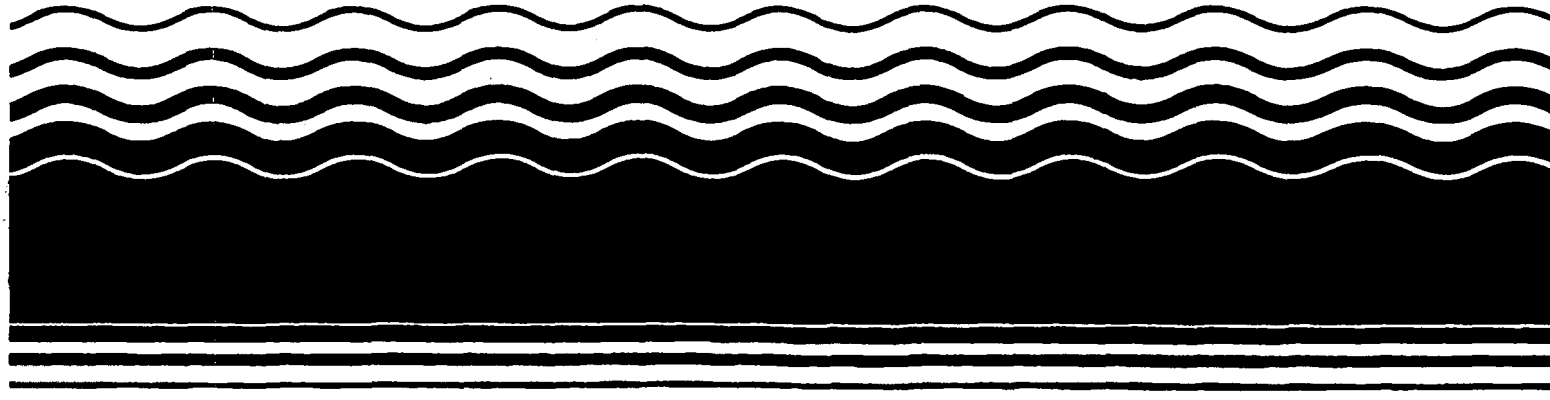
PB98-963134
EPA 541-R98-145
March 1999

EPA Superfund

Explanation of Significant Difference for the Record of Decision:

NCR Corporation
(Millsboro Plant)
Millsboro, DE
9/29/1998



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: Explanation of Significant Differences (ESD)
NCR, Millsboro, Delaware

SEP 2 9 1998

FROM: Peter W. Schaul, Chief
Superfund Remedial Branch

TO: Abraham Ferdas, Director
Hazardous Site Cleanup Division

Attached is an "Explanation of Significant Differences" (ESD) for the NCR, Millsboro, Delaware Superfund Site. The ESD identifies changes to the remedial action selected in the Record of Decision (ROD) dated August 12, 1991. The changes to the remedial action announced in this ESD involve the use of air sparging/soil vapor extraction to enhance the current pump and treat system required by the ROD.

The ROD required the implementation of a ground water pump and treat system in order to remediate ground water contaminated with Trichloroethylene (TCE). The ROD provided for a phased approach to ground water remediation, with the first phase focusing on the portion of the aquifer where the highest levels of TCE were found, and a second phase addressing the downgradient portion of the aquifer where lower levels of contamination occurred.

Construction of the Phase I ground water pump and treat system was completed in September 1995 in accordance with the ROD and the approved Remedial Design. A subsequent ESD was issued in March 1996 for the use of air sparging/soil vapor extraction for the down gradient portion of the aquifer (Phase II). Construction of the Phase II remedy was completed in September 1996.

The air sparging/soil vapor extraction technology has been very successful in reducing the concentration of TCE in the Phase II portion of the ground water. In turn, Environmental Strategies Corporation, on behalf of the Potentially Responsible Parties (PRPs), requested EPA's approval to augment the existing Phase I pump and treat system with an air sparging/soil vapor extraction system. Use of this technology not only lowers the cost of the remedy, but also enables cleanup levels to be reached in a shorter time frame.

The modified remedy will comply with all applicable or relevant and appropriate requirements (ARARs) identified in the 1991 ROD. The State of Delaware has been involved as the Support Agency for this project and has reviewed and concurred on the changes described in the ESD. The State's letter of concurrence is attached to the ESD.

I recommend that you sign the ESD.

Attachments

EXPLANATION OF SIGNIFICANT DIFFERENCES
NO. 2 FROM RECORD OF DECISION
NCR CORPORATION SUPERFUND SITE
MILLSBORO, SUSSEX COUNTY, DELAWARE

EXPLANATION OF SIGNIFICANT DIFFERENCES
NO. 2 FROM RECORD OF DECISION
NCR CORPORATION SUPERFUND SITE
MILLSBORO, SUSSEX COUNTY, DELAWARE

I. INTRODUCTION

This Explanation of Significant Differences (ESD) is issued in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. § 9617(c). Section 300.435(c)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.435(c)(2), which requires the United States Environmental Protection Agency (EPA) to issue such a document where a remedial action will differ in any significant, but not fundamental, respect from that selected by EPA and described in a Record of Decision (ROD). This ESD relates to remedial action selected by EPA for implementation at the NCR Corporation Superfund Site in Sussex County, Delaware, in a ROD dated August 12, 1991. The changes to the remedial action announced in this ESD involve use of air sparging/soil vapor extraction (AS/SVE) technologies to enhance the ground water pump and treat system at a portion (Phase I) of the Site.

The NCR Corporation Superfund site (the Site) is located approximately one quarter of a mile southeast of the intersection of Routes 113 and 24 in the town of Millsboro in Sussex County, Delaware. The Site includes a 58-acre parcel of land currently owned by First Omni Bank, National Association and formerly owned by NCR Corporation, and two adjacent parcels of unused land which together comprise approximately 80 acres. Railroad tracks separate the former NCR Corporation property from the unused portion of the Site (Figure 1). Phase I consists of the treatment of ground water west of the railroad tracks and Phase II consists of treatment of the ground water east of the railroad tracks.

Trichloroethylene (TCE), chromium, and other hazardous substances were released at the Site during the course of manufacturing activities conducted on the 58-acre parcel from approximately 1965 to 1980. On August 12, 1991, the U.S. Environmental Protection Agency

(EPA) issued a Record of Decision (ROD) which requires the implementation of a ground water pump-and-treat system in order to remediate ground water contaminated with hazardous substances released at the Site. The ROD provides for a phased approach to ground water remediation, with the first phase focusing on the portion of the aquifer where the highest levels of TCE have been found, and a second phase addressing the down gradient portion of the aquifer where lower levels of contamination occur.

On March 31, 1992, EPA issued an Administrative Order to NCR Corporation and First Omni Bank, National Association (collectively Respondents). The Administrative Order requires the Respondents to finance and perform Remedial Design (RD) and Remedial Action (RA) activities in order to implement the requirements of the ROD.

The Respondents to the Administrative Order implemented Phase I of the remedy required by the ROD. On March 27, 1996, EPA issued an ESD to modify the remedy for the down gradient portion of the site (Phase II) to include the use of air sparging/soil vapor extraction in lieu of pumping and treating the ground water. Construction of the Phase II remedy was completed on September 10, 1996.

The basis for the significant differences is discussed in detail in section III of this ESD. These differences to the remedial action do not fundamentally alter the remedy selected in the ROD with respect to scope, performance, or cost. EPA has concluded, and DNREC concurs, that the remedy selected in the ROD, modified by EPA's March 27, 1996 ESD, and further modified by this ESD, meets the objectives of the ROD and complies with applicable or relevant and appropriate requirements (ARARs) identified in the 1991 ROD and will attain all of the performance standards set forth in Appendix B of the aforementioned 1992 Administrative Order.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, SELECTED REMEDY, AND CURRENT STATUS

A. Site History

The Site consisted of woodlands before 1965. In 1965, Dennis Mitchell Industries (DMI) acquired a 58-acre portion of the Site, constructed a plant, and conducted manufacturing operations there until 1966. According to former DMI employees, the company manufactured shopping carts, children's car seats, and strollers. The manufacture of these items included a metal plating process. Waste water sludges generated during the process were stored in an onsite lagoon.

National Cash Register Company, later known as NCR Corporation (NCR), purchased the 58-acre parcel and DMI plant in 1967, and in 1969 disposed of plating sludges, allegedly generated by DMI, in a pit located near the eastern boundary of the plant property. NCR manufactured mechanical cash registers at the facility from 1967 to 1975 and electronic terminal equipment from 1975 to 1980. Electroplating, heat treating, enameling and degreasing operations were conducted from 1967 to approximately 1977. These operations were the primary sources of hazardous waste generated at the NCR plant.

The electroplating operation resulted in the production of wastes containing hexavalent chromium, copper, nickel and zinc. Sulfur dioxide gas was added to the waste stream in order to reduce the hexavalent chromium to the trivalent form. The resulting soluble chromium sulfate was then treated with caustic material to form insoluble chromium hydroxide, and the suspension was discharged to two onsite concrete lagoons for sedimentation and clarification. Sludge that accumulated in the lagoons was transported offsite for disposal. Supernatant from the clarification process was discharged to Iron Branch Creek, which is located on the northern border of the Site.

TCE was used in the vapor degreasing process to remove cutting oils from metal parts manufactured at the plant. TCE was stored in an above ground, outdoor tank and piped into the process plant for use in the degreasing units which were housed in concrete sumps. In 1976, after plating operations had been curtailed, the sumps were cleaned, filled, and covered with concrete. EPA believes that the ground water contamination at the Site resulted from spills during the delivery of TCE and from the use of TCE in plant operations.

From 1981 to 1987, NCR conducted investigations at the Site under the direction of DNREC in order to determine the extent to which soils, ground water and the surface water of Iron Branch Creek were contaminated with chromium and other metals and volatile organic compounds (VOCs). Chromium, TCE and several other halogenated VOCs were detected in soils and ground water. TCE and other halogenated VOCs were found in surface water samples.

In September of 1981, the plating sludge which had been disposed of in the pit on the eastern property boundary was excavated and sampled. The sludge was found to contain chromium and other metals used in plating processes. Approximately 315 cubic yards of excavated sludge and wastes which remained in the onsite concrete lagoons and pit were disposed of offsite under manifest in accordance with Resource Conservation and Recovery Act (RCRA) regulations. In November of 1981, NCR sold the 58-acre parcel and plant to First Omni Bank, National Association.

Under the provisions of CERCLA, the Site was placed on the National Priorities List (NPL) in July of 1987.

B. Initial Contamination Problems

In March of 1988, NCR entered into a Consent Order with DNREC. In accordance with the Consent Order, NCR installed a ground water recovery well and an air stripper west of the railroad tracks in order to curtail the migration of ground water contaminants. Under the Consent Order, NCR also conducted a Remedial Investigation (RI) to determine the nature and extent of contamination at the Site, a Risk Assessment to determine the threat to the public health or welfare or the environment caused by the release or threatened release of contaminants at or from the Site, and a Feasibility Study (FS) to evaluate alternatives for remediation of contaminated ground water.

The RI/FS was completed in 1991. The Risk Assessment demonstrated that potential future exposure to contaminated ground water at the Site would present an unacceptable risk to human health. TCE was detected in ground water samples at levels which exceed maximum contaminant levels (MCLs) for public drinking water supplies. The highest concentration of TCE (up to 490,000 micrograms per liter [µg/L]) was detected in samples collected from wells adjacent to the northeast corner of the former process plant building, the apparent source area. Ground water samples were also collected from domestic wells located east of Iron Branch. No Site-related contaminants were detected in the domestic well samples at concentrations exceeding MCLs.

C. Selected Remedy

On August 12, 1991, EPA issued a Record of Decision in which it selected a remedial action for implementation at the Site. The selected remedy included the following elements:

- Extraction of contaminated ground water using additional recovery wells until the cleanup levels are achieved;
- Treatment of VOC contamination in ground water using an air stripper followed by carbon adsorption of the air stripper effluent until the cleanup levels (MCLs and non-zero Maximum Contaminant Level Goals) are achieved;
- A provision for chromium treatment using coagulation and filtration, if determined by EPA to be necessary to achieve effluent limitations;
- A provision for air emission controls, if determined by EPA to be necessary, during predesign studies;
- A combined discharge to surface water and/or onsite ground water infiltration galleries;

- A well survey to determine the location of all wells within a one mile radius of the site in order to update the previous survey;

- Continued quarterly monitoring of ground water until the cleanup levels (MCLs and non-zero Maximum Contaminant Level Goals) are achieved;

- An annual monitoring program for surface water and sediments of Iron Branch until the ground water cleanup levels (MCLs and non-zero Maximum Contaminant Level Goals) are achieved;

- Institutional controls restricting ground water use until clean up levels (MCLs and non-zero MCLGs) are achieved throughout the entire ground water plume by establishing and enforcing a state ground water management zone and property deed restrictions regarding the installation of wells in the ground water management zone.

The selected remedial action provided for a phased approach to ground water restoration. Phase I required the installation of additional ground water recovery wells near the source area west of the railroad tracks, onsite treatment of extracted ground water using the existing air stripper and other treatment facilities as determined by EPA to be necessary, and installation of monitoring wells and monitoring of ground water quality in down gradient areas east of the railroad tracks.

Phase II called for installation of additional recovery wells and ground water treatment facilities east of the railroad tracks, if determined by EPA to be necessary. In July 1994, EPA determined that it would be necessary to remediate ground water east of the railroad tracks based on the concentration of TCE in ground water samples collected from the Phase I monitoring wells. In March of 1996, EPA issued an ESD to modify the Phase II remedy with AS/SVE in lieu of a pump and treat system. Construction of the Phase II remedy was completed in September 1996.

D. Current Status

Phase I - The ground water pump and treat system has operated since October of 1988. More than 380 million gallons of water have been treated and approximately 320 gallons of TCE have been extracted from the groundwater. The data indicate that the Phase I system has reduced the ground water TCE concentrations over the majority of the Phase I parcel by approximately 99%. During the Remedial Investigation (circa 1990), the TCE concentration in the area around Recovery Well No.1 was as high as 490,000 micrograms per liter (ug/l). The average TCE concentration in Recovery Well No.1 for 1997-1998 was 200 ug/l. Although there has been a significant reduction in the ground water TCE concentration, the levels remain above the drinking water standards.

Phase II - Construction of the AS/SVE system was completed in September 1996. The average ground water TCE concentration in monitoring well W-29A for 1996-1997 was 1080 ug/l, and the average ground water TCE concentration for the same well in 1997-1998 was 87 ug/l. This data demonstrates that the AS/SVE system has reduced the TCE concentrations in ground water by approximately 92% in only one year.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR IDENTIFIED CHANGES TO THE SELECTED REMEDY

This section of the ESD identifies and explains significant changes which are being made to the remedy identified in the 1991 ROD, as modified by the March 1996 ESD, as well as the basis for those changes. While such changes will not fundamentally alter the remedy selected in the ROD with respect to scope and performance, they do constitute a significant difference in the way certain remedial activities will be performed.

A. Description of Significant Differences

The 1991 ROD required extraction of ground water from the source area west of the railroad tracks and from down gradient areas east of the railroad tracks as determined to be necessary by EPA. The ROD further required onsite treatment of extracted ground water and discharge of treated ground water to Iron Branch Creek and/or onsite infiltration galleries. Construction of the Phase I ground water pump-and-treat system required by the ROD was completed in September 1995.

In response to EPA's decision to require remediation of the ground water east of the railroad tracks (Phase II), the Respondents submitted a proposal to perform an air sparging/soil vapor extraction pilot test at the site. The pilot tests confirmed the feasibility of using this technology to remediate the ground water and the AS/SVE system was constructed on the Phase II parcel in September of 1996. The Phase II AS/SVE system has reduced the ground water TCE concentration by approximately 92% in only one year.

In March of 1998, the Respondents to the Administrative Order proposed to augment the existing Phase I pump and treat system with air sparging/soil vapor extraction technologies. The Phase I pump and treat system would continue to operate, with the enhancement of the air sparging/soil vapor extraction technology. The AS/SVE system in conjunction with the pump and treat system shall continue to operate until EPA determines that the ground water cleanup levels identified in the ROD have been achieved. Quarterly monitoring of the ground water will be reduced to semi-annual monitoring.

Air sparging, also called "in situ air stripping," is a technology employed to remove VOCs from the subsurface saturated zone. The process introduces contaminant-free air or nitrogen into an impacted aquifer system via air injection wells, forcing the transfer of contaminants from subsurface soil and ground water into soil pore spaces in the unsaturated zone. The air sparging system operates in tandem with soil vapor extraction wells which capture and remove the VOCs from the unsaturated zone. Vapors removed from the subsurface normally require treatment prior to release to the atmosphere. Treatment options include carbon adsorption, catalytic oxidation, and incineration.

B. Basis for Identified Changes to the Selected Remedy

This ESD modifies Phase I of the remedy, which addresses contamination in the ground water west of the railroad tracks. The modified remedy at this location will use innovative *in situ* treatment technologies to enhance the pump-and-treat system for ground water remediation. Specifically, a combined air sparging/soil vapor extraction (AS/SVE) system will be used in conjunction with the pump and treat system in order to attain ground water cleanup levels west of the railroad tracks. Use of this technology not only lowers the cost of the remedy, but also enables cleanup levels to be reached in a shorter time frame.

Air sparging combined with soil vapor extraction has achieved cleanup goals at many sites where ground water pump-and-treat operations have exhibited limited success (*A Technology Assessment of Soil Vapor Extraction and Air Sparging*, EPA/600/R-92/173, September 1992). EPA reviewed the results of some of these applications and identified several conditions affecting the applicability of air sparging. Favorable conditions for the use of air sparging include a ground water table greater than 5 feet below ground surface, contaminants with low solubility which are biodegradable and volatile, soils with a permeability greater than or equal to 10^{-3} cm/sec, and an unconfined aquifer. The Phase I portion of the NCR Site is an excellent candidate for the air sparging/soil vapor extraction technology because these favorable conditions exist at the Site.

A subsurface investigation of the Phase I parcel was conducted in February 1998 to determine the feasibility of augmenting the existing Phase I ground water pump and treat system with an AS/SVE system. The investigation was conducted to locate and identify any subsurface anomalies (clay and gravel layers and/or lenses) that may be present and to delineate the lateral extent of the TCE plume.

Soils on the Phase I parcel consist predominantly of fine to medium grained sands with interspersed clay layers and lenses and gravel seams. The location of clay layers and lenses are of particular importance to the design of the AS/SVE system. If clay units are not accounted for in the design, they may, because of their low permeability, inhibit the desired dispersion of

injected air through the saturated zone or the capture of the injected air in the unsaturated zone.

Twelve borings were installed to 30 feet below the ground surface and continuously logged. No clay layer or lenses were identified that would inhibit the success of an AS/SVE system on the Phase I parcel.

One continuous clay layer was identified during the subsurface soil investigation. The clay layer is up to four feet thick and extends over the entire area of interest on the Phase I parcel. The clay layer is located entirely in the unsaturated zone and several feet above the water table in all areas. Its presence would not inhibit the successful operation of an AS/SVE system. Rather, the clay layer would improve the performance of an SVE system by acting as a cap and inhibiting short circuiting of the SVE system by ambient air from above ground.

The subsurface investigation confirmed the viability of using AS/SVE to enhance the remediation of the ground water. Augmenting the Phase I system with AS/SVE will increase the rate at which TCE is removed from the ground water resulting in a shorter clean-up time and an overall reduction in cost.

IV. COMPLIANCE WITH ARARS/ATTAINMENT OF PERFORMANCE STANDARDS

The modified remedy will comply with all applicable or relevant and appropriate requirements (ARARs) identified in the 1991 ROD and those additional ARARs identified below, and will attain all of the performance standards set forth in Appendix B of the 1992 Administrative Order. The AS/SVE system at the Phase I portion of the Site shall continue to operate until EPA determines that the ground water cleanup levels identified in the ROD have been achieved. A field sampling plan to monitor the ground water and surface water will be developed and implemented. System performance will be carefully monitored, analyzed, and adjusted as necessary based on data collected during operation.

As specified in the March 1996 ESD, air emissions from the AS/SVE system will be controlled if such emissions will result in carcinogenic risk exposure of greater than 1.0E-06 and will comply with the Performance Standards set forth in the ROD and Appendix B of the Administrative Order. In addition, the air emissions from the air sparging/soil vapor extraction system will meet the requirements of the State of Delaware Regulations Governing the Control of Air Pollution, Regulation 24, Section 50.

The modified remedy will use contaminant-free air supplied via the air sparging wells. In the event that clogging of these wells is observed, the remedy may be further modified by replacing

the air with nitrogen. The State of Delaware Regulations Governing Underground Injection Control has requirements for injection of any gas other than oxygen. These requirements will be satisfied if any gas other than oxygen is used in the air sparging wells.

V. SUPPORT AGENCY COMMENTS

The State of Delaware supports the remedy change (see attached letter dated September 2, 1998).

VI. AFFIRMATION OF STATUTORY DETERMINATIONS

The selected remedial action, as modified by the March 1996 ESD and this ESD, remains protective of human health and the environment, complies with Federal and State requirements that were identified in the ROD and in this ESD as applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

VII. PUBLIC PARTICIPATION

A notice of the availability of this ESD and a brief explanation of its contents will be published in a major local newspaper pursuant to section 300.435(c)(2)(i)(B) of the NCP, 40 C.F.R.§ 300.435 (c)(2)(i)(B).

VIII. ADMINISTRATIVE RECORD

A copy of this ESD, together with documentation supporting the changes described herein, will be included in the Administrative Record file for the Site in accordance with section 300.435(c)(2)(i)(A) of the NCP, 40 C.F.R. §300.435(c)(2)(i)(A). The Administrative Record file for the Site is available at the following locations:

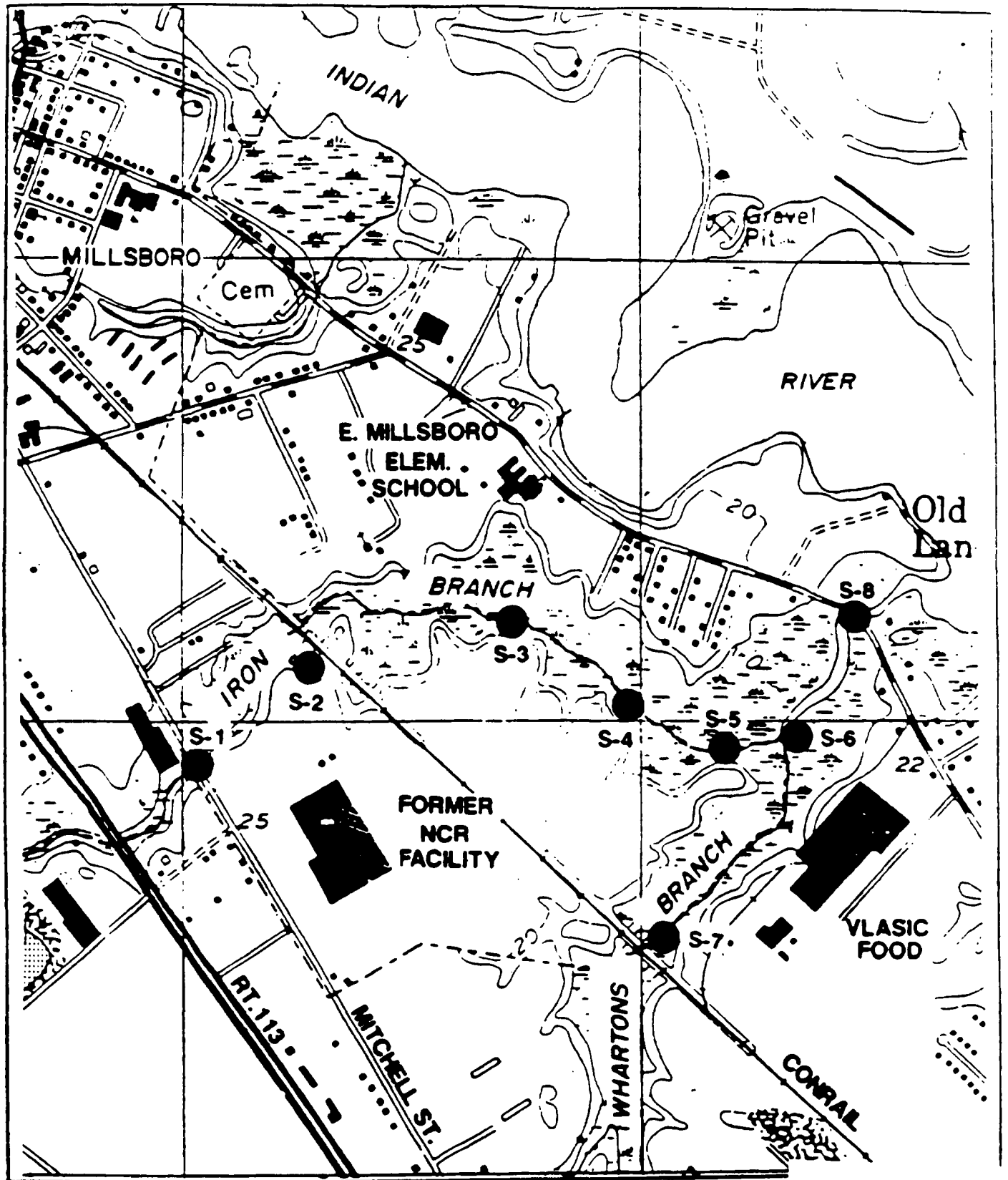
Town Office Building
P.O. Box 77
Mitchell Street
Millsboro, DE 19966
(302) 934-8171
8:00 a.m. to 4:30 p.m.

Delaware Department of Natural Resources
and Environmental Control
391 Lukens Drive
New Castle, DE 19720-2774
(302) 395-2600
8:00 a.m. to 4:00 p.m.

U.S. EPA Region III Docket Room
Ms. Anna Butch
1650 Arch Street
Philadelphia, PA 19103-2029
(215) 814-3157
8:30 a.m. to 4:30 p.m.

Abraham Ferdas, Director
Hazardous Site Cleanup Division
EPA Region III

9/27/98
Date



ENVIRONMENTAL STRATEGIES CORPORATION
8521 Leesburg Pike Suite 650

FIGURE 1.

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT

WASTE MANAGEMENT SECTION
SITE INVESTIGATION &
RESTORATION BRANCH

391 LUKENS DRIVE
RIVEREDGE PARK
NEW CASTLE, DELAWARE 19720
4090302

TELEPHONE: (302) 395-2600
FAX: (302) 395-2601

September 2, 1998

Ms. Kate Lose
U.S. Environmental Protection Agency
Region III
1650 Archer Street
Philadelphia, PA 19103

RE: Explanation of Significant Difference for NCR

Dear Ms. Lose:

The Department of Natural Resources and Environmental Control's Site Investigation and Restoration Branch (DNREC-SIRB) has reviewed the Explanation of Significant Differences for Phase I of the NCR Site. DNREC-SIRB concurs with the plan to enhance the existing Phase I pump and treat system with air sparging and soil vapor extraction(AS/VE).

DNREC-SIRB believes that the addition of AS/VE to the existing pump and treat system will help in reducing volatile ground water contamination in a more timely manner.

If you have any questions regarding the above, please call me at (302) 395-2630.

Sincerely,

David Langseder,
Project Manager

Del:sah
Del980048.doc
DE-042 II D5

Pc: N. V. Raman, Manager
Karl F. Kalbacher, Program Manager