risk under the first scenario was calculated to be one additional cancer incidence per 2,717,000 workers.

The estimated cancer risk under the second scenario was calculated to be one additional cancer incidence per 1,620,000 workers.

The estimated cancer risk under the third scenario was calculated to be one additional cancer incidence per 8,500 workers. It should be noted that no on-site well is being used as a potable water supply at this time, and restrictions on the future use of on-site groundwater as a potable supply will be incorporated into the deeds for the site under this Record of Decision.

The estimated cancer risk under the fourth scenario was calculated to be one additional cancer incidence per 460 people. Currently, there are no wells along the perimeter of the site which are used as potable water supplies.

The estimated cancer risk under the fifth scenario was calculated to be one additional cancer incidence per 2,400,000 people.

The estimated cancer risk under the sixth scenario was calculated to be one additional cancer incidence per 240,000,000 people.

Section 3.4: Summary of Environmental Exposure Pathways

The contaminants of concern for environmental pathways are the PCBs which were found in a drainage swale on the Avon Parcel (Area K) and the mercury detected in the sediments of the West Branch of the Ramapo River. In both cases, these contaminants were found at concentrations above which one would expect to observe detrimental impacts to the benthic community.

It appears that mercury is entering the river ecosystem along the Nepera plant site. The natural mechanism(s) by which this could be occurring could be any of the following:

1. Migration in groundwater in a dissolved form;

2. Migration in groundwater in particulate form;

3. Erosion of the streambank.

In addition, it is possible that mercury in the groundwater could be introduced into the river ecosystem as a result of the pumping/discharge activities associated with the groundwater IRM. The exact pathway by which mercury is entering the River is not known at this time.

SECTION 4: ENFORCEMENT HISTORY

The Potentially Responsible Parties (PRPs) in this action include:

- Nepera, Inc.
- Warner-Lambert Company
- Estate of William S. Lasdon (founder of the Pyridium Corporation)

On March 28, 1988, Nepera, Inc. and the Warner-Lambert Company entered into a legally binding stipulation agreement with the NYSDEC in which they agreed to conduct a Remedial Investigation/Feasibility Study at the site. In return, the NYSDEC agreed to pursue an enforcement action against the Estate of William S. Lasdon. This action is currently on hold pending the issuance of this Record of Decision.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

The goals for the remedial program have been established through the remedy selection process outlined in 6 NYCRR Part 375-1.10. These goals are established under the guidelines of meeting all Standards, Criteria, and Guidance values (SCGs) and protecting human health and the environment. The contaminant- and media-specific clean-up goals are presented in Tables 1, 3, 4 and 5.

At a minimum, all significant threats to public health and to the environment posed by the disposal of hazardous waste at the site should be reduced to the maximum extent practicable through the proper application of scientific and engineering principles. The remedy implemented at each site must be one which is protective of human health and the environment.

The remedial goals for this site are:

- To the maximum extent practicable, reduce the potential for direct human contact with the contaminated soils at the site.

- To the maximum extent practicable, remove the source of the groundwater plumes on site.

- Provide protection to public and private drinking water supplies in the vicinity of the site.

- Mitigate the migration (or introduction) of mercury into the river ecosystem.

- The protection of biota in the West Branch of the Ramapo River.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment and be cost effective. All statutory laws and regulations must be met. To the extent possible, permanent solutions and alternative technologies or resource recovery must be utilized. The potential remedial alternatives for the Nepera, Inc. - Harriman site were identified, screened and evaluated during the Feasibility Study (FS). This analysis is presented in the FS Report. A summary of this analysis follows.

Section 6.1: Description of the Remedial Alternatives

Different technologies for achieving the major goals of this project (see Section 5) were considered in developing the potential remedial alternatives for remediating the Nepera, Inc. - Harriman site. Ten alternatives were developed and evaluated during the Feasibility Study. The components of those ten alternatives are presented in the nine alternatives presented below. This was done so that the differences between the various alternatives would stand out better.

As presented below, present worth is defined as the amount of money needed now (in 1997 dollars at 7% interest) in order to fund the construction, and operation and maintenance (O&M) costs for each alternative. Construction, rental, engineering, and real estate costs are included in the capital cost estimates. The average yearly costs for operating treatment systems and the costs for maintaining the remedy are included in the O&M cost estimates.

(NOTE: The alternatives presented below are somewhat different than those presented in the FS Report.)

Alternative 1 - No Further Action

Capital Cost: $ 0
O&M Costs: $ 65,700/year
Present Worth: $ 807,000

Under this alternative, no additional remediation would be conducted at the site. The IRM system would continue to be operated for a period of up to 30 years. This alternative was

developed pursuant to the National Contingency Plan as a baseline for comparison of the other alternatives which were developed during the Feasibility Study.

A long-term monitoring plan would be developed and implemented. Groundwater and surface water samples would be collected at a frequency specified in the monitoring plan. The groundwater samples would be analyzed for VOCs, SVOCs, and pyridines. Surface water samples would be analyzed for mercury (EPA Methods #1631 and #1669). Sediment and biota samples would be collected if a statistically significant increase in the mercury concentration in surface water is observed.

Alternative 2 - Institutional Controls

Capital Cost:	$ 83,000
O&M Costs:	$ 75,700/year
Present Worth:	$ 1,023,000

Under this alternative, no further remediation would be conducted at the site. The IRM system would continue to be operated for a period of up to 30 years. The following institutional controls would be implemented:

1. The security fence at the site would be maintained.

2. Warning signs would be placed on the security fence as a further deterrent to potential trespassers.

3. Deed restrictions would be incorporated into the deed(s) for the property. These would include restrictions on the use of the property and the use of groundwater beneath the property. In addition, a legal instrument (deed notification) containing a description of the remaining contamination on site will be filed with the County Clerk's office.

A long-term monitoring plan would be developed and implemented. The initial step in this program would be to determine the baseline conditions (mercury concentrations) in the surface water, sediment, and biota in the River. Groundwater and surface water samples would be collected at a frequency specified in the monitoring plan. The groundwater samples would be analyzed for VOCs, SVOCs, and pyridines. Surface water samples would be analyzed for mercury (EPA Methods #1631 and #1669). Sediment and biota samples would be collected if a statistically significant increase in the mercury concentration in surface water is observed.

Additional sentry wells would be installed between the site and existing or future public drinking water supplies as necessary. These sentry wells will be sampled at a frequency specified in the monitoring plan.

Alternative 3 - Drum Removal

Capital Cost: $ 369,000
O&M Costs: $ 0/year
Present Worth $ 369,000

Approximately 320 drums are estimated to be buried in Area F. These drums would be excavated and disposed of off site under this alternative. The soils in the drum disposal area would be sampled and analyzed. Any soils contaminated above the appropriate clean-up goals would also be excavated and disposed of off site as appropriate.

Alternative 4 - Capping

Capital Cost: $1,584,000
O&M Costs: $ 10,000/year
Present Worth $1,708,000

Landfill-type caps would be constructed in areas D, E, and F (see Figure 2). These caps would conform to the requirements set forth under 6 NYCRR Part 360-2.13 for closing municipal landfills. The parking lot (Area B) would be upgraded to further reduce the potential for precipitation to infiltrate the calcium sulfate sludge which exists below the parking lot.

Alternative 5 - In-Situ Soil Vapor Extraction

Capital Cost: $ 727,000
O&M Costs: $ 80,000/year
Present Worth: $1,055,000

A soil vapor extraction system would be constructed and operated under this alternative in order to remediate a major portion of the continuing source of groundwater contamination at the site (Areas A, G, H and I). Air would be drawn through the unsaturated soils (soils above the water table) and extracted from the soil using a pump. In so doing, the organic compounds would volatilize into the air spaces in the soil and would be extracted along with the air. The air extracted from the soil would be treated in order to remove the contaminants prior to venting to the atmosphere. This system would be operated for a period of up to five years. A pilot study would be conducted during the design phase of the project in order to properly design this system.

Alternative 6 - Groundwater Containment along Arden House Road

Capital Cost: $ 1,006,000 - $1,560,000
O&M Costs: $ 84,000 - $98,000/year
Present Worth: $ 2,049,000 - $2,777,000

Approximately six (6) groundwater extraction wells (E1, E2, E3, E10, E11, and E12) would be installed on site (see Figure 5). Groundwater from these wells, along with the three (3) existing

IRM extraction wells (RW-1, R-3, and MW-1), would be pumped in a manner such that the bulk of the plume would be contained along Arden House Road. The groundwater would be treated using one of the following options:

1. A combination of an air stripping tower and a carbon adsorption polishing unit would be used to remove the VOCs and SVOCs. The treated water would be discharged to an engineered wetland which would be constructed on the Avon Parcel. The purpose of this wetland would be to remove the ammonia and metals from the treated groundwater. The wetland would be approximately 15 acres in size based upon a flow rate of 150 gallons per minute. The water treated in the wetland would ultimately be discharged to the River and would be subject to the requirements of a SPDES Permit.

2. A biological nutrient system would be used to remove the VOCs, SVOCs, and the ammonia. The treated water would be discharged to the River via the SPDES Lagoon, or reinjected back into the aquifer. In either case, the discharge would be subject to the requirements of a SPDES Permit.

A decision on which of the above options would be implemented would be made during the remedial design phase of this project. The range of costs for these options is reflected in the above cost estimate. For both options, further investigation and pilot studies would need to be conducted to determine the optimal approach for treating the groundwater.

This system would be operated for a period of up to 30 years. Three sentry wells would be installed along the eastern boundary of the site in order to provide an early warning system to downgradient water supplies.

Alternative 7 - Groundwater Containment along the Site Boundary

Capital Cost:	$ 1,399,000 - $ 2,215,000
O&M Costs:	$ 106,000 - $ 120,000/year
Present Worth:	$ 2,889,000 - $ 3,531,000

Approximately twelve (12) groundwater extraction wells (E1 - E12) would be installed on site (see Figure 5). Groundwater from these wells, along with the three (3) existing IRM extraction wells, would be pumped in a manner such that the mass of contaminants migrating off-site in the groundwater is minimized. The groundwater would be treated using one of the following options:

1. A combination of an air stripping tower and a carbon adsorption polishing unit would be used to remove the VOCs and SVOCs. The treated water would be discharged to an engineered wetland which would be constructed on the Avon Parcel. The purpose of this wetland would be to remove the ammonia and metals from the treated groundwater. The wetland would be approximately 15 acres in

size based upon a flow rate of 240 gallons per minute. The water treated in the wetland would ultimately be discharged to the River and would be subject to the requirements of a SPDES Permit.

2. A biological nutrient system would be used to remove the VOCs, SVOCs, and the ammonia. The treated water would be discharged to the River via the SPDES Lagoon, or reinjected back into the aquifer. In either case, the discharge would be subject to the requirements of a SPDES Permit.

A decision on which of the above options would be implemented would be made during the remedial design phase of this project. The range of costs for these options is reflected in the above cost estimate. For both options, further investigation and pilot studies would need to be conducted to determine the optimal approach for treating the groundwater.

This system would be operated for a period of up to 30 years.

Alternative 8 - Excavation and Disposal of Contaminated Sediment on the Avon Parcel

Capital Cost: $ 36,000
O&M Costs: $ 0
Present Worth: $ 36,000

Approximately 300 cubic yards of contaminated sediments on the Avon parcel (Area K) would be excavated and trucked off site to an appropriate facility for treatment and/or disposal.

Alternative 9 - Mitigation of Mercury Migration into the River

Capital Cost: $ 64,000
O&M Costs: $ 0
Present Worth: $ 64,000

An evaluation of the erosional stability of the western stream bank of the West Branch of the Ramapo River would be conducted. If required, measures would be implemented to prevent the streambank from eroding into the River. A decision on how this would be done would be made during the design phase of this project.

Section 6.2: Evaluation of the Remedial Alternatives

The criteria used to compare and contrast the potential remedial alternatives are defined in 6 NYCRR Part 375. For each criterion, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the FS Report.

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

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

SCGs for soil or groundwater would not be met if Alternatives 1 or 2 were implemented alone.

SCGs for VOCs and SVOCs in soil would be met if Alternatives 3 and/or 5 were implemented as source areas of groundwater contamination would be remediated. SCGs for metals in soils would be met if Alternative 4 were implemented because the mercury contaminated soils would be isolated from the environment.

SCGs for groundwater would be met if either Alternatives 6 or 7 were implemented due to the treatment components of these remedies.

SCGs for sediment would be met if Alternative 8 were implemented due to the removal action (PCBs). Surface water SCGs would be met if Alternative 9 were implemented due to the reduced threat of a significant erosion event.

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

Alternatives 1 and 2, if implemented alone, would not be protective of human health or the environment because the waste material would remain in the soils, groundwater, and sediments.

All of the source removal alternatives are considered to be protective of human health and the environment due to the treatment, removal, or other controls incorporated into these alternatives.

The groundwater alternatives are protective of human health and the environment. Alternative 7 is more protective than Alternative 6.

Primary Balancing Criteria - The next five "primary balancing criteria" are used to compare and contrast the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness - The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment are evaluated. The period of time required to achieve the remedial objectives is estimated and compared with the other alternatives.

There are no short-term impacts associated with the implementation of Alternatives 1 and 2.

There could be some potential short-term impacts to the community if Alternatives 3, 4 or 8 were implemented. Dust or chemical releases could occur during any drum excavation activities. Dust releases could also occur during any capping activities (from regrading contaminated soils and installing the cap). There are sufficient engineering controls which could be implemented to mitigate any release. These controls would be evaluated and incorporated into the remedial design. There could also be a short-term increase in truck traffic in the community during the capping or excavation activities.

There may be some short-term impacts to Nepera's operation if any of the other alternatives were implemented. Again, these could be taken into account during the design phase of the project in order to minimize these impacts.

There may be some short-term impacts to the River ecosystem if Alternative 9 were implemented due to the construction activities along the riverbank.

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

No significant long-term impacts would be expected if Alternative 3 were implemented.

There would be some remaining contamination after implementing Alternatives 5 through 8; however, the magnitude of the risk associated with this contamination should be minimal. A long-term surface water monitoring program would need to be implemented to monitor the effectiveness of any erosional controls constructed along the riverbank (Alternative 9). A groundwater monitoring program would also need to be implemented. These monitoring controls are considered to be reliable.

There would be significant quantities of waste materials left in place if either Alternative 1, 2 or 4 were implemented. The adequacy of the controls to limit the resulting risk would be questionable.

5. Reduction of Toxicity, Mobility, and Volume - Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the site.

No further reductions in the toxicity, mobility, or volume of the contamination at the site would be realized beyond the scope of the IRM if Alternatives 1 or 2 were implemented.

If Alternative 4 were implemented, there would be a further reduction in the mobility of contaminants in the areas which would be capped.

Significant reductions in the toxicity, mobility, and volume of the contamination in on-site soils would be realized if Alternatives 3 and/or 5 were implemented since major portions of the continuing sources of groundwater contamination would be remediated.

Significant reductions in the toxicity, mobility, and volume of the contamination in the groundwater on site would be realized if either Alternatives 6 or 7 were implemented. Alternative 7 is more comprehensive than Alternative 6, and as a result, the magnitude of the reductions would be greater under Alternative 7.

A reduction in the toxicity, mobility, and volume of the PCB-contaminated soil would be realized if Alternative 8 were implemented. In addition, the mobility of the mercury in Area B (Figure 2) may be reduced if a streambank protection remedy were implemented along that portion of the riverbank (if necessary).

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

Alternatives 1-5, 8, and 9 should be easy to implement technically. These are alternatives which are utilized routinely at sites in New York State and throughout the country.

Pilot studies would be required if Alternatives 6 and 7 were implemented in order to determine the optimal treatment and discharge approaches for treating the groundwater.

Administratively, all of the alternatives under consideration should be easy to implement. The alternatives in which there would be a long-term operation would be more difficult to implement than those with no long-term operation tasks due to the review of annual reports and periodic inspections which would be required.

7. Cost - Capital and operational and maintenance costs are estimated for the alternatives and compared on a present worth basis. Although cost is the last criterion evaluated, where two or more alternatives have met the requirements of the other criteria, cost effectiveness can be used as the basis for final selection. The costs for each of the alternatives are presented in Table 7.

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

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

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS conducted at the Nepera, Inc. - Harriman site, the NYSDEC has selected the following remedy:

- Design and implementation of a soil vapor extraction system for remediating the continuing source of groundwater contamination (Alternative 5). A pilot study will be conducted during the design phase of the project in order to properly design this component of the remedy.

- Design and implementation of a drum removal program in Area F (Alternative 3). The soils in the drum disposal area will be sampled and analyzed. Any soils contaminated above clean-up goals will also be excavated and disposed of off site as appropriate.

- Design and implementation of a groundwater remediation program to contain the groundwater plume on site (Alternative 7).

- Design and implementation of a sediment excavation program on the Avon Parcel (Area K - Alternative 8).

- In addition, an evaluation, and if required the design and construction of erosional controls or other appropriate remedies to mitigate the migration of mercury into the river will be conducted (Alternative 9).

- Restrictions regarding the use of groundwater at the site will be incorporated into the deed(s) for the site. A long-term groundwater and surface water monitoring program will be designed and implemented. Additional sentry wells would be installed between the site and existing or future public drinking water supplies as necessary (Alternative 2). Periodic reviews of this monitoring data will be conducted to ensure that the remedies set forth in this Record of Decision are protective of public health and the environment.

The estimated range of the capital costs for this remedy is $2,678,000 to $3,494,000. The annual operation and maintenance costs are estimated to be $261,700 to $275,700 per year over 30 years. The estimated present worth of this remedy is $5,436,000 to $6,078,000. The range of costs for the groundwater remediation options incorporated into Alternative 7 is reflected in these cost estimates.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

1. Information repositories have been established and maintained at the Harriman Village Hall, Monroe Free Library, NYSDEC Region 3 Office in New Paltz, and the NYSDEC Central Office in Albany.

2. Documents and reports pertaining to this site have been placed into the aforementioned repositories.

3. A "contact list" of interested parties (e.g. - local citizens, media, public interest groups, and elected government officials) has been developed and maintained.

4. A fact sheet was distributed to people on the contact list in December 1994.

5. A public meeting was held on January 24, 1995 during which the NYSDEC presented an overview of the RI work conducted to date.

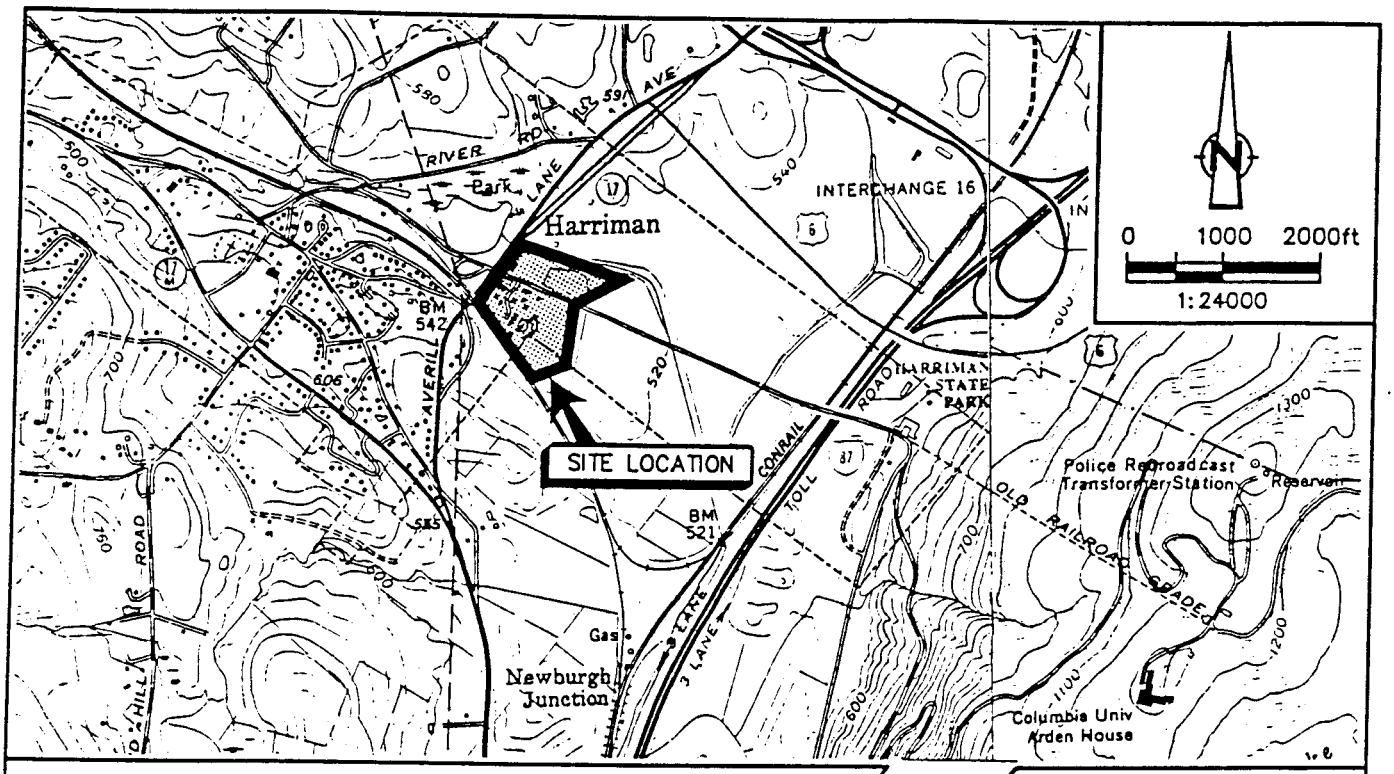
6. A fact sheet was distributed to people on the contact list in July 1996. The primary purposes for issuing this fact sheet were to announce that the PRAP had been issued and that a formal public meeting was scheduled for August 13, 1996. A public comment period on the PRAP was established for the period of July 24 through September 11, 1996.

7. A public meeting was held on August 13, 1996 during which the NYSDEC presented the results of the RI/FS to the public along with the proposed remedy for this site.

8. A Responsiveness Summary to address the comments received on the PRAP was prepared and appended to this ROD.

GLOSSARY OF ACRONYMS

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
ECL	Environmental Conservation Law (New York State)
EQBA	Environmental Quality Bond Act
IRM	Interim Remedial Measure
6 NYCRR	Title 6 of the Official New York Compilation of Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
ppb	parts per billion
ppm	parts per million
ppt	parts per trillion
PRAP	Proposed Remedial Action Plan
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments Reauthorization Act
SCGs	Standards, Criteria, and Guidance values of NYS
SPDES	State Pollution Discharge Elimination System
SVOCs	Semi-volatile Organic Compounds
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds



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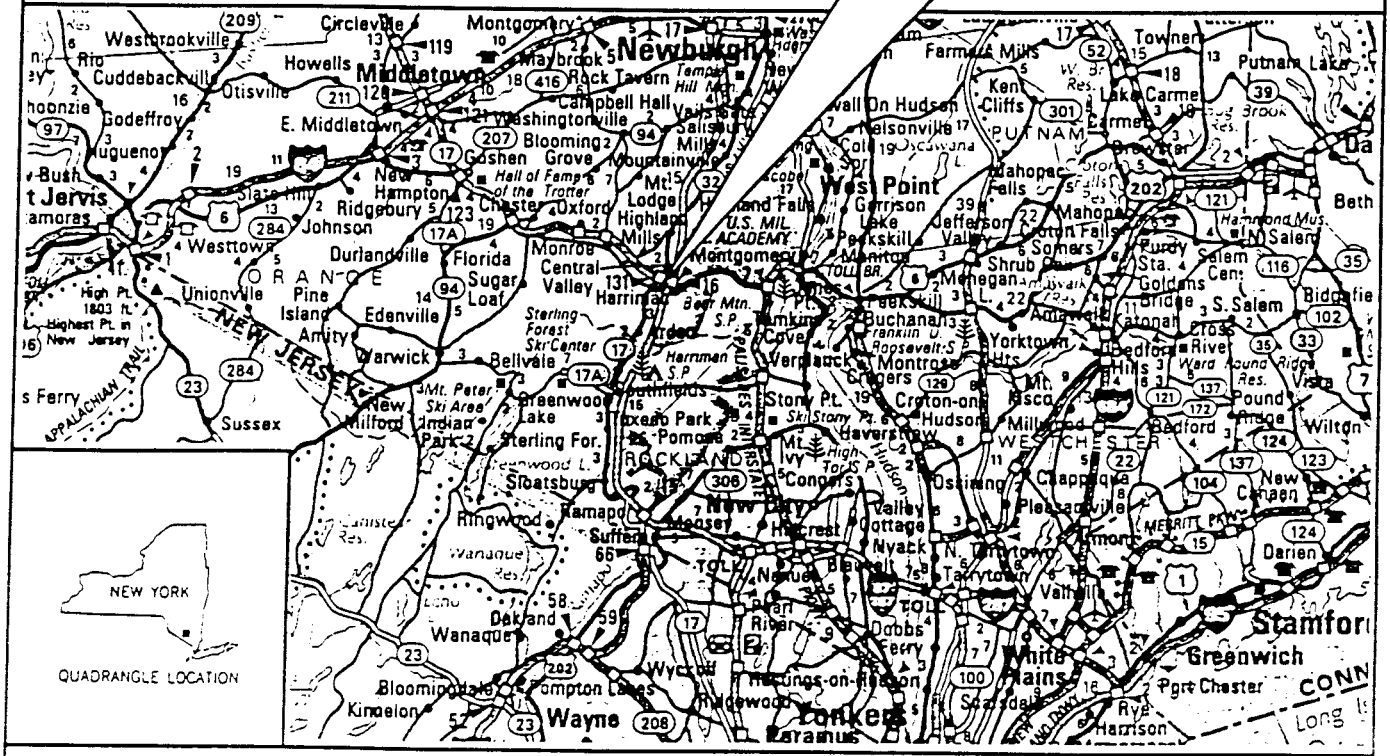
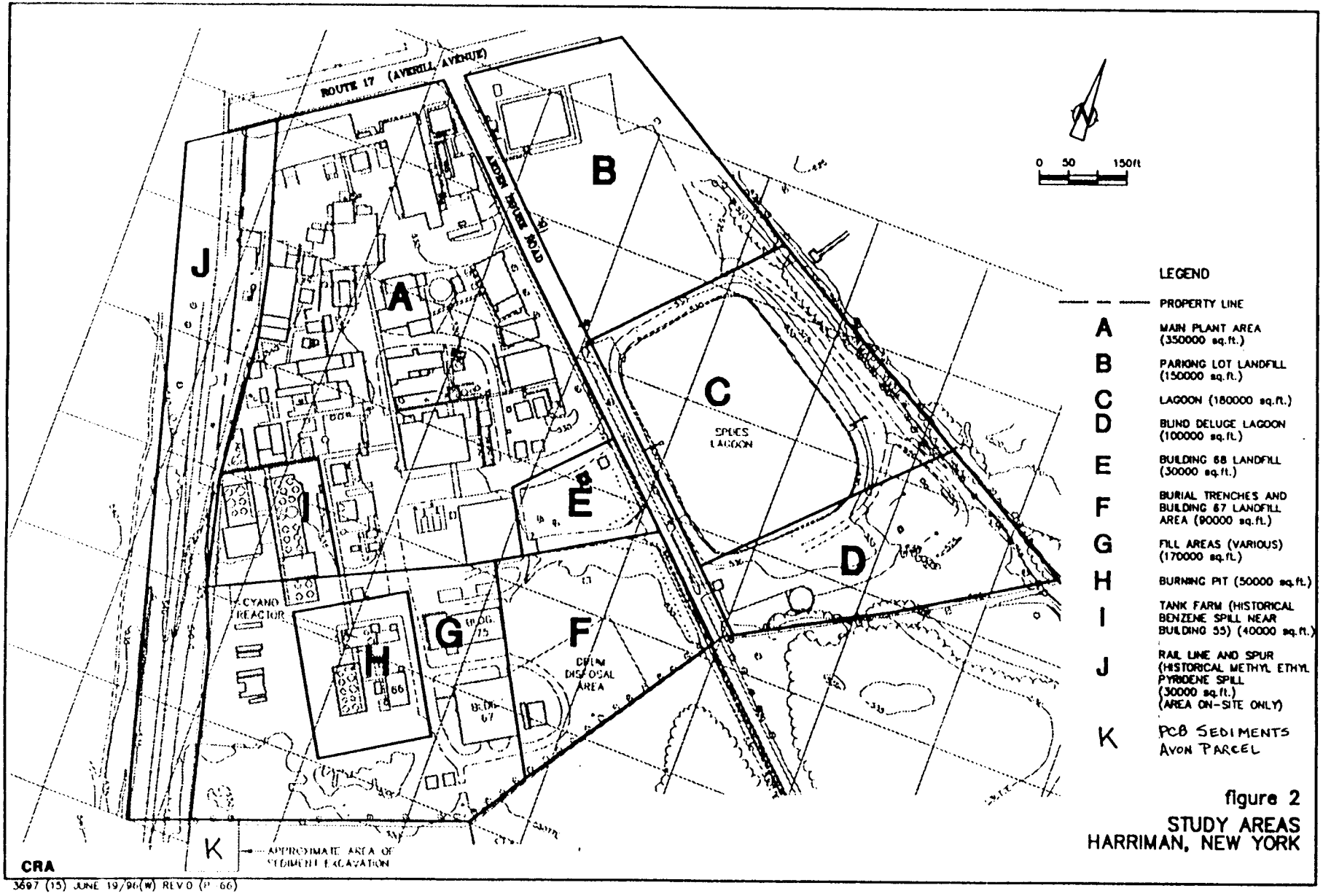


SOURCE: RAND McNALLY ROAD ATLAS

figure 1
SITE LOCATION
HARRIMAN, NEW YORK
Nepera Inc.

CRA

3697(15) MAY 23/96(W) REV.0



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3697 (15) JUNE 19/96(W) REVO (P 66)

figure 2

STUDY AREAS
HARRIMAN, NEW YORK

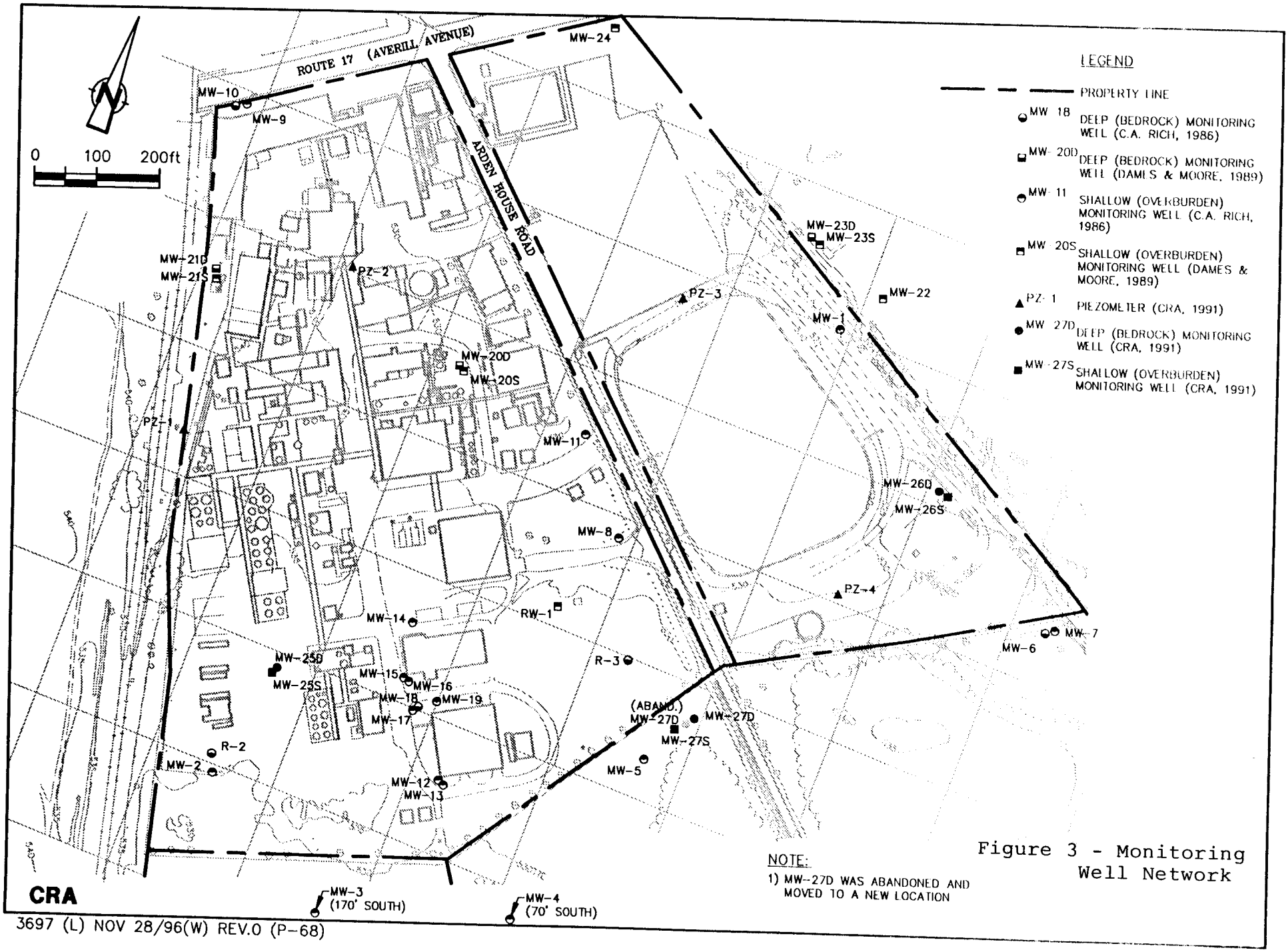

Figure 3 - Monitoring Well Network

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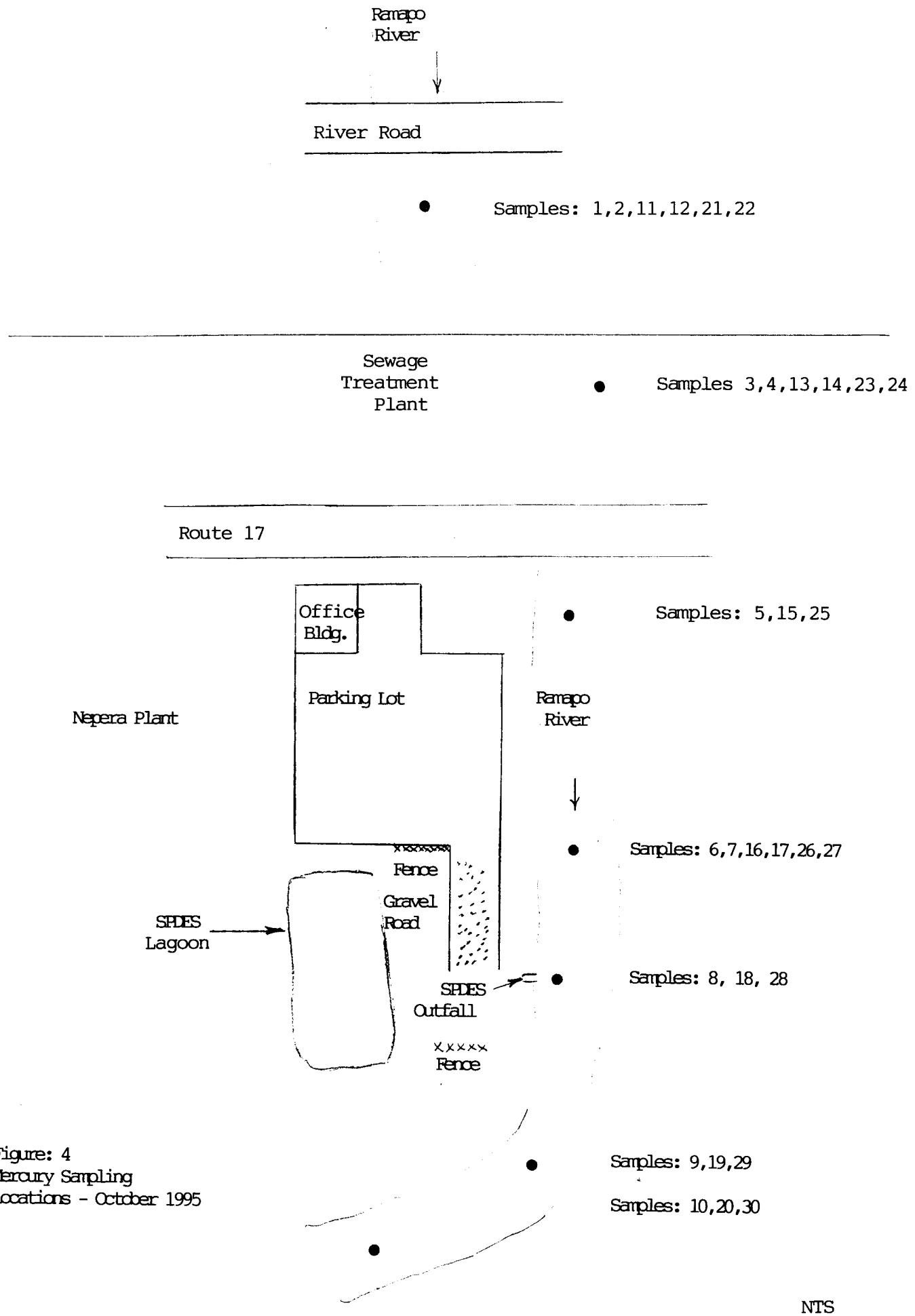


Figure: 4
Mercury Sampling
Locations - October 1995

NTS

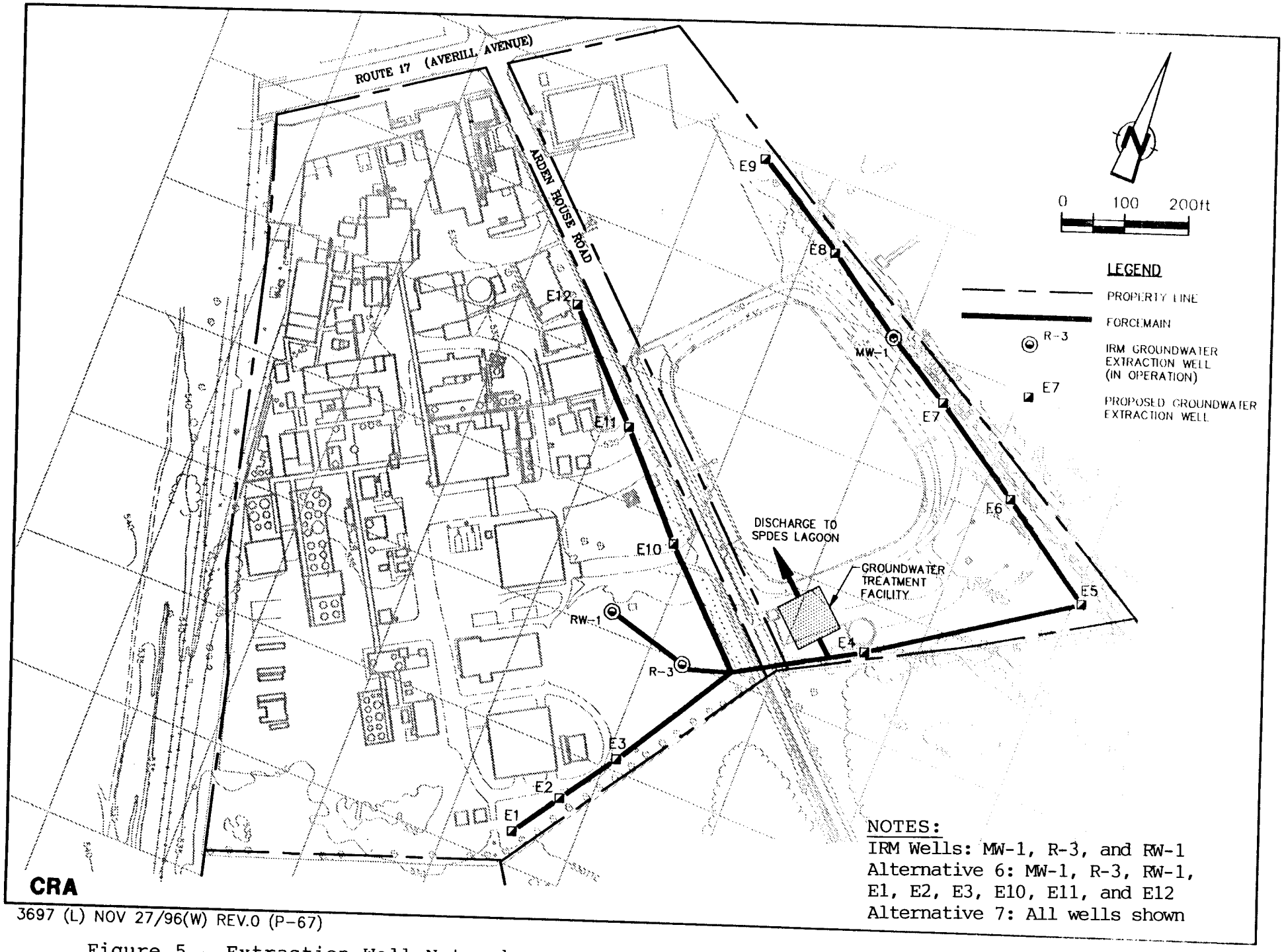


Figure 5 - Extraction Well Network

Table 1

Nature and Extent of Contamination in Soils
Test Pit Program

Nepera, Inc. - Harriman Site

1991

CLASS (1)	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb) (2)	FREQUENCY OF EXCEEDING SCGs	SCG (3) (ppb)
VOCs	benzene	ND(6) - 230,000	10 of 20	60
	toluene	ND(6) - 11,000	3 of 20	1,500
	xylenes	ND(7) - 110,000	3 of 20	1,200
	ethylbenzene	ND(6) - 36,000	1 of 20	5,500
SVOCs	2-amino pyridine	87 - 5,000	3 of 20	400
	alpha-picoline	210 - 1,900	3 of 20	575
Metals	mercury	ND(100) - 832,000	18 of 20	100
	copper	9,600 - 1,440,000	13 of 20	25,000

(1) VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds

(2) ppb - parts per billion

ND(6) - contaminant not detected at a detection limit of 6 ppb (the lowest concentration the laboratory could detect of that particular contaminant)

(3) SCGs - Standards, Criteria, and Guidance values

Table 2

Contents of the Drums Removed from Area F

Nepera, Inc. - Harriman Site

November 1991

CLASS (1)	CONTAMINANT OF CONCERN	FREQUENCY DETECTED	CONCENTRATION RANGE (2)
VOCs	benzene	6 of 8	2 ppb - 1,400 ppb
	toluene	6 of 8	6 ppb - 5,300 ppb
	xylenes	4 of 8	74 ppb - 2,400 ppb
SVOCs	alpha picoline	5 of 8	250 ppb - 8.9% (3)
	pyridine	3 of 8	95 ppb - 300,000 ppb
	2-amino pyridine	1 of 8	8700 ppb
Metals	mercury	8 of 8	140 ppb - 46.9%

(1) VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds

(2) ppb - parts per billion
ppm - parts per million

(3) 1% = 10,000,000 ppb

NOTE: There are no SCGs to compare this data set to.

Table 3

Nature And Extent of Contamination in Groundwater

Nepera, Inc. - Harriman Site

September 1991

CLASS (1)	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb) (2)	FREQUENCY OF EXCEEDING SCGs	SCG (3) (ppb)
VOCs	benzene	ND(5) - 12,000	10 of 35	5 ppb
	toluene	ND(5) - 620	3 of 35	5 ppb
	xylenes	ND(5) - 39	1 of 35	5 ppb
	ethylbenzene	ND(5) - 15	1 of 35	5 ppb
	chlorobenzene	ND(5) - 39	2 of 35	5 ppb
SVOCs	pyridine	ND(10) - 2,500	1 of 35	50 ppb
	alpha-picoline	ND(10) - 1,000	3 of 35	50 ppb
	2-amino pyridine	ND(10) -2,400	2 of 35	50 ppb
Metals	mercury	ND(0.2) - 45.2	4 of 35	2 ppb

(1) VOCs - volatile organic compounds
SVOCs - semi-volatile organic compounds

(2) ppb - parts per billion
ND(5) - contaminant not detected at a detection limit of 5 ppb (the lowest concentration the laboratory could detect of that particular contaminant)

(3) SCGs - Standards, Criteria, and Guidance Values

Table 4

Nature and Extent of Contamination in the West Branch of the Ramapo River

Nepera, Inc. - Harriman Site

Mercury in Surface Water

October 1995

SAMPLE ID	LOCATION	CONCENTRATION (ppt)	SCG (1) (ppt)
1	bridge on River Road	5.17	200
2	bridge on River Road	4.66	200
3	north side of Rte 17	5.98	200
4	north side of Rte 17	5.77	200
5	north end of parking lot	11.0	200
6	south end of parking lot	12.3	200
7	south end of parking lot	11.5	200
8	Nepera SPDES outfall	140	200
9	downstream of fence	12.5	200
10	100 yds from fence	9.37	200

NOTE: For sampling locations, see Figure 4.

(1) ppt - parts per trillion
SCGs - Standards, Criteria, and Guidance values

Notes:

1 - The drinking water standard for mercury is 2000 ppt.

2 -Since mercury can bioaccumulate in the food chain, the SCG presented was developed for the protection of human health with respect to the consumption of fish.

Table 5

Nature and Extent of Contamination in the West Branch of the Ramapo River

Nepera, Inc. - Harriman Site

Mercury in Sediments

October 1995

SAMPLE ID	LOCATION	CONCENTRATION (ppb)	SCG (1) (ppb)
11	bridge on River Road	no sample collected (2)	150 & 1,300
12	bridge on River Road	no sample collected (2)	150 & 1,300
13	north side of Rte 17	61.9	150 & 1,300
14	north side of Rte 17	180	150 & 1,300
15	north end of parking lot	824	150 & 1,300
16	south end of parking lot	no sample collected (2)	150 & 1,300
17	south end of parking lot	no sample collected (2)	150 & 1,300
18	Nepera SPDES outfall	155	150 & 1,300
19	downstream of fence	11.2	150 & 1,300
20	100 yds from fence	87.9	150 & 1,300

NOTE: For sampling locations, see Figure 4

(1) ppb - parts per billion

The first value given is referred to as the Lowest Effect Level. This is the concentration at which one would expect to observe moderate impacts to benthic organisms (organisms which live on or in the sediment). The second value is referred to as the Severe Effect Level. This is the concentration at which one would expect to observe a high mortality rate amongst benthic organisms.

(2) Sediment samples were not collected at these locations because the river bottom was too rocky.

Table 6

Nature and Extent of Contamination in the West Branch of the Ramapo River

Nepera, Inc. - Harriman Site

Mercury in Biota

October 1995

SAMPLE ID	LOCATION	CONCENTRATION (ppb) (1)	SPECIE
21	bridge on River Road	13.2	crayfish
22	bridge on River Road	13.0	crayfish
23	north side of Rte 17	28.9	crayfish
24	north side of Rte 17	22.5	crayfish
25	north end of parking lot	31.6	crayfish
26	south end of parking lot	33.0	crayfish
27	south end of parking lot	27.3	crayfish
28	Nepera SPDES outfall	none collected (2)	
29	downstream of fence	29.7	caddis larvae
30	100 yds from fence	39.7	caddis larvae

NOTE: For sampling locations, see Figure 4

(1) wet basis
ppb - parts per billion

(2) The riverbed conditions were not suitable for crayfish.

NOTE: There are no SCGs to compare this data to.

Table 7

Costs of the Remedial Alternatives

Remedial Alternative	Capital Cost	Annual O&M	Number of Years	Total Present Worth (1)
1 - No Further Action	$0	$65,700	30	$807,000
2 - Institutional Controls	$83,000	$75,700	30	$1,023,000
3 - Drum Removal	$369,000	$0	--	$369,000
4 - Capping	$1,584,000	$10,000	30	$1,708,000
5 - In-situ Vapor Extraction	$727,000	$80,000	5	$1,055,000
6 - Groundwater Containment - Arden House Road	$1,006,000 - $1,560,000	$84,000 - $98,000	30	$2,049,000 -$2,777,000
7 - Groundwater Containment - Site Boundary	$1,399,000 - $2,215,000	$106,000 - $120,000	30	$2,889,000 - $3,531,000
8 - Sediment Removal	$36,000	$0	--	$36,000
9 - Mitigation of Mercury Migration into the River	$64,000	$0	--	$64,000
Proposed Alternative (2)	**$2,678,000 - $3,494,000**	**$261,700 - $275,700**	**30**	**$5,436,000 - $6,078,000**

NOTES:

1 - A discount rate of 7% was used to calculate the present worth for each alternative.

2 - The Proposed Remedy is a combination of Alternatives 2, 3, 5, 7, 8 and 9. The cost ranges for the groundwater remediation options incorporated into Alternatives 6 and 7 are reflected in these cost estimates.

APPENDIX A
RESPONSIVENESS SUMMARY
PROPOSED REMEDIAL ACTION PLAN
NEPERA, INC. - HARRIMAN
SITE NUMBER: 336006

The issues addressed below were raised during the public meeting held on August 13, 1996 at the Harriman Elementary School, Harriman, Orange County, and in letters received from commentors. The purposes of the meeting were to present the Proposed Remedial Action Plan (PRAP) for the site to the public and to receive comments from the public on the PRAP for consideration during the final selection of a remedy. A copy of the audio cassette recording of the meeting and copies of the written comments have been incorporated into the Administrative Record for this site (Appendix B) and are available for public review at the document repositories. The public comment period for the PRAP extended from July 24, 1996 through September 11, 1996.

The following is a list of the letters received by the NYSDEC during the public comment period:

1. Letter dated August 15, 1996 from Mr. William H. Youngblood, L.S., P.E. to Mr. John Barnes, P.E. (NYSDEC).

2. Letter dated August 15, 1996 from Mr. Joel H. Sachs, Esq. (representing the Estate of William S. Lasdon) to Mr. John Barnes, P.E.

3. Letter dated August 29, 1996 from Mr. Jerry A. Mainey (representing the Arden Conference Center) to Mr. John D. Barnes, P.E.

4. Letter dated September 11, 1996 from Mr. Maurice Leduc (representing Nepera, Inc.) to John D. Barnes, P.E.

5. Letter dated September 11, 1996 (revised September 17, 1996) from Mr. Daniel H. Squire, Esq. (representing the Warner-Lambert Company) to Mr. John D. Barnes, P.E.

6. Letter dated 23 September 1996 from Mr. John S. Vaneria, Esq. (representing Nepera, Inc.) to Mr. John D. Barnes, P.E.

The State's responses to the issues raised in these letters and during the public meeting are presented below:

A. Letter submitted by Mr. William H. Youngblood

A1. ***If the remedial wells at the Nepera site are pumped at an excessive rate, could contaminants be forced from the Nepera site to the Harriman public supply well? What interactions are anticipated between the Harriman well and the Nepera remedial wells?***

A: It is highly unlikely that the Harriman well will be impacted by contaminants emanating from the Nepera site. There are two reasons for this. First, it would take a very high pumping rate at the Harriman well to overcome the natural groundwater gradient. The Harriman well is located to the north of Nepera, and the groundwater flow is from west to east (or towards the River). In addition, the pond which is located between the Harriman well and the Nepera site would need to be pumped dry before the capture zone would extend to the Nepera site. Secondly, there will be two cones of depression in the aquifer system - one at the Harriman well and the other at Nepera. As a result, the piezometric potential would be highest in the area between the Harriman well and Nepera. Groundwater flows from areas of high potential to areas of low potential. Therefore, the probability that contamination from Nepera would migrate into the Harriman well is remote.

A2. ***Will there be an area of stagnant flow between the Harriman public supply well and the Nepera remedial well network? If the pumping at the Nepera site is stopped, would the capture zone of the Harriman well extend into this area of stagnant flow?***

A: There could be an area of stagnant flow between the Harriman well and the Nepera wells. The Nepera groundwater pumping program will be designed to contain the groundwater plume on site such that any area of stagnant flow would exist in areas beyond the property boundary. If the pumping at the Nepera site is stopped, the capture zone of the Harriman well might extend into this area of stagnant flow. If this happens, the Harriman water supply would not be at risk because the water drawn from this area of stagnant flow would be uncontaminated.

A3. ***Will the NYSDEC require that Nepera post a ten-year bond at the completion of the pump and treat program as insurance that the Harriman public supply well will not become impacted by a plume emanating from the Nepera site?***

A: A long-term monitoring program has been incorporated into the remedy for this site. This work will be carried out pursuant to a consent order which will be negotiated by the NYSDEC and the responsible parties in this matter. The need for any bonds is a legal issue which will be decided during the negotiations of the consent order.

A4. ***At one time, Nepera was manufacturing with radio-active material. Will samples from the site be collected and analyzed for radioactive material?***

A: According to Nepera, they used a radioactive beam in the curing process of sheets of hydrogels. The State has no evidence that radioactive wastes were generated or disposed of on site. Considering the products which have been manufactured at the site, the

corresponding manufacturing processes, and the uses of said products, it is unlikely that any radioactive wastes were disposed of on site. Therefore, in the opinion of the State, samples need not be collected for analyses for radioactive material.

A5. ***Will documents generated during the remedial design phase, etc. of this project be forwarded to the Monroe-Woodbury CAP Committee.***

A: Yes.

A6. ***Will areas of the site be capped in order to prevent further contamination of the aquifer?***

A: There are several actions which have or will be taken to prevent further degradation of the aquifer. Currently, Nepera has constructed secondary containment systems around storage tanks and other areas which have been designed to capture any liquids which are spilled or leak from tanks. In addition, source removal actions will be conducted as outlined in this ROD (soil vapor extraction and drum removal activities). As a result, additional areas of the site need not be capped with asphalt.

The State recommends that the asphalt parking lot located adjacent to the West Branch of the Ramapo River (Area B) be maintained such that precipitation cannot leach through the asphalt and into the mercury contaminated soils beneath it.

A7. ***This commentor requested that the drums and contaminated soils, which are to be excavated from Area F, be disposed of in a landfill outside of Orange County.***

A: The fate of the drums and soils to be excavated from Area F will be determined during the remedial design phase of this project. The drums may be sent to a resource recovery facility or to a landfill. The soils may be sent to a treatment facility or to a landfill. In either case, none of the landfills in Orange County are permitted to accept hazardous wastes.

A8. ***Nepera is in the process of installing a fence-line monitoring system to detect airborne chemical releases which could migrate off site. Will this system be capable of detecting chemicals which will be removed from the soils via vacuum extraction?***

A: Yes.

B. **Letter submitted by Mr. Jerry A. Mainey**

B1. ***On Page 5 of the PRAP, there is a reference to the thirty-three wells that comprised the monitoring well network during the RI/FS. Please incorporate a figure into the ROD on which the locations of these wells are shown.***

A: The locations of these wells are shown on Figure 3 of this ROD.

B2. ***Will the monitoring wells be monitored during the time that the pump and treat activities are ongoing? If so, what will the sampling frequency be?***

A: A long-term groundwater monitoring program will be designed and implemented. No decisions regarding which wells will be sampled or the frequency of sampling have been made at this time. It is anticipated that this program will be one of the first components of the selected remedy that is implemented. This program will be implemented concurrent with the pump and treat program. These issues will be resolved during the remedial design phase of this project.

B3. ***What safety precautions would be implemented during the drum excavation activities? Would public input be considered regarding the timing of the excavation activities?***

A: The details regarding the excavation of the drums will be developed during the remedial design phase of this project. Typically, there are two sets of design documents which are developed. The technical details are presented in the first set. The second set of documents are the on-site and community health and safety plans. The community will be given an opportunity to provide input into the Community Health and Safety Plan. This will probably be done through the Citizen Advisory Panel. The community will also be given an opportunity to provide input regarding the timing of the excavation activities.

B4. ***Once the drums are excavated, when will they be removed from the site?***

A: This is another detail that will be worked out as part of the remedial design effort. As the drums are excavated, samples will be collected from the drums and analyzed in order to characterize the contents of the drums. Once the necessary transportation and disposal arrangements are made, the drums will be taken off site. These tasks will be completed as expeditiously as possible.

B5. ***Where are the proposed extraction wells going to be installed? What are the differences between Alternatives 6 and 7?***

A: The proposed locations of the extraction wells under Alternative 7 are shown on Figure 5 of this ROD. Under Alternative 6, only extraction wells E1, E2, E3, E10, E11, and E12 would have been installed.

B6. ***Will a new groundwater treatment system be installed?***

A: Either a new groundwater treatment system will be installed, or the existing system will be upgraded to handle the additional pumping. This issue will be resolved during the remedial design phase of this project.

B7. ***How deep will the extraction wells be?***

A: The extraction wells will be screened in the overburden aquifer, the depth of which varies across the site. The maximum depth of these wells will be approximately 60 feet.

B8. ***Is the present SPDES lagoon large enough to handle the increased water volume that will be treated?***

A: Yes.

B9. ***What processes will be followed to ensure the safe removal of the contaminated sediment? Will the public be given an opportunity to provide input regarding the timing of the excavation activities?***

A: The safety precautions would be similar to those referenced in the response to Comment B3 above. This issue will be finalized during the remedial design phase of this project.

B10. ***How will it be determined that all of the contaminated sediment which must be excavated has been excavated?***

A: Additional samples will be collected as the excavation activities progress. The results of the laboratory analyses of these samples will be compared to the appropriate clean-up goals to determine if the remedial goals have been met.

B11. ***After the contaminated sediment has been excavated, what restoration processes will be implemented?***

A: This issue will be addressed during the remedial design with input from the NYSDEC's natural resources staff.

B12. ***What is a drainage swale?***

A: A drainage swale is a low-lying area that surface water runoff drains into.

B13. ***Are there any plans to re-evaluate the surface run-off patterns at the site?***

A: This issue has been forwarded to the NYSDEC's Division of Water for their evaluation.

C. **Letter submitted by Mr. Joel H. Sachs**

C1. **Objections to the following historical statements which were presented in the PRAP were presented on behalf of the Estate of William S. Lasdon:**

A. ***"The Pyridium Corporation (Pyridium) began chemical manufacturing operations at the site in 1942."***

A: The source of this statement was the Remedial Investigation Report (page 4).

B. ***"Wastes were disposed of on site from 1942 to 1976."***

A: On page 3-65 of the NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites in New York State, it is stated that wastes were disposed of on site from 1942 to present.

C. ***"Chemical wastes (organic compounds) were incinerated on site from September 1945 through May 1957."***

A: The source of this statement was the ruling issued by Commissioner Langdon Marsh on March 1, 1994 (page 8).

D. ***"Drums were buried on site in trenches in the southern portion of the property" (from the fact sheet dated July 1996).***

A: Drums have been and still need to be excavated from areas on the southern portion of the site.

D. Letter submitted by Mr. Maurice Leduc

D1. ***The name of the site (on the title page and elsewhere) should be changed to "Plant Site - Harriman, New York" in order to be consistent with the Stipulations Agreement No. W3-004-8101.***

A: The name of the site, as presented in on page 3-75 of the Registry of Inactive Hazardous Waste Disposal Sites in New York State (April 1996) is Nepera, Inc. - Harriman. This is the official name of the site. A formal request for a name change may be submitted to the Department in the form of a petition.

D2. ***"The approved RI indicated that the surface water and sediments in the West Branch of the Ramapo River were not impacted by Site activities. As a result, an evaluation of the migration of mercury into the West Branch of the Ramapo River at the site is unnecessary. The only significant migration pathway for the mercury from the parking lot to enter the river is through erosion. There is no current evidence of any erosion related concerns. The mercury in the soils was identified to be present in an immobile form.... The FS alternatives include monitoring of the stream bank for erosion plus the contingency of erosion protection (which would be implemented as required)."***

A: The NYSDEC accepted the Remedial Investigation (RI) Report on March 6, 1996. In so doing, Nepera was advised that they had satisfied that element of the Stipulations Agreement. The NYSDEC does not agree with all of the statements presented in the RI Report, nor is it bound to in accepting the RI Report.

A further evaluation of the mercury loading into the river is required in order to understand the risks posed by such loadings to human health and the environment.

There are four pathways by which mercury can enter the river:

1. erosion of the stream bank
2. particulate migration through the aquifer
3. leaching
4. discharges from the groundwater treatment system

A further evaluation of the mercury loading into the river has been incorporated into the selected remedy for this site. If required, there is a contingency for designing and installing engineering controls to mitigate the mercury loading into the river.

D3. ***Why were sediment and biota sampling added to the requirements of the long-term monitoring program?***

A: These tasks have been dropped from the long-term monitoring program with the contingency that if a statistically significant increase in the mercury concentration in surface water is observed, then sediment and biota samples would be collected.

D4. ***The word "disposal" should be changed to "presence" in the third line of the second paragraph on the first page of the PRAP.***

A: The referenced sentence does not appear in the ROD due to a difference in the format of the PRAP and ROD.

D5. ***The phrase "response action" should be changed to "remedial action" on the second line of the second paragraph on page 2.***

A: The referenced language does not appear in the ROD due to a difference in the format of the PRAP and ROD.

D6. ***References to the Town of Harriman should be changed to the Village of Harriman (Section 2 of the PRAP).***

A: The reference to Harriman has been changed to the Town of Woodbury in Section 1 of this ROD (previously Section 2 of the PRAP).

D7. ***The legend for Study Area K (Figure 2) should be changed from "PCB Sediments" to "Contaminated Sediments". The excavation of the sediments on the Avon Parcel is based on the RI sediment sample results indicating levels of SVOCs, PAHs, and PCBs.***

A: This request was incorporated into Figure 2 of this ROD.

D8. ***Drummed wastes were not found near Plant 66.***

A: The area from where the drums were excavated in 1983 was adjacent to Plant 75. For reference purposes, Buildings 66 and 67 are also used in describing the location of this drum disposal area.

D9. ***The following items should be added to Section 4.1 of the PRAP (list of the RI tasks):***

- ***soil gas survey***
- ***hydrogeologic investigation including single well response tests and pumping tests***
- ***on-site Ecological Assessment***

A: The soil gas survey was added to the list of activities conducted during the RI (Section 3.1 of this ROD). The pumping tests were more of a design-related activity, and thus were not incorporated into the list presented in Section 3.1. The NYSDEC does not agree with all of the conclusions presented in the Ecological Assessment section of the RI Report. Therefore, this activity was not incorporated into the aforementioned list.

D10. ***In the first sentence of the fourth paragraph on page 4 of the PRAP, the abbreviation "SGCs" should be "SCGs".***

A: This correction was incorporated into the ROD (Section 3.1).

D11. ***Seven soil samples for chemical analysis were not collected during the borehole drilling. Only geologic samples were collected during the borehole drilling.***

A: This correction has been incorporated into Section 3.1.1 of this ROD.

D12. ***Particulate migration in groundwater through the aquifer is not a pathway of concern.***

The forms of mercury most likely to exist at the Site are as mercurous or mercuric sulfate. The solubility (K_{sp} values) of the mercurous or mercuric sulfate are low, indicating that they will likely bind to the soils. The EP Toxicity tests for mercury, performed on similar mercury sludges at the Pyridium Corp. Trailer Site, were below TCLP regulatory levels further indicating the immobility of the mercury to move through the soils or groundwater. The most significant pathway for mercury to enter the river is through physical erosion of the stream bank. This issue could be addressed

through a monitoring program with a contingency plan to repair the bank, as necessary.

A: There are two issues which need to be addressed here: (1) the form of mercury in the soils in Area B, and (2) the pathways by which mercury can enter the river.

1. The form(s) of mercury at the site.

At the time that the disposal actions occurred, the mercury in the waste material was in its elemental form. This conclusion was developed after evaluating two pieces of evidence. First, a balanced chemical reaction for the first step in the production of the niacinamide (late-1940s to early-1950s) was developed based upon information provided to the NYSDEC by Nepera (Attachment 1). In order to determine if the mercury catalyst reacted with the sulfuric acid, an analysis of the thermodynamics of the reaction was conducted. It was determined that the mercury catalyst was not altered chemically in the aforementioned process.

The other piece of evidence which was considered here was the testimony of former employees who testified that they observed a grayish metallic liquid in the calcium sulfate sludge that was disposed of in Area B.

Over time, the form of the mercury may have changed either through direct chemical reactions or biota-catalyzed chemical reactions. Mercurous or methyl mercury may be produced in the waste mass. Whereas mercurous sulfate is relatively insoluble, methyl mercury is soluble.

2. Pathways by which mercury can enter the river.

There are four ways by which mercury can enter the river. These are presented in Section 3.4 as well as in the response to Comment D2.

Of particular note is the mercury concentration (140 ppt) detected at location #8 during the NYSDEC's November 1995 sampling event. This sample was collected at the outfall from the groundwater treatment system. The groundwater standard is 2000 ppt. Although no clean-up standards or guidance values have been exceeded, it is the opinion of the NYSDEC that further investigation is warranted to evaluate the future potential for mercury to enter the river. This is important as the river is used for recreation (fishing) and as a source of drinking water downstream.

D13. ***The quality of the data generated from the NYSDEC's November 1995 sampling event was called into questioned. Specifically, this commentor stated that these samples were not collected in accordance with the project Quality Assurance Project Plan (QAPP).***

A: Although the samples collected by the NYSDEC were not collected in accordance with the QAPP, this data is, in the opinion of the NYSDEC, of high quality. The NYSDEC used a new, more accurate method to collect their samples.

D14. ***This commentor objected to the use of a 400 ppb standard for PCB in sediment (Section 4.1.4 of the PRAP).***

A: The 400 ppb concentration presented in the PRAP was not meant to be a standard. The sentence in question has been edited as follows (see Section 3.1.4 of this ROD).

"At concentrations greater than 400 ppb (a guidance value used by the NYSDEC), detrimental impacts have been observed in benthic organisms."

D15. ***The first sentence of the second paragraph of Section 4.1.4 of the PRAP should read "Sediment samples...".***

A: Agreed. This correction has been incorporated into Section 3.1.4 of this ROD.

D16. ***One of the conclusions presented in the section on the ecologic assessment presented in the RI Report was that there should be no detrimental impacts to biota exposed to surface water and sediments.***

A: As stated in the response to Comment #D2 above, the NYSDEC does not agree with all of the statements presented in the RI Report, nor is it bound to do so. In the opinion of the NYSDEC, a further evaluation of the impacts to the benthic communities due to exposures to mercury is required which is why the NYSDEC collected samples and specimens from the West Branch of the Ramapo River in November 1995.

D17. ***An objection was made regarding a statement presented in Section 4.1.5 that "mercury concentrations in biota collected downstream are greater than upstream. The data presented in Table 6 do not present a statistically significant trend..."***

A: The statement presented in the PRAP was as follows (Section 4.1.5):

"It appears that the mercury concentrations in biota are greater in the specimens collected at and downstream from the Route 17 bridge than the specimens collected at the River Road Bridge. However, this observation may not be statistically significant."

This language has been incorporated into this ROD (Section 3.1.5).

D18. ***This commentor stated that the 150 ppb concentration (for mercury in sediments) presented in the third column of Table 5 of the PRAP is not a standard and that the 1300 ppb concentration also presented in that column is "a more realistic assessment of the potential for adverse effects".***

A: Both the 150 ppb and the 1,300 ppb clean-up goals for sediments are guidance values used by the NYSDEC. These guidance values were incorporated into the PRAP and are incorporated into this ROD for comparison purposes. The sediment clean-up goal which will be used in this case is 1,300 ppb.

D19. ***This commentor requested that a statement to the effect that the groundwater pump and treat Interim Remedial Measure (IRM) has been successful, thus supporting the selected remedy, be incorporated into Section 3.2 (Section 4.2 of the PRAP).***

A: The groundwater IRM was successful to the end that a significant mass of VOC contamination in the aquifer system was removed. The additional extraction wells which have been incorporated into the remedy for this site are required in order to contain the plume on site.

D20. ***The following items should be incorporated into the discussions regarding the risks to human health which are posed at the site:***

Exposure Scenario	**Excess Cancer Risk**
Occasional visitors exposed to sediments	**one per 77,000,000 visitors**
Occasional visitors exposed to surface water	**one per 220,000,000 visitors**

A: These scenarios have been incorporated into Section 3.3 of this ROD. The excess cancer risks for these scenarios are as follows (Tables 8.16 and 8.17 of the Remedial Investigation Report):

Exposure Scenario	Excess Cancer Risk
Occasional visitors exposed to sediments	one per 2,400,000 visitors
Occasional visitors exposed to surface water	one per 240,000,000 visitors

D21. ***This commentor stated that deed restrictions for prohibiting the use of groundwater both on site and off site will be established to ensure that the groundwater use scenarios do not develop.***

A: Nepera can incorporate restrictions into the deeds for the property they own. They have no control to incorporate restrictions into deeds on property they do not own.

D22. ***The associated costs presented in the PRAP were different than those presented in the Feasibility Study Report and Feasibility Study Addendum Report (FS Reports).***

A: The alternatives presented in the PRAP were different than those presented in the FS Reports. However, the elements of the alternatives presented in the PRAP were identical

to those presented in the FS Reports. The proposed remedy in the PRAP is the same as Alternative 10 in the FS Reports with minor differences with respect to the long-term monitoring program and the treatment trains for the groundwater remedial alternatives.

D23. ***A 3% discount rate should be used as opposed to the 7% rate used in developing the cost analyses presented in the FS Reports and the PRAP.***

A: The 7% discount rate used by Nepera's consultant is consistent with EPA guidance, and no changes in the cost estimates were incorporated into this ROD.

D24. ***The estimated number of drums buried in Area F was 320, not 220.***

A: This correction has been incorporated into Section 3.1.1 (and elsewhere) of this ROD.

D25. ***What were the bases for the cost estimate for Alternative 8?***

A: In developing this ROD, the cost estimates developed by Nepera's consultant were used. No additional costs were added as was done in developing the PRAP.

D26. ***A pilot study would not be required for the soil vapor extraction component of the proposed (selected) remedy.***

A: A pilot study was recommended by Nepera's consultant and the NYSDEC agrees with their recommendation. A pilot study should be conducted in order to properly design the soil vapor extraction component of the selected remedy.

D27. ***This commentor questioned whether contaminated soils outside of the drum disposal area would be excavated and disposed of off site.***

A: The only soils that would be excavated and disposed of off site are those in Area F. Samples will be collected from the soils surrounding the drums at a frequency determined during the remedial design. Soils that are contaminated above the appropriate clean-up goals will be excavated and disposed of off site.

D28. ***The data qualifiers which have been attached to the data in the Remedial Investigation Report and the FS Reports should be incorporated into the ROD.***

A: The data in question has been reviewed by a data validator, and have not been rejected. Therefore, it is appropriate to present these data in the RI. The qualifiers were dropped in order to avoid confusing the public.

D29. ***Benzene was detected in six of the eight drums that were sampled and toluene was detected in five of the eight drums (see Table 2).***

A: The referenced entries in Table 2 have been corrected. (NOTE: Toluene was detected in six of the eight drums (see Table 6.8 of the RI Report)).

E. Letters submitted by Mr. Daniel H. Squire and Mr. John S. Vaneria

E1. ***Objections were raised regarding various statements pertaining to the history of the site as presented in Section 3 of the Proposed Remedial Action Plan.***

A: The discussions regarding the operational and disposal histories of the site (Section 2 of this ROD) are based upon statements which appear in letters, reports, and court documents that the NYSDEC has in its possession.

F. Issues raised during the public meeting of August 13, 1996

F1. ***Concerns were raised about the housing values in the Harriman area. Specifically, there were concerns that property values have dropped as a result of the presence of the site.***

A: The values of properties which are located near inactive hazardous waste sites are generally depressed from what they would have been had the site(s) not been there. The only actions that the NYSDEC can take in this regard is to remediate the site such that the risk posed to the public health and the environment are mitigated to acceptable levels.

F2. ***Concerns were raised during the public meeting regarding the ecosystem of the West Branch of the Ramapo River as well as to downstream receptors. These receptors include:***

- ***use of the river as a potable water supply***
- ***recreational uses (e.g. - trout fishing)***
- ***water fowl (e.g. - blue herons) which rely upon the river ecosystem.***

How is the NYSDEC going to address these issues?

A: One of the components of the selected remedy is the evaluation of the mercury loading from the site into the West Branch of the Ramapo River. Based upon the results of this evaluation, the NYSDEC, in conjunction with the NYSDOH, will determine if a remedial action(s) is required to mitigate risks to downstream receptors.

F3. ***Schering AG did not participate in the RI/FS process. Why didn't the State prevent the sale of Nepera from Schering AG to Cambrex?***

A: The State of New York had no authority to prevent the sale of Nepera from Schering AG to Cambrex.

F4. ***The Tuxedo Landfill site was remediated using funds from the 1986 Environmental Quality Bond Act (EQBA). EQBA funds were not used in this case. Why? Funds from the Federal Superfund Program were not used in this case. Why?***

A: Funds from the EQBA are used only in cases where a responsible party is financially unable to fund a remedial program or in cases where no responsible party can be located.

Federal Superfund monies are used for remediating sites which are on the National Priorities List (NPL). The sites on the NPL are considered to be the worst sites in the country, and the remediation of these NPL sites is overseen by the United States Environmental Protection Agency. The State of New York has not nominated this site for inclusion on the NPL.

F5. ***How will the clean-up at this site be monitored?***

A: As with the case of the RI/FS, the clean-up activities (design, construction, and operation/maintenance of the remedy) will be conducted pursuant to an order on consent with the NYSDEC. The NYSDEC will be responsible for reviewing and approving the design documents, and will oversee the construction and operation/maintenance activities in order to ensure that remedies outlined in this ROD are implemented correctly and work effectively.

F6. ***Would an agreement between the State, Nepera, Warner-Lambert, and the Estate of William S. Lasdon preclude legal action by the residents living near the site?***

A: There is no definitive answer to this question. The answer would depend upon the legal action contemplated.

F7. ***Which way does groundwater flow at the site?***

A: Groundwater flows from west to east towards the Ramapo River (see response to Comment A.1).

F8. ***Have any health studies been conducted on former employees of Nepera?***

A: The New York State Department of Health (NYSDOH) has not performed any health studies on former employees of Nepera. Based upon information gathered to date, the NYSDOH has not identified any human exposure to the hazardous wastes at the site, and as such, a health study would not be justified.

Although an employer-provided occupational health and safety program may exist at Nepera, its usefulness is limited to tracking occupational exposures posed to employees as provided under the authority of the Occupational Safety and Health Act.

F9. ***Will the NYSDOH conduct a door-to-door survey of medical conditions of residents?***

A: The NYSDOH has not identified any human exposure to hazardous wastes at the site. Door-to-door surveys are not warranted at this time. The NYSDOH will reevaluate the need to conduct a health survey in the area if new environmental, toxicological, or health outcome data become available.

F10. ***Area B at the site was once a swamp (approximately before 1948). Nepera filled this swamp in with a calcium sulfate sludge (late-1940s through the early-1950s). One commentor inquired if the NYSDEC would require that Nepera replace the wetlands that were taken as a result of these fill activities?***

A: The State's wetlands protection laws were enacted in 1975, over 20 years after the disposal action in question here was completed. The NYSDEC does not have the authority to enforce these laws retroactively.

F11. ***Why must there be a ROD for the Maybrook and Harriman sites for the Harriman site to be remediated? What is the current status of the negotiations with Warner-Lambert, the Estate of William S. Lasdon, and Nepera?***

A: The NYSDEC is not a party to the negotiations between the responsible parties in these matters. The parties have indicated to the NYSDEC that they would like to resolve the legal questions pertaining to these two sites before committing to the final remedial programs for these sites. Nevertheless, the NYSDEC will seek to compel the parties to remediate the Harriman site irregardless of the status of the Maybrook site.

As stated in Section 4 of this ROD, Nepera, Inc. and the Warner-Lambert Company signed a Stipulation with the NYSDEC in which they agreed to conduct the RI/FS at this site. In return, the NYSDEC agreed to continue an enforcement action against the Estate of William S. Lasdon (founder of the Pyridium Corporation). This action is currently on hold pending the issuance of this ROD.

APPENDIX B
ADMINISTRATIVE RECORD
NEPERA, INC. - HARRIMAN
SITE NUMBER: 336006

A. Reports

1. Plantwide Hydrogeologic Investigation, Nepera, Inc. Harriman, New York, by C. A. Rich Consultants, Inc., dated March 1986. Two volumes.

2. Limited Sampling Program, Building 75 Area, Nepera, Inc., Harriman New York, by C. A. Rich Consultants, Inc., dated April 1986.

3. Phase I Hydrogeologic Investigation, Interim Remedial Measures, Nepera, Inc., Harriman, New York, by Dames & Moore, dated July 13, 1989.

4. Work plans for the Remedial Investigation/Feasibility Study:

   RI/FS Work Plan Addendum, RI/FS Study Program, by Conestoga-Rovers & Associates, dated April 8, 1991.

   Data Management Plan, RI/FS Study Program, by Conestoga-Rovers & Associates, dated April 8, 1991.

   Health and Safety Plan (HASP), RI/FS Study Program, by Conestoga-Rovers & Associates, dated April 8, 1991.

   Quality Assurance Project Plan, RI/FS Study Program, by Conestoga-Rovers & Associates, dated April 8, 1991.

   Identification of Potentially Applicable or Relevant and Appropriate Requirements, by Conestoga-Rovers & Associates, dated April 8, 1991.

5. Remedial Investigation, Harriman Site, by Conestoga-Rovers & Associates, dated November 8, 1995. Two volumes.

6. Feasibility Study Report, Harriman Site, by Conestoga-Rovers & Associates, dated September 29, 1995.

7. Feasibility Study Report Addendum, by Conestoga-Rovers & Associates, dated January 29, 1996.

8. Proposed Remedial Action Plan, by the New York State Department of Environmental Conservation, dated July 1996.

9. Record of Decision, by the New York State Department of Environmental Conservation, dated March 1997.

B. Legal Instruments

1. Order on Consent between Nepera, Inc. (Respondent) and the New York State Department of Environmental Conservation dated October 29, 1984 ("Pole Building Order").

2. Stipulation between Nepera, Inc. and the Warner-Lambert Co. (Respondents) and the New York State Department of Environmental Conservation dated March 21, 1988. ("RI/FS Stipulation")

3. Stipulation between Nepera, Inc. and the Warner-Lambert Co. (Respondents) and the New York State Department of Environmental Conservation dated March 21, 1988. ("Termination of the Pole Building Order")

4. Deposition of John C. DeAngelis dated December 8, 1987, pages 13-20.

5. Memorandum to Dick Dana (NYSDEC) from Bob Owens (NYSDEC) dated April 7, 1988.

   Attached to memorandum:

   - Exhibit 1 from the 10/30/87 deposition of Charles Eppolito.

C. Correspondence

1. Letter to Steven B. Hammond (NYSDEC) from Medhat A. R. Reiser (Nepera) dated September 29, 1988.

2. Letter to Mr. Stephen B. Hammond from James G. McWhorter (Dames & Moore) dated December 9, 1988.

3. Letter to Thomas Egan, Esq. from Medhat A. R. Reiser dated August 14, 1989.

4. Letter to Thomas Egan, Esq. from Medhat A. R. Reiser dated December 5, 1989.

5. Letter to Mr. Medhat Reiser from Christopher J. Magee (NYSDEC) dated February 5, 1990.

6. Letter to Mr. Christopher Magee from Charlene T. Graff (Nepera) dated September 11, 1990.

7. Letter to Mr. Christopher Magee from Charlene T. Graff dated October 29, 1990.

8. Letter to Mr. Christopher Magee from Charlene T. Graff dated November 27, 1990.

9. Letter to Mr. Christopher Magee from Charlene T. Graff dated December 4, 1990.

10. Letter to Mr. Dan Bendell (NYSDEC) from Charlene T. Graff dated March 15, 1991.

11. Letter to Ms. Charlene T. Graff from Christopher J. Magee dated March 28, 1991.

12. Letter to Mr. Peter E. Thauer (Nepera) from David L. Markell (NYSDEC) dated July 23, 1991.

13. Letter to Ms. Charlene T. Graff from Christopher J. Magee dated August 7, 1991.

14. Letter to Mr. Christopher J. Magee from Gavin O'Neill (Conestoga-Rovers & Associates (CRA)) dated February 12, 1992.

15. Letter to Mr. Gavin O'Neill from Christopher J. Magee dated February 14, 1992.

16. Letter to Mr. Christopher J. Magee from Glenn Turchan (CRA) dated March 18, 1992.

17. Letter to Mr. Glenn Turchan from Christopher J. Magee dated March 20, 1992.

18. Letter to Mr. Christopher J. Magee from Glenn Turchan dated April 23, 1992.

19. Letter to Mr. Christopher J. Magee from Gavin O'Neill dated November 16, 1992.

20. Letter to Mr. Christopher Magee from Mary Ann E. Quarato (Nepera) dated December 18, 1992.

21. Letter to Mr. Christopher Magee from Mary Ann E. Quarato (Nepera) dated March 5, 1993.

22. Letter to Mr. Maurice Leduc (Nepera) from Christopher J. Magee dated March 14, 1995.

23. Memorandum to Rich Koeppicus (NYSDEC) from Bob Bode (NYSDEC) dated September 18, 1995.

24. Memorandum to File from John Barnes (NYSDEC) dated November 9, 1995.

25. Letter to Mr. Maurice A. Leduc from John D. Barnes dated December 28, 1995. Attachment:

Sampling Trip Report, by the New York State Department of Environmental Conservation, dated November 30, 1995. Attachment: Laboratory Report by Brooks Rand Ltd., dated December 12, 1995.

26. Letter to Mr. Maurice Leduc from Christopher J. Magee dated March 6, 1996.

27. Letter to Mr. Maurice Leduc from Christopher J. Magee dated May 29, 1996.

28. Letter to Mr. Christopher Magee from Maurice A. Leduc dated June 28, 1996.

29. Letter to Mr. Charles Carey (Warner-Lambert Company) and Mr. Maurice Leduc from John D. Barnes dated November 4, 1996.

30. Letter to Mr. John D. Barnes from Maurice A. Leduc dated November 4, 1996.

31. Letter to Mr. Maurice A. Leduc from John D. Barnes dated November 8, 1996.

32. Memo to John Barnes from Gavin O'Neill/Glenn Turchan (CRA) dated March 11, 1997.

33. Letter to Mr. John Barnes, P.E. from Glenn T. Turchan dated March 20, 1997.

D. Miscellaneous Documents

1. Nepera Chemical Plant, Village of Harriman, Orange County, Update: December 1994, issued by the NYSDEC.

2. Notice of Public Meeting, issued by the NYSDEC, July 1996.

3. Fact Sheet - July 1996, issued by the NYSDEC.

4. Tape recording of the August 13, 1996 public meeting (2 cassettes).

ATTACHMENT 1

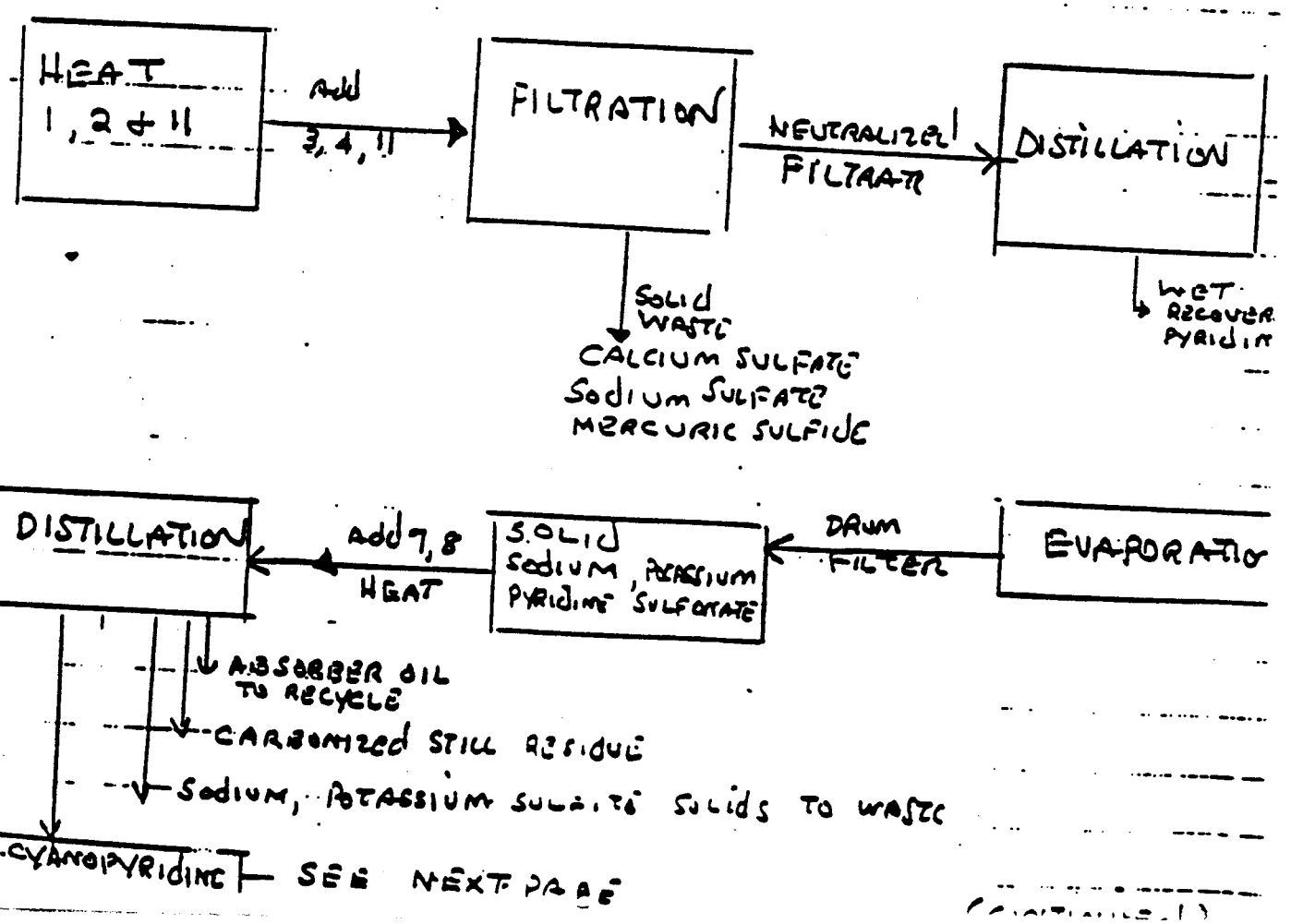
Niacinamide Manufacturing Process
1940s-1950s

NIACINAMIDE, USP

1940-1950's Process

RAW MATERIALS

1. PYRIDINE
2. OLEUM (22%)
3. Sodium SULFIDE
4. CALCIUM CARBONATE
5. Sodium CARBONATE
6. POTASSIUM CARBONATE
7. Sodium Cyanide
8. ABSORBER OIL
9. Sodium Hydroxide
10. WATER
11. MERCURY
12. DARCO



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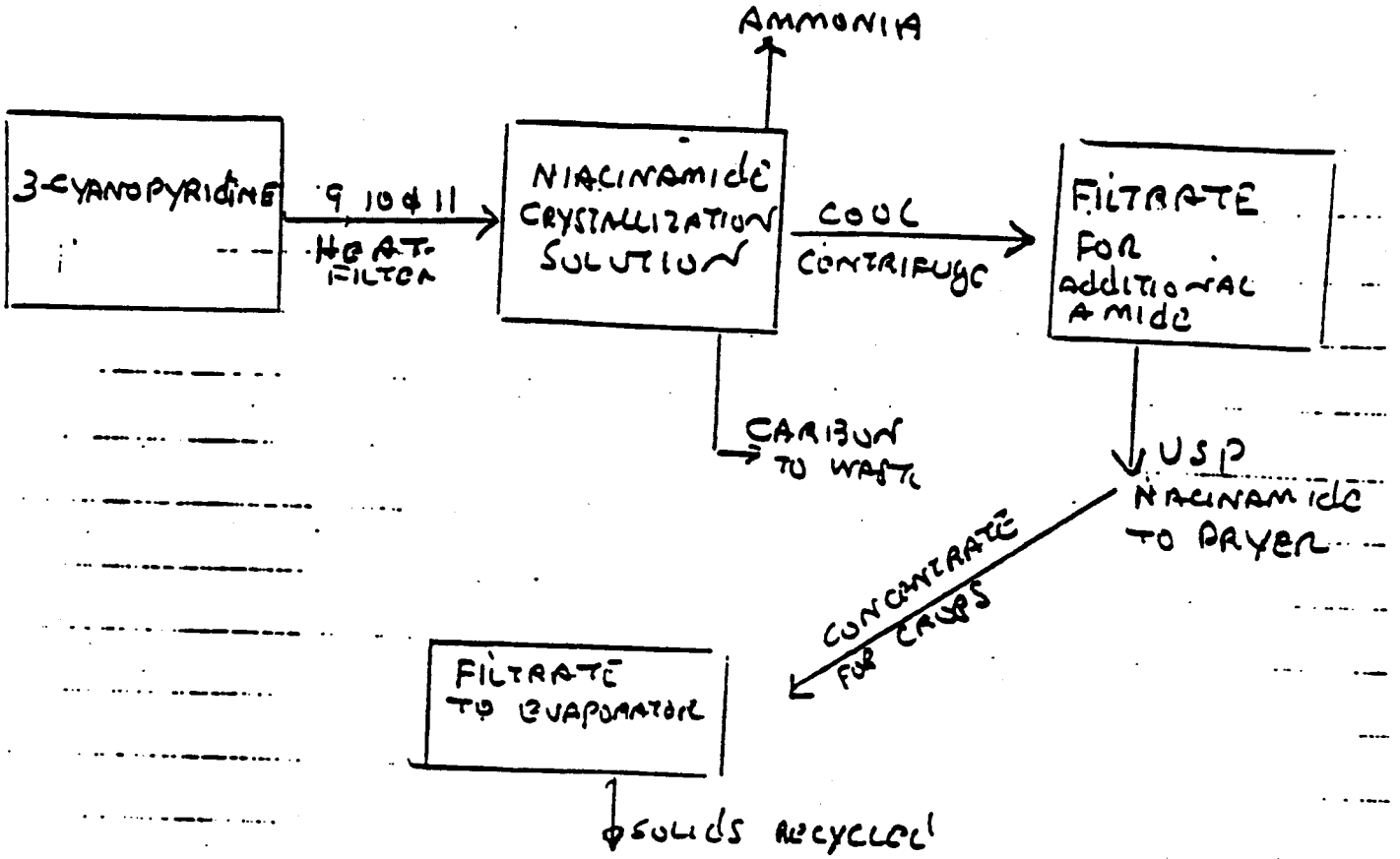

WASTE

1. Solid waste, calcium, sodium sulfate, mercuric sulfide
2. Carbonized still residue
3. Sodium and Potassium sulpite solids
4. Carbon cake
5. Ammonia to atmosphere

LSS+JOA