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Superfund Record of Decision:

Love Canal (93rd Street) (Amendment), NY

50272-101

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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Love Canal (93rd Street) site is an inactive hazardous waste site located in Niagara Falls, New York. The 19-acre 93rd Street School site, one of several operable units for the Love Canal Superfund site, is the focus of this Record of Decision (ROD). This subsite is located less than one mile northwest of the Love Canal disposal area and is within the Love Canal Emergency Declaration Area. Site features include the 93rd Street School and adjacent vacant land, and the site is bordered by Bergholtz Creek to the north and residential properties to the east, west, and south. From 1942 to 1953, Hooker Chemicals and Plastics Corporation (now Occidental Chemical Corporation) disposed of over 21,000 tons of various chemicals including dioxin-tainted trichlorophenols at the Love Canal site. In 1950, after the site was deeded to the City of Niagara Falls Board of Education, the 93rd Street School was built. In 1954, a second school, the 99th Street School, was built adjacent to the mid-portion of the Canal. Before construction of the 93rd Street School, a drainage swale had crossed the site. In 1954, the site was graded to its present contours with approximately 3,000 cubic yards of fill materials including fill from the 99th Street School. The fill material is reported to contain fly ash and BHC (a pesticide) waste. During the mid-1970's, contaminated leachate migrated

(See Attached Page)

17. Document Analysis a. Descriptors

Record of Decision - Love Canal (93rd Street), NY
Third Remedial Action (Amendment) - Final
Contaminated Medium: soil
Key Contaminants: VOCs (toluene, xylenes), other organics (PAHs, pesticides), metals (arsenic, chromium, lead)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
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(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

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Love Canal (93rd Street), NY
Third Remedial Action (Amendment) - Final

Abstract (Continued)

to the surface of the Canal, to some residential basements adjacent to the Canal, and through sewers to area creeks. Those homes have been demolished, and the sewers and creeks in the Love Canal Emergency Declaration Area have been remediated. In 1980, the 93rd Street School was closed because of public health concerns related to the potentially contaminated fill material. Investigations conducted in 1988 revealed the presence of VOCs, other organics, and metals in the soil. During previous investigations, it was determined that low level contamination present in the ground water compared to the ground water quality in the area and did not pose an exposure threat to the concerned population. A 1988 ROD addressed source control through excavating and solidifying/stabilizing the excavated material, placing the material into the same unit, and capping with a low permeability soil cover. The remedial action was not implemented and has been reevaluated in light of the Niagara Falls Board of Education's 1989 plan to restore the 93rd Street School as an educational facility and to address objections to reopening the school if contaminatedp soil remains onsite. This ROD amends the 1988 ROD, and addresses final remediation of onsite contaminated soil through excavation and offsite disposal. The primary contaminants of concern affecting the soil are VOCs including toluene and xylenes; other organics including PAHs and pesticides; and metals including arsenic, chromium, and lead.

The amended remedial action for this site includes excavating and disposing of offsite 7,000 cubic yards of contaminated soil from hot spot areas; backfilling excavated areas with site soil of lower contamination; and capping and regrading the area with fill material. The estimated present worth cost for this amended remdial action is $[illegible]0,000, which does not include O&M costs.

PERFORMANCE STANDARDS OR GOALS: Soil action levels were not provided. Ground water clean-up goals were waived due to technical impracticability.

ROD AMENDMENT FACT SHEET

SITE

Name: Love Canal - 93rd Street School
Location: Niagara Falls, New York
EPA Region: II
HRS Score: 52.23 (9/83)
NPL Rank: 157 (9/83)

ROD Amendment

Signed: 5/15/91
Remedy: Excavation/disposal off-site
Capital Cost: $2.25M
O & M/year: $0
Present worth: $2.25M

LEAD

Type: Remedial
Lead: New York State Department of Environmental Conservation
Primary contact: EPA/Damian Duda/(212) 264-9589
Secondary contact: NYSDEC/Amar Nagi/(518) 457-9280
Main PRP: None idenitified

WASTE

Type: Inorganics (metals), VOCs, BHCs
Medium: Soil
Origin: Fill material from various locations
Est. quantity: 11,000 cu.yd.

DECLARATION FOR THE RECORD OF DECISION AMENDMENT

SITE NAME AND LOCATION

93rd Street School - Love Canal, City of Niagara Falls, Niagara County, New York

STATEMENT OF BASIS AND PURPOSE

The purpose of this decision document is to amend the Love Canal 93rd Street School site 1988 Record of Decision to allow for the off-site disposal of the contaminated soils.

This decision document presents the modified selected remedial action for the 93rd Street School site, located in the Love Canal Emergency Declaration Area, Niagara Falls, New York, in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), and, to the extent practicable, the National Contingency Plan (NCP).

This decision document explains the factual and legal basis for selecting the remedy for the 93rd Street School site and is based upon its Administrative Record. The attached index (Appendix C) identifies the items which comprise the Administrative Record upon which the selection of the remedial action is based.

The State of New York concurs with the selected remedy. (See Appendix D).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the remedial action selected in this Amendment to the 1988 Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedy presented in this document addresses the off-site disposal of the contaminated soils at the 93rd Street School site.

The major components of the selected remedy include:

- Excavation and off-site disposal of approximately 7000 cubic yards of the contaminated material from the hot-spot areas, which may be reused or recycled off-site as cover and/or fill material.

- Backfilling the excavated area with Site soils from areas of lower contamination, covering with approximately one foot of suitable fill material, and regrading to contours for proper drainage.

The remediation of site soils, which are considered the principle threat to the site, will prevent any potential groundwater contamination and reduce the risks associated with exposure to the contaminated soil.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, since all threats associated with soils ingestion, inhalation and dermal contact would be eliminated. The remedy also complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, provides for the reuse of the contaminated material, and is cost effective.

Constantine Sidamon-Eristoff
Regional Administrator

Date 5/15/91

DECISION SUMMARY

93RD STREET SCHOOL - LOVE CANAL SITE

NIAGARA FALLS, NEW YORK

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

NEW YORK

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I. INTRODUCTION

Love Canal History

The Love Canal inactive hazardous waste site is located in the southeast corner of the City of Niagara Falls and is approximately one-quarter mile north of the Niagara River. Hooker Chemicals and Plastics Corporation (now Occidental Chemical Corporation) disposed of over 21,000 tons of various chemicals, including dioxin-tainted trichlorophenols, at the Love Canal site between 1942 and 1953. In April 1953, the Love Canal property was deeded by Hooker Chemical to the City of Niagara Falls Board of Education (NFBE).

During the mid-1970's, contaminated leachate had migrated to the surface of the Canal, to some residential basements adjacent to the Canal, and through sewers to area creeks. Those homes have since been demolished and the sewers and creeks in the Love Canal Emergency Declaration Area (EDA) have been remediated.

Site Name, Location, and Description

The 93rd Street School site, hereinafter, referred to as the "Site", constructed in 1950, is one of the operable units of the Love Canal National Priorities List (NPL) site and is located in the Love Canal EDA, less than one mile northwest of the Love Canal disposal site (see Figure 1). The Site is bounded by Bergholtz Creek to the north, 93rd Street to the west, residential properties and 96th Street to the east, and Niagara Falls Housing Authority property and Colvin Boulevard the south. The total Site area covers approximately 19 acres and includes both the 93rd Street School and the adjacent vacant land owned by the Niagara Falls Housing Authority.

The Site was graded in 1954 to its existing contours with, among other fills, approximately 3,000 cubic yards of fill material, reported to contain fly ash and BHC-pesticide cake, from the 99th Street School, which abutted the Love Canal. Low areas east of the 93rd Street School including the playground and the swale just south of the playground were filled and then covered with approximately one to three feet of topsoil.

In 1980, the 93rd Street School was closed due to public health concerns related to the presence of the potentially contaminated fill materials.

In March 1988, through a Cooperative Agreement with the U.S. Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (NYSDEC), through its contractor, LEA Associates, completed a remedial investigation/feasibility study (RI/FS) for the 93rd Street School site.

Original Selected Remedy

The selected remedy identified in the September 1988 ROD included excavation of the contaminated soils, on-site solidification/-stabilization of the excavated material, placement of the solidified/stabilized material back into the same unit of contamination, and capping with a low permeability soil cover.

Lead and Support Agencies

NYSDEC is the lead agency for the Site with the EPA providing technical and administrative support.

REASONS FOR ROD AMENDMENT

Regulatory Criteria

This Record of Decision (ROD) Amendment will be issued according to the requirements identified in CERCLA §117 and the NCP §300.435(c)(2)(ii).

The ROD Amendment will become part of the Administrative Record file as per the NCP §300.825(a)(2).

Scope of Response Action

This response action addresses the principal threat at the 93rd Street School site which involves eliminating the potential for direct contact with the contaminated soils, eliminating the potential for the transport of contaminated volatiles and fugitive particles into the air, eliminating the transport of contaminated particles in surface water runoff, and eliminating the transport of contamination into the groundwater.

This response action focuses solely on the remediation of the 93rd Street School site.

Rationale for Remedy Reevaluation

Since the signing of the September 1988 ROD, several developments have taken place, most notably a decision on the habitability of the EDA and the development of an EDA Land Use Master Plan by the Love Canal Area Revitalization Agency (LCARA), which resulted in the need to reevaluate the remedy. These developments are outlined in this section.

1. In December 1989, in light of the anticipated redevelopment of the EDA neighborhoods and the reassessment of the 93rd Street School as prescribed in the LCARA's Land Use Master Plan, the NFBE notified the NYSDEC and other public agencies

that it was committed to reconstitute and restore the 93rd Street School as a functional educational facility, probably a K-5 elementary school. As a result of this decision, the NFBE took objection to any treated or untreated waste remaining at the Site and urged that the contamination be completely and physically removed from the Site. NFBE was also concerned that there would be public opposition to the reopening of the School if the contaminated soils were not removed. Thus, the NFBE objected to the selected remedy in the 1988 ROD.

At the regularly scheduled January 17, 1990 Technical Review Committee meeting, NFBE formally presented its objections to EPA and NYSDEC on the 1988 ROD. It was at that meeting that EPA and NYSDEC agreed to consider the evaluation of other cost effective remedial alternatives which would involve potential off-site disposal of contaminated soils from the Site.

2. Concurrent with the issuance of the September 1988 ROD, the New York State Department of Health (NYSDOH) released the Love Canal EDA Decision on Habitability, declaring a significant portion of the Love Canal EDA habitable, which included residential properties surrounding the Site. This action relates directly to CERCLA §312 which mandates the assessment of the risks associated with inhabiting the EDA, the study of potential land uses within the EDA, and any aid that EPA may grant state and local agencies to implement the recommendations of the study in order to put the EDA properties to their best use.

   During the public comment period for the 1988 ROD, the use of the School building and grounds as an educational facility was not anticipated by the NFBE, and NFBE considered the selected remedy appropriate. The 1988 ROD did evaluate, however, the general use of the school in the risk assessment and found the selected remedy would allow such use. If the outcome of the Habitability Decision had been known during the public comment period, NFBE's concerns and potential community acceptance would have most likely been an issue and may have modified the 1988 ROD's selected remedy. Thus, as a result of NFBE's request, reevaluation of other alternatives was deemed appropriate by EPA and NYSDEC. In conformance with CERCLA §312, regarding land use recommendations, the best usage of the Site relates directly to the reopening of the School.

3. EPA's Office of Solid Waste and Emergency Response (OSWER) Directive 9347.3-01FS of July 1989 stated that RCRA Land Disposal Restriction (LDR) are applicable only to RCRA listed or characteristic wastes that are land disposed of or placed. The contaminated materials at the Site have been

determined not to be RCRA characteristic hazardous wastes nor RCRA listed hazardous wastes. This determination is consistent with the 1988 ROD. As a result, the LDR requirements are not applicable for the Site. Additionally, EPA has determined that the LDR requirements are not relevant and appropriate for the Site.

4. During previous investigations in 1984 and 1985, 2,3,7,8 TCDD (dioxin) was detected in concentrations of 2.3 parts per billion (ppb) in one subsurface sample (at 4-6 foot depth) and 1.2 ppb in one surficial soil sample. During subsequent investigations, thirty-eight subsurface composite soil samples were collected and analyzed for dioxin. Analysis of all these samples, however, showed non-detects of dioxin at detection limits below the 1 ppb level of concern.

   In April/May 1990, in order to further clarify the dioxin issue, five (5) surface soil and three (3) subsurface soil samples were collected from areas adjacent to the higher hits of dioxin. These samples were composited from thirteen (13) individual soil samples. Once again, the analysis, with detection levels below 1 ppb, showed non-detects of dioxin. A report detailing both the recent and historic dioxin samplings is included in the Administrative Record.

   Based upon these findings, dioxin is no longer considered to be a contaminant of concern.

5. Since none of the contaminated soils at the Site are considered to be RCRA hazardous waste, it is expected that the contaminated material from the Site can be disposed of off-site with potential use as fill and/or cover material.

SITE CHARACTERISTICS

Soils

The March 1988 RI/FS, prepared by LEA Associates, NYSDEC's contractor, concluded that soils at the Site are contaminated with inorganics, volatile organics, base/neutral/acid extractable organics and alpha-BHC and beta-BHC which exceed health and environmentally-based values. The extent of contamination is identified on Figure 2.

Tables 1 and 2 list all inorganic and organic compounds, respectively, detected in soils during the RI, along with the concentration and station where the highest level was detected. Background concentrations for inorganics in soils from around New York State is presented in Table 1. Various criteria, e.g., standards and background concentrations, have been considered in evaluating the extent of contamination at this Site. As shown in

Table 1, some compounds exceeded background levels. For example, arsenic was detected in both the surface and subsurface soils up to 350 parts per million (ppm), while the average background concentration for arsenic in soils around New York State is 7 ppm. In addition, background levels from the Niagara Falls Control Areas in the EPA study, Environmental Monitoring at Love Canal, showed no detectable concentrations of those PAHs which were detected at the 93rd Street School site.

As noted in the Rationale for Remedy Reevaluation section, dioxin is no longer considered to be a contaminant of concern.

Groundwater and Surface Water

Groundwater and surface water samples were collected and analyzed during the previous remedial investigations. The analyses indicated that a non-health-based New York State secondary groundwater standard for aesthetics (taste and odor) for iron was exceeded at the Site and that the groundwater and surface water at the Site were not otherwise contaminated at levels exceeding the Contract Required Detection Limits (CRDLs). However, for certain compounds, the CRDLs used exceeded NYS and EPA drinking water standards.

Tables 3 and 4 list all compounds detected at or above CRDLs in groundwater monitoring wells and surface water, respectively, along with the concentration and station where the highest level was detected and the respective ARARs and/or other criteria/guidance to be considered. Some standards/criteria are either based on aesthetics or advisories rather than actual toxicity.

As a requirement from the 1988 ROD, additional sampling was conducted in April 1989 utilizing detection levels below NYS and EPA drinking water standards. Lead was the only inorganic compound for which a health-based standard was exceeded.

During the evaluation of the groundwater sampling results, the following factors were considered:

1) The groundwater is not used nor is it planned to be used for drinking purposes, since the area is served by the City of Niagara Falls municipal water supply system and a city ordinance requires all buildings receive their water supply through the municipal system.

2) There is no route of exposure for groundwater to the concerned population.

3) The regional groundwater quality compares to the groundwater quality in the Niagara Falls area.

4) Treatment of groundwater may not be practical, due to low contamination levels.

5) All contaminated soils, which may be a source of groundwater contamination, are being excavated and disposed of off-site.

Historically, low level contamination, as shown in Table 3, is present throughout much of the Niagara Falls area groundwater, both upgradient and downgradient of the Site. Under such circumstances, the treatment of this low level contamination at the Site would not be practicable and is not necessary for the protection of human health and the environment. As a result, EPA and NYSDEC, consistent with the NCP §300.430(f)(ii)(C)(3), are waiving the applicable and relevant and appropriate requirements (ARARs) for groundwater, based upon technical impracticability.

COMMUNITY RELATIONS HISTORY

The state and federal governmental effort to ensure significant community involvement on all Love Canal projects has been extensive and is ongoing. A comprehensive community involvement strategy has been developed by NYSDEC. NYSDEC maintains a Love Canal public information office at which Love Canal documents, including those for the 93rd Street School site, are made available for public review as they are issued. In addition to this office, the EPA also has a public information office in the Carborundum Center in City of Niagara Falls.

The formal public repositories for the Administrative Record, which includes the Post Decision Proposed Plan (PDPP) and the 1988 ROD, are as follows:

New York State Department
of Environmental Conservation
Love Canal Public Information Office
9820 Colvin Boulevard
Niagara Falls, New York 14304

Environmental Protection Agency
Region II Office
EPA Document Control Center
26 Federal Plaza
New York, New York 10278

During the original public comment period (April 5-May 25, 1988) for the 1988 ROD, the use of the building and grounds as a school

was not anticipated, and the selected remedy was considered appropriate by the NFBE, NYSDEC, and EPA. NYSDOH's Habitability Decision and LCARA's Land Use Master Plan had not yet been issued. The NCP specifically identifies community and state acceptance as modifying criteria for any proposed remedy.

The Post Decision Proposed Plan (PDPP) for the Site was released for public comment on February 22, 1991. On February 22, 1991, NYSDEC transmitted a letter to the residents of the area announcing the opening of the public comment period, the public meeting, and a March 12, 1991 availability session at the NYSDEC PIO prior to the public meeting. Formal public notices were issued in the Buffalo News-Sunrise edition and the Niagara Gazette on Wednesday, February 27, 1991.

EPA and NYSDEC held a public meeting and an availability session on March 12, 1991 to discuss the PDPP and the preferred remedial alternative. The Responsiveness Summary (Appendix E) addresses concerns raised by the public during the public comment period, which closed March 28, 1991. A transcript of the public meeting was prepared, in accordance with CERCLA §117(a)(2), and is available to the public at the above-mentioned repositories. At the public meeting, the NFBE expressed strong support to the governmental agencies for the off-site disposal remedy as identified in the PDPP.

During the PDPP public comment period, using the recommendations of the post-1988 ROD NYSDOH Habitability Decision and LCARA's Love Canal Land Use Master Plan for the EDA, the community was able to comment on both the 1988 selected remedy and the PDPP preferred alternative. EPA, NYSDEC, and NYSDOH support the NFBE's new concerns on the selected remedy. The selected remedy from 1988 ROD now conflicts with CERCLA §312, since on-site disposal of the treated waste would preclude, according to the NFBE, LCARA, and the public, the Site's use as a school.

DESCRIPTION OF NEW ALTERNATIVES

After the recent reevaluation of the 1988 ROD alternatives and as per the PDPP, EPA and NYSDEC have selected two alternatives for consideration.

Alternative 1

This alternative is similar to Alternative 3 from the 1988 ROD and consists of the following:

* Excavation and off-site disposal of approximately 7000 cubic yards of the contaminated material from the hot-spot areas, which may be reused or recycled off-site as cover and/or fill material.

* Backfilling the excavated area with Site soils from areas of lower contamination, covering with approximately one foot of suitable fill material, and regrading to contours for proper drainage.

Alternative 2

This alternative is the original selected remedy as identified in the September 1988 ROD.

* Excavation of approximately 7500 cubic yards of contaminated soil and subsequent on-site solidification/stabilization of the excavated material. Additional testing to be conducted during the remedial design to further define the volume of soil needing excavation and treatment.

* Placement of the solidified/stabilized material on-site within the same unit of contamination from which it originated, with a low permeability cover, as per the Resource Conservation and Recovery Act (RCRA) 40 CFR §264.310 landfill closure requirements, installed over these areas and extended to other areas which exhibit lower levels of contaminated soil at the Site.

* Additional sampling and analysis of the groundwater with the lowest achievable levels of detection.

* Monitoring of the groundwater in accordance with RCRA regulations, 40 CFR Part 264, Subpart F.

* Conducting treatability studies during the remedial design phase to determine the effectiveness of the solidification/stabilization process for the particular soil and its ability to meet specified treatment levels. If not feasible, then treatability studies for other treatment techniques would be performed.

* Reviewing the remedy at least every five years, since the solidified soil was expected to remain on-site, to ensure that human health and the environment continue to be protected.

EVALUATION OF ALTERNATIVES

The 1988 ROD and the PDPP evaluated alternatives for the 93rd Street School site according to the nine criteria:

Threshold Criteria
-Overall protection of human health and the environment
-Compliance with ARARs

Primary Balancing Criteria
-Long-term effectiveness and permanence
-Reduction of toxicity, mobility or volume through treatment
-Short-term effectiveness
-Implementability
-Cost

Modifying Criteria
-State acceptance
-Community acceptance

Threshold Criteria

Overall Protection of Human Health and the Environment

The NCP requires that all remedies be protective of human health and the environment. This protection is primarily achieved by reducing health and environmental threats to the acceptable risk levels and by taking appropriate action to ensure that there will not be any unacceptable risks to human health and the environment through any exposure pathway. This protection applies to the nearby residents within the EDA and those using the school.

Both Alternatives 1 and 2 ensure protection of human health and the environment. Alternative 1 ensures a greater level of protection in the long term in the vicinity of the Site, since the hot spot soils would be excavated and removed from the Site. Alternative 2 is expected to immobilize the hot spot soils and thus eliminate any potential for leaching of both organic and inorganic contaminants. Threats associated with soils ingestion, inhalation and dermal contact would be eliminated in both cases.

Compliance with Applicable or Relevant and Appropriate Requirements

CERCLA §121(d) and the NCP require that remedial actions comply with all ARARs. Both Alternatives 1 and 2 satisfy these requirements.

EPA is currently undertaking an LDR rule-making that will specifically apply to soil and debris. Until that rule-making is completed, the CERCLA program will consider LDRs not to be relevant and appropriate (except for dioxin) to soil and debris that do not contain RCRA restricted wastes.

The LDR requirements have been found not to be applicable at the Site. The wastes at the Site do not exhibit the characteristics of ignitability, corrosivity or reactivity. In addition, the

binding properties of the fill material at the Site, its ability to tie-up the contaminants within the soil/fill matrix, and historical examination of Site contaminants and their concentrations as related to the toxicity characteristics leaching procedure (TCLP) list compounds should preclude the soil from being characterized as a RCRA hazardous waste by the TCLP method. The need for any further TCLP analysis, however, will be determined during the remedial design. As part of the treatability study which was conducted during the remedial design phase as required by the 1988 ROD, TCLP was performed for lead and arsenic, both of which passed the test. Thus, it has been determined that since the wastes at the 93rd Street School site are neither RCRA listed nor RCRA characteristic hazardous wastes, the RCRA LDR requirements are not applicable.

The treated soils resulting from Alternative 2 (solidification/stabilization) would be redeposited on-site in the same unit of contamination from which they originated and a low permeability cover having a permeability less than or equal to the permeability of the natural subsoils would be placed over the area. The low permeability cover of Alternative 2 complies with landfill closure requirements of 40 CFR §264.310 (RCRA Subtitle C). Under the above approach, RCRA minimum design and operating technology requirements (e.g., double liner/leachate collection system) would not be triggered since a new unit is not being constructed nor is replacement or lateral expansion of the existing unit occurring. A low permeability cover would then be placed over the area and would comply with RCRA Subtitle C (40 CFR §264.310) landfill closure and post-closure requirements.

As identified in the 1988 ROD, the Stage 1 Archeological Survey was conducted by the NYSDEC. Both the alternatives satisfy the requirements of the National Historic Preservation Act which has been found to be a location-specific ARAR, and neither will have any affect on cultural resources.

Primary Balancing Criteria

Long-term Effectiveness and Permanence

Long-term effectiveness and permanence addresses the long-term protection and reliability of the alternative. The long-term effectiveness of Alternative 1 would be high at the Site itself, since the hot-spot soils would be disposed of off-site.

Alternative 2 also provides a comparable effectiveness since the by-products are not expected to pose a hazard from a health and environmental prospective. Treatability studies which have been performed during the remedial design phase of the selected remedy in the 1988 ROD indicate that the treated material meets the criteria with respect to leaching and durability, (in terms of freeze/thaw and compressive strength). However, long-term

monitoring to ensure effectiveness of the remedy will have to be conducted for 30 years and an evaluation of the effectiveness of the remedy will be conducted every five years.

Given the lack of documentation regarding the long-term stability of the non-inorganic components of the treated material, Alternative 1 would be considered to better achieve this requirement at the Site itself than Alternative 2.

Reduction of Toxicity, Mobility or Volume

This evaluation criterion relates to the performance of a treatment technology in terms of eliminating or controlling risks posed by the toxicity, mobility or volume of hazardous substances.

Alternative 1 would not achieve a reduction in toxicity, mobility, or volume, since no treatment is involved. However, since the contaminated soils will be disposed of off-site and potentially reused or recycled as cover and/or fill material, exposure to the waste at the Site would be eliminated.

Alternative 2 involves treatment by solidification/stabilization and is expected to immobilize the contaminants in the hot spot soils, thereby, reducing any exposure to toxicity threats posed by the contaminants. Any future leaching of contaminants from the treated soils and risks due to soil's ingestion would also be reduced by this option since the soil cover over the solidified and stabilized soil would minimize the probability of exposure. With solidification/stabilization, due to the addition of the fixating/stabilizing agents, the volume of the waste material is likely to increase. Treatability studies performed during the remedial investigations indicate that the treated material meets the criteria with respect to leaching and durability (in terms of freeze/thaw and compressive strength). However, long term data on the stability and effectiveness of the treated hazardous material is not available at present.

Short-term Effectiveness

Short term effectiveness measures the time needed to implement the remedial alternative and the potential adverse impacts of its implementation.

Alternative 1 requires excavation of hot spot soils; therefore, the potential for air emissions exists. Additional risks to communities along the transportation route exists as a result of the transportation of the hot-spot soils off-site. However, strict measures would be implemented to control air emissions, soil spillage, or overturned trucks; contingencies will be adequately planned. The construction time required for this alternative will be several months less than Alternative 2.

On-site solidification (Alternative 2) requires excavation, material handling and treatment; therefore, potential short-term risks at the Site for air emissions during excavation, materials handling and treatment exists. This alternative would result in the occurrence of more potential short term risks at the Site over a longer period of time than Alternative 1 due to the longer period for implementation and due to treatment and additional material handling and mixing. However, adequate mitigation and safety plans will minimize the problem.

Although both alternatives have been shown to have potential short-term risks, Alternative 1 better satisfies this requirement than Alternative 2.

Implementability

Implementability addresses how easy or difficult it would be to carry out a given alternative's construction and operation and maintenance. The implementability of the alternatives is evaluated in terms of technical and administrative feasibility, and availability of required goods and services. Both alternatives evaluated are technically feasible.

Implementation of Alternative 1 would not be difficult technically. Excavation and transport of materials is a simple operation. There are various options available for off-site disposal locations.

Treatability studies have been conducted for Alternative No. 2 to determine the optimal conditions to satisfy the treatment requirements and provide long-term effectiveness. Frequent monitoring of treated material during operations and long term monitoring would be needed to ensure system effectiveness and reliability.

The availability of the necessary equipment and specialists is more limited for Alternative 2 than for Alternative 1 since solidification of organics is a relatively new technology.

Sufficient area exists at the Site to set up treatment units as required in Alternative No. 2, and ample land area would be available on-site for redeposition of the treated soil.

The severe winter weather conditions in this area would limit the construction season for both alternatives, and the low winter temperatures could require additional precautions to maintain optimal reaction rates for Alternative 2.

While both alternatives meet this criteria, it is believed that Alternative 1 would be simpler and easier to implement than Alternative 2.

Costs

Costs are evaluated in terms of capital cost, O&M and present worth. The cost of Alternative 1 is estimated to be $2.25 million which assumes the transportation off-site in the Niagara Falls area. This cost is significantly lower from the estimated cost of $4.8 million for Alternative 3, off-site disposal, in the 1988 ROD. The wide difference in cost relates directly to the fact that Alternative 3 included disposal of waste at a RCRA facility in Ohio (estimated to be about 500 miles away) and installation of a low permeability cover at the Site. Alternative No. 2 which results in comparable effectiveness as Alternative 1 has a total present worth cost range of from $3.9-5.5 million. The cost analysis of both the alternatives show that Alternative 1 provides a similar degree of effectiveness at a lower cost than Alternative 2.

Modifying Criteria

State Acceptance

This section addresses any concerns and degrees of support the State has expressed regarding the remedial alternatives being evaluated.

New York State supports a remedy that reduces the inherent hazard posed by the contaminants at the Site. The State's preference is for Alternative 1 which removes the hazardous waste from the Site, puts the Site to its best use, and satisfies the community.

Community Acceptance

This evaluation criteria addresses the degree to which the members of the local community support the remedial alternative being evaluated.

Both the RI/FS and the original Proposed Remedial Action Plan were made available to the public and a responsiveness summary was prepared addressing the comments raised during the comment period before issuance of the ROD. The PDPP was prepared as a result of the NFBE concerns and the LCARA's Love Canal Land Use Master Plan which was required by the Love Canal EDA Habitability Decision and CERCLA §312. The overall acceptance of this remedy by the public has been documented. Revision of the 1988 ROD selected remedy will allow for the best use of this Site as determined by the local entities responsible for its development.

MODIFIED SELECTED REMEDY

Based upon the above evaluation of the two alternatives, EPA and NYSDEC recommend Alternative 1 (Off-site Disposal) and subsequent Site restoration as the preferred alternative for the remedial action of the contaminated soils at the Site. Prior to implementation, a remedial design effort will be performed to elaborate on the specific details of the preferred alternative.

STATUTORY DETERMINATION

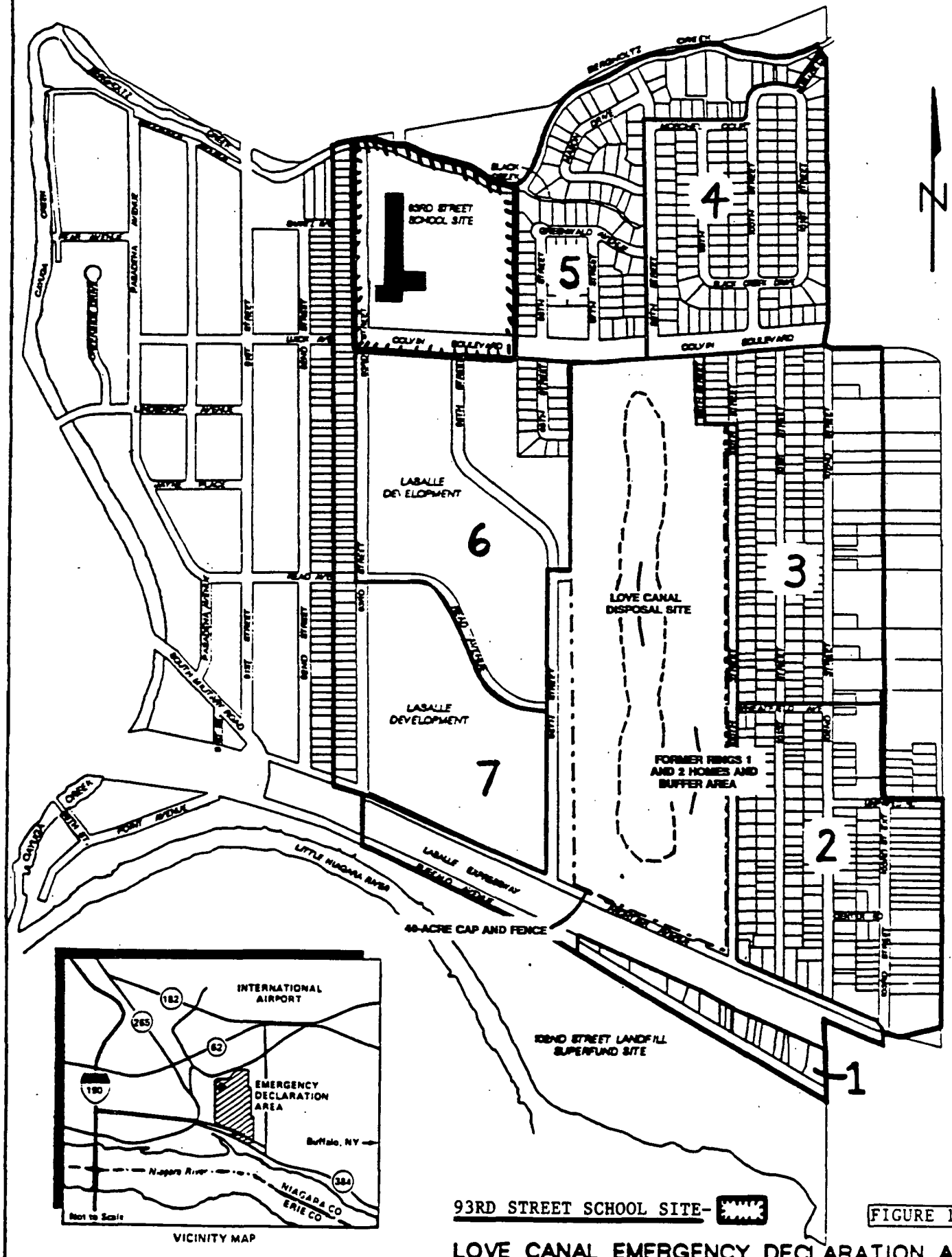
The selected remedy in this amendment which modifies the 1988 ROD satisfies CERCLA §121 and §312 and best achieves the goals of the nine evaluation criteria in comparison to the other alternative.

The EPA and NYSDEC believe that the preferred remedy described above is fully protective of human health and the environment and offers the best balance among the evaluation criteria, thereby preventing any future groundwater contamination, reducing the risks associated with exposure to the contaminated soils, and providing for the potential reuse/recycle of the contaminated materials.

EXPLANATION OF SIGNIFICANT DIFFERENCES

Based on CERCLA §117(b) requirements, EPA and NYSDEC determined that no significant changes have been made to the selected remedy from the time it was originally proposed in the PDPP to final adoption of the alternative in this ROD amendment.

APPENDIX A



VICINITY MAP

93RD STREET SCHOOL SITE-

FIGURE 1

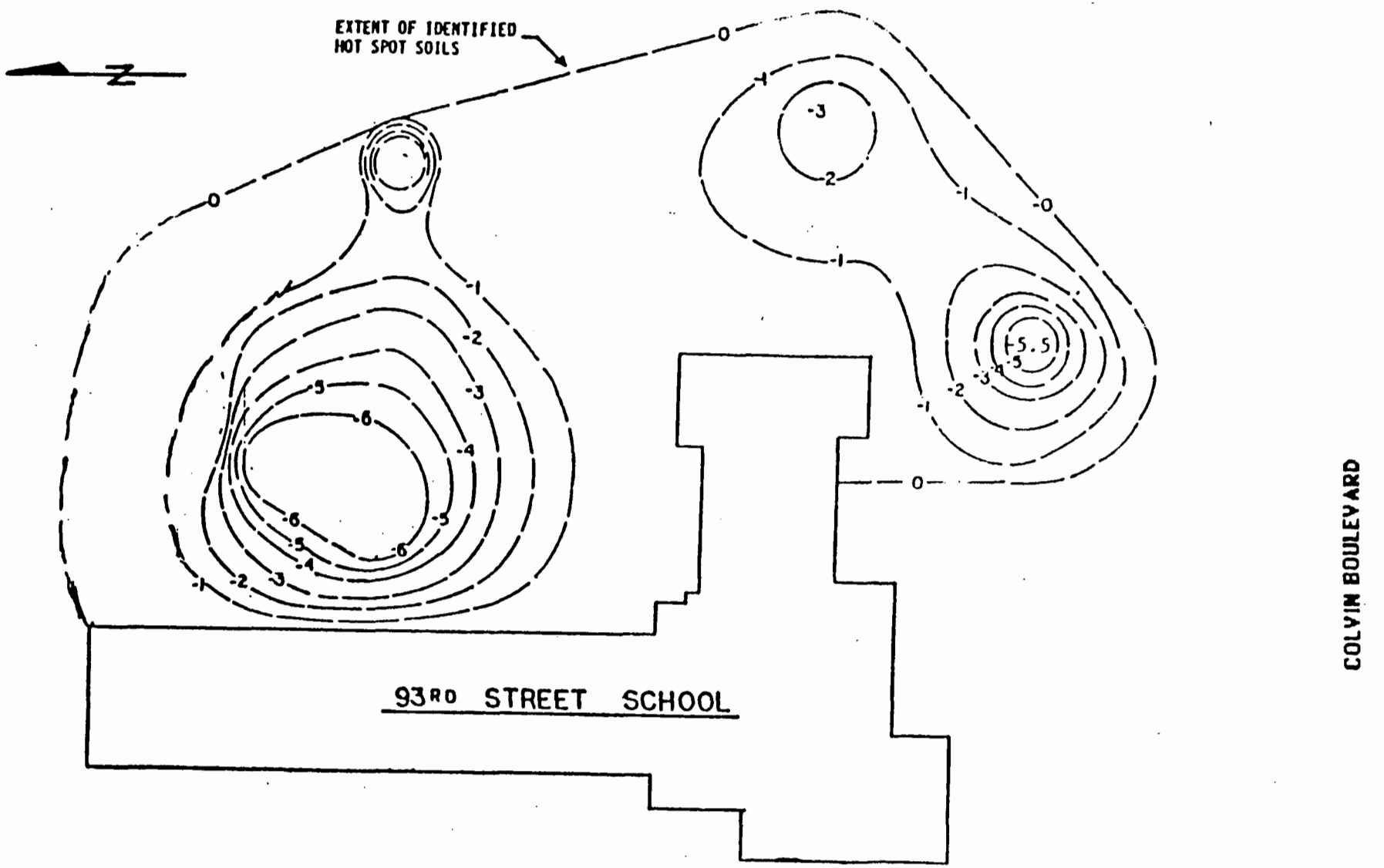
LOVE CANAL EMERGENCY DECLARATION AREA

NIAGARA FALLS, NEW YORK SCALE: 1"=750' (SEVEN EDA NEIGHBORHOODS)

LEGEND

EMERGENCY DECLARATION AREA (EDA) BOUNDARY

SOURCE:
EDA BOUNDARIES TAKEN FROM NEW YORK STATE REAL PROPERTY TAX LAW ARTICLE 17, SECTION 1702



NOTE:
EXCAVATION CONTOURS SHOWN ARE APPROXIMATE AND ARE BASED ON REMOVAL OF MATERIAL TO A DEPTH AT LEAST ONE FOOT BELOW THE DEPTH WHERE SIGNIFICANT CONTAMINATION WAS FOUND.

FIGURE 2

APPENDIX B

TABLE 1

SOILS DATA

INORGANIC COMPOUNDS AND BACKGROUND CONCENTRATIONS

Parameter	Highest Conc mg/kg† (ppm)	Sta	NY SOIL BACKGROUND Mean mg/kg (ppm)	No.Samples Exceeding Background
Aluminum	10700	1P13A	48,000	0
Antimony	209n	1P4B	0.75(<9)	59(59)
Arsenic	350	1P4D	7.0(10.6)	21(15)
Barium	565n	1P4C	300	4
Beryllium	3.4n	1P4A	0.6	20
Cadmium	133n	1P4B	0.4†††(4)	68(27)
Calcium	202000	1P4A	5,200	42
Chromium	516	1P1B	34	15
Cobalt	52	1P3E	8	21
Copper	44	1P11E	22	28
Iron	86600	1P15D	28,000	17
Lead	843	2P114A	21(114)	42(5)
Magnesium	42000*	1P13B	5,000	28
Manganese	3000n*	1P3E	1,100	5
Mercury	23	1P1B	0.15(0.15)	26(26)
Nickel	47	1P8F	14	66
Potassium	3550*	1P5B	15,500	0
Selenium	4.1s	1P1C	0.3	3
Silver	3.2	1P9D	No data	-
Thallium	1.2	1P8F	9.08	0
Vanadium	59	1P15C	60	0
Zinc	18200*	1P4B	64	54
Molybdenum	229	1P4A	No data	-
Titanium	825	1P3C	No data	-

† Subscript definitions for this column are as follows:
n = indicates spike sample recovery is not within control limits
* = indicates duplicate analysis is not within control limits
s = indicates value determined by Method of Standard Addition

††† Average from Cadmium in the Environment, J. O. Nriagu, ed, pg. 588.
††††From "Summary of Inorganic Constituent Concentrations in Soil Samples from Around the State of New York (Boerngen and Shacklette, 1981) with the exception of values in parentheses which are from Michael E. Hopkins of the Niagara County Health Dept., and were believed to be average background concentrations for soils in the Niagara Falls area.

Table 2

ORGANIC SOIL COMPOUNDS

Parameter	Highest Conc ug/kg* (ppb)	Sta
VOLATILE ORGANICS		
Methylene chloride	7700	1P9F
Acetone	4500	1P5B
1,1 Dichloroethene	1400B*	2P135
Chloroform	1500	2P135
2-Butanone	5300	1P9B
1,1,2,2-Tetrachloroethene	2400	2P135
Toluene	130000B	1P10C
Ethylbenzene	1600	1P9E
Xylenes	2000	1P10C
B/N/A		
1,4-Dichlorobenzene	830	1P4F
Naphthalene	15000	1P4C
2-Methylnaphthalene	9100	1P4C
Acenaphthene	110000	1P4C
Dibenzofuran	62000	1P4E
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs)		
Fluorene	140000	1P4C
Phenanthrene	820000	1P4C
Anthracene	220000	1P4C
Fluoranthene	450000	1P4C
Pyrene	560000	1P4C
Benzo (a) anthracene	260000	1P4C
Bis (2-Ethylhexyl) Phthalate	630	1P3A
Chrysene	240000	1P4C
Benzo (b) fluoranthene	310000	1P4C
Benzo (k) fluoranthene	49000	1P4C
Benzo (a) pyrene	190000	1P4C
Indeno (1,2,3-cd) pyrene	82000	1P4C
Benzo (g,h,i) perylene	2100	1P9B
PESTICIDES/PCBs		
Alpha BHC	13	1P8E
Beta BHC	137	1P4C

* Subscript definitions for this column are as follows:

B = indicates analyte was found in blank as well as sample.

D = indicates sample extract was diluted due to sample matrix and/or concentration levels.

TABLE 3
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSDEC DATA
(ALL VALUES IN ug/l=ppb)

Subscript Definitions for Table 2 are as follows:

B = indicates that analyte was found in blanks as well as the sample
N = indicates that spike sample recovery is not within control limits
* = indicates that duplicate analysis was not within control limits
+ = indicates that the correlation coefficient for the method of standard addition is less than 0.995
NA = Not analyzed
NC = Not calculable
ND = indicates that the analyte was analyzed for but not detected
E = indicates a value estimated due to interference
++ = Secondary Maximum Containment Level (Aesthetic Guideline)
() = Proposed Maximum Containment Level
(++) = Proposed Secondary Maximum Containment Level
** = Maximum Containment Level Goal
R = The concentration in drinking water at which ingestion will be incompatible with a sodium restricted diet
† = hexavalent chromium

Data Source Descriptions:

RI/FS (U) - Remedial Investigation/Feasibility Study data, unfiltered data calculated from December, 1986 filtered data using the adjusted ratios in Table 1

RI/FS (F) - Remedial Investigation/Feasibility Study data, from filtered samples taken on December, 1986.

SUP (U) - Supplemental Study data from unfiltered samples, taken in May, 1988.

SUP (F) - Supplemental Study data, filtered data calculated from May, 1988 unfiltered data using the adjusted ratios from Table 1.

DEC (F) - New York State Department of Environmental Conservation data for filtered samples, taken simultaneously with unfiltered samples, in Sept. 1988.

DEC (U) - New York State Department of Environmental Conservation data for unfiltered samples, taken simultaneously with filtered samples, in Sept. 1988.

TABLE 3 (CONTINUED)
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSDEC DATA
(ALL VALUE IN ug/l - ppb)

PARAMETERS	DATA SOURCE	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
INORGANICS									
Aluminum	RI/FS (U)	12	200	315-1,244	None	None	None	None	(50 ++)
	RI/FS (F)	12	200	258-1,020					
	SUP (U)	13	50	224-212,000					
	SUP (F)	13	50	184-174,000					
	DEC (U)	13	200	660-3,050					
	DEC (F)	13	200	580-2,610					
Antimony	RI/FS (U)	10	60	NC	NONE	3	NONE	NONE	NONE
	RI/FS (F)	10	60	63-219					
	SUP (U)	10	25	27.1B-58.7B					
	SUP (F)	10	25	NC					
	DEC (U)	0	60	ND					
	DEC (F)	0	60	ND					
Arsenic	RI/FS (U)	1	5	ND-14.4	25	NONE	50	50	50(30) 0**
	RI/FS (F)	1	5	ND-[10]					
	SUP (U)	9	3 OR 15	9.1B-128					
	SUP (F)	9	3 OR 15	6.3B-89					
	DEC (U)	13	10	2.0-12.2					
	DEC (F)	11	10	1.8-10.5					

NOTE: Subscript definitions are presented on the first page of this table.

TABLE 3 (CONTINUED)
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSDEC DATA
(ALL VALUE IN ug/l - ppb)

PARAMETERS	DATA SOURCE	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
Barium	RI/FS (U)	0	200	ND	1000	NONE	1000	1000	1000(5000)
	RI/FS (F)	0	200	ND					
	SUP (U)	13	41	60.4B-1170					
	SUP (F)	13	41	NC					
	DEC (U)	NA							
	DEC (F)	NA							
Beryllium	RI/FS (U)	0	3	NC	NONE	3	NONE	NONE	NONE
	RI/FS (F)	0	3	ND					
	SUP (U)	2	0.60	1.4B-2.4B					
	SUP (F)	2	0.60	NC					
	DEC (U)	0	5	ND					
	DEC (F)	0	5	ND					
Cadmium	RI/FS (U)	3	5	NC	10	NONE	10	10	10(5)
	RI/FS (F)	3	5	5.6-8.5					
	SUP (U)	2	2	3.0BN-4.0BN					
	SUP (F)	2	2	NC					
	DEC (U)	0	5	ND					
	DEC (F)	0	5	ND					
Calcium	RI/FS (U)	13	5000	17,000-3,391,000					
	RI/FS (F)	13	5000	15,000-3,001,000	NONE	NONE	NONE	NONE	NONE
	SUP (U)	13	200	82,000-1,050,000					
	SUP (F)	13	200	73,000-929,000					
	DEC (U)	13	5000	79,800-436,000					
	DEC (F)	13	5000	76,400-434,000					

NOTE: Subscript definitions are presented on the first page of this table.

TABLE 3 (CONTINUED)
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSDEC DATA
(ALL VALUE IN ug/l - ppb)

PARAMETERS	DATA SOURCE	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
Chromium	RI/FS (U)	13	10	NC	NONE	NONE	50†	50	50†(100)
	RI/FS (F)	13	10	ND					
	SUP (U)	13	3	17.2*-485*					
	SUP (F)	13	3	14.6-411					
	DEC (U)	6	10	3.5-189					
	DEC (F)	2	10	3.1					
Cobalt	RI/FS (U)	0	50	NC	NONE	NONE	NONE	NONE	NONE
	RI/FS (F)	0	50	ND					
	SUP (U)	9	5	5.1B-210					
	SUP (F)	9	5	NC					
	DEC (U)	0	50	ND					
	DEC (F)	0	50	ND					
Copper	RI/FS (U)	1	25	ND-150	1000	NONE	200	1000	(1300)
	RI/FS (F)	1	25	ND-52					
	SUP (U)	13	13	28.5-463					
	SUP (F)	13	13	9.9-160					
	DEC (U)	11	25	6-59					
	DEC (F)	8	25	3-21					
Iron	RI/FS (U)	10	100	584- 58,400	300	NONE	NONE	300	300++
	RI/FS (F)	10	100	194E,-19,400E					
	SUP (U)	13	84	456-393,000					
	SUP (F)	13	84	151-131,000					
	DEC (U)	13	100	340 -13,600					
	DEC (F)	12	100	60 -12,000					

NOTE: Subscript definitions are presented on the first page of this table.

TABLE 3 (CONTINUED)
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSDEC DATA
(ALL VALUE IN ug/l - ppb)

PARAMETERS	DATA SOURCE	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
Lead	RI/FS (U)	0	5 OR 10	ND	25	NONE	50	50	50(5) 0**
	RI/FS (F)	0	5 OR 10	ND					
	SUP (U)	11	0.8 OR 4.0	3.7B-221					
	SUP (F)	11	0.8 OR 4.0	2.5B-150					
	DEC (U)	13	5	3.3-17.4					
	DEC (F)	13	5	3.7-8.3					
Magnesium	RI/FS (U)	13	5000	43,800-401,000	NONE	35,000	NONE	NONE	NONE
	RI/FS (F)	13	5000	43,800-401,000					
	SUP (U)	13	200	62,100-489,000					
	SUP (F)	13	200	62,100-489,000					
	DEC (U)	13	5000	45,600-734,000					
	DEC (F)	13	5000	55,900-277,000					
Managanese	RI/FS (U)	13	15	47E-6560E	300	NONE	NONE	300	50++
	RI/FS (F)	13	15	28E-3920E					
	SUP (U)	13	6.1	60.4-10,200					
	SUP (F)	13	6.1	36.2-6,110					
	DEC (U)	13	15	99-3,840					
	DEC (F)	13	15	72-4,240					
Mercury	RI/FS (U)	2	0.2	0.22-0.92	2	NONE	5	2	2
	RI/FS (F)	2	0.2	0.22-0.92					
	SUP (U)	3	0.2	0.26-0.77					
	SUP (F)	3	0.2	0.26-0.77					
	DEC (U)	5	0.2	.2					
	DEC (F)	4	0.2	.2-.3					

NOTE: Subscript definitions are presented on the first page of this table.

TABLE 3 (CONTINUED)
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSDEC DATA
(ALL VALUE IN ug/l - ppb)

PARAMETERS	DATA SOURCE	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
Molybdenum	RI/FS (U)	13	250	NC	NONE	NONE	NONE	NONE	NONE
	RI/FS (F)	13	250	266-1590					
	SUP (U)	NA							
	SUP (F)	NA							
	DEC (U)	NA							
	DEC (F)	NA							
Nickel	RI/FS (U)	8	40	65-708	NONE	NONE	NONE	NONE	150++
	RI/FS (F)	8	40	51-553					
	SUP (U)	12	11	20.6B-569					
	SUP (F)	12	11	16.1B-445					
	DEC (U)	2	40	11-37					
	DEC (F)	2	40	25-29					
Potassium	RI/FS (U)	1	5000	ND-7500	NONE	NONE	NONE	NONE	NONE
	RI/FS (F)	1	5000	ND-6600					
	SUP (U)	13	290	2730B-34,200					
	SUP (F)	13	290	2420B-30,300					
	DEC (U)	13	5000	2,500-8,600					
	DEC (F)	13	5000	2,000-8,600					
Selenium	RI/FS (U)	0	5 OR 10	NC	20	NONE	10	10	10(50)
	RI/FS (F)	0	5 OR 10	ND					
	SUP (U)	3	1.2 OR 6	7.0BW-46.5+					
	SUP (F)	3	1.2 OR 6	NC					
	DEC (U)	0	5	ND					
	DEC (F)	0	5	ND					

NOTE: Subscript definitions are presented on the first page of this table.

TABLE 3 (CONTINUED)
ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS REPORT, SUPPLEMENTAL STUDY, AND NYSEC DATA
(ALL VALUE IN ug/l - ppb)

PARAMETERS	DATA SOURCE	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
Silver	RI/FS (U)	0	10	NC	50	NONE	50	50	50(90++)
	RI/FS (F)	0	10	ND					
	SUP (U)	1	2	ND-9.8B					
	SUP (F)	1	2	NC					
	DEC (U)	0	10	ND					
	DEC (F)	0	10	ND					
Sodium	RI/FS (U)	13	5000	13,700-228,000	NONE	NONE	20,000	NONE	20,000R
	RI/FS (F)	13	5000	13,700-228,000					
	SUP (U)	13	861	20,200-138,000					
	SUP (F)	13	861	20,200-138,000					
	DEC (U)	13	5000	20,500-178,000					
	DEC (F)	13	5000	20,500-173,000					
Thallium	RI/FS (U)	0	5	NC	NONE	4	NONE	NONE	NONE
	RI/FS (F)	0	5	ND					
	SUP (U)	2	2.4	ND-3.7B					
	SUP (F)	2	2.4	NC					
	DEC (U)	0	10	ND					
	DEC (F)	0	10	ND					
Vanadium	RI/FS (U)	0	50	NC	NONE	NONE	NONE	NONE	NONE
	RI/FS (F)	0	50	ND					
	SUP (U)	9	4	11.2B-322					
	SUP (F)	9	4	NC					
	DEC (U)	0	50	ND					
	DEC (F)	0	50	ND					
Zinc	RI/FS (U)	10	20	38-95	5000	NONE	300	5000	5000++
	RI/FS (F)	10	20	26-64					
	SUP (U)	13	5	30.6-1410					
	SUP (F)	13	5	20.7-950					
	DEC (U)	13	20	42-425					
	DEC (F)	13	20	32-376					

NOTE: Subscript definitions are presented on the first page of this table

TABLE 3 (CONTINUED)

ANALYSIS OF GROUNDWATER ANALYTICAL DATA
FROM THE RI/FS AND SUPPLEMENTAL STUDY
(ALL VALUES IN ug/l = ppb)

PARAMETERS	RI/FS OR SUP	NO. OF SAMPLES DETECTED	DETECTION LIMIT	CONCENTRATION RANGE	NYSDEC WQ. REGS. GA STD.	NYSDEC WQ. REGS. GA GUIDE	NYSDOH SOURCE STD	NYSDOH MCL	FED. MCLs & OTHER CRITERIA/ GUIDANCE
VOLATILE ORGANICS									
Benzene	RI/FS	0	5	ND	ND	None	None	None	5 0**
Benzene	Sup	1	0.5	ND-1.1	ND	None	None	None	5 0**
Methylene Chloride	RI/FS	4	5	ND-6	None	50	5	None	None
Methylene Chloride	Sup	0	0.5	ND	None	50	5	None	None
4-Methyl-2-Pentanone	RI/FS	0	10	ND	None	None	50	None	None
4-Methyl-2-Pentanone	Sup	13	2	3.8-79E	None	None	50	None	None
B/N/As=SEMIVOLATILE ORGANICS									
bis(2-ethylhexyl) phthalate	RI/FS	2	10	12-100	4200	None	50	None	None
bis(2-ethylhexyl) phthalate	Sup	3	5	5-17	4200	None	50	None	None
di-n-octyl phthalate	RI/FS	5	10	11-35	None	50	50	None	None
di-n-octyl phthalate	Sup	0	5	ND	None	50	50	None	None

NOTE: Subscript definitions are presented on the first page of this table.

Table 4

SURFACE WATER COMPOUNDS AND RESPECTIVE ARARS
AND/OR OTHER CRITERIA/GUIDANCE TO BE CONSIDERED
(all values in ug/l = ppb)

Parameter	Highest Conc ug/l†	Sta	NYSDEC WQ REGS A Std	NYSDEC WQ REGS A Guidance	NYSDOH Source Std
INORGANICS					
Aluminum	259	SW1	None	None	None
Antimony	90	SW2	None	3	None
Calcium	52300	SW2	None	None	None
Chromium	46	SW1	50	NA	50
Iron	378E	SW1	300	NA	None
Lead	12	SW1	50	NA	50
Magnesium	25200	SW2	35000	NA	None
Manganese	209E	SW2	300	NA	None
Nickel	55	SW1	None	None	None
Silver	44N	SW1	50	NA	50
Sodium	7400	SW2	None	None	20,000
Zinc	72	SW1	300	NA	300
VOLATILE ORGANICS					
	None				
B/N/A					
D_i-N-Octyl phthalate	21	SW1	None	50	None
PESTICIDES/PCBs/DIOXIN					
	None				

†Subscript definitions for this column are as follows:
E = indicates a value estimated due to the presence of interference
N = indicates spike sample recovery is not within control limits

APPENDIX D

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

Thomas C. Jorling
Commissioner

MAY 15 1991

Ms. Kathleen C. Callahan
Director
Emergency and Remedial Response Division
United States Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Dear Ms. Callahan:

Re: 93rd Street School Site, Niagara County, New York, Site No. 9-32-078

The final draft Record of Decision (ROD) amendment for the 93rd Street School site received by the New York State Department of Environmental Conservation (NYSDEC) on May 14, 1991 has been reviewed. The NYSDEC concurs with the selected remedial action as presented in the draft ROD amendment.

If you have any questions concerning this matter, please contact Mr. Michael J. O'Toole, Jr., P.E. at (518) 457-5861.

Sincerely,

Edward O. Sullivan
Deputy Commissioner

cc: A. Wakeman, NYSDOH
D. Duda, USEPA
D. Garbarini, USEPA

EPA-REGION II
OFFICE OF EMERGENCY &
REMEDIAL RESPONSE
1991 MAY 17 AM 11:33
DIRECTOR'S OFFICE

APPENDIX E