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93rd STREET SCHOOL

NEW YORK STATE SUPERFUND
PHASE I SUMMARY REPORT

FINAL

November 18, 1983

Prepared By:

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For:

New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-0001

93rd STREET SCHOOL
NEW YORK STATE SUPERFUND
PHASE 1 SUMMARY REPORT

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1.0 EXECUTIVE SUMMARY

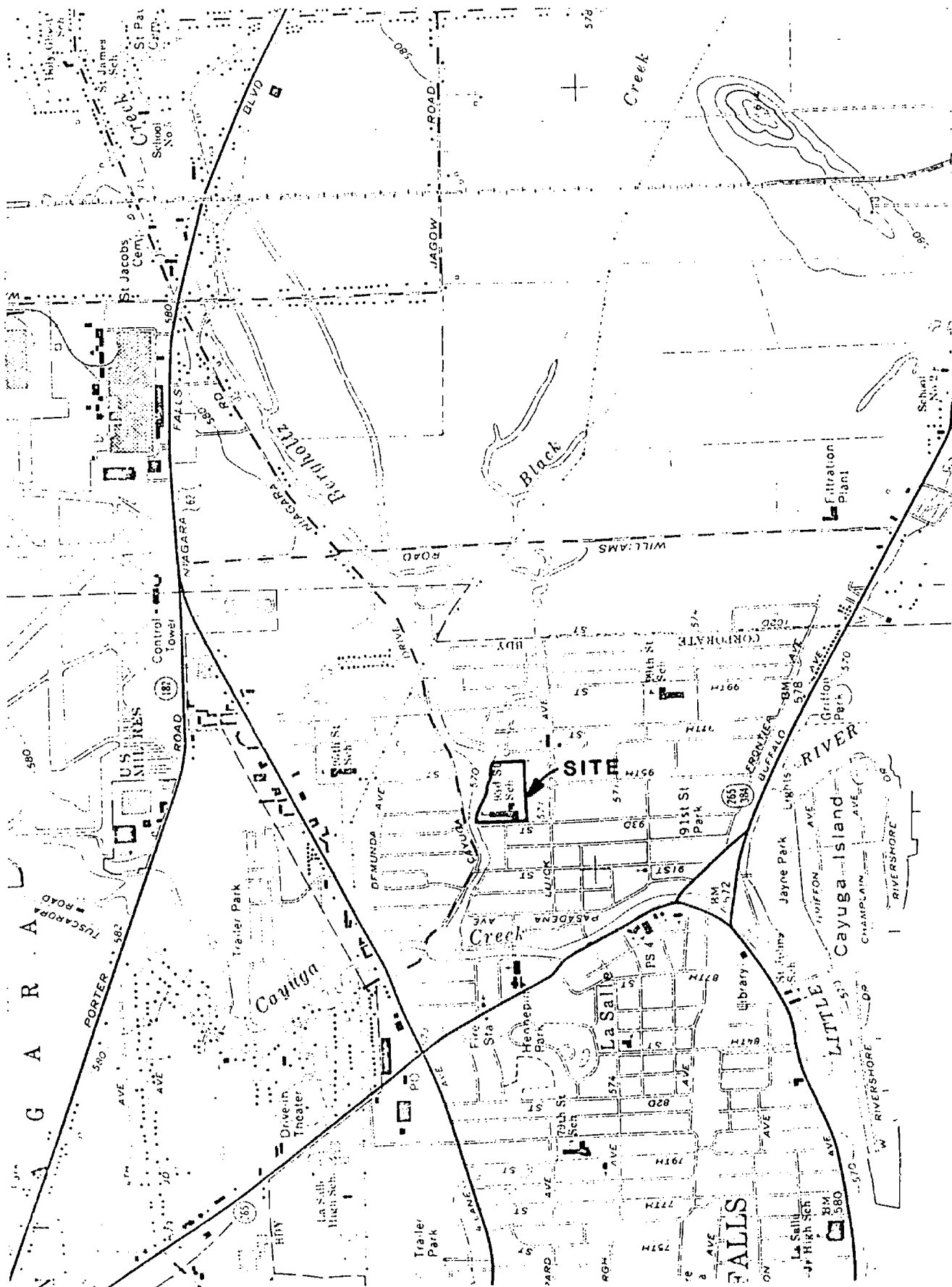
Approximately 3,000 cubic yards of fly ash and BHC cake were used for fill at the 93rd Street School, Niagara Falls, New York in 1954. Tests have shown the presence of benzene, toluene, BHC, dioxin, and lindane in on-site soils and nearby storm sewers, surface waters, and sediments. However, past testing has failed to establish the horizontal extent and thickness of the contaminated fill layer on-site. In addition, the past investigations have not differentiated the effects of off-site contamination caused by the school fill from that attributable to other Love Canal sources. No measures have been taken to cap or seal the site or to provide containment or removal of contaminated soils and waters.

The Phase II work is expected to determine the vertical and horizontal extent of on-site contamination and to better define off-site impacts. Involved in the project will be upstream and downstream water and sediment sampling of Bergholtz Creek as well as storm sewer sampling. A gully which directs surface run-off to Bergholtz Creek will also be included in the surface water/sediment sampling. The subsurface investigation will involve analysis of groundwater from existing wells and of soils of all on-site overburden strata.

2.0 SITE DESCRIPTION

The 93rd Street School is located within the City of Niagara Falls, Niagara County, New York. The elementary school was closed in 1980 by the City Board of Education. It is hoped that the school will eventually be reopened as part of the "revitalization" of the Love Canal (Ref. 1). In 1954, the Niagara Falls Board of Education contracted to have approximately 3,000 cubic yards of fly ash and BHC cake hauled from the Love Canal to the 93rd Street School for use as fill (Ref. 2). A site location map follows. The school is surrounded by residential areas.

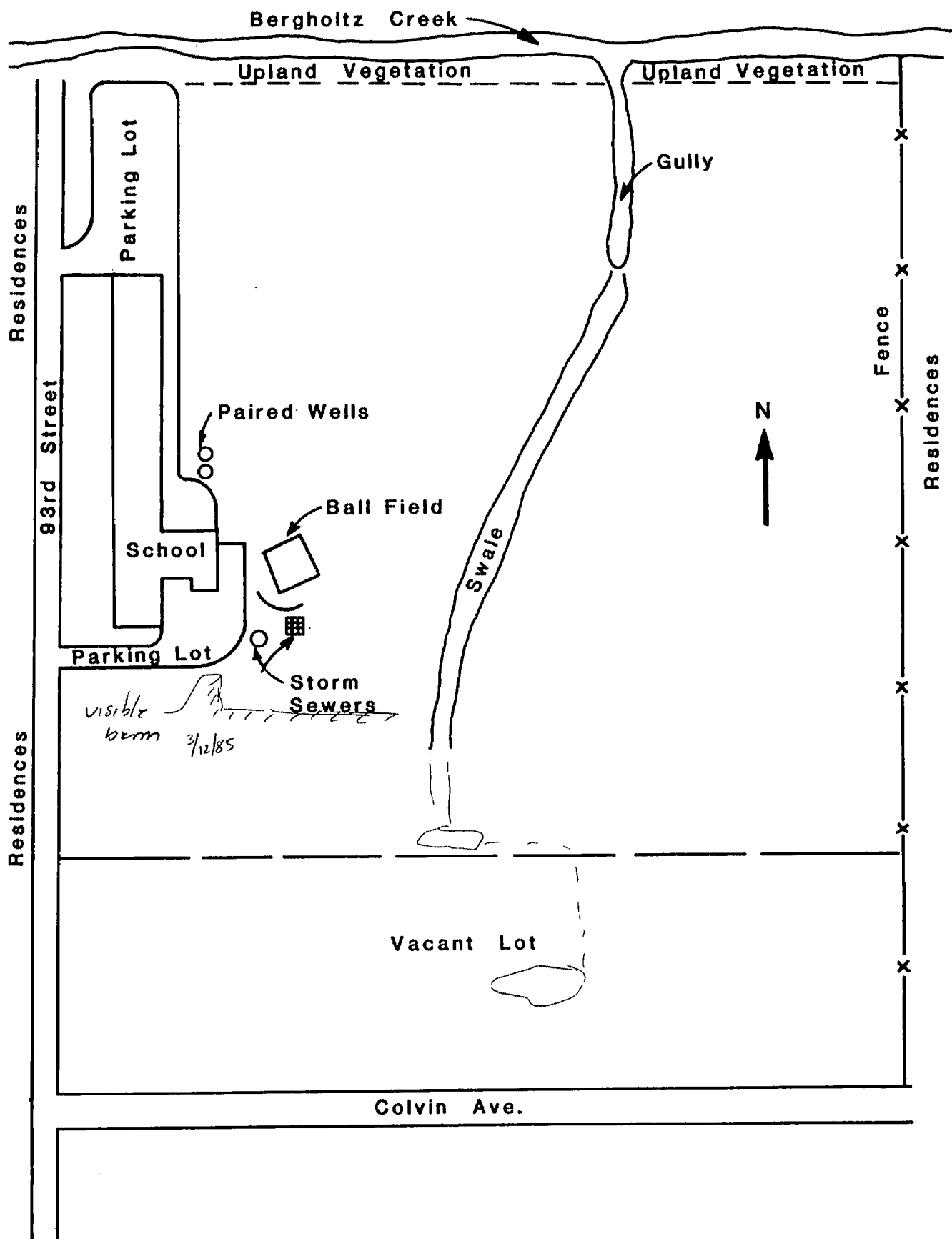
The fill layer appears to be covered by about three feet of topsoil (Ref. 3). The horizontal extent of the fill, as well as the thickness of the layer, is uncertain. No measures have been taken to control infiltration and run-off or provide containment. Bergholtz Creek flows along the northern edge of the property. Bergholtz Creek enters Cayuga Creek, a tributary of the Niagara River, about 0.3 miles west of the site (Ref. 4). The site topography directs surface run-off to Bergholtz Creek. Storm sewers are present in the vicinity of the playground. A field map depicting the general appearance of the site follows. A greater discussion of on-site characteristics is presented in Sections 4 and 5.



USGS Topographical Map
Tonawanda, W. N.Y.
Quad. 1965

VICINITY MAP
93rd STREET SCHOOL
Niagara Falls, N. Y.

Figure 1



Not To Scale

SITE MAP
93rd STREET SCHOOL
Niagara Falls N. Y.

Figure 2

3.0 PRELIMINARY HAZARD RANKING SYSTEM SCORE

Facility name <u>93rd Street School</u>	
Location <u>Niagara Falls, Niagara County, New York</u>	
EPA Region <u>2</u>	
Person(s) in charge of the facility <u>Superintendent of Schools.</u>	
<u>Board of Education Niagara Falls.</u>	
<u>New York</u>	
Name of Reviewer: <u>Recra Research, Inc.</u>	Date <u>June 3, 1983</u>
General description of the facility: (For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)	
<u>Closed public school. 3,000 cubic yards of fly ash and BHC cake</u>	
<u>placed as fill on site in 1954. Analysis of soils and ground waters</u>	
<u>indicate presence of dioxin, lindane, benzene, and toluene. May be</u>	
<u>contaminating adjacent storm sewers, Bergholtz Creek, and ground water.</u>	
Scores: $S_M = 32.8$ ($S_{gw} = 6.12$ $S_{sw} = 56.36$ $S_a = 0$)	
$S_{FE} = N/A$	Range 32.5 - 53.6
$S_{DC} = 75.0$	

HRS COVER SHEET

Ground Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Rel. (Section)
[1] Observed Release	0	(45)	1	45	45	3.1
If observed release is given a score of 45, proceed to line [4] . If observed release is given a score of 0, proceed to line [2]						
[2] Route Characteristics						3.2
Depth to Aquifer of Concern	0	1 2 3	2		6	
Net Precipitation	0	1 2 3	1		3	
Permeability of the Unsaturated Zone	0	1 2 3	1		3	
Physical State	0	1 2 3	1		3	
Total Route Characteristics Score				0	15	
[3] Containment	0	1 2 3	1	0	3	3.3
[4] Waste Characteristics						3.4
Toxicity/Persistence	0	3 6 9 12 15 (18)	1	18	18	
Hazardous Waste Quantity	0	1 2 3 4 5 6 7 (8)	1	8	8	
Total Waste Characteristics Score				26	26	
[5] Targets						3.5
Ground Water Use	0	(1) 2 3	3	3	9	
Distance to Nearest Well/Population Served	(0)	4 6 8 10	1	0	40	
Total Targets Score				3	49	
[6]	If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]			3510	57,330	
[7]	Divide line [6] by 57,330 and multiply by 100			$S_{gw} = 6.12$		

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Rel. (Section)	
[1] Observed Release	0 (45)	1	45	45	4.1	
If observed release is given a value of 45, proceed to line [4] . If observed release is given a value of 0, proceed to line [2] .						
[2] Route Characteristics					4.2	
Facility Slope and Intervening Terrain	0 1 2 3	1		3		
1-yr. 24-hr. Rainfall	0 1 2 3	1		3		
Distance to Nearest Surface Water	0 1 2 3	2		6		
Physical State	0 1 2 3	1		3		
Total Route Characteristics Score			0	15		
[3] Containment	0 1 2 3	1	0	3	4.3	
[4] Waste Characteristics					4.4	
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18		
Hazardous Waste Quantity	0 1 2 3 4 5 6 (8) 7	1	8	8		
Total Waste Characteristics Score			26	26		
[5] Targets					4.5	
Surface Water Use	0 1 2 (3)	3	9	9		
Distance to a Sensitive Environment	0 (1) 2 3	2	2	6		
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 (20) 24 30 32 35 40	1	20	40		
Total Targets Score			31	55		
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]			36,270	64,350		
[7] Divide line [6] by 64,350 and multiply by 100			S_{sw} = 56.36			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
[1] Observed Release	[0] 45	1	0	45	5.1	
Date and Location:						
Sampling Protocol:						
If line [1] is 0, the $S_a = 0$. Enter on line [5] . If line [1] is 45, then proceed to line [2] .						
[2] Waste Characteristics					5.2	
Reactivity and Incompatibility	0 1 2 3	1		3		
Toxicity	0 1 2 3	3		9		
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8		
Total Waste Characteristics Score				20		
[3] Targets					5.3	
Population Within 4-Mile Radius	{ 0 9 12 15 18 21 24 27 30	1		30		
Distance to Sensitive Environment	0 1 2 3	2		6		
Land Use	0 1 2 3	1		3		
Total Targets Score				39		
[4] Multiply [1] x [2] x [3]				35,100		
[5] Divide line [4] by 35,100 and multiply by 100				$S_a = 0$		

FIGURE 9
AIR ROUTE WORK SHEET

	s	s ²
Groundwater Route Score (S _{gw})	6.12	37.45
Surface Water Route Score (S _{sw})	56.36	3176.45
Air Route Score (S _a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		3213.9
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		56.69
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M$		32.77

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi- plier	Score	Max. Score	Ref. (Section)
1 Containment	1	3	1		3	7.1
2 Waste Characteristics						7.2
Direct Evidence	0	3	1		3	
Ignitability	0	1 2 3	1		3	
Reactivity	0	1 2 3	1		3	
Incompatibility	0	1 2 3	1		3	
Hazardous Waste Quantity	0	1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score					20	
3 Targets						7.3
Distance to Nearest Population	0	1 2 3 4 5	1		5	
Distance to Nearest Building	0	1 2 3	1		3	
Distance to Sensitive Environment	0	1 2 3	1		3	
Land Use	0	1 2 3	1		3	
Population Within 2-Mile Radius	0	1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0	1 2 3 4 5	1		5	
Total Targets Score					24	
4 Multiply 1 x 2 x 3					1,440	
5 Divide line 4 by 1,440 and multiply by 100				SFE - <i>NA</i>		

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)	
1 Observed Incident	0 45	1	0	45	8.1	
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2						
2 Accessibility	0 1 2 3	1	3	3	8.2	
3 Containment	0 15	1	15	15	8.3	
4 Waste Characteristics Toxicity	0 1 2 3	5	15	15	8.4	
5 Targets					8.5	
Population Within a 1-Mile Radius	0 1 2 3 4 5	4	20	20		
Distance to a Critical Habitat	0 1 2 3	4	4	12		
Total Targets Score			24	32		
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			16,200	21,600		
7 Divide line 6 by 21,600 and multiply by 100			SDC - 75.0			

FIGURE 12
DIRECT CONTACT WORK SHEET

3.1 Documentation Records for Hazard Ranking System

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: 93rd Street School

LOCATION: City of Niagara Falls, Niagara County, New York

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

BENZENE AND TOLUENE (REF. 7)

Rationale for attributing the contaminants to the facility:

DETECTED IN SAMPLES FROM ON-SITE WELLS,
BENZENE AND TOLUENE ALSO DETECTED IN
ON-SITE SOILS. (REF. 7)

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:

AQUIFER IN FRACTURE ZONE AT TOP OF LOCKPORT DOLOMITE
(TOP OF BEDROCK). AQUIFER IN UNCONSOLIDATED DEPOSITS
NOT OF REGIONAL IMPORTANCE (REF. 6.)

Depth(s) from the ground surface to the highest seasonal level of the
saturated zone [water table(s)] of the aquifer of concern:

30 FEET (REF. 13)

Depth from the ground surface to the lowest point of waste disposal/
storage:

UNKNOWN FILL LAYER OVERLAIN BY
APPROXIMATELY 3 FEET OF TOPSOIL (REF. 3)

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

34 INCHES (REF. 14)

Mean annual lake or seasonal evaporation (list months for seasonal):

27 INCHES (REF. 14)

Net precipitation (subtract the above figures):

7 INCHES

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

GLACIAL TILL; GLACIO-LACUSTRINE SILTS, CLAYS
AND FINE SANDS (REF. 5, 6, & 7)

Permeability associated with soil type:

10^{-7} cm/sec (Ref. 5, 6, & 7)

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

SOLID (REF. 2)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

NO CONTAINMENT

Method with highest score:

LANDFILL NO LINER

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

BHC, BENZENE, TOLUENE, DIOXIN, LINDANE
(REF. 2, 3, 7)

Compound with highest score:

LINDANE - COMBINED TOXICITY & PERSISTENCE
SCORE EQUALS 18.

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

3,000 CUBIC YARDS OF FLY ASH AND BHC
CAKES. (REF. 2)

Basis of estimating and/or computing waste quantity:

BASED ON DEC SURVEY CONDUCTED
ON DISPOSAL SITES IN NEW YORK - INFORMATION
PROVIDED BY DEC ***

5 TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

6 INDUSTRIAL WELLS LOCATED BETWEEN 2 1/2 AND 3 MILES OF SITE. (REF. 6)

DRINKING WATER WELLS LOCATED ON WITMER ROAD, TOWN OF NIAGARA, JUST OUTSIDE OF 3-MILE RADIUS

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

2 1/2 MILES SOUTHWEST OF SITE ALONG BUFFALO AVENUE BETWEEN I-190 AND HYPE PARK BLVD. (REF. 6)

Distance to above well or building:

2 1/2 MILES (REF. 6)

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

6 INDUSTRIAL WELLS (REF. 6)

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

N/A

Total population served by ground water within a 3-mile radius:

WELLS USED FOR INDUSTRIAL PURPOSES ONLY
(REF. 6)

SURFACE WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

LINDANE, BENZENE, BHC (REF 3,7)

Rationale for attributing the contaminants to the facility:

DETECTED IN STORM SEWERS AND BERGHOLTZ CREEK ADJACENT TO SITE, SAME CONTAMINANTS FOUND ON-SITE, HOWEVER, DATA INSUFFICIENT TO DIFFERENTIATE BETWEEN EFFECTS OF 93RD STREET SCHOOL AND * OTHER LOVE CANAL SOURCES

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

< 3% FACILITY GENERALLY FLAT BUT LANDSCAPED TO FORM SWALE IN CENTRAL PORTION OF SITE (REF 4,12)

Name/description of nearest downslope surface water:

BERGHOLTZ CREEK (REF 4) ADJACENT TO NORTHERN EDGE OF SITE. CLASS "D" WATER RESOURCE. (REF 8)

Average slope of terrain between facility and above-cited surface water body in percent:

~15% SLOPE (REF. 4, 12)

Is the facility located either totally or partially in surface water?

No

Is the facility completely surrounded by areas of higher elevation?

ENTIRE AREA GENERALLY FLAT (REF 4,12)

1-Year 24-Hour Rainfall in Inches

2.1 INCHES (REF 14)

Distance to Nearest Downslope Surface Water

BERGHOLTZ CREEK, ADJACENT TO SITE (REF. 4)

Physical State of Waste

SOLID (REF. 2)

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

NONE

Method with highest score:

LANDFILL NOT COVERED AND NO DIVERSION
SYSTEM PRESENT

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

SAME AS GROUNDWATER

Compound with highest score:

SAME AS GROUNDWATER

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

SAME AS GROUNDWATER

Basis of estimating and/or computing waste quantity:

SAME AS GROUNDWATER

* * *

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

BERGHOLTZ CREEK, CLASS "D" SUITABLE FOR SECONDARY CONTACT RECREATION, CAYUGA CREEK, CLASS "C", SUITABLE FOR ALL USES EXCEPT DRINKING, CULINARY, AND FOOD PROCESSING PURPOSES.

CITY OF NIAGARA FALLS WATER INTAKES APPROXIMATELY 2.6 MILES DOWNSTREAM OF SITE (REF 4, 8 & 9)

Is there tidal influence?

NO

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

N/A

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

CLASS II FRESHWATER WETLANDS 1/2 MILE TO
NORTHWEST OF SITE (REF. 11)

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

NONE

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

CITY OF NIAGARA FALLS INTAKES APPROXIMATELY
3 MILES DOWNSTREAM OF SITE (REF 4) POPULATION
SERVED, APPROXIMATELY 71,000 PEOPLE. (REF 15)

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

N/A

Total population served:

~ 71,000 PEOPLE

Name/description of nearest of above water bodies:

NIAGARA RIVER APPROXIMATELY .7 MILES SOUTH OF SITE. BERGHOLTZ & CAYUGA CREEKS ARE TRIBUTARIES OF NIAGARA RIVER

Distance to above-cited intakes, measured in stream miles.

APPROXIMATELY 3.4 MILES (REF 4)

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

NO ON-SITE DATA. AIR TESTING OF RESIDENCES
EAST OF SITE CONTAMINATION PROBABLY DERIVED FROM
OTHER LOVE CANAL SOURCES. (REF 7)

Date and location of detection of contaminants

N/A

Methods used to detect the contaminants:

N/A

Rationale for attributing the contaminants to the site:

N/A

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

N/A

Most incompatible pair of compounds:

N/A

Toxicity

Most toxic compound:

N/A

Hazardous Waste Quantity

Total quantity of hazardous waste:

N/A

Basis of estimating and/or computing waste quantity:

N/A

* * *

3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:
0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to less than 1/4 mi

N/A

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

N/A

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

N/A

Distance to critical habitat of an endangered species, if 1 mile or less:

N/A

Land Use

Distance to commercial/industrial area, if 1 mile or less:

N/A

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

N/A

Distance to residential area, if 2 miles or less:

N/A

Distance to agricultural land in production within past 5 years, if 1 mile or less:

N/A

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

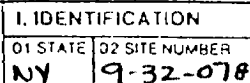
N/A

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

N/A

3.2 EPA PRELIMINARY ASSESSMENT (FORM 2070-12)

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT PART 1 - SITE INFORMATION AND ASSESSMENT		I. IDENTIFICATION 01 STATE NY 02 SITE NUMBER 932078	
II. SITE NAME AND LOCATION			
01 SITE NAME (Legal, common, or descriptive name of site) 93RD STREET SCHOOL		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER	
03 CITY NIAGARA FALLS	04 STATE NY	05 ZIP CODE 14301	06 COUNTY NIAGARA
09 COORDINATES LATITUDE 43° 05' 15.0"		LONGITUDE 079° 57' 14.0"	
10 DIRECTIONS TO SITE (Starting from nearest public road) EAST SIDE OF 93RD STREET AT NORTHERN END OF STREET			
III. RESPONSIBLE PARTIES			
01 OWNER (If known) NIAGARA FALLS BOARD OF EDUCATION		02 STREET (Business, making, residential) 607 WALNUT AVE.	
03 CITY NIAGARA FALLS	04 STATE NY	05 ZIP CODE 14301	06 TELEPHONE NUMBER (716) 278-5613
07 OPERATOR (If known and different from owner) SAME		08 STREET (Business, making, residential)	
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL: _____ (Agency name) <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input checked="" type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: _____ (Specify) <input type="checkbox"/> G. UNKNOWN			
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: ____/____/____ MONTH DAY YEAR <input type="checkbox"/> B. UNCONTROLLED WASTE SITE (RCRA 103(c)) DATE RECEIVED: ____/____/____ MONTH DAY YEAR <input type="checkbox"/> C. NONE			
IV. CHARACTERIZATION OF POTENTIAL HAZARD			
01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE 6/3/83 MONTH DAY YEAR <input type="checkbox"/> NO		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input checked="" type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify) CONTRACTOR NAME(S): RELRA RESEARCH, INC.	
02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION 1954 1954 BEGINNING YEAR ENDING YEAR <input type="checkbox"/> UNKNOWN	
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED FLY ASH POSSIBLY CONTAMINATED WITH DIOXIN, AND BHC CAKE			
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION NO CONTAINMENT, NO MEASURES TAKEN TO CONTROL INFILTRATION OF GROUNDWATER OR SURFACE WATER RUN-OFF. POSSIBLE SURFACE WATER AND GROUNDWATER CONTAMINATION, POSSIBLE EXPOSURE TO PUBLIC OF CHEMICALS ON-SITE			
V. PRIORITY ASSESSMENT			
01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input type="checkbox"/> A. HIGH (Inspection required promptly) <input checked="" type="checkbox"/> B. MEDIUM (Inspection required) <input type="checkbox"/> C. LOW (Inspection on time available basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form)			
VI. INFORMATION AVAILABLE FROM			
01 CONTACT RICHARD L. CROUCH		02 OF (Agency/Organization) RELRA RESEARCH, INC.	
04 PERSON RESPONSIBLE FOR ASSESSMENT KEVIN OWEN		05 AGENCY RELRA RESEARCH	06 ORGANIZATION SAME
		07 TELEPHONE NUMBER (716) 838-6200	08 DATE 6/3/83 MONTH DAY YEAR





POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-078

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____

02 ☒ OBSERVED (DATE: 5/82)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

TRACES OF BENZENE & TOLUENE DETECTED IN ON-SITE GROUNDWATER
ONLY INDUSTRIAL WELLS LOCATED WITHIN 3 MILES OF SITE.
(REF. 7,6)

01 ☐ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 770,000

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☒ POTENTIAL ☐ ALLEGED

LINDANE, BENZENE & BHC DETECTED IN ADJACENT STORM SEWERS AND
BERGHOLTZ CREEK. EFFECT OF OTHER LOVE CANAL SOURCES NOT SCREENED
OUT. NIAGARA FALLS WATER INTAKES < 3 MILES DOWNSTREAM OF SITE (REF 3,7,4)

01 ☐ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☒ POTENTIAL ☐ ALLEGED

BENZENE & TOLUENE VOLATILE + CONTAMINATED FILL LAYER overlain BY
TOP SOIL, VOLATILIZATION IS POSSIBLE

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

UNKNOWN

01 ☐ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 5,000

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

CONTAMINATED FILL overlain BY TOP SOIL, EXPOSURE TO PEBBLE
USING SCHOOL YARD POSSIBLE. LINDANE, BHC, BENZENE AND DIOXIN DETECTED
IN SOILS. ESTIMATED POPULATION WITH ONE MILE RADIUS

01 ☐ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: _____

02 ☒ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

SOIL FOUND TO CONTAIN BENZENE, LINDANE, DIOXIN, BHC
(REF. 2,3 & 7)

01 ☐ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 770,000

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

CITY OF NIAGARA FALLS WATER INTAKES WITHIN 3 MILE
DISTANCE DOWNSTREAM OF SITE (REF 4)

01 ☐ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

UNKNOWN, EXPOSURE POSSIBLE FOR ON-SITE WORKERS

01 ☐ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)
04 NARRATIVE DESCRIPTION

☐ POTENTIAL ☐ ALLEGED

UNKNOWN



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-070

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

UNKNOWN

01 ☐ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (include name(s) of species)

UNKNOWN

01 ☐ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

UNKNOWN

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
(Ships/runoff standing liquids/seeping drums)
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

NO CONTAINMENT

01 ☐ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

UNKNOWN

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

BHC AND DIOXIN DETECTED IN STORM SEWERS (REF 3+7)
LINDANE DETECTED IN STORM SEWERS ADJACENT TO SITE (REF 3)

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS


III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

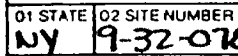
IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

REF. 2 - KNOWLES & TRAMONTANO, NYDEC HAZARDOUS WASTE DISPOSAL SITE REPORT, 4/16/80.
3 - NYSDOH "LOVE CANAL: A SPECIAL REPORT TO THE GOVERNOR & LEGISLATURE, APRIL 1981"
4 - USGS TOPOGRAPHIC MAP, TONAWANDA WES. NY QUADRANGLE 1965
6 - JOHNSON, R. H., "GROUNDWATER IN THE NIAGARA FALLS AREA, N.Y." NY Water Res Com. Bull. 6-W-53, 1964

3.3 EPA SITE INSPECTION REPORT (FORM 2070-13)

 POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 1 - SITE LOCATION AND INSPECTION INFORMATION				I. IDENTIFICATION 01 STATE NY 02 SITE NUMBER 9-32-078	
II. SITE NAME AND LOCATION					
01 SITE NAME (Legal, common, or descriptive name of site) 93RD STREET SCHOOL			02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 93RD STREET		
03 CITY NIAGARA FALLS			04 STATE NY	05 ZIP CODE 1430	06 COUNTY NIAGARA
09 COORDINATES LATITUDE 43° 05' 15.0" LONGITUDE 079° 57' 14.0"			10 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL <input type="checkbox"/> C. STATE <input checked="" type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER <input type="checkbox"/> G. UNKNOWN		
III. INSPECTION INFORMATION					
01 DATE OF INSPECTION 06/03/83 MONTH DAY YEAR		02 SITE STATUS <input type="checkbox"/> ACTIVE <input checked="" type="checkbox"/> INACTIVE		03 YEARS OF OPERATION 1954 1954 <input type="checkbox"/> UNKNOWN BEGINNING YEAR ENDING YEAR	
04 AGENCY PERFORMING INSPECTION (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. MUNICIPAL <input type="checkbox"/> D. MUNICIPAL CONTRACTOR <input type="checkbox"/> E. STATE <input checked="" type="checkbox"/> F. STATE CONTRACTOR RELRA RESEARCH <input type="checkbox"/> G. OTHER <small>(Name of firm) (Specify)</small>					
05 CHIEF INSPECTOR KEVIN OWEN		06 TITLE ENVIRONMENTAL SPECIALIST		07 ORGANIZATION RELRA RESEARCH	
08 TELEPHONE NO. (716) 838-6200		09 OTHER INSPECTORS NONE		10 TITLE	
11 ORGANIZATION		12 TELEPHONE NO.			
13 SITE REPRESENTATIVES INTERVIEWED DR. REED H. HAYEN		14 TITLE SUPERINTENDENT OF SCHOOLS		15 ADDRESS 607 WALNUT AVE NIAGARA FALLS, NY	
16 TELEPHONE NO. (716) 278-5613		17 ACCESS GAINED BY (Check one) <input checked="" type="checkbox"/> PERMISSION <input type="checkbox"/> WARRANT		18 TIME OF INSPECTION 10:00 AM	
19 WEATHER CONDITIONS SUNNY / WARM		20 INFORMATION AVAILABLE FROM			
01 CONTACT RICHARD L. CROUCH		02 OF (Agency/Organization) RELRA RESEARCH INC		03 TELEPHONE NO. (716) 838-6200	
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM KEVIN OWEN		05 AGENCY RELRA		06 ORGANIZATION RELRA	
07 TELEPHONE NO.		08 DATE 06/03/83 MONTH DAY YEAR			



7-USEPA "ENVIRONMENTAL MONITORING AT LOYE CANAL, VOL I (EPA-600/4-82-030) AND V.II (EPA-600/4-82-030b)" MAY 1982



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-078

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

SEE PRELIMINARY ASSESSMENT

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

SEE PRELIMINARY ASSESSMENT

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

//

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

//

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

//

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) 04 NARRATIVE DESCRIPTION

//

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

//

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

//

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

//



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-078

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NONE OBSERVED

01 ☐ K. DAMAGE TO FAUNA

04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NONE OBSERVED

01 ☐ L. CONTAMINATION OF FOOD CHAIN

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

UNKNOWN

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES

(Spills, Runoff, Standing liquids, Leaking drums)

03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

SEE PRELIMINARY ASSESSMENT

01 ☐ N. DAMAGE TO OFFSITE PROPERTY

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

//

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

//

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NONE OBSERVED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

GULLY OBSERVED CONDUCTING SURFACE RUN-OFF TO BERGHOLTZ CREEK, STORM SEWERS LOCATED IN PLAYGROUND NEAR BALLFIELD
EPA MONITORING WELLS PRESENT & PRESUMABLY USABLE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

2- KNOWLES & TRAMONTANO, "INSDC HAZARDOUS WASTE DISPOSAL SITE REPORT" 4/16/80

4- USGS TOPOGRAPHIC MAP, TONAWANDA WEST, NY QUADRANGLE 1965

6- JOHNSON, R.H., "GROUNDWATER IN THE NIAGARA FALLS AREA, NY" NY WATER RES. COM. BULL. 6-W-53-196

7- USEPA "ENVIRONMENTAL MONITORING AT LIE CANAL, VI (EPA-600/4-82-030a) & V. II (EPA-600/4-82-036")



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE **NY** 02 SITE NUMBER **9-32-018**

II. PERMIT INFORMATION

N/A

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input type="checkbox"/> A. NPDES				
<input type="checkbox"/> B. UIC				
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input type="checkbox"/> G. STATE (Specify)				
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION	<input type="checkbox"/> A. BUILDINGS ON SITE
<input type="checkbox"/> B. PILES			<input type="checkbox"/> B. UNDERGROUND INJECTION	
<input type="checkbox"/> C. DRUMS, ABOVE GROUND			<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input checked="" type="checkbox"/> F. LANDFILL	3,600	Cubic yds.	<input type="checkbox"/> F. SOLVENT RECOVERY	06 AREA OF SITE N/A (Acres)
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input type="checkbox"/> H. OTHER (Specify)	
<input type="checkbox"/> I. OTHER (Specify)				

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☒ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

LAYER OF TOPSOIL OVER FILL, NO CONTAINMENT, NO MEASURES
TAKEN TO PROVIDE FOR SURFACE RUN-OFF CONTROL OR TO PREVENT
PERCOLATION OF CONTAMINATES TO GROUNDWATER

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE ☒ YES ☐ NO

02 COMMENTS

SCHOOL GROUNDS ACCESSIBLE TO PUBLIC

VI. SOURCES OF INFORMATION (Give specific references, e.g. state files, sample analysis reports)

2 - KNOWLES AND TRAMONTANO "NYSDEC HAZARDOUS WASTE DISPOSAL
SITE REPORT" 4/16/82
(REF 2, 3, 7)
3 - NYSDDH "LOVE CANAL - A SPECIAL REPORT TO THE GOVERNOR AND
LEGISLATURE, APRIL 1981
7 - USEPA "ENVIRONMENTAL MONITORING AT LOVE CANAL, VI (EPA-600/4-82-030a) & VII



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE NY 02 SITE NUMBER 9-32-078

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY
(Check as applicable)

SURFACE WELL
COMMUNITY A. ☒ B. ☐
NON-COMMUNITY C. ☐ D. ☐

02 STATUS

ENDANGERED AFFECTED MONITORED
A. ☐ B. ☐ C. ☐
D. ☐ E. ☐ F. ☐

03 DISTANCE TO SITE

A. _____ (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING
(Other sources available)
☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION ☐ D. NOT USED, UNUSEABLE
(Limited other sources available)
COMMERCIAL, INDUSTRIAL, IRRIGATION
(No other water sources available)

02 POPULATION SERVED BY GROUND WATER INDUSTRY

03 DISTANCE TO NEAREST DRINKING WATER WELL N/A (mi)

04 DEPTH TO GROUNDWATER

<10 (ft)

05 DIRECTION OF GROUNDWATER FLOW

SOUTH

06 DEPTH TO AQUIFER
OF CONCERN

20 (ft)

07 POTENTIAL YIELD
OF AQUIFER

VARIABLE (gpd)

08 SOLE SOURCE AQUIFER

☐ YES ☒ NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

INDUSTRIAL WELLS USED TO PROVIDE PROCESS WATERS

10 RECHARGE AREA

☒ YES ☐ NO
COMMENTS BEDROCK AQUIFER RECHARGES VIA INFILTRATION FROM OVERLYING DEPOSITS

11 DISCHARGE AREA

☒ YES ☐ NO
COMMENTS POSSIBLE DISCHARGE TO BERGHOLTZ CREEK, BEDROCK AQUIFER DISCHARGES TO NIAGARA RIVERS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION
DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY
IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:

AFFECTED

DISTANCE TO SITE

BERGHOLTZ CREEK ☐ Adjacent (mi)
CAYUGA CREEK ☐ _____ (mi)
NIAGARA RIVER ☐ _____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE

A. _____
NO. OF PERSONS

TWO (2) MILES OF SITE

B. _____
NO. OF PERSONS

THREE (3) MILES OF SITE

C. >70,000
NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

RESIDENCES ADJACENT TO SITE (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

04 DISTANCE TO NEAREST OFF-SITE BUILDING

30 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

SCHOOL LOCATED IN A RESIDENTIAL SECTION OF NIAGARA RIVER



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE NY 02 SITE NUMBER 9-32-078

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☒ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☐ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE
(Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE
($10^{-4} - 10^{-6}$ cm/sec) ☒ C. RELATIVELY PERMEABLE
($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE
(Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK

20 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

UNKNOWN (ft)

05 SOIL pH

06 NET PRECIPITATION

7 (in)

07 ONE YEAR 24 HOUR RAINFALL

2.1 (in)

08 SLOPE

< 3 %

DIRECTION OF SITE SLOPE

NORTH

TERRAIN AVERAGE SLOPE

< 3 %

09 FLOOD POTENTIAL

SITE IS IN 100 YEAR FLOODPLAIN

10

☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

A. _____ (mi)

OTHER

B. 1/2 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: _____

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

RESIDENTIAL AREAS; NATIONAL/STATE PARKS,
FORESTS, OR WILDLIFE RESERVES

AGRICULTURAL LANDS
PRIME AG LAND AG LAND

A. _____ (mi)

RESIDENTIAL

B. ADJACENT (mi)

C. _____ (mi) D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

TOPOGRAPHY IN AREA GENERALLY FLAT LYING. ON THE NORTHERN
EDGE OF THE SITE THERE IS A 5 TO 10 FOOT DROP TO BERGHOLTZ
CREEK WITH A SLOPE OF ABOUT 16%. SCHOOL GROUNDS HAVE
APPARENTLY BEEN LANDSCAPED TO DIRECT RUN-OFF TOWARDS
BERGHOLTZ CREEK

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

- 4- USGS TOPOGRAPHIC MAP, TONAWANDA WEST QUADRANGLE, NY 1665
- 10- NIAGARA FALLS DEPT. OF PLANNING & DEVELOPMENT "ZONING MAP OF NIAGARA FALLS" 7/2/70
- 11- BATCHELIER, G., NYSDOC, REG. 9, TELEPHONE CONVERSATION 6/1/83
- 14- US DEPT OF COMMERCE, NAT'L CLIMATIC CENTER, "CLIMATE ATLAS OF THE U.S." 1979



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-078

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER		REF. 7	
SURFACE WATER		REF 3 & 7	
WASTE		REF. 3	
AIR		REF. 7	
RUNOFF			
SPILL			
SOIL		REF 2, 3 & 7	
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE <input type="checkbox"/> GROUND <input type="checkbox"/> AERIAL	02 IN CUSTODY OF _____ (Name of organization or individual)
03 MAPS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS REF. 3 & 4

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references e.g., state files, sample analysis, reports)

2- KNOWLES + TRAMONTANO, "NYSDEC HAZARDOUS WASTE DISPOSAL SITE REPORT" 4/10/80
3- NYSDOH "LOIE CANAL - A SPECIAL REPORT TO THE GOVERNOR & LEGISLATURE" APRIL 1981
4- USGS TOPO MAP, TONAWANDA WEST, NY, QUADRANGLE 1905
7- USEPA "ENVIRONMENTAL MONITORING AT LOIE CANAL, Y.I (EPA-600/4-82-030a) & VII
(EPA-600/4-82-030b)" MAY 1982



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-078

II. CURRENT OWNER(S)

PARENT COMPANY (If applicable)

01 NAME NIAGARA FALLS BOARD OF EDUCATION			02 D+B NUMBER			08 NAME			09 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.) 607 WALNUT AVE.			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE								
05 CITY NIAGARA FALLS			06 STATE NY			07 ZIP CODE			12 CITY			13 STATE			14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			12 CITY			13 STATE			14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			12 CITY			13 STATE			14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			12 CITY			13 STATE			14 ZIP CODE		
01 NAME			02 D+B NUMBER			08 NAME			09 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			10 STREET ADDRESS (P.O. Box, RFD #, etc.)			11 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			12 CITY			13 STATE			14 ZIP CODE		

III. PREVIOUS OWNER(S) (List most recent first)

IV. REALTY OWNER(S) (If applicable: list most recent first)

01 NAME			02 D+B NUMBER			01 NAME			02 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			05 CITY			06 STATE			07 ZIP CODE		
01 NAME			02 D+B NUMBER			01 NAME			02 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			05 CITY			06 STATE			07 ZIP CODE		
01 NAME			02 D+B NUMBER			01 NAME			02 D+B NUMBER								
03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE			03 STREET ADDRESS (P.O. Box, RFD #, etc.)			04 SIC CODE								
05 CITY			06 STATE			07 ZIP CODE			05 CITY			06 STATE			07 ZIP CODE		

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC REGION 9



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-070

II. CURRENT OPERATOR (Provide if different from owner)

OPERATOR'S PARENT COMPANY (If applicable)

01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER					

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					
01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					
1954		NIAGARA FALLS BOARD OF EDUCATION					
01 NAME		02 D+B NUMBER		10 NAME		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
NY 9-32-078

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NOTE: 3000 CUBIC YARDS OF FLY ASH AND BHC CAKE FROM
LOVE CANAL USED AS FILL AT 93RD STREET SCHOOL.
(REF. 2)

2 - KNOWLES + TRAMONTANO, "NYDEC HAZARDOUS WASTE DISPOSAL
SITES REPORT" 4-16-80



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE
NY

02 SITE NUMBER
9-32-078

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED
04 DESCRIPTION

02 DATE

03 AGENCY

NO ACTION OF THIS NATURE TAKEN

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ D. SPILLED MATERIAL REMOVED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ E. CONTAMINATED SOIL REMOVED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ F. WASTE REPACKAGED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ G. WASTE DISPOSED ELSEWHERE
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ H. ON SITE BURIAL
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ I. IN SITU CHEMICAL TREATMENT
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ J. IN SITU BIOLOGICAL TREATMENT
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ K. IN SITU PHYSICAL TREATMENT
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ L. ENCAPSULATION
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ M. EMERGENCY WASTE TREATMENT
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ N. CUTOFF WALLS
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ P. CUTOFF TRENCHES/SUMP
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ Q. SUBSURFACE CUTOFF WALL
04 DESCRIPTION

02 DATE

03 AGENCY

"



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE **NY** 02 SITE NUMBER **9-32-078**

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED
04 DESCRIPTION

02 DATE

03 AGENCY

NO ACTION OF THIS NATURE TAKEN

01 ☐ S. CAPPING/COVERING
04 DESCRIPTION

02 DATE

03 AGENCY

LAYER OF TOPSOIL COVERS WASTES (REF 2,3,7)

01 ☐ T. BULK TANKAGE REPAIRED
04 DESCRIPTION

02 DATE

03 AGENCY

NO N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED
04 DESCRIPTION

02 DATE

03 AGENCY

NO ACTION OF THIS NATURE TAKEN

01 ☐ V. BOTTOM SEALED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ W. GAS CONTROL
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ X. FIRE CONTROL
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ Y. LEACHATE TREATMENT
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ Z. AREA EVACUATED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ 1. ACCESS TO SITE RESTRICTED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ 2. POPULATION RELOCATED
04 DESCRIPTION

02 DATE

03 AGENCY

"

01 ☐ 3. OTHER REMEDIAL ACTIVITIES
04 DESCRIPTION

02 DATE

03 AGENCY

—

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

2- KNOWLES + TRAMONTANO "NYS DEC HAZARDOUS WASTE DISPOSAL SITE REPORT" 4-16-82
3- NYSDDH "LOVE CANAL- A SPECIAL REPORT TO THE GOVERNOR + LEGISLATURE - 4/81
7- USEPA "ENVIRONMENTAL MONITORING AT LOVE CANAL, V.I (EPA-600/4-82-030a) and
V. II (EPA-600/4-82-030b) MAY 1982



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	9-32-018

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

4.0 SITE HISTORY

In 1954, approximately 3,000 cubic yards of fly ash and BHC cake were placed as fill at the 93rd Street School. The material was excavated from the Love Canal. The fill was subsequently covered with top soil and seeded. The topsoil is currently about 3 feet thick. The horizontal extent and thickness of the fill layer is uncertain (Ref. 1, Ref. 2, Ref. 3). No measures have been taken to control infiltration and run-off or provide containment.

5.0 SITE DATA

5.1 Site Area Surface Features

5.1.1 Topography and Drainage - The site is generally flat but appears to have been landscaped to direct surface runoff towards Bergholtz Creek. The site slopes gently from the east and west to create a swale in the central portion of the site. The swale terminates at its northern end in a small gully that discharges to Bergholtz Creek. Two inlets to storm sewers were observed south of the ball field near the parking lots. These storm sewers apparently discharge to Bergholtz Creek north of the school, although the actual lines were not traced.

Bergholtz Creek is classified as a Class "D" water. Cayuga Creek is classified as a Class "C" water. Cayuga Creek enters the Niagara River about one mile south of the confluence of Bergholtz and Cayuga Creek. The Niagara River is classified as a Class "A-Special" (International Boundary) water. The best usage of Class "D" waters are for secondary contact recreation. Accordingly, the water conditions must be suitable for fish survival. Class "C" waters are considered suitable for all uses

except drinking, culinary or food processing purposes, and primary contact recreation. Class "A-Special" waters are used as sources of water for drinking, culinary or food processing purposes, primary contact recreation, and other usages (Ref. 8, Ref. 9).

The water intakes of the Niagara Falls water treatment plant are approximately 2.6 miles from the site. These intakes are the only surface water intakes for drinking water located within three miles of the site (Ref. 4).

- 5.1.2 Environmental Setting - The 93rd Street School is located in a predominately residential section of Niagara Falls (Ref. 10, Ref. 14, Ref. 15). Bergholtz Creek flows along the northern edge of the site (Ref. 4). The northern portion of the site is in the 100 year floodplain of the creek. There are no critical habitats of endangered species in the vicinity of the site. A Class II freshwater wetlands is located about one-half mile southeast of the school property. A second wetland has been tentatively identified about one mile to the northwest of the site. Field investigations are needed to verify and classify the second wetland (Ref. 11).

There are very few areas offering wildlife habitat value in the vicinity of the 93rd Street School. The school site is regularly maintained and the entire grounds are mowed. A vacant lot with tall weeds and a few scattered trees is south of schoolgrounds. A narrow band of upland trees and vegetation separates the schoolyard from Bergholtz Creek on the north. Wetland vegetation, including a willow tree, is found in the gully running from the site into Bergholtz Creek. In all other areas, including north of Bergholtz Creek, residences are found (Ref. 12).

5.2 Site Hydrogeology

5.2.1 Geology - The Lockport Dolomite, which is of Silurian Age, forms the bedrock beneath the site (Ref. 5, Ref. 6, Ref. 7). The Lockport Formation is composed almost entirely of dolomite, a slightly soluble calcium magnesium carbonate. However, a relatively thin section of limestone is encountered near the base of the formation. The Lockport Dolomite reaches a thickness of about 150 feet. The formation dips gently in a southerly direction at a rate of approximately 30 feet per mile. (Figure 3)

93rd. Street School, Niagara Falls, N. Y.

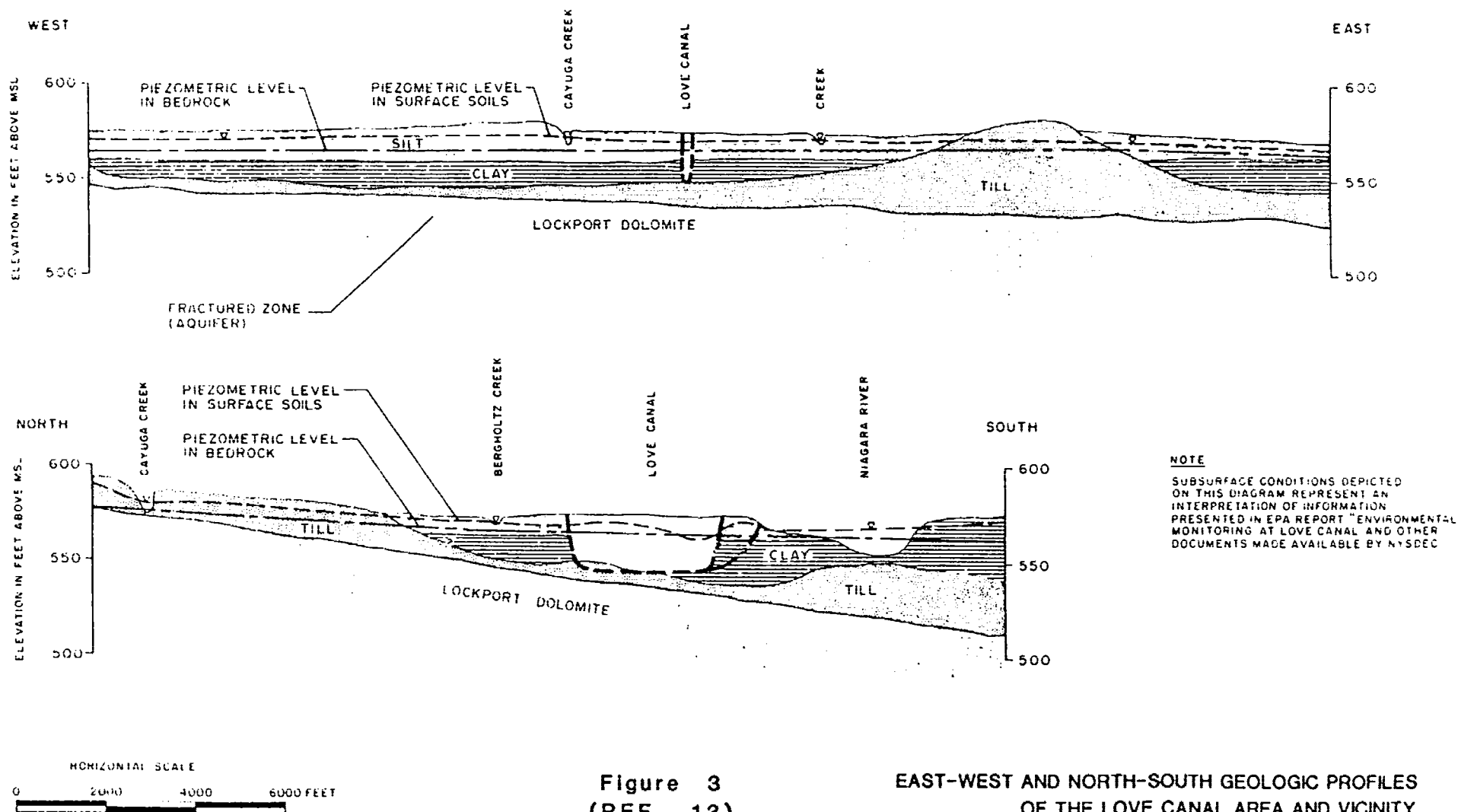


Figure 3
(REF. 13)

EAST-WEST AND NORTH-SOUTH GEOLOGIC PROFILES
OF THE LOVE CANAL AREA AND VICINITY
LOVE CANAL REMEDIAL PROJECT (TASK V)

EC.JORDANCO

5.2.2 Soils - The Silurian Age bedrock is unconformably overlain by unconsolidated Pleistocene deposits. The overburden generally varies from 20 to 45 feet in thickness in the area of the site. Deposits of glacial till overlain by clay, silt, and fine sand layers form the general surficial geology. Area geologic profiles are provided. On the 93rd Street School, the fill layer, originating from Love Canal material, and topsoil have been placed on top of the natural overburden (Ref. 3, Ref. 5, Ref. 6, Ref. 7, Ref. 13). Permeabilities in the glacial till and the clay, silt, and fine sands deposit can reach as low as 10^{-7} cm/sec (Ref. 5, Ref. 6, Ref. 7).

5.2.3 Groundwater - As depicted in the geologic profiles, groundwater occurs both in the bedrock and the unconsolidated deposits. Groundwater in the Lockport Dolomite occurs in three types of openings. These openings are the horizontal bedding joints, vertical joints, and dissolution cavities. The bedding joints form at least seven important water bearing zones. These zones are surrounded, and separated, by essentially impermeable rock. Recharge appears to occur at outcrops of the bedding joints. Downward migration of water through vertical joints in the bedrock appears to play a minor, or no

role in the recharging of the lower water bearing zones (Ref. 6, Ref. 13).

A moderately permeable zone exists in the upper ten to fifteen feet of Lockport Dolomite. This zone is characterized by extensive vertical jointing, bedding joints widened by the solution of the dolomite, and cavities formed by the solution of gypsum pockets. Water in this aquifer is recharged by the downward infiltration of water through the overlying unconsolidated deposits, as well as at outcrops (Ref 6). Water in this uppermost bedrock aquifer flows in a generally southerly direction with eventual discharge to the Niagara River (Ref. 6, Ref. 7).

Due to the low permeability of the natural overburden material, the unconsolidated deposits are not important sources of groundwater (Ref. 7). The hydrologic conditions of the surficial sediments at the 93rd Street School have not been adequately defined. Groundwater from these deposits may discharge to Bergholtz Creek or percolate to the uppermost bedrock aquifer with eventual discharge to the Niagara River. As depicted in the attached geologic profiles, the piezometric surface of both

the overburden and uppermost bedrock aquifers are within about ten feet of the ground surface (Ref. 13).

There are no known drinking water wells in the vicinity of the school. Area residents receive water supplied by the water departments of the City of Niagara Falls, the Towns of Niagara and Wheatfield, and Niagara County. Although there are a number of industrial wells in the City of Niagara Falls, no wells are closer than 2.6 miles to the 93rd Street School (Ref. 6).

5.3 Previous Sampling and Analysis

- 5.3.1 Groundwater Quality Data - Some data on groundwater quality was obtained during the U.S. Environmental Protection Agency's (EPA) investigation of Love Canal (Ref. 7). Groundwater at the school was found to contain traces of benzene (not exceeding 20 ug/l) and toluene (not exceeding 25 ug/l). These contaminants were detected in samples from both the bedrock and the overburden. Monitoring wells installed as part of the EPA study are still in existence and presumably usable (Ref. 12).

5.3.2 Surface Water Quality Data - Lindane, in

concentrations varying from 15 to 97 ug/l, was detected in storm sewers on 93rd Street, adjacent to the school (Ref. 3). In addition, traces of benzene and gamma - BHC were measured in Bergholtz Creek. However, the levels of these contaminants were similar (or greater) in samples upstream of the site (Ref. 7).

5.3.3 Air Quality Data - Benzene was detected in

residences east of the school. Values ranged from 6.6 ug/m³ outside the houses, to 7.2 ug/m³ inside the houses, and 8.7 ug/m³ in the basement. However, like the surface water data, the testing does not screen the impacts of the 93rd Street School from other Love Canal sources (Ref. 7).

5.3.4 Other Analytical Data - Soil samples from the 93rd

Street School have been analyzed. Low-level lindane contamination was detected in the fly ash fill layer. The fly ash was also found to contain 380 parts per trillion (ppt) of dioxin (Ref. 3). Core samples from the upper six inches of sediments contained cadmium ranging from 1200-1700 ug/kg. Traces of benzene (not exceeding 25 ug/kg) were also found in soil from the school grounds. In the same

samples, no gamma - BHC contamination was detected (Ref. 7). In samples obtained from the homeplate area of the school's ballfield, hexachlorocyclohexane contamination was found (Ref. 3). Contamination of school soils by trichlorobenzene and tetrachlorobenzene has been reported by NYSDEC (Ref. 2).

Sediments in the storm sewers adjacent to the school and in Bergholtz Creek have been tested. Benzene, toluene, and gamma - BHC have been detected in sediments in Bergholtz Creek near the site. However, the levels did not exceed concentrations measured in upstream samples (Ref. 7). Gamma - BHC, with a concentration of 79 ug/kg, was detected in sediment in a storm sewer on 93rd Street (Ref. 7). Sediment in a storm sewer discharging from the school area into Bergholtz Creek was found to contain 29 ppb of dioxin (Ref. 3).

6.0 ADEQUACY OF AVAILABLE DATA

In compiling the Hazard Ranking Score, the 93rd Street School was found to have a score for Sm equal to 25.3. However, because some route rating factors involve a certain degree of subjectivity due to data inadequacies, a range for the Sm score was developed and found to be 25 to 30. These data inadequacies are as follows:

- o The horizontal extent and thickness of the fill layer has not been established for the entire site.
- o The thickness (i.e. total volume) of top soil overlying the fill layer over the entire site is uncertain.
- o The impact of contaminants on groundwater quality in the bedrock aquifer has not been determined.
- o The effect of contamination from the 93rd Street School fill on water and sediments in Bergholtz Creek and adjacent storm sewers has not been differentiated from impacts arising from other Love Canal sources.
- o The possible, direct exposure, effects on people using the school grounds are uncertain.

7.0 PHASE II WORK PLAN

7.1 Objectives

As per the inadequacies of the data base that were itemized in the preceding section, a work plan has been developed which, to the extent practical, will provide the information required to address the following list:

- o Potential environmental effects of the landfill.
- o The extent and magnitude of contamination, based on site specific hydrogeologic conditions.
- o The data inputs necessary to effectuate the development and recommendation of cost effective remedial actions.

Detailed descriptions of the elements of this work plan are herein provided.

7.2 Preliminary Field Investigation

The primary purpose of this work element is to fill the data gaps identified in the preliminary assessment, so as to permit a complete site characterization/ranking (HRS) and engineering evaluation of remedial alternatives. The preliminary field investigation includes the following items:

- o Air Monitoring
- o Subsurface Investigation
- o Surface Water and Sediment Testing

Throughout the investigative effort, field activities will be performed in strict accordance with established safety protocol, presented in Recra Research Inc.'s Operation Manual -- Field and Analytical Services (previously submitted to NYSDEC by Recra as part of a prequalifying submission).

7.2.1 Air Monitoring - Prior to implementation of the various field investigative techniques associated with this element, an initial site screening will be conducted using a Century Organic Vapor Analyzer (OVA) and/or an HNU photoionizer. Based upon described site characteristics, Recra team personnel engaged in this activity will enter the site equipped with Level 3 respiratory protection. A grid pattern will be established at the site and readings taken and recorded at each grid point. This survey will determine the initial level of protection necessary for workers' safety. In addition, upgradient and downgradient air monitoring stations will be established. If the results are indicative of air quality problems, additional

testing will be initiated at specified distances away from the site.

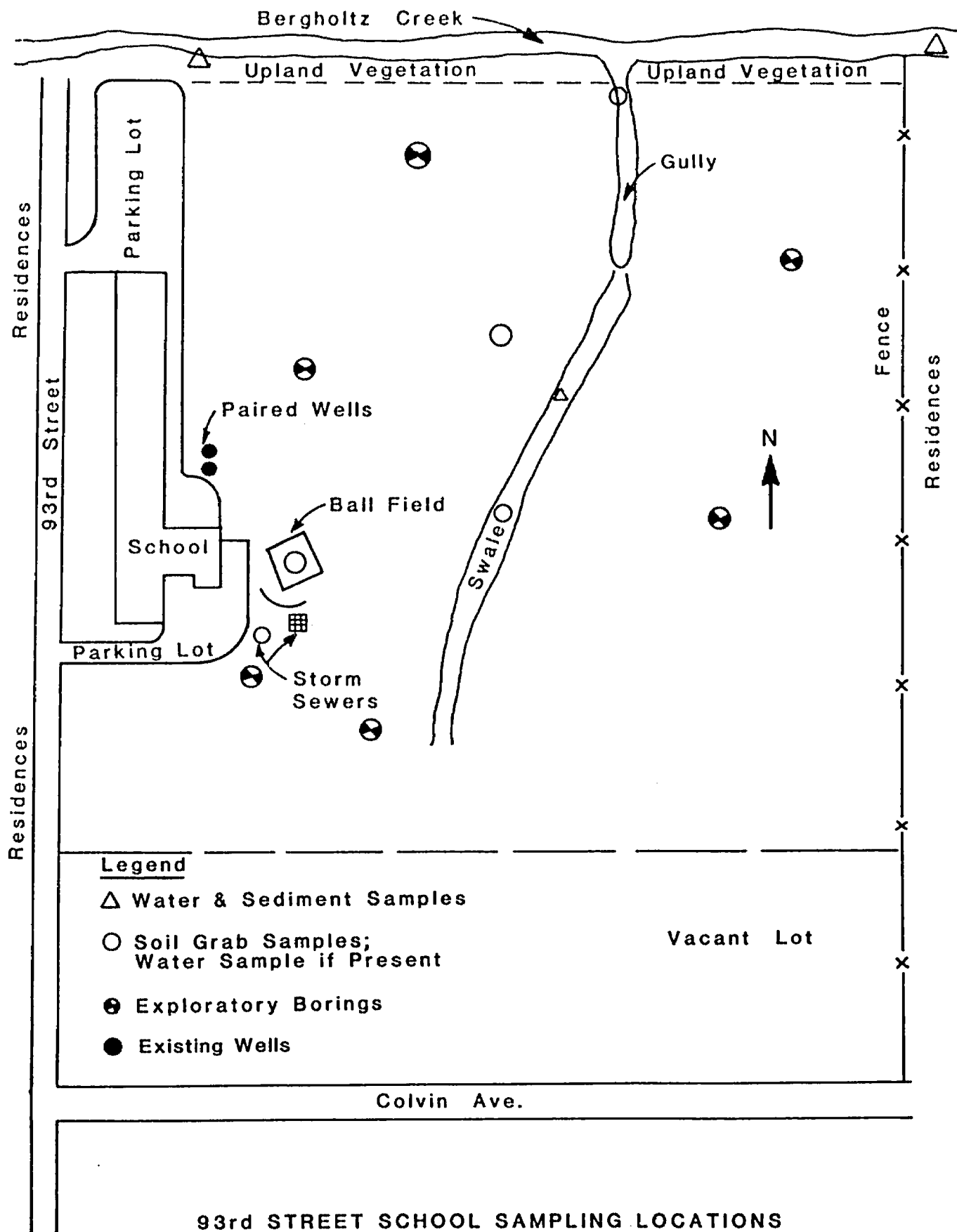
During actual field investigative work, ambient and worker air monitoring will be conducted periodically using appropriate instrumentation, such as the photoionizer and/or OVA. When deemed necessary from actual readings, the level of respiratory protection will be adjusted to meet existing conditions. All disposable equipment necessary for worker safety will be placed daily into covered on-site drums provided by Recra, and removed from the site and disposed of either upon reaching full capacity or upon completion of all field work.

- 7.2.2 Subsurface Investigation - To the extent possible, monitoring wells already in existence will be used. During the site visit one pair of monitoring wells were located. Possibly up to three more pairs of wells are located on, or in close proximity to the school property (Ref. 7). Attempts will be made to secure the boring logs for these and any other wells and/or exploratory drillings made in the vicinity of the site. Permission will be sought from the U.S. Environmental Protection Agency (and other responsible parties) to sample the existing monitoring

wells. At this time, the installation of new monitoring wells is not considered necessary.

To determine the horizontal and vertical extent of soil contamination, Four (4) shallow test borings with continuous split spoon sampling will be installed at locations shown on the accompanying site map. Each will have a carbon steel monitoring well emplaced screen above the clay layer, if present. If no clay layer is encountered, each will be screened just below the first encountered water bearing zone. Each well is estimate at 15 feet. Two (2) additional deeper borings will be made at locations specified on the site map. Each will be 35 feet deep and a monitoring well installed in the upper bedrock. The samples will be collected using a bucket auger, hand corer or an equivalent technique. Samples will be collected at each new strata and at one-foot intervals. Soil samples not analyzed will be archived by Recra Research, Inc. All field activities will be under the direct supervision of a qualified geologist and/or hydrogeologist. Due to sampling method limitations, the soil sampling will be conducted during dry weather conditions. See Figure 3 for sampling locations and Table 1 for parameters.

7.2.3 Sampling and Analysis - The procedures to be used in sampling ground and surface waters and sediments are described below. If desired, all samples will be split with the owner of the site. Also, upon completion of the analytical program, the owner will be notified of the results, if he so requests.



Not To Scale

SITE MAP
93rd STREET SCHOOL
Niagara Falls N. Y.

Figure 3

TABLE 1

Parameter List
93rd Street School, Niagara Falls, NY

pH
Specific Conductance
Chloride
Sulfate
Total Organic Carbon
+ Cadmium
+ Chromium (Total)
+ Chromium (Hexavalent)
+ Copper
+ Iron
+ Lead
+ Mercury
+ Nickel
+ Silver
+ Zinc
+ Polychlorinated Biphenyls (PCB)
+ Halogenated Organic Scan (HOSE)
+ BTX Scan (Benzene, Toluene, Xylene)
+ Chlorobenzenes
+ Chlorotoluene
+ BHC's
+ Trichlorophenol
Dry Weight (soils only)
Dioxin (subcontracted and not included in price)

+ Indicates analyses also performed on soils

7.2.4 Groundwater - From the water levels within the existing wells, water elevations will be measured to determine the water table surface. Representative groundwater samples will then be collected after the wells have been fully evacuated or a volume of three times the well contents have been removed.

Evacuation of water from the wells and the acquisition of the samples will be accomplished with an Isco Model 1580 peristaltic pump, using separate

low-density polyethylene tubing for each well and changing the silicon rubber tubing within the Isco between wells. An exception to this procedure will be employed when obtaining the required volume of sample for volatile organic analysis. This will be accomplished using small volume galvanized steel bailers that have been separately designated for each well.

Upon collection of the sample, field pH, temperature and conductivity measurements will be recorded. The samples will be placed in appropriate pre-cleaned bottles/septa vials, labeled, chilled and immediately returned to Recra's Tonawanda, New York laboratory for preservation and analysis of various chemical parameters.

- 7.2.5. Soil - Selected subsurface soil samples will undergo both physical and chemical analyses. The remaining samples will be archived by Recra Research, Inc. for a period of 6 months after completion of the contract.

The physical analysis will aid in the characterization of the underlying unconsolidated material. The physical parameters of concern during this

investigation are grain size distribution (ASTM-D-422), Atterberg limits (ASTM-D-423 & 424) and classification (ASTM-D-248). The number of samples to undergo analysis for the above parameters is dependent on the homogeneity of the subsurface conditions underlying the bottom of the uncontrolled hazardous waste landfill. The results from these tests, in conjunction with the Standard Penetration Test results will aid in the design and evaluation of remedial programs.

Chemical analyses of selected samples will be used to characterize attenuation by on-site soils and to establish the vertical and horizontal extent of soil contamination. Samples from the top soil, fill layer (if present), and each new strata of overburden encountered during the test boring excavation will be tested. Additionally, samples from each foot of unconsolidated deposit excavated will be archived by Recra Research and maintained for 6 months after the completion of this project.

- 7.2.6 Surface Water - The sampling of surface water will entail collecting water and sediments from Bergholtz Creek and the two storm sewers on the school playground. Sediments from the gully discharging into

Bergholtz Creek will also be collected. Water, if present, from the gully will be sampled. Two water samples will be obtained from Bergholtz Creek. One will be upstream of the site, the other at the downstream edge of the school property. The samples will be obtained using a pond sampler with separate sampling bottles designated for each sampling location. The same procedure as previously described for groundwater will be followed after acquisition of the surface water sample and the samples will be analyzed for the parameters listed. The storm sewers will be sampled in the same manner.

Since the possibility exists that contaminated water from the site discharges into the adjacent stream as a slug after storm events, and may not be contributing to degradation of the stream during the sampling interval, two (2) stream sediment samples will also be obtained and analyzed for the parameters listed. These samples will be obtained at the same locations as the water samples, as indicated on the attached site drawing. The samples will be collected using a 2 foot gravity type sampler. In addition, grab samples of sediments from the gully and the storm sewers will be obtained. All soil and sediment samples will be

placed in pre-cleaned, teflon-lined, screw capped glass jars, labelled, chilled, and returned to Recra for analysis. To avoid cross-contamination of the sediment samples, the core tube will be cleaned with water acetone, and distilled water between sample locations.

7.2.7 Chemical Analytical Methods - The procedure to be utilized for analyses of water, stream sediment and soil samples during this investigation are in basic accordance with one or more of the following reference texts:

- Methods for Chemical Analysis of Water and Wastes, United States Environmental Protection Agency,
- NIOSH Manual of Analytical Methods, 2nd Edition, United States Department of Health, Education and Welfare,
- Standard Methods for the Examination of Water and Wastewater, 14th Edition, APHA, AWWA, WPCF.

7.2.8 Quality Assurance Program - An overall Quality Assurance Program is essential for the production of high-quality analytical data. Such a program requires precise control of laboratory activities.

For the Quality Assurance Program in effect at the Laboratories of Recra Research, Inc., the reader is referred to a document previously submitted by Recra Research, Inc. to NYSDEC, entitled, "Operation Manual - Field and Analytical Services."

7.2.9 Engineering Evaluation Report/HRS Score - The purpose of this evaluation report is to compile all existing and newly-developed information concerning the site, and utilize this information to:

- o Evaluate feasible remedial alternatives at the site and prepare budget-level cost estimates for these alternatives
- o Based upon this evaluation, recommend the most cost-effective and environmentally sound course of remedial action
- o Prepare a Hazard Ranking System (HRS) score for the site.

It is presently anticipated that the output from this Evaluation Report will consist of a single bound report, subdivided into at least the following sections:

- o HRS Score - Utilizing USEPA's formal method of presentation (Federal Register/Vol. 47, No. 137/Friday, July 16, 1982), the following completed work sheets will be included in this opening section: HRS Cover Sheet; Groundwater Route Work Sheet; Surface Water Route Work Sheet; Air Route Work Sheet; Fire and Explosion Work Sheet; and Direct Contact Work Sheet.
- o Background
- o Summary of Project Activities
- o Identification and Evaluation of Remedial Alternatives
- o Recommendations
- o Appendix - Complete Site Data Base

7.3 Estimated Cost

The estimated cost per individual element of the preceding scope of work are listed as follows.

o	Subsurface Investigation	\$11454.42
o	Analysis	12197.00
o	Engineering Evaluation & Report	<u>5868.70</u>
	TOTAL COST	\$29520.12

APPENDIX A
DATA SOURCES AND REFERENCES

1. Morris, Richard, Director of Love Canal Revitalization Agency, personal interview, 6/3/83.
2. Knowles, G.D. and R. Tramontano, "NYS Dept. of Environmental Conservation Hazardous Waste Disposal Sites Report", 4/16/80.
3. NYS Department of Health, "Love Canal - A Special Report to the Governor and Legislature", April 1981.
4. U.S. Geological Survey, "Tonawanda West, New York, Topographical Quadrangle," 1965.
5. Kindle, E. and F. Taylor, "Niagara, New York", Geol. Atlas of the United States, U.S. Geol. Survey, Folio 190, 1913.
6. Johnston, R. H., "Groundwater in the Niagara Falls Area, New York", N.Y. Water Res. Comm. Bull. 6W-53, 1964.
7. U.S. Environmental Protection Agency, "Environmental Monitoring at Love Canal, Vol. I (EPA-600/4-82-030a) and Vol. II (EPA-600/4-82-0306)", May, 1982

8. N.Y.S. Division of Water Resources, "New York Water Classifications and Quality Standards, Chapter X, Article 2, Parts 700-704", 9/1/78.
9. N.Y.S. Division of Water Resources, "Chapter X, Article 8, Part 835 Lake Erie - Niagara River Drainage Basin Series", 10/15/66.
10. Niagara Falls Dept. of Planning and Development, "Zoning Map of the City of Niagara Falls," 2/2/70
11. Batcheller, G., N.Y.S. Department of Environmental Conservation - Region 9, Telephone Conversation, 6/1/83.
12. Recra Research, 93rd Street School Site Visit, 6/3/83.
13. E.C. Jordan, Co., "Task V: Three Year Groundwater and Surface Water Monitoring Program Love Canal Area and Vicinity, Niagara Falls, New York", prepared for NYSDEC, 1/3/83.
14. U.S. Department of Commerce, National Climatic Center, "Climatic Atlas of the United States", 1979.
15. U.S. Bureau of Census, "1980 Census of the Population", March 1981.
16. Town of Niagara Town Board, "Zoning Map of the Town of Niagara, Niagara County, New York," 3/14/78.

17. Krehbiel Associates, Inc. "Zoning Map of the Town of Wheatfield,
Niagara County, New York", 10/4/82.

APPENDIX B
HAZARDOUS WASTE DISPOSAL SITE REPORT
REVISED

Code: A

Site Code: 9-32-078

Name of Site: 93rd Street School

Region: 9

County: Niagara

Town/City: (C) Niagara Falls

Street Address: 93rd Street

Status of Site:

- o In 1954,, the Niagara Falls Board of Education contracted to have 3,000 cubic yards of fly ash and BHC hauled from Love Canal for fill at the 93rd Street School. Subsequently, the fill was covered by approximately 3 feet of topsoil and the site was landscaped to direct surface run-off northward towards Bergholtz Creek.
- o The school was closed by the Board of Education in 1980.
- o The site is located within a residential section of Niagara Falls.
- o Benzene, toluene, BHC, lindane, and dioxin have been detected in on-site soil and groundwater and off-site storm sewers, surface waters, and sediments. Past investigations have failed to differentiate off-site impacts of the 93rd Street School site and other Love Canal sources.
- o No measures have been taken to cap or seal the site; to provide containment; or to remove contaminated material from the site.

- o Public has unlimited access to site and adjacent bodies of surface water.

Type of Site: Landfill

Estimated Size: Extent of fill area on schoolgrounds not known.

Hazardous Waste Disposal: Confirmed

Type and Quantity of Hazardous Wastes: 3,000 cubic yards of fly ash and
BHC cake from Love Canal

Present owner: Niagara Falls Board of Education

Address: Superintendent of Schools 607 Walnut Avenue, Niagara Falls,
New York

Time Period Site Was Used for Waste Disposal: 1954

Site Status: Inactive

Type of Samples: Soil, Surface Water, Groundwater

Remedial Action: None

Status of Legal Action: None

Permit Issued: None

Assessment of ENvironmental Problem: Contamination of on-site soil and groundwater has occurred. Possible contamination of off-site surface waters, storm sewers, groundwaters, and soil and sediments.

Assessment of Health Problems: Possible exposure of public using the site and adjacent surface water bodies to contaminants. May impact (though extremely limited when compared to other contamination sources) on the City of Niagara Falls drinking water supplies.

Person completing this form: Kevin C. Owen, Recra Research, Inc.

Date: June 3, 1983

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