ROD DECISION SUMMARY

LOVE CANAL - 93rd STREET SCHOOL SITE

Niagara Falls, New York

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II
New York

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

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

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Love Canal - 93rd Street School site, developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9601, et. seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan, (NCP) 40 C.F.R. Part 300 (November 20, 1985).

This decision is based upon the Administrative Record for the Love Canal - 93rd Street School site. The attached index 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 attached).

DESCRIPTION OF THE REMEDY

This remedy addresses the source of contamination by remediation of the on-site contaminated soil. The remedy addresses the principal threats at the site by permanently immobilizing the contaminated soil at the Love Canal - 93rd Street School site, thereby preventing any potential groundwater contamination and reducing the risks associated with exposure to the contaminated soil.

The major components of the selected source control remedy include:

- Excavation of approximately 7,500 cubic yards of contaminated soil followed by on-site solidification/stabilization of this material;

- Placement of the solidified soil on-site within the same unit of contamination from which it originated, with a low permeability cover (consistent with 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 (with the lowest achievable levels of detection) of the groundwater to determine whether applicable or relevant and appropriate federal and state requirements (ARARs) and other criteria to be considered for groundwater are being met. This sampling was conducted in May 1988 and the analytical results are anticipated to be available in the fall of 1988;

- Monitoring of the groundwater in accordance with RCRA regulations, 40 CFR Part 264 Subpart F; and

- Treatability studies during the remedial design to determine the effectiveness of the solidification process for the particular soil and its ability to meet specified treatment levels. Should the treatability studies determine that solidification would not provide the desired degree of treatment (e.g., Land Disposal Restriction treatment standards), then treatability studies would be performed to determine the effectiveness of other treatment techniques (including thermal treatment) for the on-site soil.

DECLARATION

The selected remedy is protective of human health and the environment because all threats associated with soils ingestion, inhalation and dermal contact would be eliminated. The remedy will attain federal and state requirements that are applicable or relevant and appropriate to the remedial action (e.g., by treating the soils to a level which satisfies the requirements for land disposal and complying with Subtitle C landfill closure requirements), and is cost-effective. This remedy will satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element by selecting solidification which is expected to permanently immobilize the contaminated soil and eliminate any potential for leaching of both organic and inorganic contaminants. The remedy will utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining on-site, a review will be conducted within five years after commencement of the remedial action and at least every five years, thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment.

Sept. 26, 1988
Date

William J. Muszynski
William J. Muszynski, P.E.
Acting Regional Administrator

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Love Canal - 93rd Street School Site
Niagara Falls, New York

SITE LOCATION AND DESCRIPTION

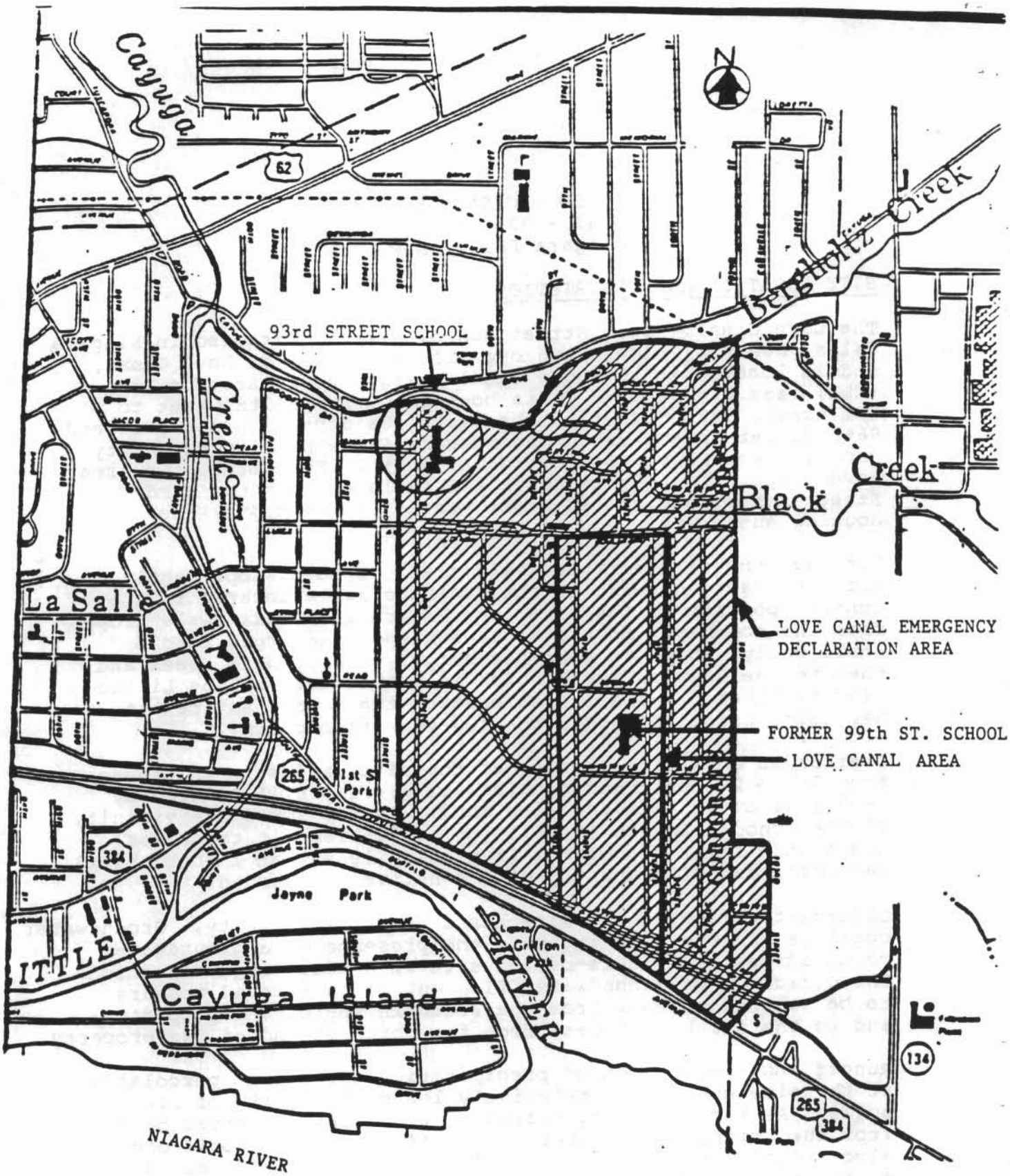
The Love Canal - 93rd Street School site is situated in Niagara Falls, New York, less than one mile northwest of Love Canal, and is located in the Love Canal Emergency Declaration Area (EDA) (see Figure 1). It is bounded by Bergholtz Creek to the north, 93rd Street to the west, residential properties 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 Housing Authority.

Although the site is relatively flat, it does slope gently from the east and west to the drainage swale located in the central portion of the site (see Figure 2). This swale slopes from the southeast to the northwest and discharges into a small gully, which in turn discharges to Bergholtz Creek and then to the Cayuga Creek, which is a tributary of the Little Niagara River. A small area east of the school adjacent to Bergholtz Creek is within the 100 year floodplain.

Overburden overlying bedrock at the site varies in thickness from 25 to 27 feet, and consists of glacial till covered by layers of clay, silt and fine sand. In the immediate vicinity of the school, layers of fill (up to 7.5 feet in thickness) and a thin layer of topsoil (typically less than 1 foot thick) have been deposited on top of the native overburden.

Groundwater flow at the site has a very low velocity. Groundwater contours for the site indicate the presence of a groundwater mound across the middle of the site in an east-west direction. The direction of groundwater flow out of this mound appears to be south-southwest from the southern end of the property and to the north-northeast from the northern end of the property.

Runoff and evaporation of precipitation far exceed percolation at the site due to the relatively low permeability of site soils. As a result, any potential transport of contaminants from the organic fill material to off-site areas would occur almost exclusively through erosion caused by surficial runoff rather than through percolation and movement with the groundwater. In addition, there are no known drinking water wells in the vicinity of the site and area residents receive their water from public water supplies.



SITE LOCATION MAP

93rd STREET SCHOOL, NIAGARA FALLS, N.Y.

FIGURE 1

SITE HISTORY

The Love Canal 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 & 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.

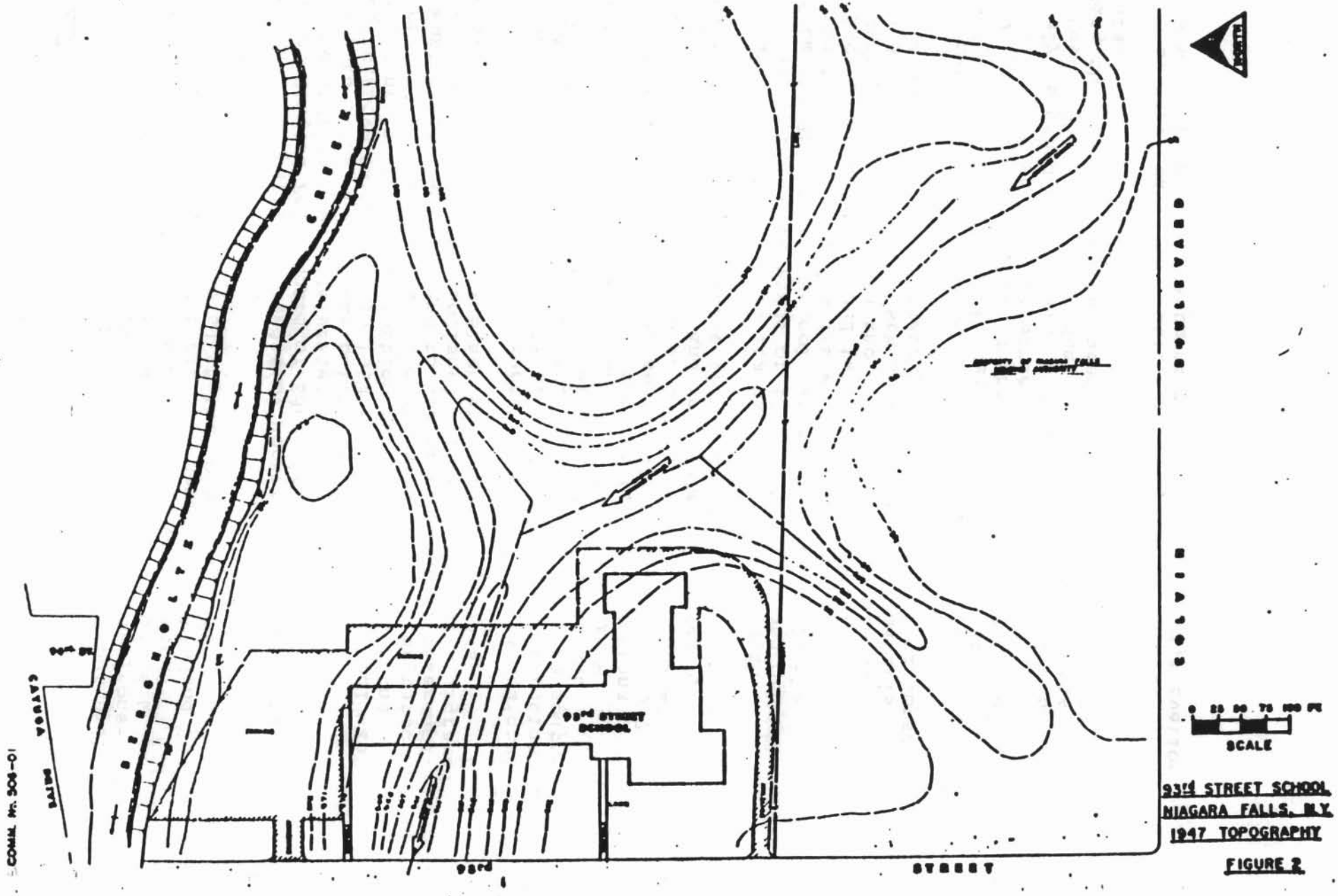
The Love Canal property was deeded by Hooker in April 1953 to the City of Niagara Falls Board of Education. During the 1950s, home construction accelerated in the area, and in 1950 the 93rd Street School was built less than one mile northwest of Love Canal, and in 1954 the 99th Street School was built adjacent to the middle portion of the Canal. Over the course of the next two decades, contaminated leachate migrated to the surface of the Canal and to nearby residential basements. The homes have since been demolished. Contaminants also migrated through area sewers to nearby Black and Bergholtz Creeks.

The 93rd Street School is an elementary school that was designed in 1947 and was constructed in 1950. Prior to the construction of the school, a drainage swale crossed the site from the south-east to northwest. This swale intersected 93rd Street and east-lying properties and discharged into Bergholtz Creek. Figure 2 depicts preconstruction contours (i.e., elevations of the land (in feet) above mean sea level) based on the 1947 site development drawing. Between 1938 and 1951, the swale was partially filled with soil and rock debris followed by sand and silt-sized carbon waste (fly ash) materials.

The site was graded in 1954 to its existing contours with approximately 3,000 cubic yards of fill material, among other fill, from the 99th Street School, which was located in the EDA on the Love Canal. Low areas east of the 93rd Street School including the playground (which had previously been filled with carbon waste) and the swale just south of the playground were filled with 99th Street School fill material and then covered with approximately one to three feet of topsoil.

The fill material at the 93rd Street School is reported to contain fly ash and BHC (pesticide) cake. The horizontal extent of the fill materials and the thickness and depths of respective layers at the 93rd Street School site were not accurately recorded during filling operations. In 1980, the 93rd Street School was closed due to public health concerns regarding the presence of the potentially contaminated fill materials.

A number of sampling investigations have been performed by both the New York State Department of Environmental Conservation



93rd STREET SCHOOL
NIAGARA FALLS, N.Y.
1947 TOPOGRAPHY

FIGURE 2

COMM. No. 506-01

(NYSDEC) and the U.S. Environmental Protection Agency (USEPA) since 1979 because of the concern associated with the fill materials brought from Love Canal. These studies have shown that there are contaminants present on-site which include volatile and base/neutral/acid extractable organics, lindane, metals and dioxin. Two of these investigations indicated the presence of dioxin in two locations at the site above the Centers for Disease Control's level of concern of greater than 1 part per billion (ppb) for dioxin in residential soils (1.2 ppb - USEPA Field Investigation Team (NUS Corporation) - 9/85 and 2.3. ppb - RECRA Research Phase II Investigaton - 8/84 *).

Through a Cooperative Agreement with the USEPA, the NYSDEC completed a remedial investigation/feasibility study (RI/FS), dated March 1988, for the 93rd Street School site through its contractor, Loureiro Engineering Associates (LEA).

ENFORCEMENT ACTIVITIES

This Record of Decision (ROD) addresses the remediation of the 93rd Street School site. The 93rd Street School is located within the northwest portion of the EDA of the Love Canal National Priority List site. A brief chronology of the Love Canal enforcement activities is presented below.

On December 20, 1979, the U.S. Department of Justice, on behalf of EPA, filed a federal law suit against Hooker Chemicals & Plastics Corporation (now Occidental Chemical Corporation) pursuant to numerous environmental statutes, alleging an imminent and substantial endangerment to human health and the environment. New York State filed a lawsuit in state court in April 1980, against Occidental for damages sustained at Love Canal. This action was stayed on August 8, 1980. On June 8, 1980, New York State was joined as a defendant in the federal action. On September 11, 1980, New York State was realigned as a plaintiff in the federal case, and on September 8, 1980, the State filed its claims in federal court.

On April 16, 1982, EPA sent Occidental a CERCLA notice letter. On July 26, 1982, EPA and the State met with Occidental to explain the remediation activities which would be taken under Superfund. Occidental at that time refused to assume responsibility for remedial action at Love Canal. On December 9, 1983, the United States filed its second amended complaint against Occidental to include claims under Sections 106 and 107 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Occidental has filed counterclaims against the United States and the State and cross-claims against the City of Niagara Falls, the Niagara Falls Board of Education, and Niagara County.

* RECRA Research, Inc. completed the Phase II Investigation under contract with the State of New York. The study was intended to finalize a Hazardous Ranking Score for the site.

On February 23, 1988, the U.S. District Court ruled on the governments' summary judgement motion holding that Occidental is liable under CERCLA for releases of hazardous substances from the Love Canal site. However, the extent of Occidental's liability under CERCLA is still subject to litigation.

On March 3, 1988, officials from Occidental formally presented to USEPA an alternative plan to remediate the sewers and creeks at Love Canal. USEPA and the NYSDEC rejected Occidental's alternative because of the lateness of the submission and the potential delay to the selected remedy. However, the governments also responded that they may at a later date reconsider the alternative if sufficient progress on implementation has been made.

In April 1988, the USEPA provided Occidental with the draft RI/FS for the 93rd Street School site, and notified Occidental of the proposed remedial action for the site as well as the close of the public comment period. The USEPA intends to send notice letters to the Potentially Responsible Parties (PRPs) upon approval of the ROD.

COMMUNITY RELATIONS HISTORY

The governmental effort to ensure significant community involvement at Love Canal has been extensive. A comprehensive community involvement strategy has been developed by NYSDEC to keep concerned parties cognizant of CERCLA activities at the site. NYSDEC maintains a Love Canal public information office at which Love Canal documents are made avialable for public review as they are produced. The office is located in the EDA at 9820 Colvin Boulevard. In addition to this office, the USEPA has a public information office in the City of Niagara Falls. The public is also kept informed through frequent public meetings.

The draft RI/FS identifying six remedial options, and the proposed remedial action plan (PRAP) was released for public comment on April 5, 1988. On the same date, USEPA and NYSDEC published a public notice which appeared in the Niagara Gazette, the Buffalo Sunrise and the Buffalo Evening News, announcing the availability of the RI/FS and the PRAP and that a public meeting would be held in Niagara Falls on April 13, 1988. In addition, an article announcing the April 13, 1988 public meeting and an availability session was published by the Niagara Gazette. NYSDEC also announced the availability of the RI/FS and the PRAP through a special addition of the Love Canal Landfill Update which is available at the NYSDEC Love Canal Public Information Office. The public repositories for the Administrative Record, which includes the RI/FS, are the NYSDEC Public Information Office in Niagara Falls and the USEPA Region II Office in New York City.

USEPA and NYSDEC held a public meeting and an availability

session on April 13, 1988 and April 14, 1988, respectively, to present the findings of the RI/FS and the PRAP. The attached July 1988 Responsiveness Summary adresses questions and concerns raised by the public during the public comment period, which closed May 25, 1988. A transcript of the public meeting was prepared in accordance with Section 117(a)(2) of CERCLA, and is available to the public at the above-mentioned Administrative Record repositories.

SCOPE OF RESPONSE ACTION

This response action addresses the principal threat at the Love Canal - 93rd Street School site which involves eliminating the potential for direct contact with site wastes; eliminating the potential for the transport of contaminated volatiles and fugitive particles into the air; and eliminating the transport of contaminated particles in surface water runoff.

Additional sampling of the groundwater at the 93rd Street School site was conducted in May 1988 with the results expected to be available in the fall of 1988. The additional sampling was performed to ensure that the groundwater is not being impacted. Should the additional sampling results indicate that groundwater standards and other criteria to be considered are exceeded, then an evaluation of the necessity for remediation of the groundwater would be conducted. Remediation of the groundwater, if warranted, would be addressed in a subsequent ROD. A further discussion of the necessity for the additional sampling is presented in the next section.

This response action focuses solely on the remediation of the 93rd Street School site. A number of other projects related to the remediation of the Love Canal site are underway. These projects include Black and Bergholtz Creek remediation (this includes the development of design documents for the procurement of a thermal destruction unit to destroy sediments from Black and Bergholtz Creek remediation and other materials stored on-site), operation of the Love Canal Treatment Plant, 102nd Street Outfall Delta Area, and EDA home maintenance and buyout.

SITE CHARACTERISTICS

The RI/FS, prepared by NYSDEC's contractor, LEA (March 1988), concluded that soils at the site are contaminated with inorganics, volatile organics, base/neutral/acid extractable organics and alpha and beta BHC which exceed health and environmentally-based values.

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, and background concentrations in soils from around New York State. Criteria (e.g., cleanup levels for dioxin and background levels for other compounds) are considered in evaluating the extent of contamination at this site. All compounds that were found to exceed background are noted on Tables 1 and 2. For example,

Table 1

INORGANIC SOIL COMPOUNDS AND RESPECTIVE BACKGROUND CONCENTRATIONS CONSIDERED

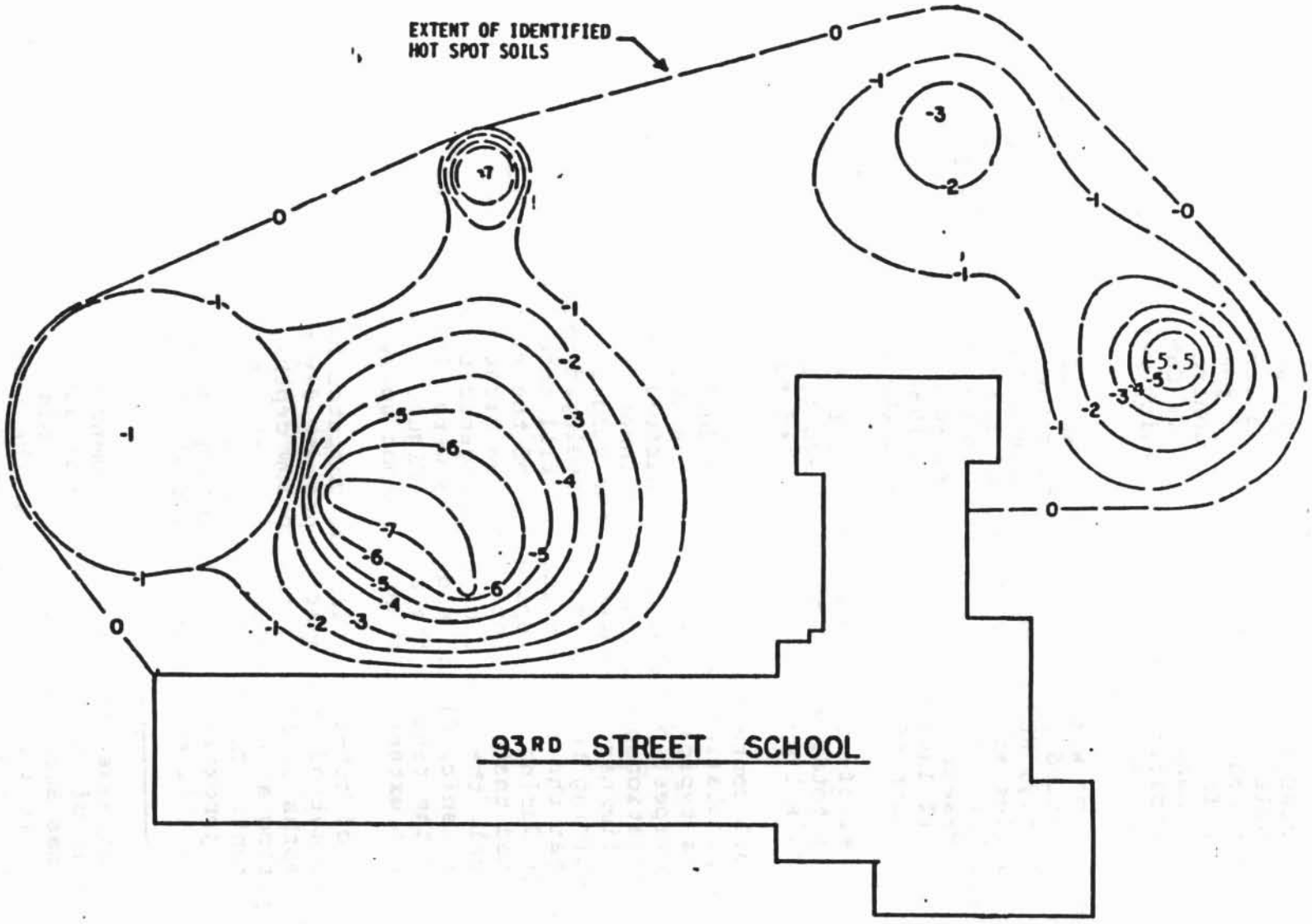
Parameter	Highest Conc mg/kg† (ppm)	Sta	NY SOIL BKGRND†††† Mean mg/kg (ppm)	No. Samples Exceeding Background
Aluminum	10700	1P13A	48,000	0
• Antimony	209n	1P4B	0.75(<9)	59(59)
• Arsenic	350	1P4D	7.0(10.6)	21(15)
Barium	565n	1P4C	300	4
Beryllium	3.4n	1P4A	0.6	20
•Cadmium	133n	1P4B	0.4†††(4)	68(27)
Calcium	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.

• These parameters exceed guidance/criteria considered.
(See Site Characteristics Section in Text)



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.

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Figure 3 - EXTENT OF HOT-SPOT SOILS

by KR,KD | chkd LK,JL | date 3-25-68

0 50ft
Scale

arsenic was detected in both the surface and subsurface soils up to 350 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.

Dioxin contamination was not detected in any of the 29 composite soil samples collected and analyzed during the RI. However, as described previously, NUS Corporation detected dioxin in three surface soil samples at concentrations of 1.2 ppb, 0.11 ppb and 0.19 ppb (September 1985). In addition to the NUS Corporation findings, RECRA Research, Inc. also detected dioxin on-site during the Phase II Investigation (August 1984) at a concentration of 2.3 ppb at a depth of 4 to 6 feet below the surface.

Based upon a level-of-concern for dioxin for this site of greater than 1 ppb *, the total volume of dioxin-contaminated soil at the site exceeding this 1 ppb level is estimated to be 550 cubic yards.

The extent of soil contamination which could impose a significant risk to nearby populations was determined during the RI. While contamination was typically greatest in the thickest fill layers located in the deepest portions of the historic swale, there was some contamination present in the thinner fill layers also. Therefore, a preliminary estimate of the volume of soil/fill potentially requiring remediation was developed based on the determination that the entire volume of fill should be addressed. Additional study during the preparation of the risk assessment, however, indicated that in a hot-spot area directly to the east of the school, the levels of carcinogenic contaminants of concern (i.e., arsenic, dioxin and PAHs) were significantly greater than for the rest of the site. Figure 3 on the following page shows the extent of these hot-spot soils.

The total volume of hot-spot soils was computed by the average end area method by comparing present day surficial contours with depths at least 1 foot below depths at which contaminants posing an unacceptable risk were indentified in the risk assessment. The final volume of soil obtained by this method was approximately 6,000 cubic yards (including dioxin hot-spots). It should be noted that if this volume of

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* The Centers for Disease Control has recommended greater than 1 ppb as the level of concern for dioxin in soils in residential areas for the Times Beach, Missouri site. Since the 93rd Street School is located in a residential area, the level of concern for dioxin greater than 1 ppb is also recommended for this site.

Table 3

GROUNDWATER MONITORING WELL 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 GA Std	NYSDEC WQ REGS GA Guidance	NYSDOH Source Std	Federal MCLs and Other Criteria/ Guidance
INORGANICS						
Aluminum	1020	SMW1	None	None	None	None
Antimony	219	SMW1	None	3	None	None
Cadmium	8.5	SMW1	10	NA	10	10 (5)
Calcium	3001000	SMW9	None	None	None	None
Copper	52	SMW7	1000	NA	200	(1300)
Iron	19400E	SMW2	300	NA	None	300 + +
Magnesium	401000	SMW1	None	35000	None	None
Manganese	3930E	SMW2	300	NA	None	50 + +
Mercury	0.92	SMW9	2	NA	5	2
Nickel	553	SMW6	None	None	None	150 H
Potassium	6600	SMW1	None	None	None	None
Sodium	228000	SMW1	None	None	None	20,000 R
Zinc	64	7140	5000	NA	300	5,000 + +
Molybdenum	1590	SMW1	None	None	None	None
VOLATILE ORGANICS						
Methylene Chloride	248*D	7140	None	50	None	None
Acetone	11000	7140	None	None	None	None
B/N/A						
Bis(2-ethylhexyl) phthalate	100	7150	4200	NA	None	None
Di-n-octyl phthalate	35	7150	None	50	None	None
PESTICIDES/PCBs/DIOXIN						
	None					

Subscript definitions are as follows:

- E = indicates a value estimated due to the presence of interference
- B = indicates analyte was found in blanks as well as the sample
- * = indicates duplicate analysis is not within control limits
- D = indicates sample extract diluted due to sample matrix and/or concentration levels

+ + = secondary maximum contaminant level(Aesthetic guideline)
( ) = proposed maximum contaminant level
H = lifetime health advisory
R = the concentration in drinking water at which ingestion will be incompatible with a sodium restricted diet

soil were to be excavated, an additional 25 percent of material might be removed using conventional construction equipment during excavation. Therefore, for all excavation alternatives evaluated in this summary, a volume of 7,500 cubic yards will be considered.

Although the area is served by a municipal water supply and the groundwater at the site is not currently used, nor is it planned to be used as a drinking water source, samples were taken and analyzed. Those analyses indicate 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 are not otherwise contaminated at levels exceeding the Contract Required Detection Limits (CRDLs). Those analyses also indicate that, for certain compounds, the groundwater and surface water did not exceed promulgated health-based applicable or relevant and appropriate federal and state requirements (ARARs). For other compounds, however, the CRDLs used during the RI exceeded both New York State and USEPA drinking water standards. In addition, some compounds detected exceeded guidance values and criteria considered. Consequently, additional sampling of the groundwater was conducted in May 1988. The analysis of these samples (with the lowest achievable levels of detection) will determine whether groundwater ARARs and other criteria to be considered are being exceeded. The results are anticipated to be available in the fall of 1988.

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. As indicated in Table 3, antimony, magnesium, manganese, nickel and sodium are present in groundwater at the site exceeding criteria considered. However, these criteria are either based on aesthetics or advisories. Since the groundwater is not being used as a drinking water source, nor is it planned to be, it has been determined that these criteria are not considered appropriate for this site. The compounds for which CRDLs exceeded their ARARs and other criteria considered for groundwater are listed in Table 5.

As discussed previously, ponding of the groundwater is evident at the site. This is due to the low permeability of the clay layer underlying the fill material and the relatively impermeable clay barrier present at the western (downgradient) end of the former drainage swale. Therefore, off-site contaminant transport from the fill area would probably occur due to erosion caused by surficial runoff of precipitation, rather than by percolation and movement in the groundwater.

A review of air quality data collected during the RI to ensure worker health and safety indicates that no significant levels of volatile contaminants above background were dectected in the breathing zone of the workers throughout drilling and well

Table 5
COMPOUNDS FOR WHICH CRDLS(1) EXCEED ARARS
AND OTHER GUIDANCE/CRITERIA CONSIDERED FOR GROUNDWATER

Parameter	CRDL(ppb)	ARAR(2)
Vinyl chloride	10	2 (Federal MCL)
1,1,2,2-Tetrachloroethane	5	0.2 (State Guidance)
Benzene	5	ND(4.4)
1,2-Dichloroethane	5	0.8
1,1-Dichloroethene	5	0.07 (State Guidance)
Tetrachloroethene	5	0.7 " "
Phenols, Total	10	1.0
Aniline	10	1.0 (State Guidance)
Bis(2-Chloroethyl)Ether	10	1.0
Dichlorobenzenes (3)	10	4.7
2,4-Dichlorophenol	10	0.3
Hexachlorobutadiene	10	0.5
Hexachloropentadiene	10	1.0
2,6-Dinitrotoluene	10	0.07 (State Guidance)
Hexachlorobenzene	10	0.35
Pentachlorophenol	50	21.
Benzidine	80	0.02 (State Guidance)
Benzo(a)Anthracene	10	0.002 " "
Chrysene	10	0.002 " "
Benzo(b)Fluoranthene	10	0.002 " "
Benzo(k)Fluoranthene	10	0.002 " "
Benzo(a)Pyrene	10	ND
Indeno(1,2,3-cd)Pyrene	10	0.002 (State Guidance)
Chlordane	0.5	0.1

(1) Contract required detection limits

(2) ARARs are New York State groundwater standards except where noted.

(3) Applies to the sum of para (1,4-) and ortho (1,2-) isomers only.

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

development operations. In addition, directly above the borings and monitoring wells, readings did not typically exceed background levels by more than 2 parts per million (ppm). In a few cases, however, when borings were first drilled and when well caps were first removed, readings as high as 10 ppm above background levels were detected. These relatively high readings were found directly above the borings and wells, and they dropped rapidly (i.e., within one to two minutes) as vapors dissipated.

SUMMARY OF SITE RISKS

The methodology used in the following evaluation is consistent with that outlined in the USEPA Superfund Public Health Evaluation Manual, (October 1986).

The full list of detected chemical parameters were narrowed down to include those parameters listed in Tables 1 and 2. Some of the compounds from these tables were eliminated based on low concentrations present in soil, limited toxicity data available for the baseline risk assesssment, or low potential for exposure. The remaining ten indicator chemicals for soil which are subjected to the baseline risk assessment are antimony, arsenic, lead, mercury, benzo(a) anthracene*, benzo(b) fluoranthene*, benzo(a) pyrene*, chrysene*, indeno (1,2,3-cd) pyrene* and dioxin.

Based on site conditions, it was determined that plausible routes of exposure for potential receptors for the 93rd Street School site would be inhalation of contaminated soils if they were entrained as a dust and inadvertent ingestion of contaminated soil (e.g., children playing on the site). Exposure via use of groundwater as a drinking water was not evaluated because the site is served with a public water supply, and the probability of drilling for a potable water supply in this area is extremely low.

In order to quantitatively estimate human exposure and potential health risk, two hypothetical scenarios were considered for the unremediated site: potential exposures at the undisturbed site; and potential exposure if soils were disturbed by persons unaware or unconcerned that the site contained potentially hazardous materials.

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* For this site, these high molecular weight PAHs are treated as a class of carcinogenic PAHs with carcinogenic potency equivalent to benzo(a) pyrene.

° Toxicological Information

The main route of exposure for toxic metals is primarily by ingestion of metal-contaminated food, water, and soil and by inhalation of metal-contaminated dusts or fumes. Dermal absorption is generally inefficient unless very high concentrations of a soluble salt are liberally applied. As a result, dermal absorption was not considered as a potential route of exposure in this assessment.

PAHs are formed as a result of combustion or natural petroleum synthetic mechanisms. PAHs are not generally intentionally synthesized, but are obtained by refining natural material for use as fuels, lubricants, preservatives, and starting materials for petrochemical manufacture. Only a subset of the general chemical category of PAHs have the potential to cause cancer. Five PAH compounds, which were mentioned previously, found at the site have EPA ratings of probable to possible human carcinogens. Of these compounds, only benzo(a) pyrene has experimental data sufficient for quantatively estimating carcinogenic potency. Therefore, in doing this risk assessment, it was conservatively assumed that other PAHs with probable or possible carcinogenic effects had a carcinogenic potency equal to that of benzo-a-pyrene.

Chlorinated dibenzo-p-dioxins are not intentionally synthesized. They exist as trace contaminants of synthetic chlorinated aromatic compounds such as pentachlorophenol and 2,4,5- trichlorophenoxyacetic acid or, as a combustion product of chlorinated compounds.

Limited data is available on human exposure to dioxin. It has been documented that exposure to dioxin in the workplace will produce chloracne. This appears to be the effect seen in humans that is most clearly correlated with dioxin exposure. Dioxin has also been shown to be extremely toxic to certain laboratory animals. It has been demonstrated that 2,3,7,8-tetrachlorodibenzo-p-dioxin causes tumors in rats and this finding has been used for dose-response assessment.

° Risk Assessment Results

The baseline risk assessment for this site (See RI Section 6) concludes that under the no-action alternative, a theoretical cumulative cancer risk of 2.4×10^{-4} may exist for the undisturbed site scenario. If the site were disturbed without careful implementation of direct contact and dust control measures, then an even greater cumulative cancer risk of 1.3×10^{-3}* could be posed. The risk

* The value presented in the RI risk assessment for total carcinogenic risk for the inhalation exposure (disturbed scenario) is 1.8×10^{-5}, but should have instead been reported as 2.8×10^{-7}. However, this does not change the overall conclusions in the risk assessment because the total cumulative cancer risk for the disturbed site remains 1.3×10^{-3}.

posed by the ingestion case contributes almost all of the risk, i.e., 2.3×10^{-4} and 1.3×10^{-3} for the undisturbed and disturbed site scenarios, respectively.

The primary contaminants contributing to this unacceptable risk are arsenic, PAHs and dioxin, and the primary route of exposure for these contaminants is through inadvertent ingestion of soils (e.g., children playing at the site).

The cancer risks noted above and further detailed in the RI/FS baseline risk assessment were based on utilizing maximum concentrations of contaminants for the soil ingestion scenarios (i.e., undisturbed and disturbed site). Even if average concentrations are used in the ingestion scenarios, total cumulative carcinogenic risks of 3.2×10^{-5} and 7.1×10^{-5} are derived for the undisturbed and disturbed site, respectively. Again, most of this risk is accounted for by the ingestion case, i.e., 2.6×10^{-5} and 7.1×10^{-5} for the undisturbed and disturbed site scenarios, respectively. Additionally, even assuming arguendo that the carcinogenic potency factor for dioxin were reduced by a factor of 16, as suggested by one commentor, the risk posed by the site would still be unacceptable.

Regardless of whether or not the site is disturbed, it is unlikely that the non-carcinogenic contaminants will pose a significant toxic effect.

USEPA concludes that the risks posed by the above described scenarios are unacceptable. Implementation of the no-action alternative would lead to continued unacceptable cancer risk at this site. Human health and the environment would not be protected on a short-term basis since particles in contaminated surface soils may become airborne, or come into direct contact with humans or other environmental receptors at the site. Over the long-term, it is anticipated that potential exposure risks may increase since wind and surface water erosion could expose greater portions of the deeper, more contaminated soils. In addition, the no-action alternative would not be consistent with CERCLA § 121 statutory preference for utilizing remedies which employ treatment as their principal element to reduce toxicity, mobility or volume of the contaminants at the site.

Based on the results of the baseline risk assessment and a locational determination of the contaminants at the site, a hot-spot area containing approximately 7,500 cubic yards of soil was identified at the site where arsenic, PAHs and dioxin (detected in previous investigations) are present at significantly higher levels than identified in other soils at the site.

A description of the analytical methods that were used in making these risk calculations are provided in the RI report and in the responsiveness summary.

DOCUMENTATION OF SIGNIFICANT CHANGES

USEPA and NYSDEC have indentified in the PRAP that on-site solidification of the hot-spot soils is their preferred alternative for remediation of the 93rd Street School site.

Based on CERCLA Section 117(b) requirements, USEPA and NYSDEC determined that no significant changes have been made to the proposed remedy from the time it was originally proposed in the PRAP to final adoption of the alternative in the ROD.

DESCRIPTION OF ALTERNATIVES

As a result of the alternative's development and initial screening process, a total of six remedial action alternatives were developed for detailed evaluation for the 93rd Street School site. Two containment options, three treatment options and the no-action alternative were carried through to this step. These six feasible remedial alternatives, and their associated capital, annual operation and maintenance (O&M), and total present worth costs are provided in Table 6. This table also provides the estimated time to implement each remedial alternative from the completion of the ROD.

This section provides a brief description of the six feasible remedial alternatives. A more detailed description of the alternatives development and screening process can be found in the FS.

Alternative 1- No-Action with Site Monitoring

This alternative would allow the site to remain in its existing condition. The contaminated soils would be left in place in an uncontained and untreated condition and long-term monitoring of the groundwater and surface water would be performed as well as maintenance of the paved areas adjacent to the school and the existing vegetative cover. The maintenance and monitoring would be consistent with the relevant and appropriate requirements of the Resource, Conservation and Recovery Act (RCRA) regulations, 40 CFR Part 264, Subpart F, and 40 CFR § 264.117.

This alternative would result in potential exposure of humans to contaminants of unacceptable exposure levels. Over time, risks from these exposures might increase as more contaminated soils would become exposed due to wind and surface water erosion.

Alternative 2 - Containment with Low Permeability Soil Cover

Construction of a low permeability cover at the 93rd Street School site would be performed with the intent of containing the wastes on-site, thereby preventing impacts associated with migration of contaminants via air or surface water at the site and to prevent direct contact risks. The cover would be designed and constructed so that it would have the following capabilities:

(1) Provide long-term minimization of migration of liquids through the underlying contaminated soils;

(2) Function with minimum maintenance;

(3) Promote drainage and minimize erosion or abrasion of the cover;

(4) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(5) Have a permeability less than or equal to the permeability of the natural subsoils underlying the contaminated fill materials.

The cover would be placed over both the hot-spot soil areas and extended to other areas which exhibit significantly lower levels of contaminated soils on-site. It is expected that the cover would encompass an area of approximately eight acres. The specific characteristics and thickness of the cover would be determined during the remedial design phase. It is anticipated that in order for the covered area to drain properly, the site would be regraded to ensure effective surface runoff.

Long-term monitoring would be required with this alternative to ensure that contaminants are not leaching into the groundwater or surface water. Periodic inspections of the cover and paved areas would be required consistent with RCRA § 264.117, and any cover damage detected would require prompt correction.

This alternative would comply with RCRA Subtitle C (40 CFR § 264.310) landfill closure requirements. Since wastes are not being placed with this alternative, RCRA Land Disposal Restrictions (LDRs) would not apply. The groundwater monitoring associated with this alternative would comply with RCRA 40 CFR Part 264, Subpart F requirements for groundwater monitoring.

To comply with CERCLA Section 121(c), since wastes would remain on-site following implementation of this alternative, a review of the performance of the cover would be conducted at least every five years to ensure that the remedy continued to provide protection of human health and the environment.

Table 6

Remedial Alternatives Summary

Alternative Number	Components	Estimated Total Costs ($ x 10^6) Capital	Annual O & M	Present Worth**	Estimated Time to Implement from ROD	Comments
1	No Action with Site Monitoring	-	0.2	2.0	3 mo.	Will not protect human health and environment.
CONTAINMENT OPTIONS						
2	Installation of a low permeability soil cover	1.3	0.2	3.0	3 yrs.	Hot-spot soils exceed 1 ppb level of concern for dioxin. High O&M.
3	Excavation of soil hot-spot areas, off-site disposal of these soils at RCRA landfill and installation of low permeability soil cover	3.7	0.1	4.8	3 yrs.	Doesn't meet RCRA land disposal restrictions. High long-term protection at site but not off-site. High short-term risks from transportation.
TREATMENT OPTIONS						
4*	Excavation of soil hot-spot areas, on-site solidification of contaminated soils and installation of a low permeability soil cover	2.3-3.7	0.1	3.4-4.8	3 yrs.	Reduces toxicity and mobility of organics and inorganics. Permanently immobilizes the waste. Protects human health and environment. Meets ARARs. Low O&M.
5	Excavation of soil hot-spot areas, on-site thermal treatment of contaminated soils at the 93rd Street School and installation of a low permeability soil cover					
	A) Case 1- Disposal of treated byproducts at RCRA landfill	10.0	0.1	10.7	5 yrs.	Reduces toxicity and mobility. Destroys organics. Further treatment (solidification) of the byproducts may be required if metals remain. Meets ARARs and protects human health and environment. Low O&M.
	B) Case 2- Solidification of byproducts followed by on-site disposal	8.7-10.0	0.1	9.7-11.1	6 yrs.	
	C) Case 3- Treated byproducts disposed on-site	7.8	0.1	8.9	5 yrs.	
6	Excavation of soil hot-spot areas, on-site thermal treatment of contaminated soils in the proposed thermal unit sited at Love Canal proper and installation of a low permeability soil cover					
	A) Case 1- Same scenario as Alternative 5	8.8	0.1	9.9	6 yrs.	Same as Alternative 5. Treatment would have to coincide with sewer & creek sediment burn.
	B) Case 2 " " "	7.4-8.8	0.1	8.5-10.0	7 yrs.	
	C) Case 3 " " "	6.6	0.1	7.7	6 yrs.	

* Preferred Remedial Alternative.

** Present worth is calculated based on a discount rate of 10% and a performance period of twenty-five years. The low permeability cover would be placed over the hot-spot soils and extended to other areas which exhibit lower level of contaminated soils on-site.

Alternative 3 - Soil Hot-Spot Excavation, Off-site Disposal at a RCRA Landfill and a Low Permeability Cover

This option involves excavating all identified hot-spot soils followed by transportation of these soils to an approved off-site RCRA landfill. It has been estimated previously that the quantity of hot-spot soils requiring remediation at the site would be approximately 7,500 cubic yards. Following excavation, the excavated areas would be filled with clean fill from an off-site location, then a low permeability cover as described in Alternative 2 would be place over the approximately eight acre area.

Control technologies that would be required during implementation of this alternative would include: respiratory and protective clothing for workers at the site; decontamination equipment; dust controls which could include water spraying, windscreening, and temporary surface water controls to prevent migration of contaminants off-site. In addition, chemical dust suppressants may be required to control volatilization of organics.

Long-term groundwater monitoring and maintenance requirements would be similar to those described previously for the low permeability cover (Alternative 2). Monitoring requirements might be reduced since hot-spot soils would no longer be present at the site. Consistent with the relevant and appropriate requirements of 40 CFR § 264.117, the Regional Administrator has the authority to reduce the post-closure care if it is determined that the reduced period is sufficient to protect human health and the environment (e.g., groundwater monitoring results, or alternative disposal or reuse techniques indicate that the facility is secure).

A potentially limiting factor of this alternative is the fact that prior to disposal at the off-site RCRA landfill, it may have to be demonstrated that the hot-spot soils would meet LDR requirements. LDR standards have not been promulgated for soil and debris waste (except for dioxin, which requires the leachate from treated soils to be less than 1 ppb), but when promulgated, the standards may be relevant and appropriate.

Methods such as the Toxicity Characteristic Leaching Procedure (TCLP) and total waste analysis could be utilized to determine if the soils meet the LDR levels. For Alternative 3, without prior treatment of the hot-spot soils, it is possible that they would fail the TCLP or total waste analysis test (at least for dioxin at this time) and, therefore, off-site

land disposal of these soils after November 8, 1988 (the date which LDR requirements for soil and debris are expected to take effect), may not be allowed. Off-site land disposal without prior treatment is also the least preferred alternative under CERCLA.

Option 3 must also comply with CERCLA Section 121(d)(3) regarding off-site disposal of hazardous waste. This section requires that the off-site facility be operating in compliance with all federal (e.g., RCRA) and state requirements. As a result, the hot-spot soils from the site may only be transferred to an off-site facility if the landfill unit that will accept the soils is not releasing any hazardous waste into the groundwater, surface water or soil, and all releases from other units at that facility are being controlled by a RCRA corrective action program.

Since the hot-spot soils would be sent off-site, RCRA 40 CFR Part 262, Subparts A through D manifesting and transportation requirements would be followed. In addition, the soils would not require significant temporary storage prior to transportation.

Alternative 4 - Soil Hot-Spot Excavation, On-Site Solidification of Soils, and a Low Permeability Cover

Alternative 4 involves the solidification/stabilization of the contaminated soils. The soil hot-spots would be excavated and then solidified utilizing a transportable treatment unit located at the 93rd Street School site.

The solidification treatment would involve blending the soils in mixing tanks with additives which would reduce the toxicity and mobility of the contaminants and would permanently immobilize the waste. If the transportable solidification treatment unit is not a closed system, controls may be required for potential emissions. Additives typically introduced during the solidification process include cement, silicates, polymers and proprietory additives which chemically stabilize the organics in the contaminated soil for optimum solidification. Once the additives are mixed with the soil, the final product may resemble concrete or hardened clay. The treatment of soils would comply with the appropriate treatment standards of 40 CFR Part 264.

Prior to implementation of this alternative, a treatability study would be conducted during the remedial design phase to ensure the effectiveness of this technology and its capability of reducing the total waste concentration and any possible leachate from the treated soils to levels below applicable or relevant and appropriate treatment standards (e.g., LDR requirements). Should the treatability study determine that solidification would not provide the desired degree of treatment, then treatability studies would be performed to determine the effectiveness of other treatment techniques (including thermal treatment) for the on-site soils.

If the solidified soil meets all treatment level requirements, then the treated soil would be redeposited in the same unit of contamination from which it originated. A low permeability cover would then be placed over the area (as discussed in Alternative 2) and monitored consistent with the technical requirements for closure and post-closure (e.g., RCRA 40 CFR § 264.310). The remedial activities of Alternative 4 would also comply with the general and record keeping requirements of 40 CFR Part 262, Subparts A and D, respectively.

Long-term monitoring, consistent with RCRA regulations, 40 CFR Part 264, Subpart F, of the groundwater and surface water would be required with this alternative as well as monitoring and maintenance of the cover as described in Alternative 2. Post-closure requirements might be reduced, however, as discussed in Alternative 3.

Control technologies required during implementation of this alternative would be essentially the same as those described previously for off-site RCRA landfill disposal of the soils. It is not anticipated that significant stockpiling of the excavated soils would occur prior to the solidification treatment. On-site storage of soils prior to and after treatment and prior to disposal would comply with 40 CFR § 262.34 or 40 CFR Part 264 storage requirements.

Since the solidified soil will remain on-site, this remedy would be reviewed at least every five years to ensure that human health and the environment continue to be protected.

Alternative 5 - Soil Hot-Spot Excavation, On-Site Thermal Treatment of Soils at the 93rd Street School, and a Low Permeability Cover

This alternative involves excavation of the hot-spot soil areas followed by on-site thermal treatment of these soils at the 93rd Street School site utilizing a transportable unit and residuals disposal into the same unit of contamination from which they originated. A low permeability cover would then be placed over the area (as discussed in Alternative 2) and monitored and maintained.

On-site thermal treatment would be performed with the intent of permanently treating the hot-spot soils so that treatment by-products would meet LDR treatment levels prior to disposal at the 93rd Street School site (Case 3). If, however, no thermal treatment unit were available which could achieve these levels by itself (due to the metal contaminants present in the soils), then an additional technology capable of reducing the remaining levels of the contaminants in the byproducts could be utilized. Following thermal treatment, the partially treated byproducts could then be disposed of either on-site following treatment via a solidfication technology capable of meeting the LDR treatment levels (Case 2) or at an approved off-site landfill (Case 1).

Control technologies required during the excavation would be similar to those described previously for the off-site RCRA landfill disposal and solidification/stabilization alternatives. If feed preparation operations such as pulverization or drying were required, then controls would be warranted to minimize worker contact with the soils during handling operations, to minimize particulate and possibly volatile emissions, and to minimize noise pollution. During thermal treatment, air pollution controls would be required to prevent potential escape of hazardous byproducts. Finally, if the treatment byproducts were hazardous, workers would have to be equipped with the appropriate respiratory and other protection equipment to handle the partially treated ash and scrubber waters. Process wastewater from thermal treatment could be treated at the Love Canal Leachate Treatment Facility. All federal and state ARARs would be complied with for storage and treatment of these wastewaters.

To reduce storage requirements prior to treatment, it is anticipated that the hot-spot soils would be excavated in a batch mode rather than excavate and stockpile all the soils at once.

The time required for thermal treatment of the hot-spot soils could vary from aproximately 12 to 21 months based on 24 hours/day, 365 days/year, and a 75 percent efficiency operation, depending upon the transportable unit selected. It is anticipated that a treatability study followed by a test burn would be required prior to selection of a final thermal treatment unit for use at the site to determine the level of treatment attainable, the effectiveness of air pollution controls, and the time required for treatment. The test burn would also help to indentify any problems associated with thermally treating the hot-spot soils from the 93rd Street School site. Analysis of the byproducts from the treatability study and test burn could be used to establish whether or not they would be capable of meeting LDR treatment requirements and, therefore, whether off-site RCRA landfill disposal (Case 1), solidification/stabilization (Case 2) or direct on-site disposal (Case 3) would be appropriate.

Maintenance and monitoring requirements for all cases would include maintenance of the transportable thermal treatment unit and the low permeability cover, and monitoring of groundwater, emissions and byproducts to ensure protection of human health and the environment.

Since the treated soil would remain on-site in Cases 2 and 3, this remedy would be reviewed at least every five years to ensure that the remedy continued to provide protection of human health and the environment. If the treated byproducts are sent to an off-site facility (Case 1), then applicable RCRA 40 CFR Part 262 Subparts A through D manifesting and transportation requirements would be required.

This remedy would comply with RCRA § 264 Subpart O requirements for incineration units. Subpart O specifies design requirements for operation of hazardous waste incinerators. In addition, the thermal treatment unit would comply with State requirements prohibiting general air pollution and controlling air emissions from process sources. The site would also be closed in accordance with landfill closure under 40 CFR § 264.310 (RCRA Subtitle C).

Alternative 6 - Soil Hot-Spot Excavation, On-Site Thermal Treatment of Soils at Love Canal Proper, and a Low Permeability Cover

This alternative involves the same steps as Alternative 5 (thermal treatment at the 93rd Street School) except that the hot-spot soils would be thermally treated at Love Canal proper.

This alternative is possible because USEPA has previously selected on-site thermal treatment as the remedy for the creek and sewer sediments project (see Record of Decision--Love Canal Site, October 26, 1987). Under the selected remedy, a transportable thermal treatment unit will be located at Love Canal proper, therefore, it is feasible that the hot-spot soils from the 93rd Street School site could be treated in this same unit. However, as mentioned previously, a treatability study and test burn would have to be performed prior to implementation of this alternative to ensure its continued effectiveness.

This alternative would differ from Alternative 5 in that transportation of the hot-spot soils to the transportable thermal treatment unit located at Love Canal proper would be required. Since both the Love Canal - 93rd Street School site and the Love Canal proper are located within the EDA, and are, therefore, considered one site, RCRA manifests would not be required for transportation of the contaminated soils to the treatment unit, or for transportation of the treated byproducts back to the 93rd Street School site for disposal. However, if the treated byproducts are sent to an off-site RCRA landfill (Case 1), then applicable RCRA 40 CFR Part 262, Subparts A through D manifesting and transportation requirements would be required.

The time required for thermal treatment of the hot-spot soils is dependent upon the creek and sewer remediation schedule. It is anticipated that thermal treatment of the creek and sewer sediments would be initiated in 1992, thereby delaying excavation and treatment of the 93 Street School site hot-spot soils until that time.

As is the case with Alternative 5, thermal treatment of the soils would comply with all applicable requirements of 40 CFR Part 264, Subpart O of RCRA and more stringent state regulations pertaining to incinerators. In addition, thermal treatment operations, closure requirements, cover maintenance, groundwater monitoring and storage and treatment requirements for process wastewaters would be the same as Alternative 5.

SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

The above six alternatives were evaluated using evaluation criteria derived from the NCP and CERCLA. These criteria relate directly to factors mandated by CERCLA in Section 121 including Section 121(b)(1)(A-G). The criteria are as follows:

- Protection of human health and the environment
- Compliance with ARARs
- Reduction of toxicity, mobility or volume
- Short-term effectiveness
- Long-term effectiveness and permanence
- Implementability
- Cost
- State acceptance
- Community acceptance

A summary of the relative performance of the alternatives with respect to each of the nine criteria is provided below.

- Protection of Human Health and the Environment

Protection of human health and the environment is the central mandate of CERCLA. Protection is achieved primarily by reducing health and environmental threats to acceptable levels and taking appropriate action to ensure that there will be no unacceptable risks to human health and the environment through any exposure pathway.

Except for the no-action alternative, all the alternatives evaluated afford adequate protection of human health and the environment. The no-action alternative will not be capable of adequately protecting human health and the environment on a short-term basis since particles in contaminated surface soils may become airborne, transported via surface water runoff or come into direct contact with humans or other environmental receptors at the site. Over the long-term, it is anticipated that potential exposure risks may increase since wind and surface water erosion could expose greater portions of the contaminated soils. Since the no-action alternative cannot satisfy this fundamental requirement, it will not be considered further.

Alternatives 2 through 6 all afford adequate protection of human health and the environment, although they achieve this through different means. Containment Options 2 and 3 achieve protection through controlling exposure to the waste. Treatment Options 4 through 6 achieve protection through a reduction of the inherent hazard posed by the contaminants in addition to controlling exposure to residuals.

Alternatives 2 and 3 physically contain the contaminants on-site and off-site, respectively. Alternative 3 ensures greater level of protection in the long-term since the hot-spots would be excavated, however, there may be some short-term risks associated with excavation and transportation. Alternative 2 provides the greatest protection in the short-term, however, there is a higher degree of uncertainty in the long-term if the hot-spot soils are eventually exposed through the cover. As a result, significant health risks may be posed.

Of the treatment options, solidification (Alternative 4) is expected to permanently immobilize the hot-spot soils and eliminate any potential for leaching of both organic and inorganic contaminants. All threats associated with soils ingestion, inhalation and dermal contact would be eliminated. During the treatability study for solidification, it must be demonstrated that deterioration of the solidified/stabilized hot-spot soils will not occur such that the residuals will pose a significant risk as a result of erosion.

Thermal treatment (Alternatives 5, 6B and 6C) would provide essentially comparable effectiveness to solidification, assuming that the byproducts meet all treatment level requirements, specifically, heavy metals.

Alternatives 5A and 6A would result in comparable effectiveness at the site, however, the effectiveness provided near the off-site facility is dependent on proper maintenance of the landfill.

All alternatives except for the no-action alternative would include adherence to a site specific health and safety plan to protect workers during implementation. Occupational Safety and Health Administration requirements, as well as more stringent state regulations would be followed by workers at the site to minimize the potential for harmful exposure and remediation related accidents.

- Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA requires that remedial actions comply with all ARARs to the extent that hazardous substances are present on-site. Alternatives 2 through 6 would attain their respective ARARs.

Although the area is served by a municipal water supply and the groundwater at the site is not currently used, nor is it planned to be used as a drinking water source, samples were taken and analyzed. Those analyses indicate 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 are not otherwise contaminated at levels exceeding CRDLs. Those analyses also indicate that, for certain compounds, the groundwater and surface water did not exceed health-based ARARs. For other compounds, however, the CRDLs used during the RI exceeded both New York State and USEPA drinking water standards. In addition, some compounds detected exceeded guidance values and criteria considered. Consequently, additional sampling of the groundwater was recently performed. The analysis (with the lowest achievable levels of detection) will determine whether groundwater ARARs and other criteria to be considered are being exceeded. The results are anticipated to be available in the fall of 1988, and may be considered in any subsequent decision on groundwater or surface water remediation.

Based upon the LDR provisions, RCRA hazardous waste in accordance with 40 CFR Part 261 (i.e., hazardous waste is defined as listed or characteristic) which is excavated, treated and then redeposited in the same unit of contamination constitutes placement and, therefore, the LDR requirements are potentially applicable or relevant and appropriate.

To determine whether a waste is a listed RCRA hazardous waste, it is necessary to know the source or use of the waste. When it is not possible to make an affirmative determination that the wastes are listed RCRA hazardous wastes, RCRA requirements are not applicable to CERCLA actions, but may be relevant and appropriate if the CERCLA action involves treatment, storage or disposal and if the wastes are similar or identical to RCRA hazardous wastes. Because it has not been determined with certainty whether the wastes at the 93rd Street School site are RCRA listed hazardous wastes, EPA has determined that the RCRA LDR requirements are not applicable.

Although the LDR requirements are not applicable in terms of a listed hazardous waste, they may be applicable if the waste is identified as RCRA characteristic hazardous waste. A RCRA characteristic hazardous waste is identified as a waste which exhibits the characteristics of either ignitability, corrosivity, reactivity or toxicity (using the extraction procedure (EP)).

The waste at the 93rd Street School site do not exhibit the characteristics of ignitability, corrosivity or reactivity. In addition, due to the binding qualities of the fill material at the site and its ability to tie-up the contaminants within the soil/fill matrix, it is also improbable that the wastes exhibit EP toxicity characteristics. Furthermore, the contaminants would be immobilized after treatment (i.e., at the time placement of the waste will occur). As a result, the LDR requirements are also not applicable in terms of RCRA characteristic hazardous waste.

Although the LDR requirements are not applicable because the waste is not a RCRA hazardous waste, the LDR requirements are still potentially relevant and appropriate. Dioxin LDR standards based upon analysis of treated soil have been promulgated for soil and debris waste. (These standards require the leachate from treated soils to be less than 1 ppb). Accordingly, the dioxin waste at the 93rd Street School is sufficiently similar to LDR dioxin waste, 40 CFR Part 268, Subpart C. Therefore, EPA believes that the LDR standards for dioxin are relevant and appropriate for this site.

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

Following solidification, the treated soils would then be redeposited back on-site in the same unit of contamination from which they originated, with a low permeability cover having a permeability less than or equal to the permeability of the natural subsoils, placed over the area. Therefore, these alternatives are consistent with landfill closure requirements under 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 occuring.

Containment Option 3 would not comply with the LDR requirements unless the hot-spot soils meet the treatment levels, using testing procedures such as the TCLP and total waste analysis. This alternative would also need to comply with CERCLA § 121 (d)(3) regarding off-site disposal of hazardous waste. This requires that the off-site facility be operating in compliance with all federal (i.e., RCRA) and state requirements.

While permits are not required for on-site remedial actions at Superfund sites, any on-site action must meet the substantive technical requirements of the permit process. The site excavation options (3, 4, 5 and 6) will comply with all federal and state requirements concerning potential air emissions (particulates and volatiles) during the excavation of the hot-spot soils. Thermal treatment of the soils (Options 5 and 6) would comply with all the requirements of 40 CFR Part 264, Subpart O (RCRA) and more stringent state regulations pertaining to incinerators. Specifically, operation of an on-site thermal treatment unit would require that the transportable unit undergo waste specific trial of demonstration burns to demonstrate satisfactory destruction of the toxic components of the waste. The trial or demonstration burn must show that the unit achieves 99.9999% destruction and removal efficiency (DRE) for dioxin and 99.99% DRE for the remaining contaminants, and controls air emissions of products of incomplete combustion, acid gases and particulates to specified levels.

Options 3, 5A and 6A which involve off-site shipment of waste would comply with the requirements of RCRA 40 CFR Part 262, Subparts A through D regarding manifesting and transportation.

A location-specific ARAR which would be complied with for all the alternatives is the National Historic Preservation Act. A determination of whether the alternatives would have any affect on cultural resources would be made during the design phase.

- Reduction of Toxicity, Mobility or Volume

This evaluation criteria relates to the performance of a remedial alternative in terms of eliminating or controlling risks posed by the toxicity, mobility or volume of hazardous substances.

Solidification is expected to permanently immobilize the hot-spot soils, thereby, eliminating any exposure to toxicity threats posed by the contaminants. Any future leaching of contaminants from the solidified soil and risks due to soils ingestion in the treated areas would also be eliminated by this option. The thermal treatment options would destroy the organics (including dioxin), and any toxicity that may remain due to the heavy metals in the byproduct could be remediated either through solidification (Options 5B or 6B) or off-site disposal (Options 5A or 6A). However, the toxicity, mobility or volume would not be reduced with the off-site disposal options. Thermal treatment would also eliminate future mobility of the waste.

The containment options (Alternatives 2 and 3) would reduce exposure to the waste but would not achieve a reduction in toxicity, mobility or volume through treatment.

The volume of the hot-spot soils consisting primarily of inert materials would not be significantly reduced following thermal treatment. The volume of the vegetative layer of soils from the hot-spot area, however, might be significantly reduced because of the higher percentage of organic materials in this layer.

The long-term mobility of the hot-spot soils would be reduced by thermal treatment since the contaminants would be destroyed, but there would be an increase in the mobility of contaminants over the short-term due to air release of products of incomplete combustion and increased materials handling. This would be controlled through careful handling and operational procedures for the thermal treatment process (i.e., scrubbers, etc.). There could also be an increase in the mobility of contaminants during the solidification process over the short-term due to increased materials handling.

With solidification, due to the addition of the fixation agents, the volume of waste material would likely increase.

- Short-Term Effectiveness

Short-term effectiveness measures how well an alternative is expected to perform, the time to implement the action, and the potential adverse impacts of its implementation.

The low permeability cover installed with Alternative 2 would virtually eliminate existing risks on a short-term basis since it would not be necessary to disturb the contaminated soils. However, minor exposure during use of construction equipment on the surface soils prior to placement of the cover could occur.

The excavation options would increase the short-term risks from air emissions, and additional risks to communities along the transportation route would be incurred as a result of the off-site transportation of the hot-spot soils with Alternative 3.

Approximately four hundred 20 cubic yard truck loads of soil would have to be transported to the off-site RCRA facility. Therefore, risks due to soils spillage or an overturned truck could occur.

On-site solidification (Option 4) would significantly reduce existing risks at the site once the hot-spot soils are treated. However, both the solidification and thermal treatment alternatives would result in short-term risks from excavation. In addition, thermal treatment may result in air emissions, however, as mentioned previously, strict measures would be implemented to ensure that such emissions would not be harmful to human health and the environment. Thermal treatment may also require additional materials handling on-site, such as pretreatment (e.g., shredding and crushing) of the contaminated soils prior to feeding to the thermal treatment unit.

The time to implement each remedial alternative, except for the thermal treatment alternatives, is approximately three years from the signing of the ROD. Depending on the method of disposal of the byproducts following thermal treatment, the time to implement Alternatives 5 and 6 could vary from approximately five to seven years. It should be noted that thermal treatment of the 93rd Street School site hot-spot soils at Love Canal proper would begin in 1992, thereby, coinciding with thermal treatment of the creek and sewer sediments schedule.

* Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence addresses the long-term protection and reliability of an alternative.

Over the long-term, the on-site solidification and thermal treatment options provide essentially comparable effectiveness to the local community, since the byproducts are not expected to pose a hazard from a health and environmental perspective. However, thermal treatment is not an effective technology for the inorganic contaminants in the soils. The inorganics tend to slag (depending on their volatility) and remain in the byproducts. Further treatment or off-site disposal of the byproducts may, therefore, be required (i.e., Alternatives 5B, 6B and 5A, 6A, respectively).

Treatability studies would be performed during the design of both the solidification and thermal treatment alternatives to ensure their long-term effectiveness. During the treatability studies, the byproducts would be analyzed according to methods such as the TCLP and total waste analysis to determine the effectiveness each treatment procedure has in meeting the LDR treatment levels. Even though the solidification process would permanently immobilize the waste, the testing conducted during the treatability study would confirm the long-term effectiveness of this option. If this alternative is implemented, it is anticipated that any deterioration of the solidified material would be detected during routine monitoring. Should the deterioration be significant, then appropriate action would be taken to ensure protectiveness.

The effectiveness of the low permeability cover would be better than the no-action option, however, it is necessary to continually monitor the cover to ensure erosion would not result in exposure of the hot-spot soils. There is also the possibility that damage to the cover could occur due to a major earthquake (since this area has defined seismic activity) or a flood of a magnitude greater than 100 years.

The long-term effectiveness of Alternative 3 would be high at the site itself since the hot-spots would be removed, however, the contaminated soils would be deposited at an off-site RCRA facility.

All options in which wastes would remain on-site need to be reviewed at least every five years to ensure their continued effectiveness.

- Implementability

Implementability addresses how easy or difficult it would be to carry out a given alternative. This covers implementation from design through construction and O&M.

The implementability of the alternatives is evaluated in terms of technical and administrative feasibility, and availability of needed goods and services.

Each alternative evaluated is technically feasible, however, treatment options 4, 5 and 6 would require treatability studies to determine the optimal conditions to satisfy the LDR treatment level requirements and provide a high degree of long-term effectiveness. Frequent monitoring of byproducts during operations would be needed to ensure system effectiveness and reliability.

The availbility of necessary equipment and specialists may be more limited for solidification than for the other alternatives since solidification of both organic and inorganics is a fairly recently demonstrated technology. However, based upon recent use of transportable units for this technology at other CERCLA sites (e.g., Pepper's Steel and Alloys site, Florida) and its widescale selection for other CERCLA sites in the country, a well-established market is becoming available for this technology for both organics and inorganics.

Thermal treatment implementation would vary in difficulty depending on the transportable unit selected and its associated pretreatment and operational requirements.

Sufficient area exists at the 93rd Street School site to set-up treatment units as called for in Alternatives 4 and 5 and there is ample land area available on-site for redeposition of the treated soil.

With Alternative 6 (thermal treatment at Love Canal proper), excavation of the hot-spot soils could either occur during the 1990 construction season (following the creek sediments excavation in 1989), allowing the soils to be temporarily stored with the creek sediments, or the 93rd Street School site hot-spot soils could be excavated just prior to thermal treatment during 1992, eliminating the requirements for temporary storage.

Implementation of a low permeability cover and off-site disposal (Alternatives 2 and 3, respectively) would not be difficult technically, however, administrative requirements with disposal of the waste off-site may prove substantial. Difficulties can be anticipated with finding an off-site disposal unit that is in compliance with RCRA regulations and facilities may not be capable or willing to accept the dioxin-contaminated waste.

The severe winter weather conditions in this area would limit the construction season for the alternatives, and the decreased winter temperatures may require additional precautions to maintain optimal reaction rates for the solidification option.

- Cost

Costs are evaluated in terms of capital, O&M and present worth.

While comparing treatment Alternatives 4, 5 and 6, which result in comparable effectiveness, solidification of the hot-spot soils has been identified as the lowest cost alternative. The total present worth cost for these options range from approximately $3.4 to $4.8 million for solidification to $7.7 to $11.1 million for thermal treatment. The lower end of the cost range for thermal treatment assumes treatment at Love Canal proper, with the byproducts meeting LDR treatment levels disposed on-site at the 93rd Street School site (Option 6C). The higher cost assumes treatment at the 93rd Street School site with the byproducts solidified (Option 5B).

The containment options (Alternatives 2 and 3) vary from approximately $3 milllion to $4.8 million, respectively.

As mentioned previously, Table 6 provides a summary of the capital, O&M and total present worth cost of each of the six alternatives. A more detailed breakdown of these costs are provided within the RI/FS.

- State Acceptance

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

The State supports a solution that involves treatment that reduces the inherent hazard posed by the contaminants for the Love Canal - 93rd Street School site. Its preference is on-site solidification/stabilization of the contaminated soils (Alternative 4), contingent upon the results of a treatability study which would be performed to ensure the effectiveness of the

solidification process and its ability to meet specified treatment levels. Should the treatability study indicate that solidification of the soils would not provide the desired degree of treatment, then other treatability studies would be performed to determine the effectiveness of treating these soils on-site.

° Community Acceptance

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

Both the draft RI/FS and the PRAP (Alternative 4) were made available during the public comment period and were presented at the public meeting. In general, the community indicated a preference for a treatment based alternative that reduces the inherent hazard posed by the contaminants at the site and many favored the solidification/stablization alternative.

Some residents expressed concern at the public meeting that solidification is not a proven technology. In response to their concerns, during the subsequent availability session and throughout the remainder of the public comment period, information concerning the demonstrated ability and performance of the soldification process was made available to the local community by both USEPA and NYSDEC.

Detailed responses to the community concerns are contained in the attached responsiveness summary.

SELECTED REMEDY

Based upon CERCLA, the detailed evaluation of the alternatives, and public comments, both USEPA and NYSDEC have determined that Alternative 4, soils excavation, on-site solidification and a low permeability cover is the most appropriate remedy for the 93rd Street School site. This remedy consists of the following components:

1. Excavation of approximately 7,500 cubic yards of contaminated soil followed by on-site solidification/stabilization of this material. Figure 3 illustrates the extent of identified hot-spot soils to be excavated. Additional testing will be conducted during the remedial design to further define the volume of soil needing excavation and treatment. It is anticipated that the current estimate of 550 cubic yards of dioxin-contaminated soil would be significantly reduced based on the results of this additional testing.

2. The solidified soil would be placed back on-site within the same unit of contamination from which it originated, with a low permeability cover installed over these areas and extended to other areas which exhibit lower levels of contaminated soils at the site.

3. Treatability studies will be conducted during the remedial design to determine the effectiveness of the solidification/ stabilization process for the particular soil and its ability to meet specified treatment levels (e.g., LDR treatment requirements). Should the treatability studies determine that solidification would not provide the desired degree of treatment, than treatability studies would be performed to determine the effectiveness of other treatment techniques (including thermal treatment) for the on-site soils. In addition to meeting the LDR treatment requirements, interim soil and debris treatment levels will be considered while evaluating the effectiveness of the solidification process during the treatability studies.

4. Since the solidified soil will remain on-site, the remedy will be reviewed at least every five years to ensure that human health and the environment continue to be protected.

5. Additional sampling (with the lowest achievable levels of detection) of the groundwater was conducted in May 1988 to ensure that ARARs for groundwater are not being exceeded. Should the analytical results indicate that groundwater standards and other criteria to be considered are exceeded, then an evaluation of the necessity for remediation of the groundwater would be conducted. Remediation of the groundwater, if warranted, would be addressed in a subsequent ROD.

6. A groundwater monitoring program would be established in accordance with RCRA regulations, 40 CFR Part 264, Subpart F.

7. One hundred percent of the remedial design will be funded by USEPA. Cost sharing for construction of the remedy is 90% USEPA and 10% State of New York.

Cost estimates for the selected remedial action are presented in Table 7.

° Operation and Maintenance

O&M are those costs required to operate and maintain the remedial action throughout its lifetime. These activities ensure the lifetime effectiveness of the remedial alternative selected.

Table 7

SOLIDIFICATION/STABILIZATION ALTERNATIVE COST ESTIMATE

CAPITAL EXPENSE ITEMS	QTY.	UNITS	UNIT COST	TOTAL COST
1. Preliminary Testing & Approvals	---	---	$100,000	$100,000
2. Hot Spot Soil Excavation	7,500	Cu. Yd.	$5.00	40,000
3. Hot Spot Pavement Excavation	3,000	Sq. Yd.	8.00	25,000
4. Solidification/Stabilization	11,250 *	Ton	50.00 to 150.00	565,000 to 1,690,000
* 7500 cu.yd. x 1.5 tons/cu.yd.= 11,250 tons				
5. Sampling/Analysis of Treated Soils	15	Sample	1,000.00	15,000
6. Redisposal of Treated Soils	7,500 to 13,000	Cu. Yd.	5.00	40,000 to 65,000
7. Reconstruct Paved Areas				
a. Base	3,000	Sq. Yd.	5.00	15,000
b. Pavement, 3" thick	3,000	Sq. Yd.	7.00	25,000
8. Place Low Permeability Cover---------See Table 4-6----------				1,085,000
			Sub-Total:	$1,910,000 to $3,060,000
			20% Eng. and Reg. Contingency:	$ 385,000 to $ 615,000
			TOTAL:	$2,295,000 to $3,675,000

PERIODIC EXPENSE ITEMS				TOTAL COST/YR
1. Semi-Annual Site Inspection	50	Manhr./Yr.	$50.00	$2,500
2. Quarterly Groundwater Monitoring	52	Sample/Yr.	1,300.00	68,000
3. Detailed Evaluation (every 5 years)	0.2	Eval/Yr.	100,000.00	20,000
4. Maintenance				
a. Cover Maintenance				2,500
b. Misc. Maintenance				7,500
			Sub-Total:	$100,500
			20% Eng. and Reg. Contingency:	20,500
			TOTAL:	$121,000

O&M requirements (primarily for groundwater monitoring and maintenance of the low permeability cover) are eligible for Superfund monies for a period of up to one year to assure the effectiveness of the remedy. Following that year, any additional O&M costs would be the responsibility of the State.

As part of the remedial action, a long-term groundwater sampling program is included to monitor changes in the nature and extent of contamination at the site to determine the effectiveness of the remedy.

° Future Actions

This ROD addresses the source of contamination by remediation of the on-site contaminated soils. The remedy will address the principal threats at the site by permanently immobilizing the soils at the 93rd Street School site, thereby preventing any future groundwater contamination and reducing the risks associated with exposure to the contaminated soils.

Additional sampling of the groundwater was conducted in May 1988. The analysis of these samples (with the lowest achievable levels of detection) will determine whether groundwater ARARs and other criteria considered are being exceeded. The results are anticipated to be available in the fall of 1988, and may be considered in any subsequent groundwater remediation. Remediation of the groundwater, if warranted, would be addressed in a subsequent ROD.

The selected remedy is not expected to encroach upon the 100-year floodplain. However, if it is determined during the remedial design that any portion of the low permeability cover would be located within the 100-year floodplain, then appropriate measures such as a floodplain assessment may be performed.

An evaluation of the area for the potential discovery of unidentified cultural resources is necessary. Accordingly, under the National Historic Preservation Act, a cultural resources (Stage 1A) survey would be performed during the remedial design phase to determine whether the selected remedial action will have any affect on resources or whether the site is eligible for nomination to the National Register of Historic Places.

STATUTORY DETERMINATION

The selected remedy best achieves the goals of the nine evaluation criteria in comparison to the other alternatives.

Solidification/stabilization is expected to permanently immobilize the hot-spot soils and eliminate any potential for leaching of both organic and inorganic contaminants. All threats associated with soils ingestion, inhalation and dermal contact would be eliminated.

With the solidification option, short-term risks from excavation of the hot-spot soils would occur, however, strict measures would be implemented to ensure that such emissions would not be harmful to human health and the environment. During implementation, portions of the contaminated soils would be excavated at a time and then solidified. This method would eliminate any significant stockpiling of the contaminated soils prior to treatment, thereby, reducing short-term risks from direct contact and inhalation.

The selected remedy would comply with federal and state requirements regarding fugitive volatile and particulate emissions during excavation. The applicable New York State air and hazardous waste requirements for excavation which would be complied with include 6 NYCRR Part 257 and Part 373, which regulate ambient air standards, and control particulates from waste piles, respectively. Part 211 also contains general prohibitions against air pollution and it gives the State discretion in requiring controls. Controls that are typically utilized are water spray and chemical dust suppressants to control fugitive particulate emissions and volatilization of organics. In addition, Part 212 may also apply to the solidification process, thereby, requiring controls on emission sources. The federal requirements that will be complied with during excavation include 40 CFR Part 50 and § 264.25(f), which control ambient air standards and control of particulates from waste piles, respectively.

Based upon the LDR provisions, RCRA hazardous waste (listed or characteristic) which is excavated, treated and then redeposited in the same unit of contamination constitutes placement and, therefore, the LDR requirements are potentially applicable or relevant and appropriate.

Because it has not been determined with certainty whether the wastes at the 93rd Street School site are listed hazardous wastes, EPA has determined that the RCRA LDR requirements are not applicable. In addition, the waste at the site do not exhibit the characteristics of ignitability, corrosivity or reactivity, and it is also improbable that the wastes exhibit EP toxicity characteristics. As a result, the LDR requirements are also not applicable in terms of RCRA characteristic hazardous waste.

Dioxin LDR standards based upon analysis of treated soil have been promulgated for soil and debris waste. (These standards require the leachate from treated soils to be less than 1 ppb). Therefore, EPA believes that the LDR standards for dioxin are relevant and appropriate for this site.

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

Following compliance with the LDR treatment levels for dioxin, the solidified soils would be redeposited back on-site in the same unit of contamination from which they originated. The area would then be covered (the cover material would have a permeability less than or equal to the permeability of the natural subsoils) and monitored consistent with the technical requirements for RCRA Subtitle C closure and post-closure (i.e., 40 CFR § 264.310). Under this approach, a double liner/ leachate collection system would not be required since; the hot-spot soils would have been removed during closure for the purpose of treating them to enhance the effectiveness of the closure; and RCRA minimum (design and operating) technology requirements (i.e., 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 occuring. A groundwater monitoring program would also be established for this remedy in accordance with RCRA regulations 40 CFR Part 264, Subpart F.

Since the solidified soil will remain on-site, the remedy will be reviewed at least every five years consistent with CERCLA Section 121 requirements, to ensure that human health and the environment continue to be protected.

Solidification of the hot-spot soils will meet the greater than 1 ppb level of concern established for dioxin in soils at this site.

Surface water and groundwater are not contaminated at levels exceeding the CRDLs and ARARs for some compounds. For other compounds, however, the CRDLs exceeded either ARARs or other guidance values considered. Consequently, additional sampling of the groundwater was recently performed. The analysis of these samples (with the lowest achievable levels of detection) will determine whether groundwater ARARs and other criteria considered are being exceeded.

EPA believes that soils solidification is an available and reliable technology for the treatment of wastes types identified at the 93rd Street School site. The treatability study would ensure the site-specific technical feasibility and operational reliability of the solidification process.

ATTACHMENT A

Document Number: NSS-001-0001 To 0001 Date: 06/19/85

Title: (Letter requesting sampling to be done as soon as possible)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Stout, Douglas: US EPA

Document Number: NSS-001-0002 To 0002 Date: 07/03/85

Title: (Letter announcing that the school has been defined as part of the Love Canal site and discussing issues relative to the Remedial Investigation/Feasibility Study)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Ogg, Robert N: US EPA

Document Number: NSS-001-0003 To 0003 Date: 04/10/86

Title: (Memo attaching analytical results of the 09/00/85 sampling at the site)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: none: US EPA

Document Number: NSS-001-0007 To 0017 Date: 08/06/86

Title: (Letter enclosing approved RI/FS project schedule and the NYSDEC Division of Solid and Hazardous Waste's format for the QA work plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

The selected remedy is cost-effective since solidification of the soils provides comparable effectiveness as the other treatment options, but at a lower cost.

The selected remedy will satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility or volume as a principal element. This will be accomplished through solidification, which is expected to permanently immobilize the soils and eliminate any potential for leaching of both organic and inorganic contaminants. Solidification will achieve protection through a reduction of the inherent hazard posed by the contaminants in addition to controlling exposure to residuals. The remedy will utilize permanent solutions and alternative treatment technologies to the maximum extent practicable.

To summarize, EPA and DEC believe that their selection of on-site solidification/stabilization of the hot-spot soils (Alternative 4), will satisfy the statutory requirements of providing protection of human health and the environment, will attain all ARARs, and is cost-effective. Since this option utilizes solidification to eliminate the principal threat at the site, this alternative would also satisfy CERCLA preference for remedies which employ treatment as their principal element to reduce toxicity, mobility or volume of the contaminants at the site.

Document Number: NSS-001-0024 To 0026 Date: 09/29/86

Title: (Cover letter enclosing a sample status report format to be used for future monthly technical status reports)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0027 To 0030 Date: 10/10/86

Title: (Cover letter enclosing comments on the RI/FS Health and Safety Plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0031 To 0034 Date: 10/14/86

Title: (Letter enclosing comments on the Draft RI/FS Health and Safety Plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0035 To 0036 Date: / /

Title: Draft Work/Sampling/QA/QC/Plan Comments

Type: PLAN
Category: 3.1.0 Correspondence
Author: none: none
Recipient: none: none

Document Number: NSS-001-0018 To 0018 Date: 09/17/86

Title: (Letter explaining RI/FS activities and time schedule for the site)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Rogers, Roy: Niagara Falls NY, City of

Document Number: NSS-001-0019 To 0020 Date: 08/25/86

Title: Recovery of Grid North Baseline

Type: OTHER
Category: 3.1.0 Correspondence
Author: Stout, Douglas: US EPA
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0021 To 0021 Date: 09/16/86

Title: (Letter explaining responsibilities under the contract for soil sampling)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0022 To 0023 Date: 09/22/86

Title: 93rd Street School Grid Layout

Type: OTHER
Category: 3.1.0 Correspondence
Author: Stout, Douglas: US EPA
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0047 To 0047 Date: 12/11/86

Title: (Letter enclosing proposed Addendum #2 to the Health and Safety Plan, which relates to the assessed potential of dermal hazard)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates
Attached: NSS-001-0048 NSS-001-0238

Document Number: NSS-001-0048 To 0048 Parent: NSS-001-0047 Date: 12/02/86

Title: Addendum #2 Health & Safety Plan

Type: PLAN
Category: 3.1.0 Correspondence
Author: none: Loureiro Engineering Associates
Recipient: none: none

Document Number: NSS-001-0049 To 0049 Date: 12/29/86

Title: (Cover letter enclosing a copy of the Health and Safety Plan, Investigative Work Plan, Sampling Plan and the QA/QC Plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0050 To 0050 Date: 01/06/87

Title: (Memo explaining that the responsibility for reviewing and approving of the QA Plan resides with the NYSDEC and enclosing a copy of the final approved Investigative Work Plan, Sampling Plan, QA/QC Plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Coakley, William A: US EPA

Document Number: NSS-001-0037 To 0037 Date: 10/17/86

Title: (Memo enclosing Work Plan, QA/QC for comments)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0038 To 0041 Date: 11/03/86

Title: (Memo reviewing the RI/FS Health and Safety Plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Lybarger, Jeffrey A: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Nelson, William Q: US EPA

Document Number: NSS-001-0042 To 0045 Date: 11/06/86

Title: (Letter outlining issues discussed at 10/24/86 meeting regarding RI/FS with comments on the Health and Safety Plan enclosed)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0046 To 0046 Date: 12/08/86

Title: (Letter describing extraction procedure for some samples as defined by the contract)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0055 To 0055 Date: 02/17/87

Title: (Letter enclosing an annotated RI/FS site plan needing corrections)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Jaworski, Charles A: Loureiro Engineering Associates
Recipient: Stout, Douglas: US EPA

Document Number: NSS-001-0056 To 0056 Date: 12/15/86

Title: (Letter regarding analytical results for soil and aqueous samples and asking for confirmation of contract lab protocols)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0057 To 0057 Date: 05/27/87

Title: (Transmittal slip enclosing a preliminary draft of First Round Data Analysis for comment)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Jaworski, Charles A: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation
Attached: NSS-001-0061

Document Number: NSS-001-0058 To 0058 Date: 06/11/87

Title: (Transmittal slip enclosing supplement to work plan for Round 2 Work for approval)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Jaworski, Charles A: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-0051 To 0051 Date: 10/21/86

Title: (Memo discussing the Investigative Work Plan, Sampling Plan, and Quality Assuarance/Quality Control Plan)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Rankin, John: NY Dept of Environmental Conservation
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0052 To 0052 Date: 01/12/87

Title: (Letter enclosing a copy of the method lab uses to test dioxins)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Arnet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-0053 To 0053 Date: 01/29/87

Title: (Letter discussing additions to RI/FS monthly reports)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0054 To 0054 Date: 02/06/87

Title: (Transmittal Slip enclosing sampling method information)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

Document Number: NSS-001-0064 To 0064 Date: 07/01/87

Title: (Transmittal slip enclosing various site plan prints as requested)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Loureiro, Julio: Loureiro Engineering Associates
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0065 To 0065 Date: 09/28/87

Title: (Letter forwarding comments on QA/QC Data package with request for more data to complete review)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates
Attached: NSS-001-0066

Document Number: NSS-001-0066 To 0066 Parent: NSS-001-0065 Date: / /

Title: (Memo regarding comments on QA/QC data package)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Rankin, John: NY Dept of Environmental Conservation
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0138 To 0144 Date: 06/18/87

Title: Investigative Work Plan, Sampling Plan, QA/QC Plan (with supplement added)

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Condition: INCOMPLETE
Author: none: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-0059 To 0059 Date: 05/28/87

Title: (Transmittal slip enclosing preliminary draft and supplement to Work Plan for Phase 2 Work for comment)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Jaworski, Charles A: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-0060 To 0060 Date: 06/19/87

Title: (Letter forwarding First Round Investigations Report for review)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Wakeman, Allison C: NY Dept of Health

Document Number: NSS-001-0061 To 0061 Parent: NSS-001-0057 Date: 05/26/87

Title: First Round Data Analysis Report Comments

Type: PLAN
Category: 3.1.0 Correspondence
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0062 To 0063 Date: 06/17/87

Title: (Letter summarizing discussions and agreements reached during 06/04/87 meeting)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0238 To 0294 Parent: NSS-001-0047 Date: 10/01/86

Title: Health and Safety Plan for RI/FS activities at the 93rd Street School

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Author: none: Phoenix Safety Associates
Recipient: none: Loureiro Engineering Associates

Document Number: NSS-001-0295 To 0295 Date: 09/24/84

Title: (Letter enclosing laboratory data that confirms an unacceptable contamination level in the school's playground soil and that the site should be funded as part of the EPA Love Canal project)

Type: CORRESPONDENCE
Category: 3.3.0 Sampling and Analysis Data
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Librizzi, William J: US EPA
Attached: NSS-001-0296 NSS-001-0337 NSS-001-0338 NSS-001-0339

Document Number: NSS-001-0296 To 0336 Parent: NSS-001-0295 Date: 08/17/84

Title: (Letter enclosing the results of analysis of 4 water samples and 2 soil samples for 2,3,7,8-TCDD)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Hansen, Earl M: Envirodyne Engineers
Recipient: Frost, Steven: Recra Research

Document Number: NSS-001-0337 To 0337 Parent: NSS-001-0295 Date: 12/10/84

Title: (Follow-up letter to the 09/24/84 letter requesting that the site be included in the Love Canal Superfund Assistatnce Agreement based on the transport of fill from the 99th Street School and the detection of dioxin in soil samples)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MARGINALIA
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Librizzi, William J: US EPA

Document Number: NSS-001-0145 To 0224 Date: 10/01/86

Title: Investigative Work Plan, Sampling Plan, QA/QC Control Plan

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Author: none: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-0225 To 0235 Date: 09/25/85

Title: Sampling Trip Report 09/03/85 through 09/05/85

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Author: Rojek, Gary: NUS
Recipient: none: none

Document Number: NSS-001-0236 To 0236 Date: 01/08/86

Title: Site Inspection Report

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Author: Howe, Robert F: US EPA
Recipient: none: none

Document Number: NSS-001-0237 To 0237 Date: 11/19/86

Title: Site Inspection Report 11/12/86 through 11/14/86

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Author: Howe, Robert F: US EPA
Recipient: none: none

Document Number: NSS-001-0348 To 0349 Parent: NSS-001-0341 Date: 08/22/84

Title: (Memo with data on dioxin contaminated samples)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Goddard, Charles N: NY Dept of Environmental Conservation
Recipient: Nosenchuck, Norman H: NY Dept of Environmental Conservation

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Document Number: NSS-001-0350 To 0355 Date: 07/25/79

Title: Soils Report (with site maps)

Type: PLAN
Category: 3.2.0 Sampling and Analysis Plans
Author: Owens, Donald W: Earth Dimension
Recipient: none: none

Document Number: NSS-001-0356 To 0356 Date: 03/26/86

Title: (Letter enclosing analytical results of dioxins testing from 09/00/85)

Type: CORRESPONDENCE
Category: 3.3.0 Sampling and Analysis Data
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Attached: NSS-001-0357

Document Number: NSS-001-0357 To 0370 Parent: NSS-001-0356 Date: 03/20/86

Title: (Letter summarizing analytical results of sampling taken in 09/00/85)

Type: CORRESPONDENCE
Category: 3.3.0 Sampling and Analysis Data
Author: Rojek, Gary: NUS
Recipient: Messina, Diana: US EPA

Document Number: NSS-001-0338 To 0338 Parent: NSS-001-0295 Date: 11/01/84

Title: (Memo attaching a copy of the Board of Education meeting 01/21/54, which shows that a contract was awarded to transport soil from the 99th Street School to the site)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Buechi, Peter: NY Dept of Environmental Conservation
Recipient: Demick, Walter E: NY Dept of Environmental Conservation

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Document Number: NSS-001-0339 To 0340 Parent: NSS-001-0295 Date: 01/21/54

Title: (Board of Education meeting minutes)

Type: OTHER
Category: 3.1.0 Correspondence
Condition: INCOMPLETE
Author: none: Niagara Falls NY, City of
Recipient: none: none

Document Number: NSS-001-0341 To 0341 Date: 08/17/84

Title: (Memo discussing groundwater sampling results)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Goddard, Charles N: NY Dept of Environmental Conservation
Recipient: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Attached: NSS-001-0342 NSS-001-0348

Document Number: NSS-001-0342 To 0347 Parent: NSS-001-0341 Date: 08/17/84

Title: (Letter enclosing results of analysis of 4 water samples and 2 soil samples for 2,3,7,8-TCDD - duplicate of NSS0010296)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: INCOMPLETE
Author: Hansen, Earl M: Envirodyne Engineers
Recipient: Frost, Steven: Recra Research

Document Number: NSS-001-0398 To 0411 Date: 04/19/85

Title: 93rd Street School Photograph Index

Type: GRAPHIC
Category: 3.5.0 Work Plan
Author: none: NUS
Recipient: none: none

Document Number: NSS-001-0412 To 0569 Date: 03/25/88

Title: Volume I - Remedial Investigation Summary, Remedial Investigation/Feasibility Study Report

Type: PLAN
Category: 3.6.0 Remedial Investigation Reports
Author: none: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation
Attached: NSS-001-0804

Document Number: NSS-001-0575 To 0575 Date: 03/28/88

Title: (Transmittal Slip remarking that a copy of the RI/FS was sent)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Anderson, John: US EPA

Document Number: NSS-001-0576 To 0576 Date: 03/04/88

Title: (Letter giving name and address of new NYSDEC contact for the site)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: O'Toole, Michael J Jr: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0371 To 0373 Date: 12/16/86

Title: (Letter enclosing analytical results from samples taken 11/25/86 and 11/11/86 through 11/17/86)

Type: CORRESPONDENCE
Category: 3.3.0 Sampling and Analysis Data
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-0374 To 0375 Date: 12/29/86

Title: (Letter enclosing analytical results from samples taken 11/24/86)

Type: CORRESPONDENCE
Category: 3.3.0 Sampling and Analysis Data
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-0376 To 0377 Date: 01/16/87

Title: (Letter enclosing analytical results from samples taken 12/15/86)

Type: CORRESPONDENCE
Category: 3.3.0 Sampling and Analysis Data
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-0378 To 0397 Date: 08/21/85

Title: Work Plan for the Screening of 2,3,7,8-Tetrachlorodibenzo-p-dioxin at the 93rd Street School

Type: PLAN
Category: 3.5.0 Work Plan
Author: Rojek, Gary: NUS
Recipient: none: US EPA

Document Number: NSS-001-0589 To 0593 Date: 03/02/88

Title: (Memo regarding site groundwater classification with completed worksheet attached)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Malleck, John S: US EPA
Recipient: Pavlou, George: US EPA

Document Number: NSS-001-0594 To 0594 Date: 03/08/88

Title: (Letter forwarding NY Dept of Health's comments on RI/FS and Health Risk Assessment Workplan)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Howe, Robert F: US EPA
Attached: NSS-001-0595 NSS-001-0599 NSS-001-0600

Document Number: NSS-001-0595 To 0598 Parent: NSS-001-0594 Date: 03/02/88

Title: (Letter commenting on RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Wakeman, Allison C: NY Dept of Health
Recipient: Schick, Robert W: NY Dept of Environmental Conservation

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Document Number: NSS-001-0599 To 0599 Parent: NSS-001-0594 Date: 03/03/88

Title: (Memo forwarding NY Dept of Health's comments on Health Risk Assessment workplan)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Knapp, Lynda K: Loureiro Engineering Associates

Document Number: NSS-001-0577 To 0577 Date: 02/17/88

Title: (Letter confirming final draft RI/FS to be submitted by 03/04/88)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0578 To 0578 Date: 12/09/87

Title: (Letter outlining review schedule for RI/FS reports)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Singerman, Joel: US EPA
Attached: NSS-001-0622

Document Number: NSS-001-0579 To 0582 Date: 02/18/88

Title: (Letter confirming volatile organics data and attaching the instrument detection limits)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Curran, Jeffrey C: York Wastewater Consultants (YWC)
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0583 To 0588 Date: 01/22/88

Title: (Telex letter regarding comments on the draft RI/FS Report)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0610 To 0611 Date: 01/13/88

Title: (Memo regarding Air and Waste Management Division's comments on the RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Simon, Conrad: US EPA
Recipient: Luftig, Stephen D: US EPA

Document Number: NSS-001-0612 To 0612 Date: 08/11/87

Title: (Transmittal Slip forwarding EPA guidance documents)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0613 To 0614 Date: 09/11/87

Title: (Letter commenting on the draft section on Screening of Remedial Action Technologies for the RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0615 To 0617 Date: 09/21/87

Title: (Letter summarizing general concerns regarding the technology screening)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

Document Number: NSS-001-0600 To 0601 Parent: NSS-001-0594 Date: 03/02/88

Title: DOH Comments on Loureiro Engineering Associates Workplan for Health Risk Assessment for the Site

Type: PLAN
Category: 4.1.0 Correspondence
Author: none: NY Dept of Health
Recipient: none: none

Document Number: NSS-001-0602 To 0605 Date: 01/11/88

Title: (Letter enclosing additional comments on RI/FS to be incorporated in revised RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0606 To 0608 Date: 01/11/88

Title: (Memo regarding Water Management Division's comments on the Draft RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Malleck, John S: US EPA
Recipient: Pavlou, George: US EPA

Document Number: NSS-001-0609 To 0609 Date: 01/01/88

Title: (Memo regarding EIB review of 12/00/87 Draft RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: DRAFT
Author: Hargrove, Robert W: US EPA
Recipient: Singerman, Joel: US EPA

Document Number: NSS-001-0622 To 0622 Parent: NSS-001-0578 Date: 12/09/87

Title: (Letter outlining review schedule for RI/FS report - duplicate of NSS0010578)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Singerman, Joel: US EPA

Document Number: NSS-001-0623 To 0623 Date: 11/30/87

Title: (Letter enclosing excerpts from the RI/FS reports)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0624 To 0624 Date: 12/04/87

Title: (Transmittal slip forwarding RI/FS reports for comment)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Knapp, Lynda K: Loureiro Engineering Associates
Recipient: Howe, Robert F: US EPA

Document Number: NSS-001-0625 To 0625 Date: 12/17/87

Title: (Memo requesting comments on Draft RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Luftig, Stephen D: US EPA
Recipient: Simon, Conrad: US EPA

Document Number: NSS-001-0618 To 0618 Date: 09/29/87

Title: (Letter inquiring about schedule changes on RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0619 To 0619 Date: 10/20/87

Title: (Letter forwarding documents to help in preparation of the FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Loureiro, Julio: Loureiro Engineering Associates
Attached: NSS-001-0620

Document Number: NSS-001-0620 To 0620 Parent: NSS-001-0619 Date: 10/23/87

Title: (Letter forwarding soil contaminant evaluation methodology to help in the preparation of the FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0621 To 0621 Date: 11/06/87

Title: (Letter forwarding the Phase II Investigation and the Index to NY ARAR's)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0630 To 0630 Date: 12/24/87

Title: (Memo requesting comments on draft RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Luftig, Stephen D: US EPA
Recipient: Caspe, Richard L: US EPA

Document Number: NSS-001-0631 To 0631 Date: 01/08/88

Title: (Transmittal slip forwarding comments on RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-0632 To 0632 Date: 02/08/88

Title: (Letter forwarding Love Canal RODs and technical documents)

Type: CORRESPONDENCE
Category: 4.2.0 Applicable or Relevant and Appropriate Requirement(ARAR)Determinations
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0633 To 0633 Date: 02/08/88

Title: (Letter forwarding regulatory documents)

Type: CORRESPONDENCE
Category: 4.2.0 Applicable or Relevant and Appropriate Requirement(ARAR)Determinations
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0626 To 0626 Date: 12/22/87

Title: (Transmittal Slip)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: ILLEGIBLE
Author: Howe, Robert F: US EPA
Recipient: Feldt, Lisa: US EPA

Document Number: NSS-001-0627 To 0627 Date: 12/22/87

Title: (Memo requesting comments on Draft RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Singerman, Joel: US EPA
Recipient: Hargrove, Robert W: US EPA

Document Number: NSS-001-0628 To 0628 Date: 12/22/87

Title: (Memo requesting comments on Draft RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Singerman, Joel: US EPA
Recipient: Lynch, Kevin: US EPA

Document Number: NSS-001-0629 To 0629 Date: 12/22/87

Title: (Transmittal slip forwarding draft RI/FS for comment)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Pavlou, George: US EPA
Recipient: Schaaf, Eric: US EPA

Document Number: NSS-001-1112 To 1368 Date: 03/25/88

Title: Volume III - Supplemental Laboratory Data RI/FS Report

Type: PLAN
Category: 4.3.0 Feasibility Study Reports
Author: none: Loureiro Engineering Associates
Recipient: Jorling, Thomas C: NY Dept of Environmental Conservation
Attached: NSS-001-1117 NSS-001-1152 NSS-001-1154 NSS-001-1156 NSS-001-1160 NSS-001-1161 NSS-001-1369

Document Number: NSS-001-1117 To 1150 Parent: NSS-001-1112 Date: 11/20/87

Title: (Letter forwarding information on dioxin analysis method used)

Type: CORRESPONDENCE
Category: 4.3.0 Feasibility Study Reports
Author: Watkins, Robert: ENSECO
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-1152 To 1153 Parent: NSS-001-1112 Date: 12/29/86

Title: (Letter forwarding analytical results for samples received on 11/24/86)

Type: CORRESPONDENCE
Category: 4.3.0 Feasibility Study Reports
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-1154 To 1155 Parent: NSS-001-1112 Date: 01/06/87

Title: (Letter forwarding analytical results for samples received on 11/15/86)

Type: CORRESPONDENCE
Category: 4.3.0 Feasibility Study Reports
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-0634 To 0635 Date: 02/01/88

Title: (Letter regarding recommendations for consideration in completing the RI/FS)

Type: CORRESPONDENCE
Category: 4.2.0 Applicable or Relevant and Appropriate Requirement (ARAR) Determinations
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0636 To 0636 Date: 03/01/88

Title: (Letter forwarding literature regarding the Air Quality Data)

Type: CORRESPONDENCE
Category: 4.2.0 Applicable or Relevant and Appropriate Requirement (ARAR) Determinations
Condition: MISSING ATTACHMENT
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: Loureiro, Julio: Loureiro Engineering Associates

Document Number: NSS-001-0637 To 0803 Date: 03/25/88

Title: Volume II - Feasibility Study, Remedial Investigation/Feasibility Study Report for the 93rd Street School Site

Type: PLAN
Category: 4.3.0 Feasibility Study Reports
Author: none: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-0804 To 1111 Parent: NSS-001-0412 Date: 03/25/88

Title: Appendices Volume I - Remedial Investigation Summary, Remedial Investigation/Feasibility Study Report for the 93rd Street School Site

Type: PLAN
Category: 4.3.0 Feasibility Study Reports
Author: none: Loureiro Engineering Associates
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-1645 To 1657 Date: / /

Title: Proposed Remedial Action Plan, Love Canal - 93rd Street School

Type: PLAN
Category: 4.4.0 Proposed Plan
Author: none: none
Recipient: none: none
Attached: NSS-001-1658

Document Number: NSS-001-1658 To 1658 Parent: NSS-001-1645 Date: 04/04/88

Title: (Routing and Transmittal slip forwarding final Proposed Remedial Action Plan)

Type: CORRESPONDENCE
Category: 4.4.0 Proposed Plan
Author: Howe, Robert F: US EPA
Recipient: Feldt, Lisa: US EPA

Document Number: NSS-001-1659 To 1662 Date: 11/03/87

Title: (Memo forwarding Delegation Briefing for the American Thermostat and Love Canal 93rd Street School Sites)

Type: CORRESPONDENCE
Category: 5.1.0 Correspondence
Author: Luftig, Stephen D: US EPA
Recipient: Nadeau, Paul: US EPA

Document Number: NSS-001-1731 To 1742 Date: 01/09/85

Title: (Memo providing staff with information necessary to prepare Amendment #7 to current Love Canal Cooperative Agreement between EPA and NYSDEC)

Type: CORRESPONDENCE
Category: 6.2.0 Cooperative Agreements/SMOAs
Author: Librizzi, Willian J: US EPA
Recipient: Barrack, Herbert: US EPA
Attached: NSS-001-1743 NSS-001-1744

Document Number: NSS-001-1156 To 1158 Parent: NSS-001-1112 Date: 12/06/86

Title: (Letter forwarding analytical results for two samples received on 11/25/86)

Type: CORRESPONDENCE
Category: 4.3.0 Feasibility Study Reports
Author: Bell, Dorothy A: Energy Resources Company (ERCO)
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-1160 To 1160 Parent: NSS-001-1112 Date: 07/21/87

Title: (Letter forwarding results of analysis of 14 sediment samples received on 07/01/87)

Type: CORRESPONDENCE
Category: 4.3.0 Feasibility Study Reports
Author: Watkins, Robert: ENSECO
Recipient: Armet, Brian: York Wastewater Consultants (YWC)

Document Number: NSS-001-1161 To 1162 Parent: NSS-001-1112 Date: 07/23/87

Title: (Letter listing 26 samples to be analyzed)

Type: CORRESPONDENCE
Category: 4.3.0 Feasibility Study Reports
Author: Mitzel, Robert S: ENSECO
Recipient: Watkins, Robert: ENSECO

Document Number: NSS-001-1369 To 1644 Parent: NSS-001-1112 Date: 03/25/88

Title: Volume IV - Supplemental Laboratory Data Continued RI/FS Report

Type: PLAN
Category: 4.3.0 Feasibility Study Reports
Author: none: Loureiro Engineering Associates
Recipient: Jorling, Thomas C: NY Dept of Environmental Conservation

Document Number: NSS-001-1891 To 1891 Date: 03/19/85

Title: (Letter describing results of soil and water samples and requesting assistance to determine if area should be restricted)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Huffaker, Robert: NY Dept of Health

Document Number: NSS-001-1892 To 1892 Date: 12/11/85

Title: (Letter enclosing soil sampling results and asking what measures should be taken to protect human health)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Author: Slack, Joseph L: NY Dept of Environmental Conservation
Recipient: Kim, Nancy K: NY Dept of Health

Document Number: NSS-001-1893 To 1893 Date: 04/07/86

Title: (Letter asking whether immediate action to restrict access to site is necessary)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Condition: MARGINALIA
Author: Slack, Joseph L: NY Dept of Environmental Conservation
Recipient: Kim, Nancy K: NY Dept of Health
Attached: NSS-001-1897 NSS-001-1898

Document Number: NSS-001-1894 To 1894 Date: 12/23/87

Title: (Memo to follow-up 07/15/87 memo and forwarding draft Remedial Investigation/Feasibility Study)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Nelson, William Q: US EPA
Recipient: Pavlou, George: US EPA

Document Number: NSS-001-1743 To 1743 Parent: NSS-001-1731 Date: 10/29/84

Title: (Letter requesting additional time to execute Amendment to review and modify Special Conditions to the Amendment)

Type: CORRESPONDENCE
Category: 6.2.0 Cooperative Agreements/SMOAs
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Ogg, Robert N: US EPA

Document Number: NSS-001-1744 To 1744 Parent: NSS-001-1731 Date: 12/10/84

Title: (Letter concerning followup to 09/24/84 letter and requesting that 93rd Street School and environs be included as part of the Love Canal site as defined in the Love Canal Superfund Assistance Agreement)

Type: CORRESPONDENCE
Category: 6.2.0 Cooperative Agreements/SMOAs
Condition: MARGINALIA MISSING ATTACHMENT
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Librizzi, William J: US EPA

Document Number: NSS-001-1745 To 1745 Date: 01/17/85

Title: (Letter forwarding executed copies of Amendment #1 and Amendment #2)

Type: CORRESPONDENCE
Category: 6.2.0 Cooperative Agreements/SMOAs
Condition: MISSING ATTACHMENT
Author: Torkelson, Richard: NY Dept of Environmental Conservation
Recipient: Beggun, Helen S: US EPA

Document Number: NSS-001-1767 To 1781 Date: 05/23/86

Title: EPA Assistance Agreement/Amendment

Type: OTHER
Category: 6.2.0 Cooperative Agreements/SMOAs
Author: Daggett, Christopher J: US EPA
Recipient: Williams, Henry G: NY Dept of Environmental Conservation

Document Number: NSS-001-1901 To 1901 Date: 02/04/88

Title: Aerial Photo Analyses Request

Type: OTHER
Category: 9.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: none: Environmental Monitoring Systems Laboratory

Document Number: NSS-001-1902 To 1903 Date: 12/10/87

Title: (Notification form forwarding draft RI/FS for review)

Type: CORRESPONDENCE
Category: 9.2.0 Notices Issued
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Patterson, Bill: US Dept of the Interior

Document Number: NSS-001-1904 To 1904 Date: 09/15/80

Title: (Letter forwarding beryllium report)

Type: CORRESPONDENCE
Category: 9.4.0 Reports
Condition: MARGINALIA
Author: Kim, C Stephen: NY Dept of Health
Recipient: Preuster, Nora: none

Document Number: NSS-001-1905 To 1934 Date: 07/11/80

Title: (Memo forwarding soil analysis report for beryllium analysis)

Type: CORRESPONDENCE
Category: 9.4.0 Reports
Author: Hoffman, R J: NY Dept of Health
Recipient: Kim, C Stephen: NY Dept of Health

Document Number: NSS-001-1895 To 1895 Date: 07/15/87

Title: (Memo requesting that a health assessment be performed for the site and forwarding preliminary draft "First Round Data Analysis Report")

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Pavlou, George: US EPA
Recipient: Nelson, William Q: US EPA

Document Number: NSS-001-1896 To 1896 Date: 03/18/88

Title: (Routing slip for draft health assessment from ASTDR)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Howe, Robert F: US EPA
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-001-1897 To 1897 Parent: NSS-001-1893 Date: 05/22/86

Title: (Letter indicating that there is no need for immediate action to restrict the area)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Luftig, Stephen D: US EPA

Document Number: NSS-001-1898 To 1900 Parent: NSS-001-1893 Date: 05/05/86

Title: (Letter recommending additional sampling, a long term remedy, and to review data to ensure it is sufficient)

Type: CORRESPONDENCE
Category: 8.1.0 Correspondence
Author: Kim, Nancy K: NY Dept of Health
Recipient: Slack, Joseph L: NY Dept of Environmental Conservation

Document Number: NSS-001-1976 To 2050 Parent: NSS-001-1975 Date: 11/18/83

Title: NY State Superfund Phase I Summary Report Final

Type: PLAN
Category: 9.4.0 Reports
Author: none: Recra Research
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-2051 To 2051 Date: 08/01/85

Title: Engineering Investigations at Inactive Hazardous Waste Sites Phase II Investigation

Type: PLAN
Category: 9.4.0 Reports
Author: none: Recra Research
Recipient: Williams, Henry G: NY Dept of Environmental Conservation
Attached: NSS-001-2052 NSS-001-2096 NSS-001-2098 NSS-001-2113 NSS-001-2126 NSS-002-0001 NSS-002-0018
NSS-002-0035 NSS-002-0038 NSS-002-0043 NSS-002-0051 NSS-002-0154 NSS-002-0167

Document Number: NSS-001-2052 To 2095 Parent: NSS-001-2051 Date: 08/15/84

Title: Preliminary Engineering Investigations at Active Hazardous Waste Sites in the State of NY,
Phase II Investigations

Type: PLAN
Category: 9.4.0 Reports
Author: none: Recra Research
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-2096 To 2097 Parent: NSS-001-2051 Date: / /

Title: Part II Topographical Maps, 93rd Street School Quad 1965

Type: GRAPHIC
Category: 9.4.0 Reports
Author: none: US Geological Survey (USGS)
Recipient: none: none

Document Number: NSS-001-1935 To 1962 Date: 12/31/79

Title: (Letter forwarding soil sample descriptions)

Type: CORRESPONDENCE
Category: 9.4.0 Reports
Author: Owens, Donald W: Earth Dimension
Recipient: Kim, C Stephen: NY Dept of Health

Document Number: NSS-001-1966 To 1974 Date: / /

Title: NY State Superfund Phase II Site Investigations Revised Work Plans

Type: PLAN
Category: 9.4.0 Reports
Condition: INCOMPLETE
Author: none: Recra Research
Recipient: none: none
Attached: NSS-001-1967

Document Number: NSS-001-1967 To 1974 Parent: NSS-001-1966 Date: 10/18/83

Title: (Letter forwarding cost estimates for Phase II Investigations and explaining derivation of pricing)

Type: CORRESPONDENCE
Category: 9.4.0 Reports
Author: Stellrecht, C James: none
Recipient: Demick, Walter E: NY Dept of Environmental Conservation

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Document Number: NSS-001-1975 To 1975 Date: 11/18/83

Title: (Letter forwarding Phase I - Preliminary Investigation with a summary of pertinent information)

Type: CORRESPONDENCE
Category: 9.4.0 Reports
Condition: MISSING ATTACHMENT
Author: Crouch, Richard L: Recra Research
Recipient: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Attached: NSS-001-1976 NSS-001-2004 NSS-001-2018

Document Number: NSS-001-2128 To 2272 Date: / /

Title: (Record of data nad documentation used to apply Hazard Ranking System)

Type: PLAN
Category: 9.4.0 Reports
Author: none: none
Recipient: none: none

Document Number: NSS-002-0001 To 0017 Parent: NSS-001-2051 Date: 08/20/84

Title: Part V, Site Inspection Report (EPA forms 2070-13)

Type: OTHER
Category: 9.4.0 Reports
Author: Werneiwski, Diane M: Recra Research
Recipient: none: US EPA

Document Number: NSS-002-0018 To 0033 Parent: NSS-001-2051 Date: / /

Title: Section 6; Preliminary Engineering Assessment of Remedial Alternatives

Type: PLAN
Category: 9.4.0 Reports
Condition: INCOMPLETE
Author: none: none
Recipient: none: none

Document Number: NSS-002-0035 To 0037 Parent: NSS-001-2051 Date: 08/28/85

Title: Appendix 1: Site Plate

Type: GRAPHIC
Category: 9.4.0 Reports
Author: none: URS
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-001-2098 To 2105 Parent: NSS-001-2051 Date: / /

Title: Part III Groundwater Work Sheets

Type: PLAN
Category: 9.4.0 Reports
Author: none: Recra Research
Recipient: none: none

Document Number: NSS-001-2106 To 2112 Date: / /

Title: Part IV (Sources for information on groundwater in Niagara Falls Area of NY)

Type: OTHER
Category: 9.4.0 Reports
Author: none: none
Recipient: none: none

Document Number: NSS-001-2113 To 2125 Parent: NSS-001-2051 Date: 05/01/82

Title: Environmental Monitoring at Love Canal, Volume I

Type: PLAN
Category: 9.4.0 Reports
Condition: INCOMPLETE
Author: none: US EPA
Recipient: none: none

Document Number: NSS-001-2126 To 2272 Parent: NSS-001-2051 Date: / /

Title: (Record of data and documentation used to apply Hazard Ranking System)

Type: PLAN
Category: 9.4.0 Reports
Author: none: none
Recipient: none: none

Document Number: NSS-002-0167 To 0169 Parent: NSS-001-2051 Date: / /

Title: Appendix 6, Appendix A; Data Sources and References

Type: PLAN
Category: 9.4.0 Reports
Author: none: none
Recipient: none: none

Document Number: NSS-002-0171 To 0171 Date: 07/25/85

Title: (Letter in response to 06/20/85 letter regarding report on soil and groundwater sampling at site)

Type: CORRESPONDENCE
Category: 11.1.0 Comments and Responses
Author: Nosenchuck, Norman H: NY Dept of Environmental Conservation
Recipient: Smith, Marion: resident

Document Number: NSS-002-0172 To 0172 Date: 01/01/88

Title: (Page 8 of Love Canal Landfill Update with article entitled "93rd Street School Investigation")

Type: CORRESPONDENCE
Category: 11.6.0 Fact Sheets
Condition: INCOMPLETE
Author: none: NY Dept of Environmental Conservation
Recipient: none: none

Document Number: NSS-003-0001 To 0001 Date: 04/18/88

Title: (Letter enclosing documents on solidification proecesses for review)

Type: CORRESPONDENCE
Category: 11.1.0 Comments and Responses
Condition: MISSING ATTACHMENT
Author: Hale, Joann: resident
Recipient: Gabalski, Anita M: NY Dept of Environmental Conservation

Document Number: NSS-002-0038 To 0042 Parent: NSS-001-2051 Date: 08/28/85

Title: Appendix 2: Cross Sections

Type: GRAPHIC
Category: 9.4.0 Reports
Author: none: URS
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-002-0043 To 0050 Parent: NSS-001-2051 Date: 05/18/84

Title: Appendix 3: Boring Logs/Well Construction (dated from 05/18/84 to 05/18/84)

Type: DATA
Category: 9.4.0 Reports
Author: none: Recra Research
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-002-0051 To 0153 Parent: NSS-001-2051 Date: 08/10/84

Title: Appendix 4: Analytical Data

Type: DATA
Category: 9.4.0 Reports
Author: none: none
Recipient: none: none

Document Number: NSS-002-0154 To 0166 Parent: NSS-001-2051 Date: 05/24/84

Title: Appendix 5: Field Report for Sampling Activities at the 93rd Street School for NY State Dept of Environmental Conservation May 17,21,24, 1984

Type: PLAN
Category: 9.4.0 Reports
Author: Bauer, Robert P: Recra Research
Recipient: none: NY Dept of Environmental Conservation

Document Number: NSS-003-0012 To 0012 Date: 04/04/88

Title: (Letter enclosing final draft of the RI/FS and announcing a public meeting on 04/13/88)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Schick, Robert W: NY Dept of Environmental Conservation
Recipient: Howe, Robert F: US EPA

Document Number: NSS-003-0013 To 0022 Date: 04/05/88

Title: (Letter responding to Robert Schick's letter dated 01/22/88 on comments on the 12/04/87 version of the RI/FS)

Type: CORRESPONDENCE
Category: 4.1.0 Correspondence
Author: Knapp, Lynda K: Loureiro Engineering Associates
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-004-0001 To 0002 Date: 05/04/88

Title: (Memo forwarding documents to be included in the Administrative Record File)

Type: CORRESPONDENCE
Category: 5.1.0 Correspondence
Author: Payne, David W: US EPA
Recipient: Gabalski, Anita M: NY Dept of Environmental Conservation
Attached: NSS-004-0003 NSS-004-0004 NSS-004-0005 NSS-004-0007

Document Number: NSS-004-0003 To 0003 Parent: NSS-004-0001 Date: 04/07/88

Title: (Letter forwarding 93rd Street School FS and propoesed Remedial Action Plan)

Type: CORRESPONDENCE
Category: 4.1.3 Public Correspondence, specific to feasibility study
Condition: MISSING ATTACHMENT
Author: Payne, David W: US EPA
Recipient: Cull, Jay A: Occidental Chemical

Document Number: NSS-003-0002 To 0002 Date: 04/13/88

Title: Attendance Sheet For 93rd Street School Public Information Meeting

Type: OTHER
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Author: none: NY Dept of Environmental Conservation
Recipient: none: none

Document Number: NSS-003-0003 To 0003 Date: 04/05/88

Title: (Newspaper article titled: "NY State Dept of Environmental Conservation and The US EPA Announce the Proposed Cleanup Alternatives For The 93rd St School" appearing in 3 newspapers)

Type: CORRESPONDENCE
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Author: none: Niagara Gazette
Recipient: none: none

Document Number: NSS-003-0004 To 0010 Date: 03/01/88

Title: (Love Canal Newsletter titled: "Study and Cleanup Program Love Canal Landfill")

Type: CORRESPONDENCE
Category: 11.6.0 Fact Sheets
Author: Jorling, Thomas C: NY Dept of Environmental Conservation
Recipient: none: none

Document Number: NSS-003-0011 To 0011 Date: 04/02/88

Title: (Newspaper article titled: "93rd Street School Soil to be Treated at Site")

Type: CORRESPONDENCE
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Condition: MARGINALIA
Author: Kuma, Carolyn: Niagara Gazette
Recipient: none: none

Document Number: NSS-004-0016 To 0016 Date: 05/09/88

Title: (Letter authorizing groundwater minitoring at the site effective immediately)

Type: CORRESPONDENCE
Category: 3.1.2 Interagency
Author: Pavlou, George: US EPA
Recipient: Willson, John J: NY Dept of Environmental Conservation

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Document Number: NSS-004-0017 To 0017 Date: 05/06/88

Title: (Newspaper announcements of extensionof the Remedial Action Olan Public Comment Period for the site)

Type: CORRESPONDENCE
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Author: none: NY Dept of Environmental Conservation
Recipient: none: illegible

Document Number: NSS-004-0018 To 0018 Date: 04/28/88

Title: (Routing and Transmittal slip forwarding second announcement of extension of Remedial Inv estigation/Feasibility Study)

Type: CORRESPONDENCE
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Author: none: none
Recipient: Gabalski, Anita M: NY Dept of Environmental Conservation
Attached: NSS-004-0019

Document Number: NSS-004-0019 To 0019 Parent: NSS-004-0018 Date: / /

Title: (Announcement for the extension of the Remedial Investigation/Feasibility Study and the Proposed Remedial Action Plan Public Comment period)

Type: CORRESPONDENCE
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Condition: MARGINALIA
Author: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Recipient: none: none

Document Number: NSS-004-0004 To 0004 Parent: NSS-004-0001 Date: 05/03/88

Title: (Letter extending Remedial Investigation/Feasibility Study public comment period to 05/25/88 and forwarding public notice to be published 05/04/88)

Type: CORRESPONDENCE
Category: 4.1.3 Public Correspondence, specific to feasibility study
Condition: MISSING ATTACHMENT
Author: Payne, David W: US EPA
Recipient: Cull, Jay A: Occidental Chemical

Document Number: NSS-004-0005 To 0006 Parent: NSS-004-0001 Date: 05/03/88

Title: (Memo elaborating on proposed remedy's compliance with the appropriate federal and state requirements)

Type: CORRESPONDENCE
Category: 3.1.1 Intra-agency
Author: Howe, Robert F: US EPA
Recipient: file: none

Document Number: NSS-004-0007 To 0014 Parent: NSS-004-0001 Date: 03/27/86

Title: (Memo providing interim guidance on noncontiguous sites and on-site management of waste and treatment residue)

Type: CORRESPONDENCE
Category: 12.1.0 EPA Headquarters Guidance
Author: Porter, J Winston: US EPA
Recipient: none: US EPA

Document Number: NSS-004-0015 To 0015 Date: 06/29/88

Title: (Memo regarding use of all terrain vehicles by teenagers at the site)

Type: CORRESPONDENCE
Category: 8.1.1 Inter-agency
Author: Gabalski, Anita M: NY Dept of Environmental Conservation
Recipient: none: US EPA

Document Number: NSS-004-0038 To 0039 Parent: NSS-004-0037 Date: 09/05/79

Title: Request for Analysis

Type: OTHER
Category: 3.1.0 Correspondence
Author: Malinchock, John C: Niagara NY, County of
Recipient: none: NY Dept of Health

Document Number: NSS-004-0040 To 0040 Parent: NSS-004-0037 Date: 09/05/79

Title: (Handwritten report of area and circumstances of soil sampling)

Type: PLAN
Category: 3.1.0 Correspondence
Author: Zak, D: Niagara NY, County of
Recipient: Illegible: illegible

Document Number: NSS-004-0041 To 0045 Parent: NSS-004-0037 Date: / /

Title: (Preliminary investigation of Alcliff Landscaping area and profile report including a site sketch and conclusions)

Type: OTHER
Category: 3.1.0 Correspondence
Condition: MARGINALIA
Author: none: none
Recipient: none: none

Document Number: NSS-004-0046 To 0046 Date: / /

Title: (Interim report regarding 93rd and 66th Street Schools site surveys and soil sampling)

Type: PLAN
Category: 3.1.0 Correspondence
Author: none: none
Recipient: none: none
Attached: NSS-004-0047

Document Number: NSS-004-0020 To 0020 Date: 04/29/88

Title: (Memo forwarding index that accompanies the site Administrative Record)

Type: CORRESPONDENCE
Category: 5.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: none: none
Recipient: Gabalski, Anita M: NY Dept of Environmental Conservation

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Document Number: NSS-004-0021 To 0035 Date: 04/26/88

Title: (Letter commenting on the RI/FS Report and forwarding documentation to support comments)

Type: CORRESPONDENCE
Category: 4.1.2 Interagency
Condition: MARGINALIA MISSING ATTACHMENT
Author: Hopkins, Michael E: Niagara NY, County of
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation
Attached: NSS-004-0065

Document Number: NSS-004-0036 To 0036 Date: 09/11/79

Title: (Letter responding to 09/05/79 request and advising that on 09/05/79 a sample of fill material was obtained and sent for analysis

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Malinchock, John C: Niagara NY, County of
Recipient: Walsh, James A: Niagara NY, Town of

Document Number: NSS-004-0037 To 0037 Date: 09/05/79

Title: (Letter requesting dirt fill from sample from Alcliff Nursery be obtained tested and a report sent)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Walsh, James A: Niagara NY, Town of
Recipient: Maida: Niagara NY, County of
Attached: NSS-004-0038 NSS-004-0040 NSS-004-0041

Document Number: NSS-004-0065 To 0066 Parent: NSS-004-0021 Date: 06/13/88

Title: (Letter providing comments on 04/26/88 comments regarding Remedial Investigation/Feasibility Study Report)

Type: CORRESPONDENCE
Category: 4.1.2 Interagency
Author: Kim, Nancy K: NY Dept of Health
Recipient: Willson, Jack J: NY Dept of Environmental Conservation

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Document Number: NSS-004-0067 To 0067 Date: 06/16/88

Title: (Letter referencing 06/13/88 letter and staating "hot spots" should be evacuated if the area is redeveloped)

Type: CORRESPONDENCE
Category: 3.1.2 Interagency
Author: Tramontano, Ronald: NY Dept of Health
Recipient: Willson, Jack: NY Dept of Environmental Conservation

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Document Number: NSS-004-0068 To 0086 Date: 05/24/88

Title: (Letter submitted on behalf of accidental chemical corproation commenting on the Feasibility Study for the site)

Type: CORRESPONDENCE
Category: 4.1.3 Public Correspondence, specific to feasibility study
Author: Truitt, Thomas H: Piper & Marbury
Recipient: Nagi, Amarinderjit S: NY Dept of Environmental Conservation

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Document Number: NSS-004-0087 To 0087 Date: 03/11/88

Title: Dioxin Sites Cleanup Activities Weekly Update

Type: PLAN
Category: 11.3.0 Public Notice of Availability of Information, Notice of Meetings
Author: Young, Jeff: US EPA
Recipient: none: none

Document Number: NSS-004-0047 To 0047 Parent: NSS-004-0046 Date: 11/12/78

Title: (Map of sampling locations for 66th Street School and Bishop Duffy High School)

Type: GRAPHIC
Category: 3.1.0 Correspondence
Author: none: none
Recipient: none: none

Document Number: NSS-004-0048 To 0048 Date: 03/26/79

Title: (Memo forwarding readings of radon and ionizing radiation taken at the site as requested, providing assessment of results and suggesting varfication of radon levels at 93rd Street School over two to four week period)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Condition: MISSING ATTACHMENT
Author: Matuszek, J: Radiological Sciences Laboratory
Recipient: none: NY Dept of Health

Document Number: NSS-004-0049 To 0050 Date: 09/12/78

Title: (Memo providing results of air sampling on 09/09/78 and concluding the school is radiation free, except for the strip of land adjacent to the school also includes a map)

Type: CORRESPONDENCE
Category: 3.1.0 Correspondence
Author: Dooley, David A: NY Dept of Health
Recipient: Campbell, LaVerne: NY Dept of Health

Document Number: NSS-004-0051 To 0064 Date: 05/16/88

Title: (Memo regarding health consultation for the site including tables of sample results)

Type: CORRESPONDENCE
Category: 8.1.1 Inter-agency
Author: McClanahan, Mark A: US Dept of Health & Human Services
Recipient: Nelson, William Q: US EPA

Document Number: NSS-004-0088 To 0114 Date: 06/01/88

Title: (Memo requesting review by the regional offeces by 06/17/88 of interim treatment levels for soil and debris)

Type: CORRESPONDENCE
Category: 12.1.0 EPA Headquarters Guidance
Author: Longest, Henry L: US EPA
Recipient: none: US EPA

Document Number: NSS-004-0115 To 0127 Date: / /

Title: Proposed Remedial Action Plan

Type: PLAN
Category: 4.4.0 Proposed Plan
Author: none: none
Recipient: none: none

Document Number: NSS-004-0128 To 0238 Date: 04/13/88

Title: (Transcript of public meeting regarding site Remedial Investigation/Feasibility Study)

Type: LEGAL DOCUMENT
Category: 11.4.0 Public Meeting Transcripts
Author: Smith, Sandra K: Jack W Hunt & Associates
Recipient: none: none

ATTACHMENT B

R. Howe

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

Thomas C. Jorling
Commissioner

Mr. Stephen D. Luftig
Director, Emergency and Remedial
Response Division
United States Environmental
Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Luftig:

Re: 93rd Street School Site, Niagara Falls, Niagara County, Remedial Investigation/Feasibility Study, Site No. 9-32-078

The New York State Department of Environmental Conservation (NYSDEC) has recently completed a Remedial Investigation/Feasibility Study (RI/FS) at the 93rd Street School Site, Niagara Falls, Niagara County, New York.

The RI/FS work recommended that the following remedial measures be implemented at this site: 1) Excavate and treat the hot spot soils. 2) Install a low permeability cover over the hot spot soils and extended areas with lower contaminated soils. 3) Monitoring of site. The NYSDEC endorses these recommendations.

Since this site is a Federal Superfund site, it is NYSDEC's understanding that: 1) One hundred percent of the remedial design costs for this project will be eligible for federal funding. 2) the remedial costs will be divided 90% federal and 10% non-federal and; 3) that the operation and maintenance costs for this project will be eligible for federal funding for at least one year following construction completion. After this period of time, the State of New York will be responsible for assuring the operation and maintenance of the implemented remedies.

If you have any questions or comments regarding this matter, please contact Mr. Robert W. Schick or Mr. Amarinderjit S. Nagi, of my staff, at (518) 457-4343.

Sincerely,

Michael J. O'Toole, Jr., P.E.
Acting Director
Division of Hazardous Waste Remediation

AN/tv
cc: G. Pavlou, USEPA-Reg.II
J. Singerman, USEPA-Reg.II
R. Howe, USEPA-Reg.II ✓
J. Loureiro, LEA