A MEMBER OF THE ENVIRONMENTAL RESOURCES MANAGEMENT GROUP

REMEDIAL DESIGN REPORT

Former Columbia Ribbon and
Carbon Company Disposal Site
Glen Cove, New York
NYSDEC Site Code No. 1-30-028

May, 1993

Prepared For:

Konica Imaging, U.S.A., Inc.
71 Charles Street
Glen Cove, NY 11542-9001

Prepared By:

ERM-NORTHEAST
175 Froehlich Farm Boulevard
Woodbury, New York 11797

ERM

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1.0 INTRODUCTION

1.1 PURPOSE AND ORGANIZATION OF REPORT

The Konica Imaging, USA, Inc. (KONICA) Site Restoration Design was conducted for KONICA in response to a NYSDEC Draft Order on Consent, Index #W105479107, Site Code #1-30-028, dated 6/19/92.

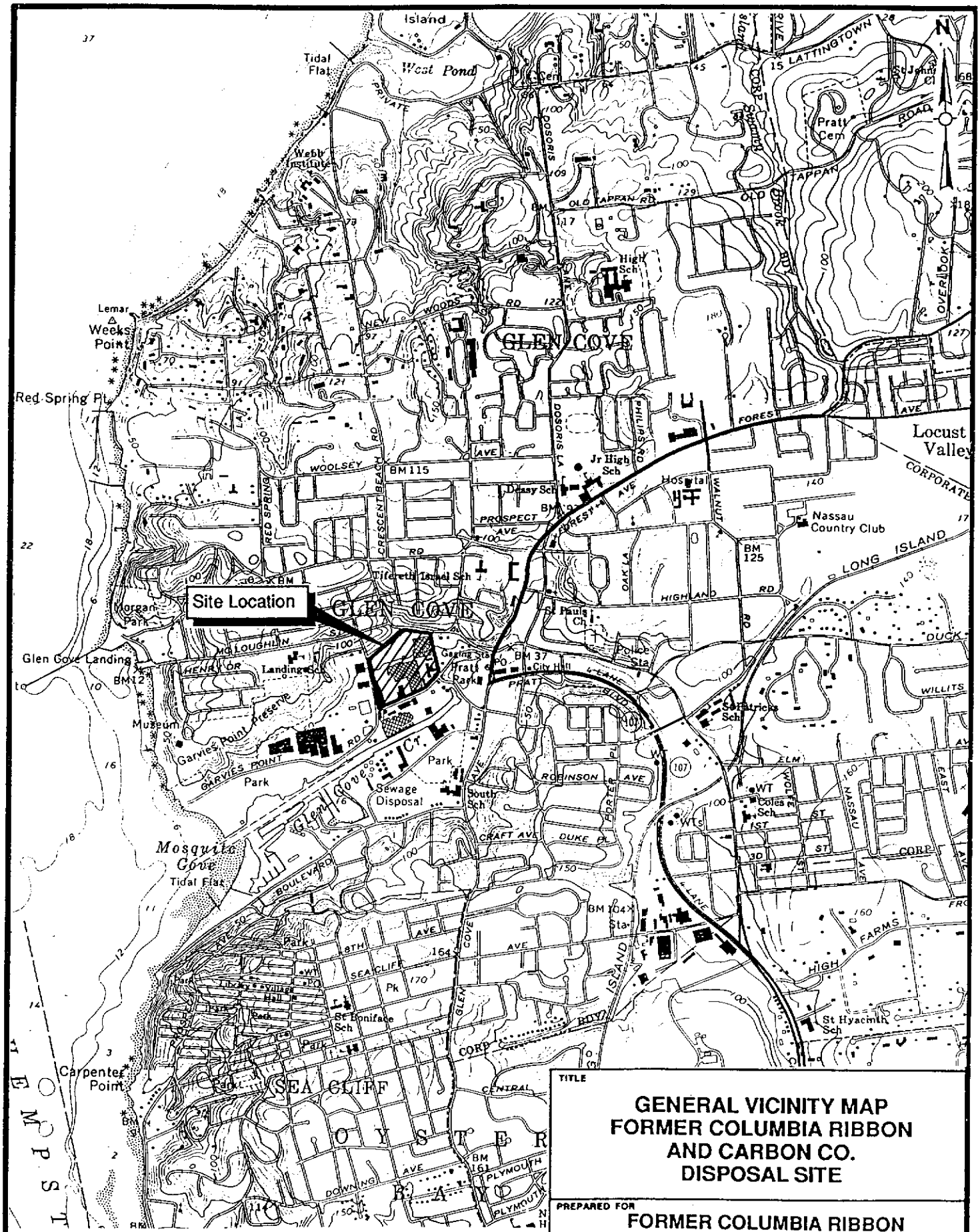
The Restoration Site has previously been identified as the Former Columbia Ribbon and Carbon Company Disposal Site. Subsequently, it has also been identified as the Powers Chemco Site #1-30-028, Index #W105479107. The Remedial Investigation and Feasibility Study Report (RI/FS) for the Former Columbia Ribbon and Carbon Company Disposal Site, dated January 31, 1991 was accepted by the NYSDEC Record of Decision (ROD) dated March, 1991. As part of the ROD, a Pilot Study and Additional Data Acquisition Report (Pilot Study Report), dated October 2, 1992 and modified by letter dated October 12, 1992 was prepared which recommended a remedial program for the site. The Pilot Study Report was approved by the NYSDEC confirming selection of the final remedy for the site on March 2, 1993.

Section 2.0 of the Remedial Design addresses all requirements contained in the Draft Order of Consent, on an item by item basis. The design documents are included in the Remedial Design as Attachment 1.

1.2 *SITE DESCRIPTION*

The Site is located at 71 Charles Street in the City of Glen Cove located in Nassau County, New York. A site location map is provided as Figure 1-1.

The site encompasses an area of approximately 17 acres, of which the area of concern comprises a 0.8 acre area that will actually be remediated. The parcel of land containing the area of concern was purchased in 1979 from the Columbia Ribbon and Carbon Manufacturing Company for use as a parking lot.



SOURCE: U.S.G.S. Quadrangle Maps, Bayville, Hicksville, Mamaronek & Sea Cliff, NY

SCALE: 1"= 2000'

TITLE

GENERAL VICINITY MAP FORMER COLUMBIA RIBBON AND CARBON CO. DISPOSAL SITE

PREPARED FOR

FORMER COLUMBIA RIBBON AND CARBON CO.

ERM-Northeast
Environmental Resources Management

SCALE: Noted

DATE: 3/1993

FIGURE: 1-1

167114

2.0 *REMEDIAL DESIGN*

Section 2.0 addresses all items listed in subparagraphs I.B.1.a.1 through I.B.8 of the Draft Order on Consent dated 6/19/92.

2.1 *IMPLEMENTATION OF THE REMEDIAL PROGRAM (I.B.1.a)*

As described in the ROD and Pilot Study Report the remedial objectives of the Remedial Design are:

1. containment of groundwater containing chemicals of concern and the prevention of chemical migration during remediation
2. collection and/or treatment of affected groundwater;
3. the proper disposal of treated groundwater;
4. remediation of soil in order to reduce the potential for continuing releases to groundwater; and,
5. achieving the remedial goals in ground water referenced in the ROD.

In order to implement the selected remedial alternative which is designed to achieve the objectives, a combined soil venting extraction/groundwater recovery and treatment system will be installed at the site. Well drilling, trench excavation, paving, and construction of the treatment works and the treatment building will be performed as part of the Remedial Design Construction. Detailed design drawings and technical specifications showing all essential elements of the remedial design are included in Attachment 1.

2.1.1 *Remedial System Description (I.B.1.a, I.B.1.b, I.B.1.c)*

In accordance with paragraph I.B.1 of the Order on Consent the following subparagraphs describe how the remedial design will address: 1) the construction and operation of any structures; 2) the collection, destruction, treatment, and/or disposal of hazardous wastes and substances as described in the ROD and of any soil or other materials contaminated thereby; and 3) the collection, destruction, treatment, and/or disposal of contaminated groundwater, leachate, and air.

2.1.1.1 *Groundwater Recovery System*

The groundwater recovery system will be comprised of thirty (30) wellpoints located so as to completely dewater the area of concern (refer to Drawing No. C-1). Each wellpoint is expected to yield between 0.25 and 1.0 gallon per minute (gpm). Hydraulic modelling has indicated that a sustained pumping rate of approximately 14 gpm total from all thirty (30) wells will dewater the area of concern and maintain a depressed water table. If, in the future, additional dewatering is required in the vicinity of existing monitoring well MW-4 an additional groundwater recovery well could be easily connected to the recovery system piping and powered through spare conduit and a junction box provided in the initial design.

Each wellpoint will be fitted with a submersible pump that will be controlled by manually set speed controllers, located in the proposed treatment building, and level switches in the well casing. The speed controllers are required due to the predicted low yield of the wellpoints and will help to maintain minimal pumping rates without unnecessary cycling. The speed controllers will drive a group of pumps that have the same predicted well yields and will act as a power source while the level

switches will act to turn the pumps on and off as the water levels change through the pump cycle.

The remote speed controllers negated the requirement for installing local throttling devices in a manhole, similar to the system described in the Pilot Study Report, thus reducing the amount of soil being disturbed and simplifying the installation.

2.1.1.2 *Recovered Groundwater Treatment System*

The recovered groundwater will be treated by two (2) low profile air strippers configured for operation in series or parallel mode. The VOC removal efficiencies and system capability for adequately treating influent spike concentrations are discussed in detail in ERM's letter of March 5, 1993 addressed to Mr. Andrew English of NYSDEC Division of Hazardous Waste Remediation (see Attachment 2). The low profile tray aerators, which do not contain plastic packing, were selected in order to minimize required maintenance typically associated with iron/manganese fouling. The off-gas from the strippers will be conveyed to the catalytic oxidizer unit for treatment prior to release to the atmosphere.

Due to the high levels of naturally occurring iron in the site groundwater, a polyphosphate sequestering agent will be injected into the recovered groundwater upstream of the two air strippers. The addition of the sequestering agent will reduce the amount of iron that precipitates out of solution. Additional information on the sequestering agent can be found in ERM's March 5, 1993 letter to NYSDEC (see Attachment 2). The treated effluent will be discharged to the City of Glen Cove storm sewer system which empties into Glen Cover Creek.

A proposed discharge point for the groundwater treatment system has been identified on Drawing No. C-1 of Attachment 1. Preliminary discussions with the City of Glen Cove have identified this location as an approvable discharge location, subject to the City's review of a formal building permit submission. Konica intends to meet the substantive requirements of building permit as part of the Remedial Design. As discussed in ERM's letter to the NYSDEC dated March 5, 1993, this discharge is new and physically separate from the existing SPDES discharge to Glen Cove Creek.

2.1.1.3 Soil Vapor Recovery

The soil vapor extraction system will consist of 12 extraction wells and 18 passive air injection wells. Each extraction well line will include a throttling valve located in the treatment building to control the extraction rates from each well. A header pipe will then convey the air flow through a moisture separator and then out to the explosion proof SVE blower assembly located in a fenced area adjacent to the treatment building. The condensate that accumulates in the moisture separator will be automatically pumped to the groundwater treatment system upstream of the two strippers. A fresh air inlet will be available to provide dilution air to reduce the % LEL of the raw soil vapor being transferred to the catalytic oxidizer. As described in the Pilot Study Report, a soil vapor flow rate of 20 cfm is estimated for each well. Therefore, the total design soil vapor extraction rate is 240 cfm.

2.1.1.4 Vapor Treatment

As discussed in ERM's letter dated March 5, 1993 to NYSDEC (see Attachment 2), treatment of the extracted soil vapor and the off-gas from the ground water treatment system will be accomplished by a catalytic oxidizer. The catalytic vapor treatment module includes a 7 1/2 hp booster

fan and separate control panel. Propane is used as supplemental fuel to ensure continuous destruction of VOCs. The trailer mounted unit and propane cylinders will be located in the fenced area adjacent to the treatment building. The unit is capable of treating up to 1,000 cfm including dilution air. Treated air shall meet the discharge limits for chemicals of concern in accordance with 6 NYCRR Part 212 and Air Guide-1.

2.1.1.5 Soil

In accordance with an Order on Consent with NYSDEC, removal of buried drums and visible contaminated soil was conducted at the site in July, 1984. The report entitled, Engineer's Report: Removal of Drums and Contaminated Soils from the Former Columbia Ribbon and Carbon Company Site, Glen Cove, NY documents and summarized the activities associated with the 1984 remedial program. A significant amount of the soil to be excavated during construction will be the clean fill that was provided in 1984. All soil excavated from the site during construction of the remediation system will be temporarily stockpiled on a layer of HDPE fabric and the area will be bermed to prevent stormwater runoff. The construction activities will be performed in accordance with the site specific Health and Safety Plan (HASP) prepared by ERM. The HASP is attached in Section 01517 of the Technical Specifications.

The stockpiled soil will be used as backfill and fill to level the parking area prior to paving operations. It is not expected that any surplus contaminated soil will be generated that will require off-site disposal.

2.1.2 *Site Security (I.B.1.d)*

The entire site is currently secured with a chain link fence with access provided through the main gate near the guardhouse or the plant buildings. The proposed treatment building and the fenced SVE/incinerator area will be located near the pond area and access will be limited to authorized personnel. Additionally, signs indicating Remedial Treatment System will be posted on the exterior of the treatment building and along the fenced area.

2.1.3 *Health and Safety (I.B.1.e)*

The Health and Safety Plan (HASP) has incorporated the requirements of 29 CFR 1910 to protect the safety and health of persons in and around the vicinity of the site. The HASP has been prepared by an individual meeting the training requirements specified in 29 CFR 1910. For additional information see the HASP which is attached to Section 01517 of the Technical Specifications.

2.1.4 *Quality Assurance/Quality Control (I.B.1.f)*

This section presents a general overview of the Quality Assurance and Quality Control procedures that will be inspected to ensure they meet quality standards set by the approved remedial design and implemented during construction.

All materials used to construct the remediation system will be inspected to ensure they meet quality standards set by the approved remedial design and the Technical Specifications and Drawings.

All piping and hose installed on the site will be pressure tested prior to being placed in service. In addition, all water-conveying piping, tanks, and equipment will be tested with potable water to ensure leak-tight joints and fittings prior to placing the equipment on-line to handle ground water.

Quality Assurance/Quality Control procedures are presented in more detail in the Technical Specifications. Part I of each technical specification section normally includes QA/QC requirements such as shop testing, field testing, warranties, submittals, etc.

2.1.5 *Construction Monitoring (I.B.1.g)*

Monitoring will be conducted during implementation of the Remedial Program, to ensure the safety of on-site workers and Konica employees and the safety of the public in locations proximate to the site, and to ensure that the Remedial Program is implemented in accordance with the NYSDEC-approved Remedial Design.

A full-time qualified representative will be on the site during actual construction activities. A health and safety officer will also be present on the Site to implement the site-specific Health and Safety Plan. All intrusive work will be monitored, and the health and safety officer will have the authority to stop work and order corrective measures in the event of a significant environmental release (i.e., a release that cannot be confined to the immediate work area). No work will be conducted which would allow an off-site release of chemicals.

Refer to Specification Sections 01517 and 01715 for specific Health and Safety procedures.

2.2 *DESIGN DOCUMENTS (I.B.2)*

The design documents are included in this Remedial Design as Attachment 1, and include one set of Drawings, and the Technical Specifications. Specification Section 01517 contains the site-specific Health and Safety Plan. The Drawings show all work to be installed as part of the Remedial Program. The design documents will be incorporated into the bid package along with the Instruction to Bidders, Bidders Price Schedule, Owner-Contractor Agreement Form and the General Conditions.

2.3 *SCHEDULE (I.B.3)*

A time schedule for the implementation of the Remedial Program is included as Figure 2-1. The schedule covers the period of time from the submission of the Remedial Design to the NYSDEC to the start of ongoing operations of the Remedial System.

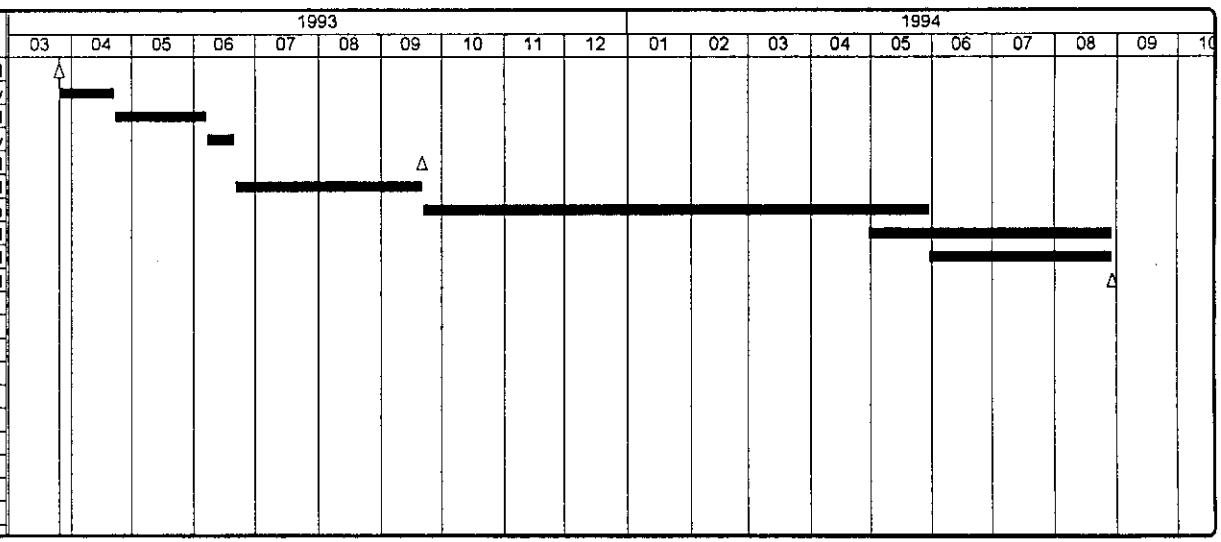
The schedule assumes that NYSDEC will require 4 weeks for the initial review of the Remedial Design documents. After receipt of NYSDEC comments, ERM will require 45 days to incorporate these comments into the final construction documents. A two week period is delineated for a final review by the NYSDEC.

Upon receipt of NYSDEC's final approval of the Remedial Design Documents, Konica will solicit bids from qualified contractors to perform the construction efforts for the project. It is expected that the construction contract will be executed within 90 days of this approval.

The period of construction is estimated to be approximately eight months. This is based on the delivery schedule of some of the key equipment components required in the process.

FIGURE 2-1
REMEDIAL PROGRAM SCHEDULE

Row #	Task Name	Duration
1	REMEDIAL DESIGN SUBMISSION	0.00 d
2	NYSDEC REVIEW AND APPROVAL	4.00 w
3	FINALIZE CONTRACT DOCUMENTS	45.00 d
4	NYSDEC APPROVAL OF DESIGN	2.00 w
5	PERFORMANCE ANALYSIS & DESIGN MOD. PLAN SUBMISSION	0.00 d
6	AWARD CONSTRUCTION CONTRACT	90.00 d
7	PERFORMANCE OF CONSTRUCTION	8.00 m
8	O&M MANUAL	120.00 d
9	STARTUP & DEBUGGING OF SYSTEM	90.00 d
10	START OF OPERATIONS	0.00 d



Printed: 03/29/93
Page 1

Once construction has begun, the NYSDEC will receive monthly progress reports of the work that has been completed, and the work that is intended to begin in the near future, to assist the NYSDEC in coordinating any site visits.

The preparation of the Operations and Maintenance will commence during the construction phase of the project. Efforts will be concentrated on the sections of the manual required for system startup and debugging. At the end of the construction phase, when final "As-Built-Drawings", "Shop Drawings" and final vendor O&M manuals are received, the Operations and Maintenance Manual will be finalized with actual site specific information. This schedule will allow the incorporation of data and experience gathered during the startup period of the system into the final Operations and Maintenance Manual.

As can be seen on the schedule construction is presently scheduled to begin during September of 1993. However, depending on actual dates of approval(s), such as building permit approvals (if required), it is possible remedial construction could begin in the spring of 1994 to avoid construction activities being performed during the winter months.

2.4 *PERFORMANCE ANALYSIS AND DESIGN MODIFICATION PLAN (I.B.4)*

A Performance Analysis and Design Modification Plan will be prepared to monitor and evaluate the effectiveness of the remedy and make changes, if needed, to improve the ability of the selected remedy to achieve remedial goals. The plan will identify the performance criteria and the methods which will be used to determine if the remedy is effective in meeting these criteria. Additionally, the plan will identify the options that will be employed to modify the operations of the system to improve its

effectiveness toward achieving the performance criteria. This plan will be submitted to NYSDEC within 90 days of the approved Remedial Design.

The effectiveness monitoring methods will involve specific procedures to assess each operating component of the remedial system. The remedial system components are:

ground water recovery system
soil vapor recovery system
ground water treatment system
vapor treatment system

The means by which effectiveness monitoring will be achieved for each of the systems identified above is described in the following paragraphs.

GROUNDWATER RECOVERY SYSTEM: As previously described, the groundwater recovery system will consist of thirty (30) recovery wells located as shown on the Remedial Design Drawings. The purpose of these wells is to depress the water table in the area of known soil contamination so as to allow the vapor recovery system to remove the mass of volatile contaminants from the soil through the soil venting system.

In order to achieve these goals, the remedial design has incorporated the following monitoring and control devices into the design:

pump speed control (recovery rate control)
recovery pump running time meters
level controls
piezometers

The initial step in the remedial design process required the development of a ground water recovery model to identify the recovery rates for each of the wellpoints. This model when developed defined the recovery rate of each well point. For this site the recovery rates fall into four (4) groups, 0.25, 0.50, 0.75 gpm, and 1.0 gpm. In order to obtain the low flow rates and maintain close control of the recovery system, low flow submersible pumps were selected that would be grouped in accordance with predicted recovery rates and controlled by a common speed controller for that particular flow rate. This will allow the pumping rates to be matched to the ground water recovery rate of the wells and will minimize cycling and increase the radius of influence. It should be noted that the speed controllers are adjustable and will allow flexibility in the recovery rates and capabilities of the system.

A running time meter has been fitted to each submersible pump. The purpose of these meters is to identify if the recovery well is pumping at too low a rate, which would be identified by running times equal to real time, or at too high a rate which would be identified by running times that are significantly less than real time. This information would enable an operator to modify the recovery rate of the submersible pump(s) through the adjustment of the speed controllers.

Level switches are provided for each submersible pump that will control the pump's cycling as the water level in the casing rises and falls. It will protect the pump from running dry and will ensure that it operates within the proper liquid elevation ranges.

Piezometers will be located within the area to be dewatered by the groundwater recovery pumps. Water level readings will be taken periodically at these locations to assist in evaluating the hydraulic performance of the recovery system.

VAPOR RECOVERY SYSTEM: As described previously, the vapor recovery system will be comprised of 12 venting wells and 18 fresh air inlet wells. The vapor recovery wells will be connected to a vacuum blower that will provide the negative pressure to evacuate the vapors from the wellpoint and transport it through the recovery piping and ultimately to the vapor treatment system. Each vapor recovery wellpoint will be piped individually into the treatment building and will be fitted with a vacuum gage, throttling valve and air flow meter prior to being connected to a header pipe that will lead to the treatment system.

The vacuum gage, throttling valve and air flow meter fitted to each recovery line will enable a simple air flow and vacuum pressure balancing procedure to be implemented on the vapor recovery wells. These wells can easily be monitored and rebalanced as groundwater levels change and airflow patterns transform.

The fresh air inlet wells will be fitted with a removable cap with a hose barb that will allow the periodic monitoring of vacuum pressure levels at the inlet wells. Should the identification of preferential air flow patterns be identified, modifications to the vacuum well pressures and rates can be changed to impart a more even coverage of the vapor extraction system.

GROUNDWATER TREATMENT SYSTEM: The prime components of the groundwater treatment system are the air strippers. The performance of the air strippers will be monitored simply by taking raw influent and effluent samples from the units and analyzing them for VOC content. Modifications to air flow and liquid flow rates could be implemented to optimize the efficiency of the equipment should it be required.

The discharge pumps from the air strippers have also been sized to allow for the connection of skid mounted sand and carbon filtration systems

should they be necessary to polish the final effluent. This polishing step, however, is not expected to be required.

VAPOR TREATMENT SYSTEM: Similar to the procedures outlined above for the water treatment system, the performance of the catalytic incinerator will be monitored by taking raw air influent and discharge samples from the unit and analyzing them for VOC content. Similar to the operation of the liquid treatment system, recovered vapor and dilution air flow rates can be throttled to optimize the treatment system.

2.5 *OPERATIONS AND MAINTENANCE (I.B.5)*

This section generally describes how the remediation system will operate, how it will be maintained, and how the performance of the system can be used to assess the future condition of the site. Major items of equipment have also been identified by the equipment numbers assigned in the Design Documents, to help clarify the discussion.

A preliminary outline of an Operations and Maintenance Manual is included as Table 2-1. A detailed Operation and Maintenance Manual will be submitted within 90 days after the completion of the Remedial Design Construction.

2.5.1 *Operations*

Site groundwater will be pumped from thirty (30) recovery wells (MWR-301 through 330) using variable speed controlled submersible pumps (P-301 through P-330). The speed controls (SC-3001 through 3005) can be manually adjusted in the treatment building in order to increase or decrease the recovery rates. The recovered ground water will be injected

TABLE 2-1
PRELIMINARY OUTLINE OF O&M MANUAL

1.0 INTRODUCTION

- 1.1 Purpose and Scope
- 1.2 Guide to Manual Format
- 1.3 Site Description and Background
- 1.4 Ground Water Quality
- 1.5 Vapor Quality
- 1.6 Design Criteria
- 1.7 Remedial System Description
- 1.8 Remedial Goals
- 1.9 Design Basis
- 1.10 Operation and Maintenance Responsibilities
- 1.11 Staffing Plan

2.0 PERMITS

3.0 OPERATION AND CONTROLS

- 3.1 General
- 3.2 Ground Water Recovery System
- 3.3 Ground Water Treatment
- 3.4 Soil Vapor Extraction System
- 3.5 Vapor Treatment System

4.0 SUPPORT SYSTEMS

- 4.1 General
- 4.2 Heating, Ventilating and Air Conditioning System (HVAC)
- 4.3 Fire Protection System
- 4.4 Security System

5.0 LABORATORY TESTING AND REPORTING

- 5.1 General
- 5.2 Sampling
- 5.3 Ground Water Analysis
- 5.4 Soil Vapor Analysis
- 5.5 Laboratory Records and Monitoring Reports

TABLE 2-1 (Continued)

6.0 OPERATION RECORDS AND REPORTS

- 6.1 General
- 6.2 Physical Records
- 6.3 Operating Records
- 6.4 Administrative Records
- 6.5 Reports

7.0 MAINTENANCE MANAGEMENT

- 7.1 General Requirements
- 7.2 Equipment Record System
- 7.3 Equipment Maintenance
- 7.4 Site Maintenance
- 7.5 Maintenance Tools and Equipment

8.0 EMERGENCY RESPONSE PLAN

- 8.1 Emergency Shutdown Procedures
- 8.2 Emergency Equipment and Materials

9.0 GENERAL HEALTH AND SAFETY

- 9.1 General
- 9.2 Safety Program
- 9.3 Safety Practices
- 9.4 Safety References

10.0 UTILITIES

- 10.1 General
- 10.2 Electric Power
- 10.3 Telephone Service
- 10.4 Storm Sewer Discharge
- 10.5 Propane Fuel

TABLE 2-1 (Continued)

with an iron sequestering agent which is stored in a 550 gallon tank (TK-601A).

The influent is then conveyed to the two (2) low profile tray aerators (STR-401, STR-402) for VOC removal. The off-gas from the strippers is conveyed to the vapor treatment system. The treated effluent will be pumped to the City of Glen Cove storm sewer system.

Soil vapor will be extracted from 12 wells (VRW-201 through 212) by the operation of the 10 hp vapor extraction system (VEM-501) located in the fenced area adjacent to the building. A throttling valve for the pipeline from each well will be located in the treatment building. The moisture separator (VSM-501) is also located in the building. Accumulated condensate will be conveyed to the ground water treatment system via the level controlled condensate transfer pump (P-501).

The extracted soil vapor and off-gas from the strippers will be conveyed to the catalytic incinerator (VTM-501) for destruction of VOC's prior to release to the atmosphere. The supplemental propane fuel will be automatically fed into the unit on an as-needed basis.

2.5.2 *Maintenance*

In addition to normal maintenance requirements, such as lubrication, calibration, and inspection of equipment, some specialized maintenance will be required as part of the site remediation.

The duplex strainer filter (F-401) will need to be inspected and cleaned regularly. This must be performed to prevent clogging of the filter basket and subsequent shutdown of the groundwater recovery system. The low profile tray aerators must be cleaned periodically to prevent build-up of

insoluble mineral deposits. Cleaning can normally be accomplished with a pressure washer or washer wand that can be inserted into the cleanout ports on the side of the unit. The trays will need to be disassembled for cleaning if the build-up of deposits is allowed to become excessive. The residual solids (scale and sediment) generated by these cleaning procedures will be collected for analysis and handled on-site or disposed of off-site in an approved manner.

The sequestering agent storage tank level will be monitored in order to schedule bulk deliveries. A service contract with a propane fuel vendor is recommended to ensure a constant supply of supplemental fuel for the catalytic incinerator (VTM-501). The area around the propane cylinder should be inspected frequently to ensure that plant equipment, debris, etc., are not placed in the clear zone. The cylinders should also be tested periodically for signs of leakage.

2.5.3 *Systems Monitoring*

The remedial system will be monitored to ensure compliance with all regulations, and to assist in evaluating the progress of remediation at the site.

Regular inspections will be performed to ensure that no leaks have occurred in the recovery systems. The vapor treatment system will be monitored to assure that vapors are being properly treated prior to emission. The groundwater treatment system will be monitored to assure that effluent discharge limits are met.

By monitoring certain operations and parameters, the progress of the remedial effort can be evaluated. Monitoring will include the quality of the recovered ground water and the quality of the extracted soil vapor.

2.6 *HEALTH AND SAFETY PLAN (I.B.7)*

See Section 0517 of the Technical Specifications.

2.7 *CITIZEN PARTICIPATION PLAN (I.B.8)*

A citizen participation plan is currently being developed by NYSDEC. Although the entire scope of citizen participation during the remedy has not been finalized, the basic aspects of citizen participation in the remedy are outlined below.

After approval of the remedial design, a notice will be published informing the public that the remedy selected in the ROD will be implemented at the Site. A copy of the Pilot Report, and subsequent correspondence pertaining to modifications and approval to this report, will also be placed in the document repository in the Glen Cove Public Library. Additionally, Konica representatives will assist the NYSDEC in a public availability session to address any questions which members of the community may have.

After the remedial design is constructed and begins to operate, copies of the quarterly progress reports (excluding raw data) will be put in the document repository in the Glen Cove Public Library. These reports will provide a summary of the progress of the remedy and any planned modifications based on the monitoring data.

ATTACHMENT 1

DESIGN DOCUMENTS - DRAWINGS AND SPECIFICATIONS
(Provided Under Separate Cover)

ATTACHMENT 2

ERM'S LETTER OF MARCH 5, 1993
ADDRESSED TO MR. ANDREW ENGLISH OF NYSDEC

ERM-Northeast

175 Froehlich Farm Blvd.
Woodbury, NY 11797
(516) 921-4300
(516) 921-5679 (Fax)

5 March 1993

Mr. Andrew J. English, P.E.
Division of Hazardous Waste Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, NY 12233

ERM

Re: Final Design of Remediation Program
Powers Chemco Site #1-30-028
(AKA Former Columbia Ribbon & Carbon Co. Disposal Site)

Dear Mr. English:

The final design of the remediation program for the above referenced site is currently being performed by ERM-Northeast (ERM) on behalf of Konica Imaging USA, Inc. (Konica). The remediation program will include a combined ground water and vapor extraction system similar to the conceptual system presented in the report entitled, Pilot Study and Additional Data Acquisition, prepared by ERM in August, 1992 (referred to as the "Pilot Study Report"). The purpose of this letter is to provide an update on recent design decisions regarding selection of equipment for the final remedial system so that you are kept abreast of the progress of the design.

The type of remedial equipment discussed in the pilot study report was intended to permit evaluation of the feasibility of the combined ground water and vapor extraction system for the Site. Additionally, the remedial equipment which was described in the above referenced report permitted a comparison of costs between the combined ground water and vapor extraction system and an aggressive pump and treat system. It is ERM's intent during final design to actually evaluate each item of remedial equipment in order to identify the most appropriate devices which will achieve the objectives of the remedial program most cost-effectively. Hence, the selection of remedial system equipment for the final design, as described in this letter represents a more efficient and cost-effective system that will require less maintenance effort.

Ground Water Recovery

The conceptual remedial system discussed in the Pilot Study Report suggested that one duplex air driven diaphragm pump could be installed

below grade and used for ground water recovery. In that conceptual system each well point would have included a flush mounted vault and a regulating valve.

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In order to maximize the dewatering effort, it has been determined that 30 individual variable-speed submersible pumps controlled by a frequency inverter, would be a preferable approach. These pumps will not be hindered by the fact that some extraction wells may be as deep as 30 feet below grade. This arrangement will facilitate modulation of well recovery rates and provide additional system flexibility. Because throttling local to each well will no longer be required, pitless adapters will be installed in order to eliminate the need for the 30 concrete vaults described in the report referenced above. The wells will be installed with flush mounted locking caps.

Ground Water Treatment

The conceptual remedial system discussed in the Pilot Study Report presented a process flow diagram for a suggested ground water and SVE remediation system. Upon further analysis, it was determined that the aeration tank, retention tank, filtration system and iron sludge holding equipment would not be needed in the final design. The extracted ground water will be treated by two (2) low profile air strippers configured for operation in series or parallel mode. One tray aeration type stripper alone will typically remove in excess of 99.95% of the expected concentrations shown in Table 5-1 of the pilot study report (see attached). The 99.95% removal assumes that the stripper will be equipped with four (4) trays. Additionally, the low profile tray aerators, which do not contain plastic packing, will minimize required maintenance associated with iron/manganese fouling.

The NYSDEC Division of Hazardous Waste Remediation in their letter of November 12, 1992 addressed to Mr. Charles Tozzo of Konica stated that carbon polishing of the air stripper effluent would probably be needed to attain the required effluent discharge limits. The suggested carbon polishing step can be eliminated if an additional air stripper is connected in series with the initially proposed air stripper. By connecting the second air stripper in series it will act as a polishing unit assuring that discharge criteria will be met even if spikes in the expected contaminant levels occur (see Table A). The upstream air stripper will be designed to handle potential spikes with a minimum of 99.97% removal efficiency at a flowrate of 25 gpm. The downstream air stripper will also be designed for

100% treatment system flow capacity and will be capable of removing any remaining contaminants to below discharge limit criteria. Therefore, including the two tray arrangement in the final design will sufficiently treat influent concentrations that are 10 to 20 times higher than the design basis shown in Table 5-1 of the pilot study report (see attached).

ERM

Over time, as influent contaminant concentrations decrease, the series operation of the two (2) air strippers will be switched to an alternating mode of operation. This will enable uninterrupted operation of the ground water recovery and treatment system, while either air stripper is off line for maintenance. The proposed remediation system is schematically shown in the process flow diagram (see Figure 1).

An iron level of 70 ppm was measured in a sample collected during the pumping operation of the pilot study. In accordance in the discussion with the NYSDEC Division of Water, ERM recommends using the polyphosphate sequestration agent, Aqua-Mag, supplied by the Kjell Corporation. Aqua-Mag is a liquid polyphosphate blend that has been on the market for twenty years and has federal and state approvals for use in potable water at concentrations of up to 10 ppm. Aqua-Mag is a very stable linear chain concentrate of phosphates with a shelf life of at least 12 years. It is specifically designed to sequester (tie up) soluble iron, manganese, calcium, magnesium and silica. It also has the ability to dissolve existing scale and iron deposits, thereby eliminating food for bacterial growth on wetted surfaces. As shown in the attached Material Safety Data Sheets, Aqua-Mag requires no special handling and presents few safety concerns.

The sequestering agent will be injected at the head of the treatment works. In-line static mixers will be used to enhance the chemical reaction.

Treated Effluent Discharge

Use of the polyphosphate sequestering will cause a phosphate (PO_4) discharge of approximately 35 ppm. Messrs. Jim Harrington and Robert Withur of NYSDEC were contacted to determine if a treated effluent discharge containing 35 ppm PO_4 to Glen Cove Creek would be allowable. Glen Cover Creek has been designated as a Class "I" surface water by the NYSDEC. Mr. Harrington reported that a 35 ppm PO_4 discharge would be acceptable according to NYSDEC's BPJ methodology. However, Mr. Harrington indicated that if the discharge of the treated effluent from the remedial system was conveyed to the existing SPDES

permitted outfall, Konica would have to modify its current SPDES permit. Alternatively, if the treated effluent from the remedial system is conveyed to a separate outfall, the discharge would simply have to meet the limits stated in the documents appended to the order on consent. Therefore, the final design has identified a potential discharge point for the treated effluent from the remedial system which is separate from the existing SPDES outfall. Konica plans to obtain permission from the City of Glen Cove to connect to their storm sewer system located adjacent to Konica's property along The Place. The Glen Cove storm sewer system in this area reportedly drains into Glen Cove Creek. It is expected that the monitoring parameters for this new discharge will not include limits on iron. Any guidance the NYSDEC Division of Water can provide regarding this outfall would be appreciated.

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Soil Vapor Extraction

The final design of the soil vapor extraction system will consist of a total of 12 vapor extraction wells and 12 passive air injection wells. This system will remain unchanged from the conceptual design discussed in the Pilot Study Report.

Vapor Treatment

The conceptual design presented in the Pilot Study Report, indicated that treatment of the extracted soil vapor and the off-gas from the ground water treatment system would be accomplished by a regenerative thermal oxidizer. The final design is currently evaluating the option of using a catalytic oxidizer to treat the combined vapor stream. A catalytic unit would operate at a much lower temperature (i.e. 700° F, VS 2000° F), generate less noise, and occupy less space as compared to the regenerative thermal oxidizer. The cost of these two types of unit are similar. The destruction efficiency of the catalytic unit is guaranteed to exceed the 95% destruction efficiency normally attained by the regenerative thermal oxidizer. The expected low levels of chlorinated compounds in the vapor stream should not affect the destruction efficiency of the catalytic unit.

In summary, the selection of equipment for the final remedial system described above will produce a more efficient, flexible remedial system that will be less costly to operate. If you have any questions or require additional information, please contact me at (516) 921-4300.

ERM

Very truly yours,

Brian P. Morrissey

Brian P. Morrissey, P.E.
Project Manager

BPM/pjl

cc: J. Harrington, NYSDEC
C. Tozzo, Konica
D. Case
J. Perazzo

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TABLE A

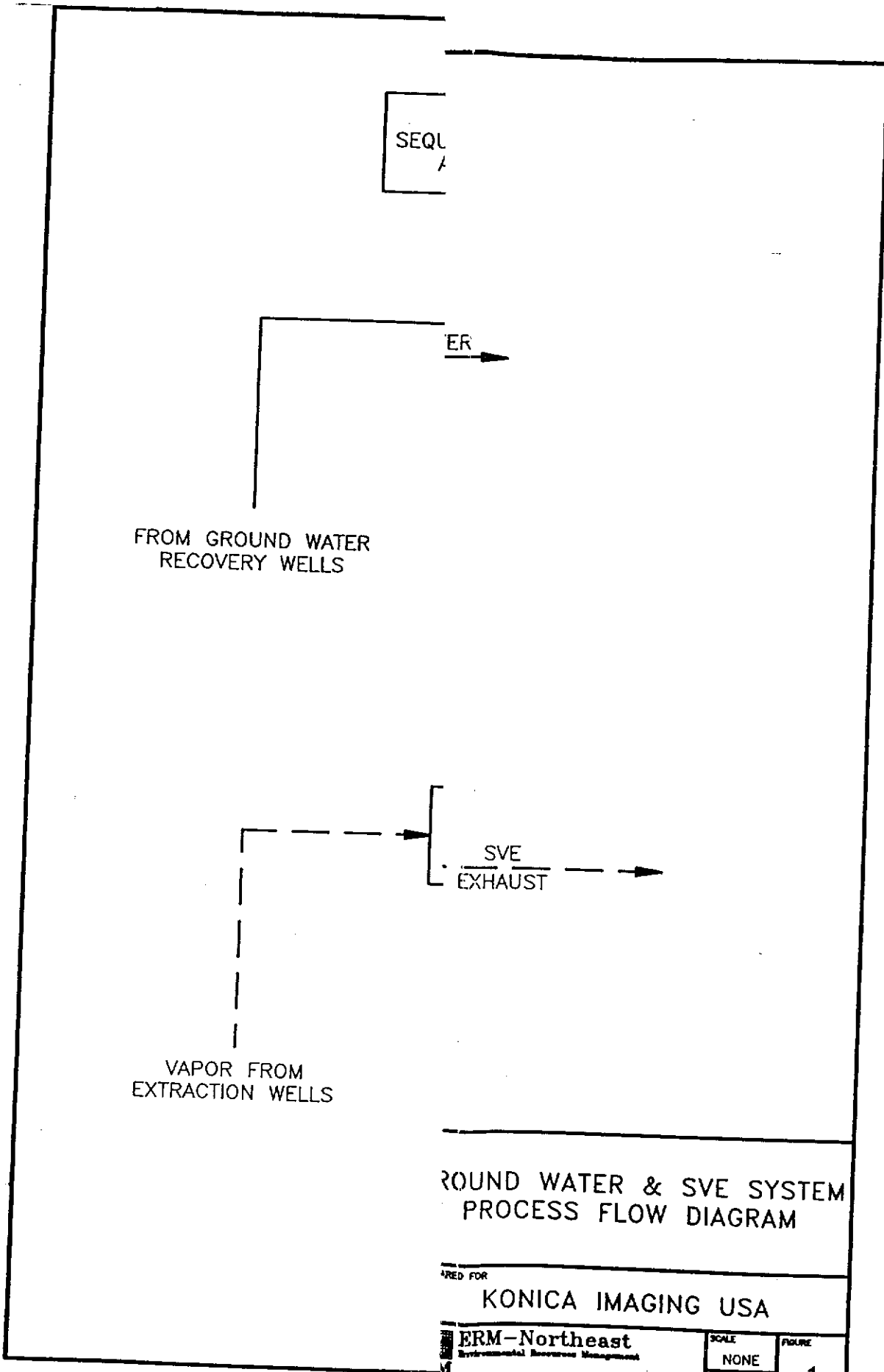
CAPABILITY OF PROPOSED GROUND WATER TREATMENT SYSTEM
FOR HANDLING SPIKE INFLUENT CONCENTRATIONS
AT A FLOWRATE OF 25 GPM

Name of Chemical Constituent	Maximum Potential Contaminant Spike Influent Concentration (ppb)	Safety Factor over Design Influent Concentrations	First Air Stripper			Second Air Stripper
			Effluent Concentration (ppb)	% Removal	Effluent Concentration (ppb)	% Removal
Benzene	310	13.5	<1	99.98	<1	99.9
1,1,1-Trichloroethane	340	---	<1	99.99	<1	99.9
Ethylbenzene	820	21.0	<1	99.99	<1	99.9
o-Xylene	1,100	16.7	<1	99.99	<1	99.9
p-Xylene	2,600	16.7	1	99.99	<1	99.9
T-1,2,Dichloroethylene	150	---	<1	99.99	<1	99.9
Toluene	340,000	17.0	98	99.97	<1	99.97

TABLE 5-1

GROUND WATER TREATMENT DESIGN BASIS

Compound	Influent Conc.(ppb)	Effluent Goal (ppb)	% Removal
Benzene	23	6	73.9
Ethylbenzene	39	10	55.0
Toluene	20,000	10	99.95
Xylenes	222	10	95.5
1,1 Dichlorethane	19	10	47.4
Tetrachlorethene	20	10	50.0
Trichloroethene	38	10	73.7



ROUND WATER & SVE SYSTEM
PROCESS FLOW DIAGRAM

RED FOR
KONICA IMAGING USA

ERM–Northeast			SCALE: NONE	FIGURE: 1
E.M.	JOB NO.: 515.013	FILE NAME: IMAGKON	DATE: 2/3/93	

In Case of Chemical Emergency

Call Chemtrec at 1-800-424-9300

MATERIAL SAFETY DATA SHEET

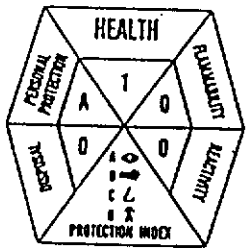
THE KJELL CORPORATION
PO BOX 834
BELOIT, WISCONSIN 53512-0834
(800) 356-0422 (608) 755-0422

Product Name: Aqua Mag

Date Prepared: June, 1986 Last Revision: December, 1992

==========PRODUCT INFORMATION==========

Synonyms:	Blended Sodium Phosphate
Chemical Family:	Liquid phosphate blend
Formula:	Proprietary
Maximum use:	23.4 mg/L



FROM MATERIAL SAFETY DATA SHEET, ENT
HAZARD RATING IN APPROPRIATE BOX

HAZARD RATING

0 - MINIMAL HAZARD 2 - MODERATE H
1 - SLIGHT HAZARD 3 - SERIOUS HAZ
4 - SEVERE HAZARD

Note

==========PRECAUTIONARY INFORMATION==========

Precautionary Statement: (As defined by OSHA Hazard Communications Standard)

No Significant Health Effects Reported from manufacturing locations

==========INGREDIENTS/COMPONENTS==========

Chemical Identity:	Sodium ortho/polyphosphate blend
OSHA PEL:	Not listed
ACGIH TLV:	Not listed
CAS #:	68915-31-1
Hazard Class:	None

==========PHYSICAL DATA==========

Boiling Point:	Above 212 degrees F.
Melting Point:	Not Applicable
Vapor Pressure:	Not Applicable
Vapor Density (Air = 1):	Not Applicable
Specific Gravity (H_2O = 1):	1.368
Evaporation Rate (Butyl Acetate = 1):	Non-Volatile
Solubility in Water by Weight:	Complete
pH (neat):	5.6
pH (1% solution):	6.8
Appearance:	Clear Liquid
Odor:	Slight

FIRE AND EXPLOSION DATA

Flash Point:	Non-Combustible
Flammable Limites - Upper:	Not Applicable
Lower:	Not Applicable
Extinguishing Media:	Not Applicable
Special Fire Fighting Procedures:	Not Applicable
Unusual Fire & Explosion Hazards:	None

REACTIVITY DATA

Stability:	Stable
Incompatibility:	Concentrated Chlorine and Concentrated Mineral Acids
Hazardous Polymerization:	Will not occur
Conditions to Avoid:	Direct Mixing of Concentrates of Chlorine and Mineral Acids
Hazardous Decomposition By products:	Heat, Chlorine and Sulfur Dioxide

HEALTH HAZARD DATA

Routes of Exposure -

Eyes:	No published data
Skin Contact:	No published data
Skin Absorption:	No published data
Inhalation:	No published data
Ingestion:	No published data

Effects of Overexposure -

Acute Exposure:	No Published Data
Chronic Exposure:	When good Industrial Hygiene practices are followed no significant inhalation hazard or skin irritation.

Other Health Effects -

Medical Conditions Aggravated by Exposure:	None known
Carcinogenic Potential:	
NTP Annual Report:	Not listed
IARC Monographs:	Not listed
OSHA 29CFR Part 1910 Sub z:	Not listed

Additional Regulatory Information -

FDA:	GRAS List; permitted in food
USDA:	Listed as acceptable if followed by a potable water rinse

Emergency and First Aid Procedures -

Eyes:	Flush with water. If irritation occurs seek medical attention.
Skin:	Wash with water. If irritation occurs seek medical attention.
Inhalation:	Remove from exposure.
Ingestion:	Rinse mouth and dilute stomach contents with water or milk if available.

Decontamination Procedure: Wash with water.
Notes to Physicians: Large doses may cause nausea and diarrhea.

STORAGE AND HANDLING

Spill or Leak Procedures:	Material should be wiped up for salvage or disposal. Flush with water.
Waste Disposal Method:	If not salvaged, dispose in a landfill in accordance with local, state, and federal regulations.
Precautions in Storing:	Should be stored in clean area for quality assurance. Keep container closed when not in use. Protect from freezing and extreme heat.

SPECIAL PROTECTION

Respiratory:	None required
Eye:	Not mandatory
Protective Gloves:	Not mandatory
Clothing & Equipment:	No special requirements
Ventilation Requirements:	No special requirements
Work/Hygienic Practices:	No special requirements. Follow good industrial hygiene practices.

TRANSPORTATION DATA

DOT Proper Shipping Name:	Sodium polyphosphate solution
DOT Classification:	Not regulated
DOT Labels:	Not required
DOT Placards:	Not required
Emergency Accident Precautions & Procedures:	Not hazardous - See instructions above for release or spill.

MANUFACTURER'S DISCLAIMER

While The Kjell Corporation will make every effort to insure the validity of this information, we must rely on the information supplied to us by our suppliers and thus make no warranty express or implied as to the validity of this data.

Any use of this product or method of application which is not described in the Product Data Sheet is the responsibility of the user.