PHASE I REPORT

ENGINEERING INVESTIGATIONS AND EVALUATIONS AT INACTIVE HAZARDOUS WASTE DISPOSAL SITES

Niagara Mohawk, Cherry Farm
Erie County, NY

SUBMITTED TO

New York State Department of Environmental Conservation

SUBMITTED BY

ENGINEERING-SCIENCE, INC.
in association with
DAMES & MOORE

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SECTION I

EXECUTIVE SUMMARY

Niagara Mohawk (Cherry Farms)

Objective

The purpose of this two phase program is to conduct engineering investigations and evaluations at inactive hazardous disposal sites in New York State in order to calculate a Hazard Ranking System (HRS) score for each site and estimate the cost of any recommended remedial action. During the initial portion of this investigation (Phase I) all available data and records combined with information collected from a site inspection were reviewed and evaluated to determine the adequacy of existing information for calculating an HRS score. On the basis of this evaluation, a Phase II Work Plan was prepared for collecting additional HRS data (if necessary), evaluating remedial alternatives and preparing a cost estimate for recommended remedial action. The results of this Phase I study for this site are summarized below and detailed in the body of this report.

Site Background

The Niagara Mohawk site is an inactive landfill located in the City of North Tonowanda, Erie County, between River Road and the Niagara River. The site is at the riverfront edge of an industrialized area and is currently owned by the Niagara Mohawk Corporation and used as the Niagara Mohawk Employee Athletic Park.

The site was previously used as a landfill by Niagara Mohawk, Dow Chemical and the Chevrolet Foundry Sand Corporation. Fly ash, foundry sand and boiler cleaning wastes were disposed on site. In addition, Hooker-Durez is rumored to have disposed of phenol tars on site.

In March of 1981 the NYSDEC detected phenols in surface water samples taken from drainage ditches at the edge of the property. A subsequent USGS study has determined the presence of organics and heavy metals in soil and surface water. Current concern is over the possible contamination of groundwater and the adjacent Niagara River.

Assessment

Insufficient information is available to complete a final HRS. The preliminary HRS scoring for this site was:

$S_M = 28.95$ $S_A = 0$

$S_{GW} = 4.69$ $S_{FE} = 0$

$S_{SW} = 49.86$ $S_{DC} = 37.50$

The low route scores are due to insufficient target information. Both groundwater and air quality data are required.

Recommendations

The following recommendations are made for the completion of Phase II:

- o A groundwater monitoring system consisting of seven wells;
- o Sample analyses should include phenol, Pb, Hg and a GC/MS scan;
- o Air monitoring survey with an OVA meter to determine air quality.

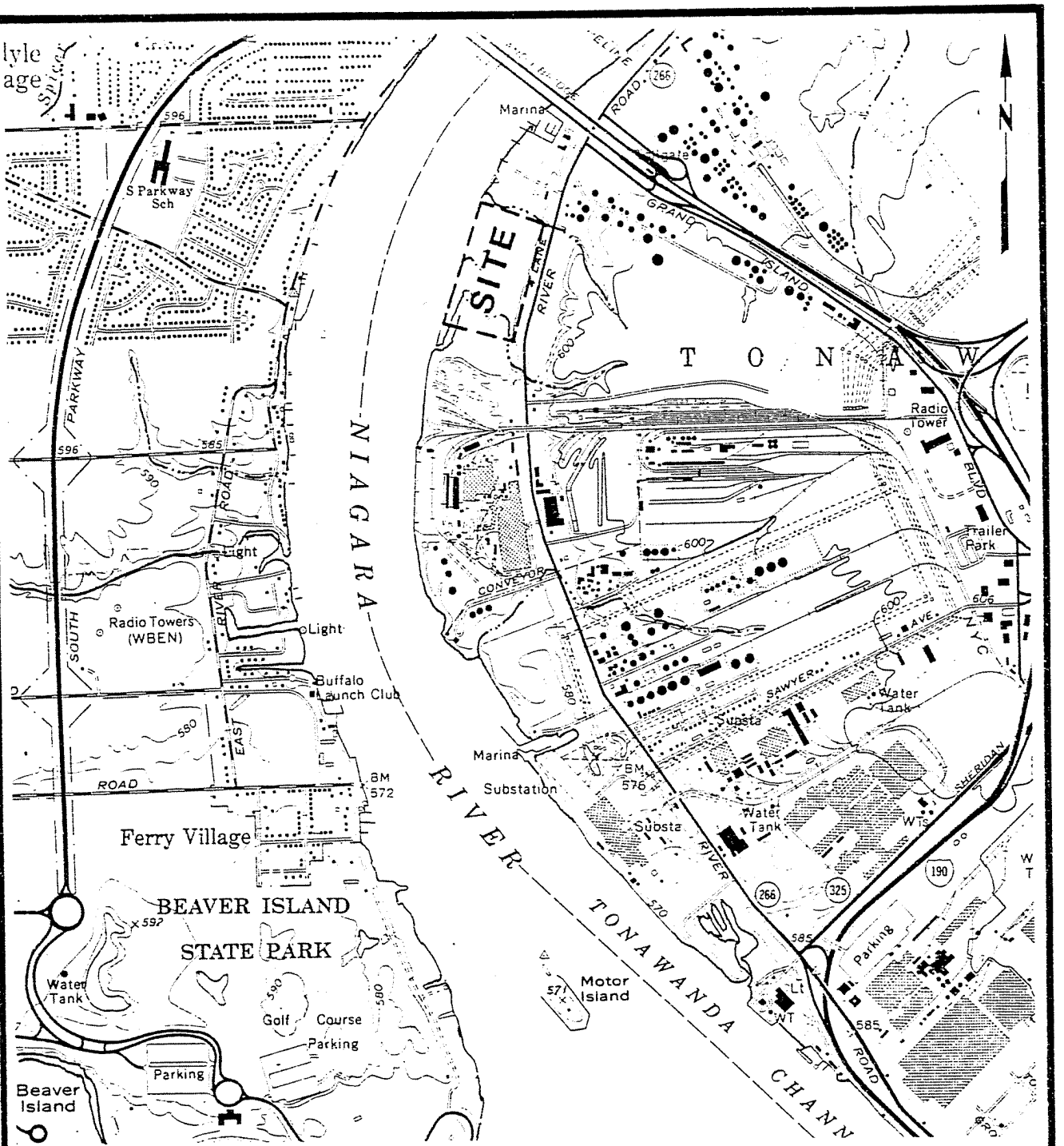
The estimated manhours needed to complete Phase II are 342, while the estimated cost is $33,789.

SECTION II

SITE DESCRIPTION

Niagara Mohawk Cherry Farms

The Niagara Mohawk Cherry Farms site is an inactive landfill, located in the city of Tonawanda, Erie County (NYS), between River Road (on the east) and the Niagara River (on the west). The site is rectangular, extending approximately 3000 feet in a northeast direction and 1200 feet in a northwest direction. The Cherry Farms site is located at the riverfront edge of an industrialized area and is currently used as a Niagara Mohawk Employee Athletic Park, with softball fields and grassy lawns. The site was used by Niagara Mohawk as an industrial waste disposal area. Waste materials include foundry sands, slag, and phenol tars (containing chlorobenzenes). Investigations have determined the presence of organic compounds and heavy metals in soil and surface water. Current concern for this site centers on potential leaching of these contaminants into the groundwater and/or the adjacent Niagara River.



SITE LOCATION MAP
NMPC (CHERRY FARM)

REFERENCE: U.S.G.S. 7.5' TOPOGRAPHIC MAP
BUFFALO NW, NY (1965) QUADRANGLE

SECTION III

HRS SCORING

HRS COVER SHEET

Facility name: NMPC Cherry Farms

Location: Tonawanda

EPA Region: II

Person(s) in charge of the facility:

Niagara-Mohawk Corp.

Syracuse, NY

Name of Reviewer: John Kubarewicz/ Art Seanor Date: ~~May 18, 1983~~

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.)

Site once part of "Cherry Farms" used by Hooker-Durez for disposal of phenol tars. Site is currently covered with grass and used as an athletic field.

Scores: $S_M = 28.95$ ($S_{gw} = 4.69$ $S_{sw} = 49.86$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 37.50$

GROUND WATER ROUTE WORK SHEET

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section
1 Observed Release	(0) 45	1	0	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	6	
Net Precipitation	0 1 (2) 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 (2) 3	1	2	3	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			13	15	
3 Containment	0 1 2 [3]	1	3	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	5	8	
Total Waste Characteristics Score			23	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 / 12 16 18 20 / 24 30 32 35 40	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			2691	57,330	
7 Divide line 6 by 57,330 and multiply by 100 -7-			S_{gw} = 4.69		

SURFACE WATER ROUTE WORK SHEET

Surface Water Route Work Sheet

	Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (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				15	
3	Containment	0 1 2 3	1		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 7 8	1	5	8	
	Total Waste Characteristics Score			23	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			32085	64,350	
7	Divide line 6 by 64,350 and multiply by 100			S_{SW} =		49.86

AIR 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		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		

DIRECT CONTACT 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	[8]	20	
Distance to a Critical Habitat	0 (1) 2 3		4	4	12	
Total Targets Score				12	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				8:00	21,600	
7 Divide line 6 by 21,600 and multiply by 100				SOC = 37.50		

Fire and Explosion Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	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 =		

WORKSHEET FOR COMPUTING S_M

	S	S^2
Groundwater Route Score (S_{gw})	4.69	22.00
Surface Water Route Score (S_{sw})	49.86	2486.02
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		2508.02
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		50.08
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} \,/\, 1.73 = S_M =$		28.95

June 28, 1982

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: NMPC CHERRY FARMS

LOCATION: TONAWANDA

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

NONE

Rationale for attributing the contaminants to the facility:

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:

ASSUME RIVER LEVEL
≈ 11-16' BELOW GROUND

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

~ 11'-16'

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

UNKNOWN

Net Precipitation

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

40

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

27

Net precipitation (subtract the above figures):

13

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

SILTS
SANDS

Permeability associated with soil type:

$10^{-4} \rightarrow 10^{-3}$ CM/SEC

Physical State

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

LIQUID AND SOLID

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:
SCORED AS AN "OPEN DUMP" UNLINED LAGOON BY NYS DEC

Method with highest score:

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:
PHENOL TARS (3,1)
CHLORINATED BENZENES (2,2)
PYRENE
LEAD TRICHLOROBENZENE (2,3) (RECRA, 1981)

Compound with highest score:
LEAD 3,3 => 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):
625 TONS

Basis of estimating and/or computing waste quantity:
NY STATE REGISTRY

* * *

5 TARGETS

Ground Water Use

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

NONE - Potential as Industrial Source

Distance to Nearest Well

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

UNKNOWN

Distance to above well or building:

N/A

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:

NONE

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):

NONE

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

UNKNOWN

SURFACE WATER ROUTE

1 OBSERVED RELEASE

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

ARSENIC
NICKEL, LEAD, HEXADECANE

Rationale for attributing the contaminants to the facility:

USGS ON-SITE SURFACE WATER TESTING

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0.95

Name/description of nearest downslope surface water:

NIAGARA RIVER

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

0.95

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

NO

Is the facility completely surrounded by areas of higher elevation?

NO

1-Year 24-Hour Rainfall in Inches

2.1

Distance to Nearest Downslope Surface Water

0.01

Physical State of Waste

LIQUID AND SOLID

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:
SCORED AS AN OPEN DUMP, UNLINED LAGOON BY NYSDEC

Method with highest score:

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated
PHENOL TARS
CHLORINATED BENZENES
PYRENE
TRICHLOROBENZENE

Compound with highest score:
TRICHLOROBENZENE 2,3 => 15

LEAD 3,3 => 18
(not analyzed but assumed since in groundwtr route)

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):

625 TONS

Basis of estimating and/or computing waste quantity:
EPA SITE INSPECTION REPORT 12/10/80
- ESTIMATE MAY BE GREATER

* * *

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:
RECREATION
DRINKING
TRANSPORTATION
COMMERCIAL

Is there tidal influence?

NO

Distance to a Sensitive Environment

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

NONE

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

~ 0.8 MILE

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

0.8 MILE

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 TONAWANDA - Population 18,500
INTAKE ≈ 2.9 miles downstream

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

N/A

Total population served:

18,500

Name/description of nearest of above water bodies:

N/A

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

N/A

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

NONE DETECTED

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 1/4 mi

UNKNOWN

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:

0.8

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

0.8

Land Use

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

0.2

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

UNKNOWN

Distance to residential area, if 2 miles or less:

UNKNOWN

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

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D063909694

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
NIAGARA MOHAWK CHERRY FARM	RIVER ROAD				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
TONAWANDA	NY	14150	ERIE		

09 COORDINATES: LATITUDE 42° 59' 28.5" | LONGITUDE 078° 56' 15.8"

10 TYPE OF OWNERSHIP (Check one): [X] A. PRIVATE [ ] B. FEDERAL _____ [ ] C. STATE [ ] D. COUNTY [ ] E. MUNICIPAL [ ] F. OTHER _____ [ ] G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 4 28 83 (MONTH DAY YEAR)

02 SITE STATUS: [ ] ACTIVE [X] INACTIVE

03 YEARS OF OPERATION: 1957 (BEGINNING YEAR) | 1972 (ENDING YEAR) [ ] UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply):
[ ] A. EPA [ ] B. EPA CONTRACTOR _____ (Name of firm) [ ] C. MUNICIPAL [ ] D. MUNICIPAL CONTRACTOR _____ (Name of firm)
[ ] E. STATE [X] F. STATE CONTRACTOR ENGINEER - SCIENCE (Name of firm) [ ] G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
ART SEANOR	GEOLOGIST	D+M	315 639-2572
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
JOHN KUBAREWICZ	CHEMICAL ENGINEER	ES	(703) 591-7575
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
FRANK GRABOWSKI	ENV ANALYST	NIAGARA - MOHAWK	(315) 474-1511
			( )
			( )
			( )
			( )
WRONG SITE VISITED			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
[ ] PERMISSION [ ] WARRANT	—	—

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
JOHN KUBAREWICZ	ES	(703) 591-7575

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
SAME				5 17 83 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER
NY D003909694

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)
- ☑ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ E. SLURRY
- ☑ F. LIQUID
- ☐ G. GAS
- ☐ D. OTHER (Specify)

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)
- TONS: 625
- CUBIC YARDS:
- NO. OF DRUMS:

03 WASTE CHARACTERISTICS (Check all that apply)
- ☑ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☐ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☐ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
(SOL)	SOLVENTS	625	TN	PHENOL CHLORINATED BENZENES (suspected)
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
(MES)	HEAVY METALS	23,000	TONS/YR	FLYASH

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	PHENOL	108-952	LF	.01-1.0	MG/L
OCC	DICHLORBENZENE	25321-226	LF	.21-4.5	PPb
MES	LEAD	99	LF	10,000-120,000	PPb
MES	NICKEL	7440020	LF	10,000-20,000	PPb
OCC	HEXADECANE	999	LF	15	PPb
OCC	TRICHLORBENZENE	12002-48-1	LF	.02-.34	PPb

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	NICKEL	7440020	FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

EPA WASTE SITE IDENTIFICATION AND ASSESSMENT 1/16/81
LAND SITE INSPECTION REPORT 12/10/80
RECRA RESEARCH ANALYSIS 6/9/81

EPA FORM 2070-13(7-81)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 000390694

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☐ A. GROUNDWATER CONTAMINATION
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
POSSIBLE CONTAMINATION OF GROUNDWATER FROM METALS, PHENOLTARS AND CHLORINATED BENZENES

01 ☐ B. SURFACE WATER CONTAMINATION
02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____
04 NARRATIVE DESCRIPTION
CONTAMINATED LEACHATED IN DITCH ADJACENT TO RIVER RUNNOFF DURING STORM.

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: 6/9/81) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres)
04 NARRATIVE DESCRIPTION
METALS AND CHLORINATED BENZENE FOUND IN SOIL SAMPLES,

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

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 0003909094

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
SITE FRONTS NIAGARA RIVER. IF THE PHENOLS OR CHLORINATED BENZENE ARE LEACHING INTO THE RIVER, FISH AND OTHER AQUATIC LIFE MAY BE SUBJECT TO CONTAMINATION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

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

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

01 ☑ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
NO EVIDENCE OF DUMPING

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
THE ONLY OTHER SUBSTANCES NOT INDIGENOUS TO THE AREA ARE BELIEVED TO BE BOTTOM ASH OR SLUG WHICH MAY COVER OR CAP THE ALLEGED TARS/PHENOLS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 0

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)
EPA SITE INSPECTION REPORT 1/16/81

EPA FORM 2070-13 (7-81)

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D003909694

II. PERMIT INFORMATION

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

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☑ F. LANDFILL		
☐ G. LANDFARM		
☑ H. OPEN DUMP	UNKNOWN	
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)
- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☑ H. OTHER NONE (Specify)

05 OTHER
- ☐ A. BUILDINGS ON SITE

06 AREA OF SITE: 54 (Acres)

07 COMMENTS: SITE FRONTS NIAGARA RIVER.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one): UNKNOWN
- ☐ A. ADEQUATE, SECURE
- ☐ B. MODERATE
- ☐ C. INADEQUATE, POOR
- ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.: LANDFILL NO VISUAL EVIDENCE

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☑ NO FENCED ON RIVER ROAD OTHER SIDES

02 COMMENTS: BOUNDED BY CREEKS AND RIVER

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

EPA SITE INSPECTION REPORT 1/16/81

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER
NY 0003909694

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS: ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☐	B. ☐	A. ☐	B. ☐	C. ☐	A. _____ (mi)
NON-COMMUNITY	C. ☐	D. ☐	D. ☐	E. ☐	F. ☐	B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

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

02 POPULATION SERVED BY GROUND WATER 0

03 DISTANCE TO NEAREST DRINKING WATER WELL _____ (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
11'-16' (ft)	WNW	N/A (ft)	_____ (gpd)	☐ YES ☐ NO

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS: UNKNOWN	☐ YES ☐ NO	COMMENTS

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
NIAGARA RIVER	☐	0.01 (mi)
	☐	_____ (mi)
	☐	_____ (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 266 NO. OF PERSONS	B. 1500 NO. OF PERSONS	C. 5300 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION: 6000' (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
3500	1200' (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)

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION

01 STATE: NY | 02 SITE NUMBER: D003909694

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	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
>21.5 (ft)	0.5 (ft)		

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
13 (in)	2.1 (in)	0.95 %	WNW	0.95 %

09 FLOOD POTENTIAL

SITE IS IN _____ 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. 0.8 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

0.8 (mi)

ENDANGERED SPECIES: PEREGRINE FALCON, GOLDEN EAGLE

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0.2 (mi)	B. _____ (mi)	C. _____ (mi)	D. _____ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

SITE IS UNIFORMLY AND GENTLY SLOPING WNW TO THE NIAGARA RIVER. TWO INTERMITTENT STREAMS APPEAR TO FLOW IN THE NORTHERN AND SOUTHERN SECTIONS OF THE SITE, ENTER THE NIAGARA RIVER. AREAS SURROUNDING THE SITE SLOPE IN A SIMILAR FASHION

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

USGS TOPOGRAPHIC MAP

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION

01 STATE | 02 SITE NUMBER
NY 000390696 94

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☒ AERIAL

02 IN CUSTODY OF D+M OFFICE
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS D+M OFFICE

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

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

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	0003909694

II. CURRENT OWNER(S)

Field	Value
01 NAME	NIAGARA-MOHAWK
02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	HUNTLY POWER STREET
04 SIC CODE	4900
05 CITY	BUFFALO
06 STATE	NY
07 ZIP CODE	

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

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

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

PARENT COMPANY (If applicable)

Field	Value
08 NAME	NIAGARA MOHAWK Corp
09 D+B NUMBER	
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	
11 SIC CODE	4900
12 CITY	BUFFALO
13 STATE	NY
14 ZIP CODE	

Field	Value
08 NAME	
09 D+B NUMBER	
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	
11 SIC CODE	
12 CITY	
13 STATE	
14 ZIP CODE	

Field	Value
08 NAME	
09 D+B NUMBER	
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	
11 SIC CODE	
12 CITY	
13 STATE	
14 ZIP CODE	

Field	Value
08 NAME	
09 D+B NUMBER	
10 STREET ADDRESS (P.O. Box, RFD #, etc.)	
11 SIC CODE	
12 CITY	
13 STATE	
14 ZIP CODE	

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

Field	Value
01 NAME	CF+I STEEL Corp
02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	
04 SIC CODE	
05 CITY	BUFFALO
06 STATE	NY
07 ZIP CODE	

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

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

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

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

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

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

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

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 0003909094

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
NONE	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

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

01 NAME	02 D+B NUMBER
SEA WAY CORP.	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1957 - 1970	

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER
FRONTIER CHEM WASTE	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1970 - 72	

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

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

MEMO FROM ITCHAK KORNFEID, SENIOR GEOLOGIST

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 000390694

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
NONE	
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
NIAGARA MOHAWK		DOW CHEM CO	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
HUNTLEY STATION			
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
BUFFALO	NY	DEPEW NY	NY
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
		CHEVROLET FOUNDAY SAND	
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
CARMINE PARLEY TRUCKING			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
273 SOUTH ROYCRAFT			
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
BUFFALO	NY		
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)

SAME

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D003909694

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
NY D003909694

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
SOIL AND GRASS

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
FENCED ALONG ROAD, REMAINING SIDES BORDERED BY STREAMS & NIAGARA

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NO

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NONE

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

EPA FORM 2070-13 (7-81)

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

I. IDENTIFICATION

01 STATE: NY | 02 SITE NUMBER: 000340964

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)*

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 000396094

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
NIAGARA MOHAWK CHERRY FARM	RIVER ROAD				
03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
TONAWARDA	NY	14150	ERIE		
09 COORDINATES LATITUDE: 42° 59' 28.5"	LONGITUDE: 078° 56 15.8"				

10 DIRECTIONS TO SITE (Starting from nearest public road)
APPROXIMATELY 2000 FT SOUTH-SOUTHWEST OF GRAND ISLAND BRIDGE ON WESTERN SIDE OF RIVER RD

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)		
NIAGARA MOHAWK	300 ERIE BOULEVARD		
03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
SYRACUSE	NY		315 474-5511
07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)		
SEAWAY / FRONTIER CHEM WASTE			
09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
BUFFALO	NY		( )

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☐ YES DATE ___/___/___ (MONTH DAY YEAR)
☒ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION: 1957 (BEGINNING YEAR) | 1972 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
LEAD
NICKEL
HEXADECANE
PHENOL
DICHLOROBENZENE
TRICHLOROBENZENE

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
SURFWATER SAMPLES CONTAIN LEAD AND NICKEL
PHENOLS AND CHLORINATED BENZENE ALSO FOUND IN
SOIL SAMPLES PROXIMITY TO RIVER SHOWS POTENTIAL FOR CONTAM.

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)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)			03 TELEPHONE NUMBER
JOHN KUBAREWICZ	ES			(703) 541-7575
04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
			( )	5 17 83 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 0003909644

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)
- [X] A. SOLID
- [ ] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER (Specify)
- [ ] E. SLURRY
- [X] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)
- TONS: Gas
- CUBIC YARDS:
- NO. OF DRUMS:

03 WASTE CHARACTERISTICS (Check all that apply)
- [X] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [ ] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
(SOL)	SOLVENTS	625	TN	PHENOL CHLORINATED BENZENES
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
(MES)	HEAVY METALS	23,000	TONS/YR	FLYASH

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	PHENOL	108-952	LF	.01-1.0	PPM
OCC	DICHLORBENZENE	25321-226	LF	.21-4.5	PPb
MES	LEAD	999	LF	10,000-120,000	PPb
MES	NICKEL	7440020	LF	10,000-20,000	PPb
OCC	HEXADECANE	999	LF	15	PPb
OCC	TRICHLORBENZENE	12002-48-1	LF	.02-.34	PPb

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	NICKEL	7440020	FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

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

EDA WASTE SITE IDENTIFICATION AND ASSESSMENT 1/16/81
LAND SITE INSPECTION REPORT 12/10/80
RE CRA RESEARCH ANALYSIS 6/9/81

EPA FORM 2070-12 (7-81)

EPA

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

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER
NV D003909694

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☑ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☑ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
POSSIBLE CONTAMINATION OF GROUNDWATER FROM METALS PHENOL TAR AND CHLORINATED BENZENES

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
CONTAMINATED LEACHATED IN DITCH ADJACENT TO RIVER RUNNOFF DURING STORM.

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: 6/9/81) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) — 04 NARRATIVE DESCRIPTION
METALS AND CHLORINATED BENZENE FOUND IN SOIL SAMPLES

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

EPA FORM 2070-12 (7-81)

EPA

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

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 000390696 94

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
SITE FRONTS NIAGARA RIVER. IF THE PHENOLS OR CHLORINATED BENZENES ARE LEACHING INTO THE RIVER, FISH AND OTHER, AQUATIC LIFE MAY BE SUBJECT TO CONTAMINATION

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

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

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

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION
NO EVIDENCE OF DUMPING

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
THE ONLY OTHER SUBSTANCES NOT INDIGENOUS TO THE AREA ARE BELIEVED TO BE BOTTOM ASH OR SLUGE WHICH MAY COVER OR CAP THE ALLEGED TARS/PHENOLS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 0

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analysis, reports)
EPA SITE INSPECTION REPORT 1/16/81

EPA FORM 2070-12 (7-81)

SECTION IV

SITE HISTORY

Niagara-Mohawk (Cherry Farms)

The Niagara-Mohawk Corporation purchased the site, a segment of Cherry Farms, in 1957. The property was leased to the Seaway Corporation for use as a landfill (Seaway Industrial Park). Niagara-Mohawk disposed of fly ash and bottom ash at the site from 1957 to 1970. In 1972 the Frontier Chemical Waste Process, Inc., replaced Seaway Corporation as the landfill operator. During their period of operation, liquid boiler cleaning wastes from the Dow Chemical Company, and foundry sand and slag from Chevrolet Foundry Sand Corporation were disposed. Hooker-Durez is also rumored to have dumped phenol tars at the site (Kornfeld, 1981).

In March of 1981, the NYSDEC detected phenols in water samples taken from drainage ditches on the site (Ploscyca, 1981). The USGS did extensive soil and surface water sampling on the site in 1982 as part of their Niagara River Groundwater Study (USGS, 1982-1983). Groundwater samples collected at the same time were considered unusable and will be resampled by the USGS.

SECTION V

SUMMARY OF AVAILABLE DATA

Niagara-Mohawk (Cherry Farm)

Regional Geology and Hydrology

The site is located in the Erie-Ontario lowlands physiographic province. The bedrock of this region consists of sedimentary rocks of varying lithologies. Most of the rocks are deep aquifers with regional flow to the south. In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened preexisting valleys and deposited widespread accumulations of till. The melting of ice, ending approximately 12,000 years ago, produced large volumes of meltwater; this water subsequently shaped channels and deposited locally thick accumulations of stratified, granular sediments. As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. This region is covered by lake sediments, the most recent being from Lake Iroquois (a larger predecessor to Lake Ontario) and from Lake Tonawanda (an elongate lake which occupied an east-west valley and drained north into Lake Iroquois). The sediments consist of blanket silt and sand, which are occasionally underlain by lacustrine silts and clays (indicating quiet, deeper water deposition).

Granular deposits in this region frequently act as shallow aquifers, whereas lacustrine clays, as well as tills, often inhibit groundwater movement. However, fine-grained, water-lain sediments, such as silts and clays, frequently contain horizontal laminations and sand seams. These internal features facilitate lateral groundwater movement through otherwise low permeability materials.

Site Geology

The geology of the site is known from 13 on-site borings (USGS,1982), USGS topographic maps, and NYS Museum and Science Service Bedrock Geology Maps. The Bedrock is Camillus Shale (Salina Group).

The bedrock surface may occur at a depth of approximately 30 feet to 40 feet. Borings indicate that the site is "made land"; the uppermost natural soil layer occurs at approximately 23 feet (which corresponds to the depth of the river channel). Natural soils are fine sands.

Site Hydrology

Based on an on-going USGS study (1982), a shallow aquifer is known to exist within the fill material. The water table occurs at 11 feet to 16 feet below the ground surface. A deep bedrock aquifer may exist in the shale, and may be hydraulicly connected to the shallow aquifer. No information is available concerning the deep aquifer. Groundwater movement within the shallow aquifer is toward the Niagara River.

Sampling and Analysis

The NYSDEC sampled water and soil at the Niagara Mohawk site in 1981 (RECRA, 1981). Sample analyses are summarized in Table V-1. As shown, phenols were detected at low concentration (.01-1.0 ppb) in water samples while dichlorobenzene and trichlorobenzene were detected at levels varying from .02-4.5 ppb in the soil samples. Sample locations are shown in Figure V-1.

The USGS collected twenty soil and surface water samples at the site as part of their ongoing study (USGS, 1982). Heavy metals such as cadmium, arsenic, lead and nickel were detected in the 1000-3000 ppb range. The results of analysis for organic compounds were not found in the records. Complete details including a sampling location map are available in Appendix A.

TABLE V-1

SUMMARY OF NIAGARA - MOHAWK (CHERRY FARMS) ANALYTICAL DATA 3/27/81 (RECRA, 1981)

Sample#	Phenols (ppm)	Para-dichlorobenzene (ppb)	1,2,3 Trichlorobenzene (ppb)	1,2,4 Trichlorobenzene (ppb)	1,2,5 Trichlorobenzene (ppb)
CF - 1	<0.01	4.5	0.12	0.22	0.06
CF - 2	1.0	0.21	<0.01	0.04	<0.01
CF - 3	<0.01	<0.	<0.02	0.07	<0.02
CF - 4	0.01	3.8	0.13	0.34	<0.02
CF - 5	0.20	0.11	<0.01	<0.01	0.01
CF - 6	0.59	< 0.07	0.02	0.04	<0.01

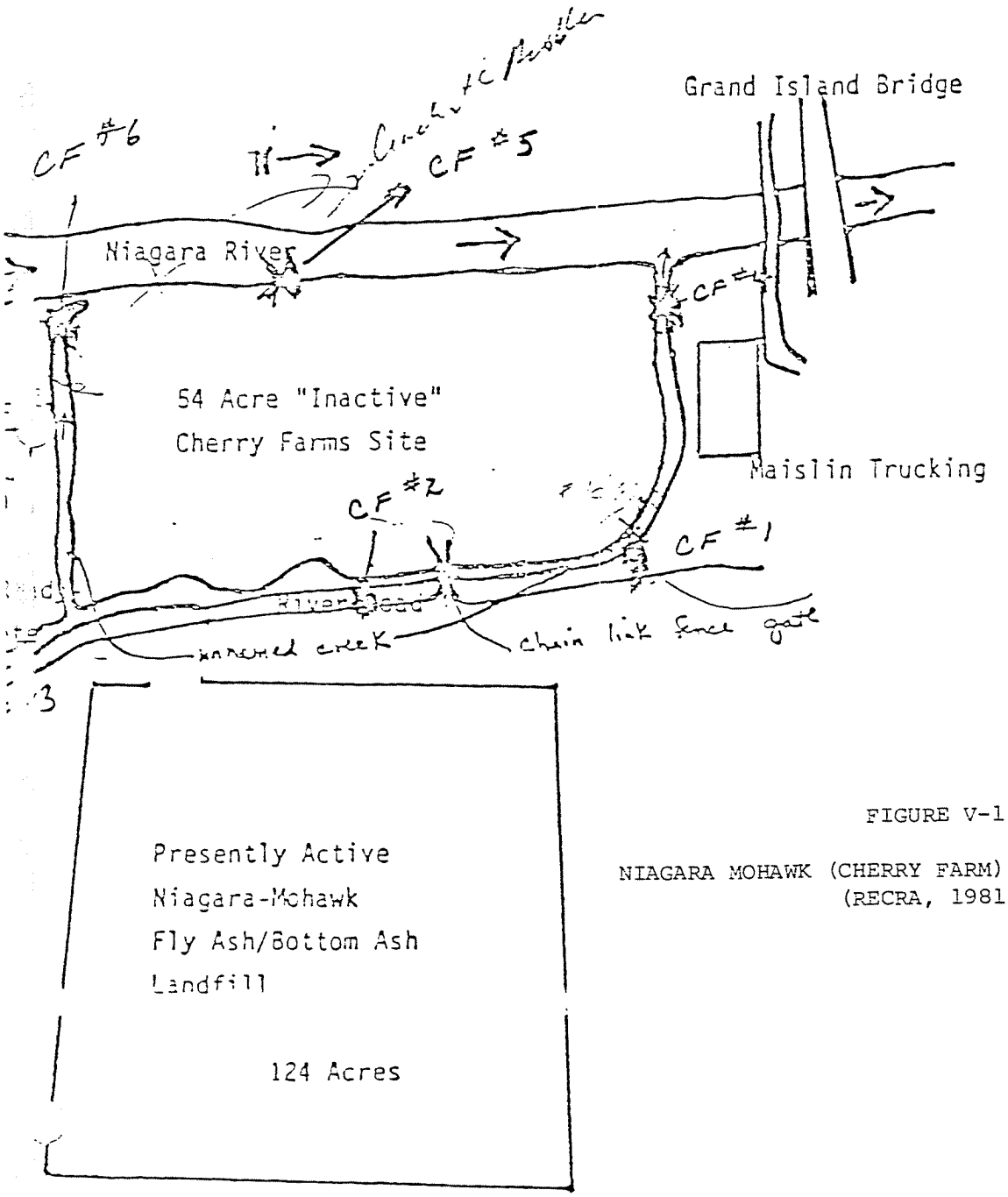

FIGURE V-1

NIAGARA MOHAWK (CHERRY FARM) SAMPLING LOCATIONS
(RECRA, 1981)

SECTION VI

ASSESSMENT OF ADEQUACY OF DATA

Site: Niagara Mohawk (Cherry Farm)

HRS Data Requirement	Comments on Data
Observed Release	
Ground Water	No available data, field data collection recommended.
Surface Water	Data available, adequate for HRS evaluation.
Air	No available data, field data collection recommended.
Route Characteristics	
Ground Water	Data available, adequate for HRS evaluation.
Surface Water	Data available, adequate for HRS evaluation.
Air	Data available, adequate for HRS evaluation.
Containment	Information available, adequate for HRS evaluation.
Waste Characteristics	Information available, adequate for HRS evaluation.
Targets	Insufficient information; more data collection recommended.
Observed Incident	Information available revealed no report of incident. No further investigation recommended.
Accessibility	Adequate information available.

SECTION VII

PHASE II WORK PLAN

Site: Niagara Mohawk (Cherry Farm)

Objectives

The objectives of the Phase II activities are:

- To collect additional field data necessary to complete the HRS scoring.
- To perform a conceptual evaluation of remedial alternatives and estimate budgetary costs for the most likely alternative.
- To prepare a site investigation report.

The additional field data required to complete the HRS are defined as follows:

Ground Water - A ground water monitoring system consisting of 7 wells approximately 30 to 35 feet deep is recommended to obtain samples to be analyzed for the following parameters: phenol, Pb, Hg, and a GC/MS scan.

Air - An air monitoring survey with an OVA meter is recommended to check the air quality above the surface of the site.

TASK DESCRIPTION

The proposed Phase II tasks are described in Table VII-1.

COST ESTIMATE

The estimated manhours required for the Phase II project are presented in Table VII-2 and the estimated project costs by tasks are presented in Table VII-3. The cost for performing the Phase II project is $33,789.

TABLE VII-1
PHASE II WORK PLAN - TASK DESCRIPTION
Site: Niagara Mohawk (Cherry Farm)

Tasks		Description of Task
TASK		
II-A	Update Work Plan	Review the information in the Phase I report, conduct a site visit, and revise the Phase II work plan.
II-B	Conduct Geophysical studies	No further studies necessary.
II-C	Conduct Boring/Install Install Monitoring Wells	No further installation of monitoring wells necessary.
II-D	Construct Test Pits/ Auger Holes	No further construction of test pits/auger holes necessary.
II-E	Perform Sampling and Analysis	
	Soil samples from borings	No further sampling necessary.
	Soil samples from surface soils	No further sampling necessary.
	Soil samples from test pits and auger holes	No further sampling necessary.
	Sediment samples from surface water	No further sampling necessary.
	Ground-water samples	Analyze samples for phenol, Pb, Hg, and a GC/MS scan.
	Surface water samples	No further sampling necessary.
	Air samples	Using the OVA, determine the presence of organics.
	Waste samples	No further sampling necessary.
II-F	Calculate Final HRS	Based on the field data collected in Tasks IIB - IIE, complete the HRS form.
II-G	Conduct Site Assessment	Prepare final report containing Phase I report, additional field data, final HRS and HRS documentation records, and site assessments. The site assessment will consist of a conceptual evaluation of alternatives and a preliminary cost estimate of the most probable alternative.
II-H	Project Management	Project coordination, administration and reporting.

TABLE VII-2
PERSONNEL RESOURCES BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: NIAGARA MOHAWK)

TASK DESCRIPTION	TEAM MEMBERS, MANHOURS													
	PIC	TRD	PM	DPM	PCM	QAM	HSM	FTL	FT	RAAL	RAAT	SS	TOTAL HOURS	TOTAL $
II-A UPDATE WORK PLAN	1		4	1		1	1	6		6		0	20	469
II-B CONDUCT GEOPHYSICAL STUDIES													0	0
II-C CONDUCT BORING/INSTALL MONITORING WELLS			2	1		1	4	16	40	4		8	76	970.27
II-D CONSTRUCT TEST PITS/AUGER HOLES													0	0
II-E PERFORM SAMPLING AND ANALYSIS														
SOIL SAMPLES FROM BORINGS													0	0
SOIL SAMPLES FROM SURFACE SOILS													0	0
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES													0	0
SEDIMENT SAMPLES FROM SURFCE WATER													0	0
GROUND-WATER SAMPLES			2	1		1	2	8	32	4		6	58	703.25
SURFACE WATER SAMPLES													0	0
AIR SAMPLES								1	8			2	11	109.56
WASTE SAMPLES													0	0
II-F CALCULATE FINAL HRS			3	3				3	24			16	49	563.23
II-G CONDUCT SITE ASSESSMENT	1	2	4	2				4	16	6	24	32	91	1103.84
II-H PROJECT MANAGEMENT	2		6	2	3	4	4					8	29	500.2
TOTALS	4	2	21	10	3	7	11	38	120	20	24	82	342	4419.35

TABLE VII-3
COST ESTIMATE BREAKDOWN BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: NIAGARA MOHAWK)

TASK DESCRIPTION	DIRECT LABOR HOURS	DIRECT LABOR COST	OTHER DIRECT COSTS (ODC), $ LAB ANALYSIS	TRAVEL AND SUBSISTANCE	SUPPLIES	EQUIP. CHARGES	SUBCON-TRACTORS	MISC.	SUBTOTAL ODC	TOTAL ($)
II-A UPDATE WORK PLAN	28	469		100	50	50		25	225	694
II-B CONDUCT GEOPHYSICAL STUDIES									0	0
II-C CONDUCT BORING/INSTALL MONITORING WELLS	76	970.27		500	300	75	10000		10075	11045.27
II-D CONSTRUCT TEST PITS/AUGER HOLES									0	0
II-E PERFORM SAMPLING AND ANALYSIS										
SOIL SAMPLES FROM BORINGS									0	0
SOIL SAMPLES FROM SURFACE SOILS									0	0
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES									0	0
SEDIMENT SAMPLES FROM SURFACE WATER									0	0
GROUND-WATER SAMPLES	50	703.25	8370	350	100	150		25	8995	9698.25
SURFACE WATER SAMPLES									0	0
AIR SAMPLES	11	109.56		85	25	15		5	130	239.56
WASTE SAMPLES									0	0
II-F CALCULATE FINAL HRS	49	563.23			50	50		25	125	688.23
II-G CONDUCT SITE ASSESSMENT	91	1103.84			100	200		75	375	1478.84
II-H PROJECT MANAGEMENT	29	500.2		150	150	50		50	400	900.2
TOTALS	342	4419.35	8370	1185	775	590	10060	205	21125	25544.35

OVERHEAD = 6310.83
SUBTOTAL = 31855.18
FEE = 1933.79
TOTAL PROJECT COST = 33788.97

APPENDIX A

BIBLIOGRAPHY

APPENDIX A

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Niagara-Mohawk Cherry Farm

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NEW YORK STATE GEOLOGICAL ASSOCIATION

38th Annual Meeting

April 29 - May 1, 1966

GUIDEBOOK

Geology of Western New York

Edward J. Buehler, Editor

Department of Geological Sciences
State University of New York at Buffalo

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54th ANNUAL MEETING

October 8-10, 1982

Amherst, New York

GUIDEBOOK FOR FIELD TRIPS IN WESTERN NEW YORK, NORTHERN PENNSYLVANIA AND ADJACENT, SOUTHERN ONTARIO

Edward J. Buehler

and

Parker E. Calkin

Editors

Department of Geological Sciences
State University of New York at Buffalo

Held in Conjunction with
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Published by the New York State Geological Association. Guidebook available from the executive secretary: M.P. Wolf, Geology Department, Gittleson Hall, Hofstra University, Hempstead, New York 11550.

TDD # 2-8011-17

RECORD OF COMMUNICATION

☐ PHONE CALL ☐ DISCUSSION ☒ FIELD TRIP ☐ CONFERENCE
☐ OTHER (SPECIFY)

(Record of item checked above)

TO:	FROM:	DATE
Dr. Richard Spear	Itzchak E. Kornfeld	TIME

SUBJECT

NIAGARA - MOHAWK (CHERRY FARMS) HUNTLEY STATION , CITY OF TONAWANDA, N.Y.

SUMMARY OF COMMUNICATION

The Niagara-Mohawk "Cherry Farms" landfill is an inactive 54 acre site. It front the Niagara River and is bordered on the east by River Road. An active 124 acre Fly ash/Bottom ash landfill operated by Niagara - Mohawk Corp. is across River Road from this site.

The site is clean, and overgrown with grass. On the day we were there it was covered with 1-2 inches of snow. NYSDEC classified the site as an open dump, however, we feel that it is a landfill. The site is said to contain phenol tars (some of which may contain chlorinated benzenes) alleged to have been dumped there by Hooker Durez. The site was sold to Niagara - Mohawk Corp. by Saperstein Realty in 1957. During the period of 1966-1970 Chevrolet Foundary Sand Corp. dumped foundry sand and slag.

The site stands 12.4 feet above water. There is a six foot high fence on the River Road side of the landfill. The remaining sides are bordered by 2 creeks and the Niagara River respectively.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

There is no evidence of chemical dumping and once again the site appears to be clean. It is therefore our recommendation that sampling not be undertaken.

INFORMATION COPIES
TO:

7 VV - 02-8011-17

LANDFILLS SI INSPECTION REPORT
(Supplemental Report)

Niagara-Mohawk

INSTRUCTION
Answer and Explain as Necessary.

1. EVIDENCE OF SITE INSTABILITY (Erosion, Settling, Sink Holes, etc)
☐ YES ☒ NO

2. EVIDENCE OF IMPROPER DISPOSAL OF BULK LIQUIDS, SEMI-SOLIDS AND SLUDGES INTO THE LANDFILL
☐ YES ☒ NO

3. CHECK RECORDS OF CELL LOCATION AND CONTENTS AND BENCHMARK
☒ YES ☐ NO

4. WASTES SURROUNDED BY SORBENT MATERIAL
☒ YES ☐ NO

5. DIVERSION STRUCTURES ARE EFFECTIVELY CONSTRUCTED AND PROPERLY MAINTAINED
☐ YES ☒ NO

6. EVIDENCE OF PONDING OF WATER ON SITE
☐ YES ☒ NO
Stream adjacent to site forms ponds

7. EVIDENCE OF IMPROPER/INADEQUATE DRAINING
☐ YES ☒ NO

8. ADEQUATE LEACHATE COLLECTION SYSTEM (If "Yes", specify Type)
☐ YES ☒ NO

8a. SURFACE LEACHATE SPRING
☐ YES ☒ NO

9. RECORDS OF LEACHATE ANALYSIS
☐ YES ☒ NO

10. GAS MONITORING
☐ YES ☒ NO

11. GROUNDWATER MONITORING WELLS
☐ YES ☒ NO

12. ARTIFICIAL MEMBRANE LINER INSTALLED
☐ YES ☒ NO

13. SPECIFIC CONTAINMENT MEASURES (Clay Bottom, Sides, etc)
☐ YES ☒ NO

14. FIXATION (Stabilization) OF WASTE
☐ YES ☒ NO

15. ADEQUATE CLOSURE OF INACTIVE PORTION OF FACILITY
☒ YES ☐ NO

16. COVER (Type)
Soil and Vegetation

16a. THICKNESS
Unkown

16b. PERMEABILITY
Unknown

16c. DAILY APPLICATION
☐ YES ☒ NO

Inactive Landfill

GENERAL INSTRUCTIONS: Complete Sections I and III through XV of this form as completely as possible. Then use the information on this form to develop a Tentative Disposition (Section II). File this form in its entirety in the regional Hazardous Waste Log File. Be sure to include all appropriate Supplemental Reports in the file. Submit a copy of the forms to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (EN-335); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME: Niagara - Mohawk/C.R Huntley Station

B. STREET (or other identifier): River Road "Cherry Farm Site"

C. CITY: Tonawanda

D. STATE: N.Y.

E. ZIP CODE: 14150

F. COUNTY NAME: Erie

G. SITE OPERATOR INFORMATION

1. NAME: Niagara - Mohawk

2. TELEPHONE NUMBER: (716) 856-2425

3. STREET: 535 Washington Street

4. CITY: Buffalo

5. STATE: N.Y.

6. ZIP CODE: 14202

H. REALTY OWNER INFORMATION (if different from operator of site)

1. NAME:

2. TELEPHONE NUMBER:

3. CITY:

4. STATE:

5. ZIP CODE:

I. SITE DESCRIPTION: relatively clean landfill mostly overgrown, not in operation, West side of River Road

J. TYPE OF OWNERSHIP

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE

II. TENTATIVE DISPOSITION (complete this section last)

A. ESTIMATE DATE OF TENTATIVE DISPOSITION (mo., day, & yr.): 12/10/80

B. APPARENT SERIOUSNESS OF PROBLEM

☐ 1. HIGH ☐ 2. MEDIUM ☒ 3. LOW ☐ 4. NONE

C. PREPARER INFORMATION

1. NAME: Itzchak E. Kornfeld/Senior Geohydrologist

2. TELEPHONE NUMBER: (201) 621-6800

3. DATE (mo., day, & yr.):

III. INSPECTION INFORMATION

A. PRINCIPAL INSPECTOR INFORMATION

1. NAME: Itzchak E. Kornfeld

2. TITLE: Senior Geohydrologist

3. ORGANIZATION: Fred C. Hart Associates

4. TELEPHONE NO. (area code & no.): (201) 621-6800

B. INSPECTION PARTICIPANTS

1. NAME	2. ORGANIZATION	3. TELEPHONE NO.
Peter Cangialosi Brian Jacot	Fred C. Hart Associates 155 Washington Street, Newark, N.J. 07102	(201) 621-6800
Itzchak E. Kornfeld David Lipsky	" " " " " "	" " "
Gregory Shkuda John Tygert	" " " " " " New York DEC	(716) 842-3837

C. SITE REPRESENTATIVES INTERVIEWED (corporate officials, workers, real. etc)

1. NAME	2. TITLE & TELEPHONE NO.	3. ADDRESS
Michael L. Boesl	Environmental Coordinator	River Road, Tonawanda, N.Y. 14150

III. INSPECTION INFORMATION (continued)

D. GENERATOR INFORMATION (source: S. ...ing)

1. NAME	2. TELEPHONE NO.	3. ADDRESS	4. WASTE TYPE GENERATED
N/A			
N/A			
N/A			

E. TRANSPORTER/HAULER INFORMATION

1. NAME	2. TELEPHONE NO.	3. ADDRESS	4. WASTE TYPE TRANSPORTED
N/A			
N/A			
N/A			

F. IF WASTE IS PROCESSED ON SITE AND ALSO SHIPPED TO OTHER SITES, IDENTIFY OFF-SITE FACILITIES USED FOR DISPOSAL.

1. NAME	2. TELEPHONE NO.	3. ADDRESS
N/A		
N/A		
N/A		

G. DATE OF INSPECTION (mo., day, & yr.)	H. TIME OF INSPECTION	I. ACCESS GAINED BY: (credentials must be shown in all cases)
11/18/80	9:00am - 12:00	[X] 1. PERMISSION [ ] 2. WARRANT

J. WEATHER (describe)

Partly cloudy, windy 30°F site had 1-2 inches of snow

IV. SAMPLING INFORMATION

A. Mark 'X' for the types of samples taken and indicate where they have been sent e.g., regional lab, other EPA lab, contractor, etc. and estimate when the results will be available.

1. SAMPLE TYPE	2. SAMPLE TAKEN (mark 'X')	3. SAMPLE SENT TO:	4. DATE RESULTS AVAILABLE
a. GROUNDWATER	N/A	N/A	
b. SURFACE WATER	N/A	N/A	
c. WASTE	N/A	N/A	
d. AIR	N/A	N/A	
e. RUNOFF	N/A	N/A	
f. SPILL	N/A	N/A	
g. SOIL	N/A	N/A	
h. VEGETATION	N/A	N/A	
OTHER (specify)	N/A	N/A	

FIELD MEASUREMENTS TAKEN (e.g., radioactivity, explosivity, PH, etc.)

1. TYPE	2. LOCATION OF MEASUREMENTS	3. RESULTS
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Continue On Page 3

Continued From Page 2

IV. SAMPLING INFORMATION (continued)

C. PHOTOS

1. TYPE OF PHOTOS: [ ] a. GROUND [ ] b. AERIAL
2. PHOTOS IN CUSTODY OF: none

D. SITE MAPPED?

[X] YES. SPECIFY LOCATION OF MAPS. sketch attached

E. COORDINATES

1. LATITUDE (deg.-min.-sec.): 42° 59' 10"
2. LONGITUDE (deg.-min.-sec.): 78° 56' 20"

V. SITE INFORMATION

A. SITE STATUS

[ ] 1. ACTIVE (Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if intermittently.)
[X] 2. INACTIVE (Those sites which no longer receive wastes.)
[ ] 3. OTHER (specify): _____ (Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)

B. IS GENERATOR ON SITE?

[X] 1. NO [ ] 2. YES (specify generator's four-digit SIC Code): _____

C. AREA OF SITE (in acres): approximately 54

D. ARE THERE BUILDINGS ON THE SITE?

[X] 1. NO [ ] 2. YES (specify): .

VI. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

X	A. TRANSPORTER	X	B. STORER	X	C. TREATER	X	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION		1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS./TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY		8. OTHER (specify):
					9. OTHER (specify):		Fly ash disposal facility

E. SUPPLEMENTAL REPORTS: If the site falls within any of the categories listed below, Supplemental Reports must be completed. Indicate which Supplemental Reports you have filled out and attached to this form.

[ ] 1. STORAGE [ ] 2. INCINERATION [X] 3. LANDFILL [ ] 4. SURFACE IMPOUNDMENT [ ] 5. DEEP WELL
[ ] 6. CHEM/BIO/PHYS TREATMENT [ ] 7. LANDFARM [ ] 8. OPEN DUMP [ ] 9. TRANSPORTER [ ] 10. RECYCLER/RECLAIMER

VII. WASTE RELATED INFORMATION

A. WASTE TYPE

[X] 1. LIQUID * [X] 2. SOLID [ ] 3. SLUDGE [ ] 4. GAS * see VII, page 4

B. WASTE CHARACTERISTICS

[ ] 1. CORROSIVE [ ] 2. IGNITABLE [ ] 3. RADIOACTIVE [ ] 4. HIGHLY VOLATILE
[X] 5. TOXIC [ ] 6. REACTIVE [X] 7. INERT [ ] 8. FLAMMABLE

[ ] 9. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, invoices, etc. below.

(1) No (2) Hazardous waste disposal site NYDEC No

VII. WASTE RELATED INFORMATION (continued)

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT: X	AMOUNT	AMOUNT: unknown	AMOUNT
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE: 625 tons	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
X (1) PAINT, PIGMENTS	X (1) OILY WASTES	X (1) HALOGENATED SOLVENTS	X (1) ACIDS	X (1) FLYASH	X (1) LABORATORY PHARMACEUTICAL
(2) METALS SLUDGES	(2) OTHER (specify):	X (2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify): phenol tars which contain chlorinated benzenes as indicated by NYSDEC Haz-O-Waste Disposal Site Report	(3) CAUSTICS	(3) MILLING/MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMELTING WASTES	(4) MUNICIPAL
(5) OTHER (specify):			X (5) DYES/INKS	X (5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify)
			(6) CYANIDE	X (6) OTHER (specify): foundary sand and slag	
			X (7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER (specify)		

D. LIST SUBSTANCES OF GREATEST CONCERN WHICH ARE ON THE SITE (place in descending order of hazard)

1. SUBSTANCE	2. FORM (mark 'X') a. SOLID	b. LIQ.	c. VAPOR	3. TOXICITY (mark 'X') a. HIGH	b. MED.	c. LOW	d. NONE	4. CAS NUMBER	5. AMOUNT	6. UNIT
Phenol Tars containing		X			X					
Chlorinated Benzenes		X		X						

VIII. HAZARD DESCRIPTION

FIELD EVALUATION HAZARD DESCRIPTION: Place an 'X' in the box to indicate that the listed hazard exists. Describe the hazard in the space provided.

☐ A. HUMAN HEALTH HAZARDS

None apparent

☐ B. NON-WORKER INJURY/EXPOSU

☐ C. WORKER INJURY/EXPOSURE

☐ D. CONTAMINATION OF WATER SUPPLY

☒ E. CONTAMINATION OF FOOD CHAIN

The site fronts the Niagara River. If the phenols or chlorinated benzenes are leaching into the river, fish and other aquatic life may be subject to contamination.

☐ F. CONTAMINATION OF GROUND WATER

Possible contamination of groundwater from alleged phenol tars and chlorinated benzenes.

☒ G. CONTAMINATION OF SURFACE WATER

In the event that the phenols and chlorinated benzenes would leach the Niagara river would collect these leachates thereby contaminating surface waters.

☐ H. DAMAGE TO FLORA/FAUN

☐ I. FISH KILL

☐ J. CONTAMINATION OF AIR

☐ K. NOTICEABLE ODORS

/

☒ L. CONTAMINATION OF SOIL

Were the soil saturated with the suspected phenols or chlorinated benzenes it would probably be found to be contaminated . The site, however, is currently covered with bottom ash and slag.

☐ M. PROPERTY DAMAGE

Continue On Page 7

☐ N. FIRE OR EXPLOSION

☐ O. SPILLS/LEAKING CONTAINERS/RUNOFF/STANDING LIQUID

☐ P. SEWER, STORM DRAIN PROBLEMS

☐ Q. EROSION PROBLEMS

☐ R. INADEQUATE SECURITY

The site was fenced on one side (River Road) and surrounded by the Niagara River and two Creeks on the other three respective sides.

☐ S. INCOMPATIBLE WASTES

VIII. HAZARD DESCRIPTION (continued)

☐ T. MIDNIGHT DUMPING

None apparent

☐ U. OTHER (specify):

There is no evidence of dumping or contamination. The only substances not indigenous to the area believed to be bottom ash or slag which may cover or cap the alleged phenols and tars. No evidence of phenol tar was seen during the investigation.

IX. POPULATION DIRECTLY AFFECTED BY SITE

A. LOCATION OF POPULATION	B. APPROX. NO. OF PEOPLE AFFECTED	C. APPROX. NO. OF PEOPLE AFFECTED WITHIN UNIT AREA	D. APPROX. NO. OF BUILDINGS AFFECTED	E. DISTANCE TO SITE (specify units)
1. IN RESIDENTIAL AREAS	0	0	0	1 mile
2. IN COMMERCIAL OR INDUSTRIAL AREAS	less than 50	less than 50	approx. 10	1/4 mile
3. IN PUBLICLY TRAVELLED AREAS				
4. PUBLIC USE AREAS (parks, schools, etc.)	Site is adjacent to Niagara River .			

X. WATER AND HYDROLOGICAL DATA

A. DEPTH TO GROUNDWATER (specify unit)	B. DIRECTION OF FLOW	C. GROUNDWATER USE IN VICINITY
10 - 15 feet	West toward River	none
D. POTENTIAL YIELD OF AQUIFER	**E. DISTANCE TO DRINKING WATER SUPPLY (specify unit of measure)**	**F. DIRECTION TO DRINKING WATER SUPPLY**
unknown	N/A	N/A

G. TYPE OF DRINKING WATER SUPPLY

☐ 1. NON-COMMUNITY < 15 CONNECTIONS ☒ 2. COMMUNITY (specify name): > 15 CONNECTIONS

☐ 3. SURFACE WATER ☐ 4. WELL

Continue On Page 9

Continued From Page 8

X. WATER AND HYDROLOGICAL DATA (continued)

H. LIST ALL DRINKING WATER WELLS WITHIN A 1/4 MILE RADIUS OF SITE

1. WELL	2. DEPTH (specify unit)	3. LOCATION (proximity to population/buildings)	4. NON-COMMUNITY (Mark 'X')	5. COMMUNITY (Mark 'X')
None			N/A	N/A

I. RECEIVING WATER

1. NAME: Niagara River

☐ 2. SEWERS ☒ 3. STREAMS/RIVERS ☐ 4. LAKES/RESERVOIRS ☐ 5. OTHER (specify):

6. SPECIFY USE AND CLASSIFICATION OF RECEIVING WATERS

River: Navigation and recreation

XI. SOIL AND VEGITATION DATA

LOCATION OF SITE IS IN: unknown

☐ A. KNOWN FAULT ZONE ☐ B. KARST ZONE ☐ C. 100 YEAR FLOOD PLAIN ☐ D. WETLAND

☐ E. A REGULATED FLOODWAY ☐ F. CRITICAL HABITAT ☐ G. RECHARGE ZONE OR SOLE SOURCE AQUIFER

XII. TYPE OF GEOLOGICAL MATERIAL OBSERVED

Mark 'X' to indicate the type(s) of geological material observed and specify where necessary, the component parts.

X	A. OVERBURDEN	X	B. BEDROCK (specify below)	X	C. OTHER (specify below)
X	1. SAND foundary sand	X	Camillus Shale (upper silurian Age)		
	2. CLAY				
	3. GRAVEL				

XIII. SOIL PERMEABILITY

☒ A. UNKNOWN ☐ B. VERY HIGH (100,000 to 1000 cm/sec.) ☐ C. HIGH (1000 to 10 cm/sec.)

☐ D. MODERATE (10 to .1 cm/sec.) ☐ E. LOW (.1 to .001 cm/sec.) ☐ F. VERY LOW (.001 to .00001 cm/sec.)

G. RECHARGE AREA

☒ 1. YES ☐ 2. NO 3. COMMENTS:

H. DISCHARGE AREA

☒ 1. YES ☐ 2. NO 3. COMMENTS:

I. SLOPE

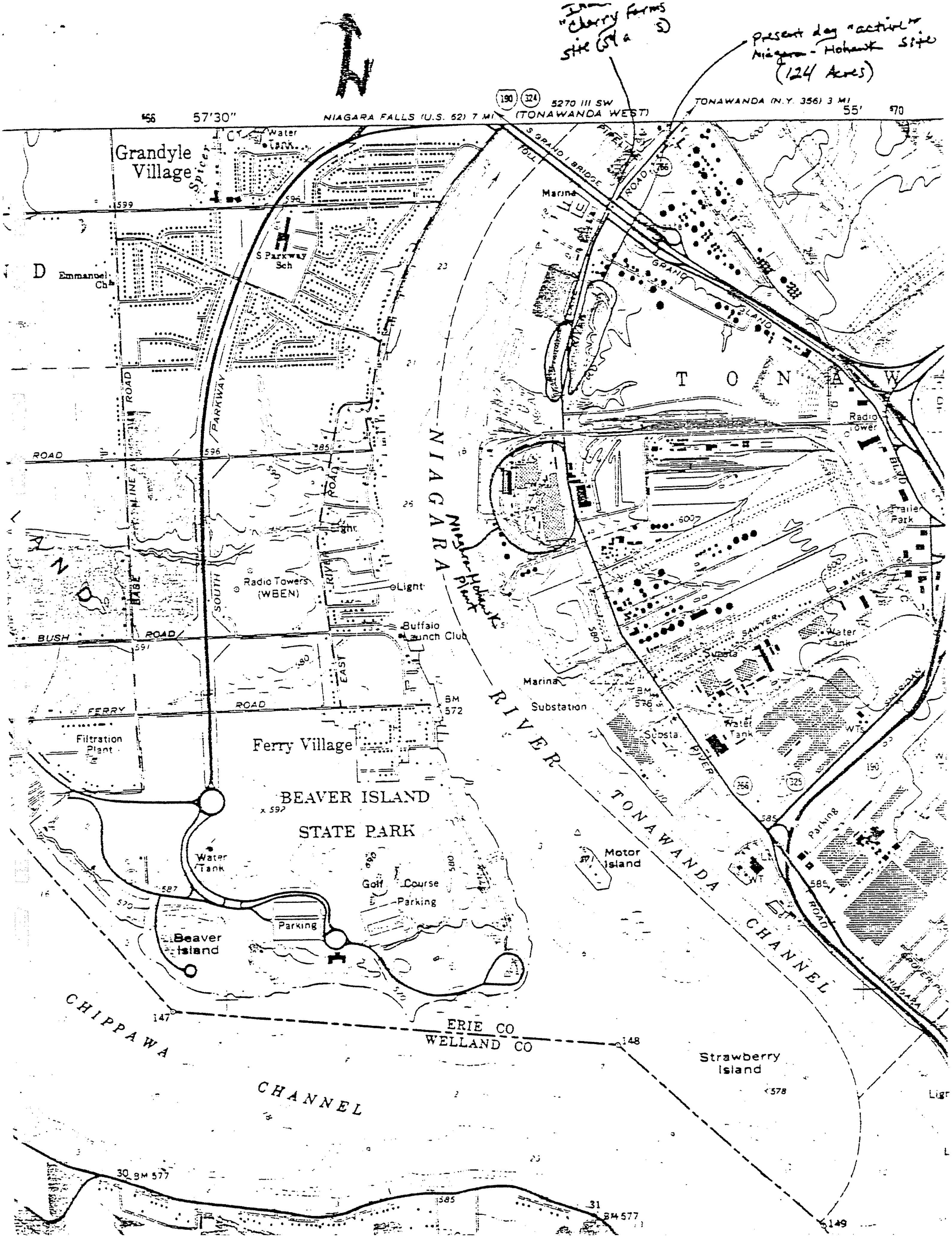
1. ESTIMATE % OF SLOPE: Fairly flat

2. SPECIFY DIRECTION OF SLOPE, CONDITION OF SLOPE, ETC.: Flat

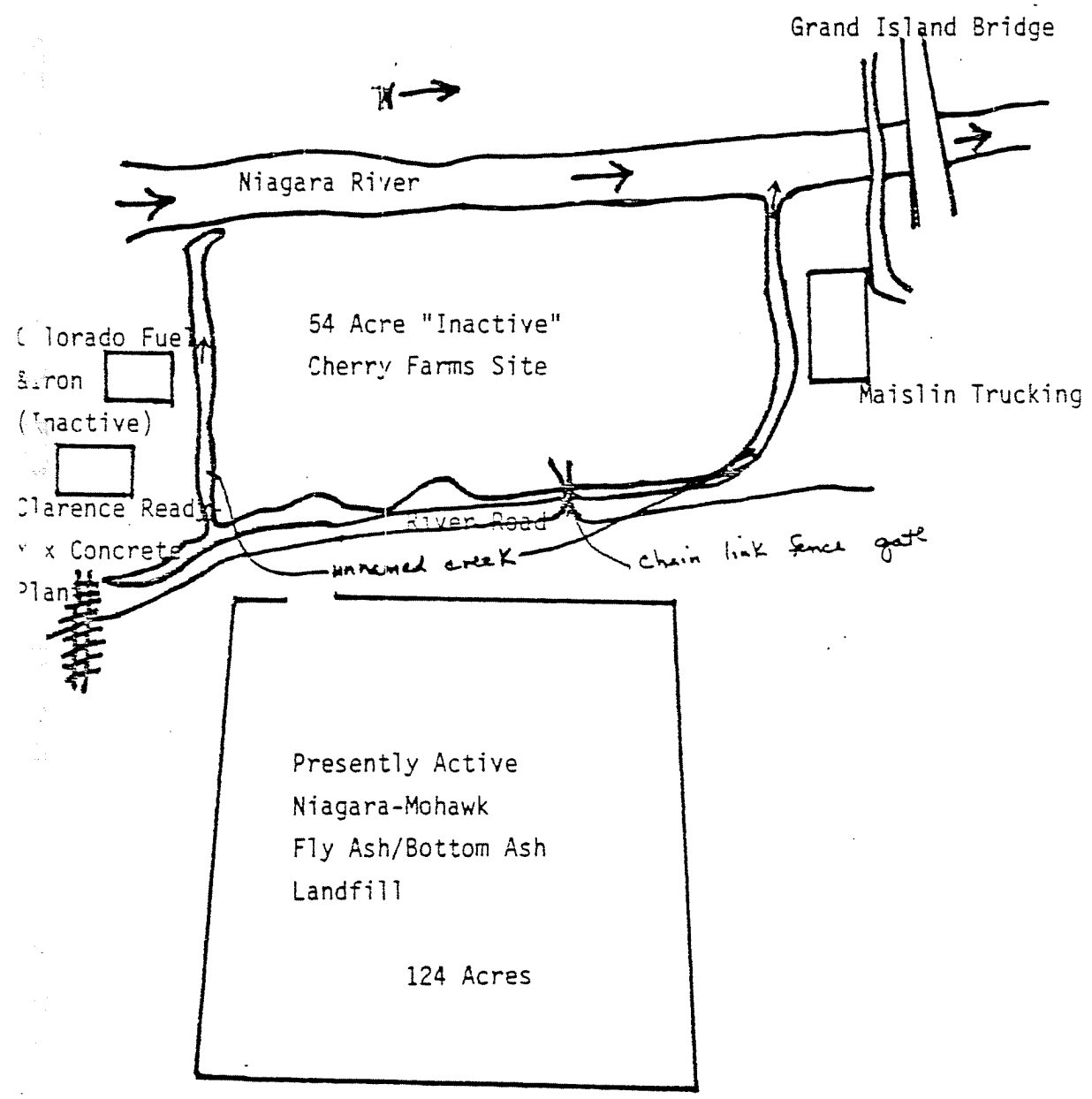
J. OTHER GEOLOGICAL DATA

The present active site across River Road from this site is underlain by an extremely tight and nonporous reddish clay.

Continue On Reverse


"Cherry Farms" site
present day "active" Niagara-Mohawk site
(124 Acres)
NIAGARA FALLS (U.S. 62) 7 MI
5270 III SW
(TONAWANDA WEST)
TONAWANDA (N.Y. 356) 3 MI
57'30"
55'
Grandyle Village
Water Tank
S Parkway Sch
Emmanuel Ch
Marina
S GRAND I BRIDGE
TOLL
PIPE LINE ROAD
GRAND ISLAND
T O N A W
Radio Tower
Trailer Park
NIAGARA RIVER
Niagara-Mohawk Plant
ROAD
PARKWAY
SOUTH
BABE
RIVER
EAST
BUSH ROAD
FERRY ROAD
Radio Towers (WBEN)
Light
Buffalo Launch Club
BM 572
Marina
Substation
Substa
Water Tank
SAWYER AVE
WTS
RIVER ROAD
Filtration Plant
Ferry Village
BEAVER ISLAND
STATE PARK
Water Tank
Golf Course
Parking
Beaver Island
Motor Island
TONAWANDA CHANNEL
ERIE CO
WELLAND CO
CHIPPAWA CHANNEL
Strawberry Island
BM 577

Niagara-Mohawk "Cherry Farms" Landfill



March 12, 1981
Itchak E. Kornfeld
Senior Geohydrologist

BACKGROUND

The Niagara-Mohawk (Cherry Farms) landfill was referred to EPA by the New York State Department of Environmental Conservation. Sources of information are the NYS DEC Regional Office in Buffalo, the City of Tonawanda Water Superintendent and the site's owner Niagara-Mohawk, Huntly Station Tonawanda, N.Y.

In 1957 the Niagara-Mohawk Corporation purchased a segment of Cherry Farms from Saperston Real Estate Associates, Inc. Buffalo, N.Y. The site was leased to the Seaway Corporation for use as a landfill (Seaway Industrial Park). During the period 1957-1970 112,000 tons/yr of uncontained fly ash and 23,000 tons/yr of uncontained bottom ash were disposed of at the site by Niagara-Mohawk Power Corporation. The hauler for both these operators was Carmine M. Pariso Trucking Inc. (273 South Roycroft Blvd., Buffalo, N.Y.). In 1972 the Frontier Chemical Waste Process, Inc. (a new leasee) accepted 12,000 gal/yr of boiler cleaning liquid wastes from Dow Chemical U.S.A., Depew, N.Y. Rumors have been circulated that Hooler Durez dumped phenol tars which may contain chlorinated benzenes. These, however, are unsubstantiated at this time. Chevrolet Foundary Sand Corp. disposed of foundary sand and slag on the site during the period 1966-1970. According to disposal records, these are the only refuse disposed at the site.

DESCRIPTION OF THE LANDFILL SITE

The site which is 54 acres in size is located approximately 2,000 feet south-southwest of the Grand Island Bridge on the western side of River Road in the City of Tonawanda, Erie County, New York. To the west, the site is bordered by the Niagara River. To the north and south immediately off the site lie two unnamed creeks. The two creeks are conduits for runoff and feed into the Niagara River. Leachate was not noted neither were any conspicious surface water features.

DESCRIPTION OF SURROUNDING AREA

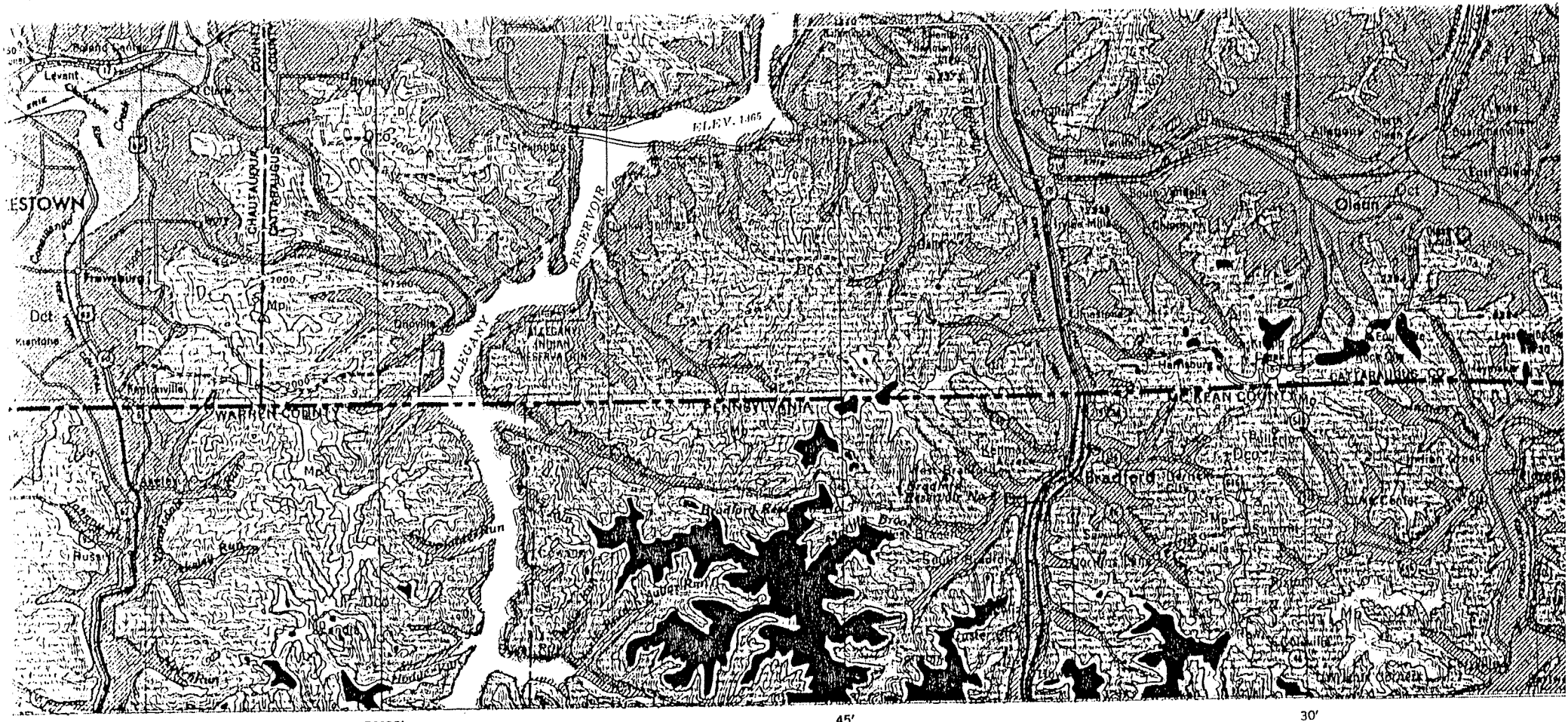
The area around the site is industrialized, no private residences were noted. Industrial complexes lie on both sides of River Road, a water treatment plant lies approximately 1.5 miles upstream of the site. A number of landfills can be found about the site.

SAMPLING AND CHEMICAL ANAIYSIS OF SAMPLES

No samples were taken and no plans have been made to do any sampling.

STATUS OF LOCAL AND STATE INVOLVEMENT

No legal action has been taken against Niagara-Mohawk in this matter.



GEOLOGIC MAP OF NEW YORK

1970

Niagara Sheet

Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET

obtained for RECRA 4/23/83 NMPC Utility Files

June 8, 1981

Mr. Robert Wozniak
New York State Department of
Environmental Conservation
584 Delaware Avenue
Buffalo, New York 14202

Re: Analytical Results

Dear Mr. Wozniak:

Please find enclosed Recra Research, Inc.'s results of the analyses of nine samples received at our laboratories on March 27, 1981.

If you have any questions concerning these data, do not hesitate to contact the undersigned.

Sincerely,

RECRA RESEARCH, INC.

James A. Ploseyca
Laboratory Manager

LER/JAP/df
Enclosure
cc: Mr. B. McCarty, N.Y.S.D.E.C.

I.D.#81-105 CC

RECRA RESEARCH, INC. P.O. Box 448 / Tonawanda, New York 14150 / (716) 838-6200

ANALYTICAL RESULTS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
"IN-PLACE TOXICS"

Report Date: 6/8/81

SOIL ANALYSES

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE) CF #4 (3/27/81)	CF #5 (3/27/81)	CF #6 (3/27/81)
monochlorobenzene	ug/g dry	<2	<2	<2
ortho-dichlorobenzene	ug/g dry	<0.1	<0.03	<0.05
meta-dichlorobenzene	ug/g dry	<0.1	<0.03	<0.06
para-dichlorobenzene	ug/g dry	3.8	0.11	<0.07
1,2,3-trichlorobenzene	ug/g dry	0.13	<0.01	0.02
1,2,4-trichlorobenzene	ug/g dry	0.34	≤0.01	0.04
1,3,5-trichlorobenzene	ug/g dry	<0.02	<0.01	<0.01
percent dry weight	% dry	37.3	81.1	58.7

COMMENTS: Differences in detection limits are a function of variance in response factors for the individual parameters or chromatogram characteristics.

FOR RECRA RESEARCH, INC. Mary E. Rosenquist

DATE 6/8/81

ANALYTICAL RESULTS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
"IN-PLACE TOXICS"

Report Date: 6/8/81

SOIL ANALYSES

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION (DATE) CF #1 (3/27/81)	CF #2 (3/27/81)	CF #3 (3/27/81)
monochlorobenzene	µg/g dry	<2	<2	<2
ortho-dichlorobenzene	µg/g dry	<0.1	<0.1	<0.1
meta-dichlorobenzene	µg/g dry	1.9	<0.1	<0.1
para-dichlorobenzene	µg/g dry	4.5	0.21	<0.2
1,2,3-trichlorobenzene	µg/g dry	0.12	<0.01	<0.02
1,2,4-trichlorobenzene	µg/g dry	0.22	0.04	0.07
1,3,5-trichlorobenzene	µg/g dry	0.06	<0.01	<0.02
percent dry weight	% dry	56.3	67.1	52.6

COMMENTS: Results of analyses for chlorobenzenes are based upon retention time matches between standard and sample chromatograms. Confirmational analysis has not been performed.

FOR RECRA RESEARCH, INC. _____

DATE 6/8/81

ANALYTICAL RESULTS

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
"IN-PLACE TOXICS"

Report Date: 6/8/81

WATER ANALYSES

SAMPLE IDENTIFICATION	SAMPLE DATE	PARAMETER (UNITS OF MEASURE) TOTAL RECOVERABLE PHENOLICS (mg/l)
CF #1	3/27/81	<0.01
CF #2	3/27/81	1.0
CF #3	3/27/81	<0.01
CF #4	3/27/81	0.01
CF #5	3/27/81	0.20
CF #6	3/27/81	0.59
TC #7	3/27/81	<0.01
TC #8	3/27/81	<0.01
TC #9	3/27/81	<0.01

COMMENTS: All samples were received accompanied by chain of custody records.

All analyses were performed according to U.S. Environmental Protection Agency methodologies where applicable.

FOR RECRA RESEARCH, INC. Irene E. Rosengard

DATE 6/8/81

RECRA RESEARCH, INC.

CHAIN OF CUSTODY RECORD

PROJECT#: _____ PROJECT NAME: D.E.C. INPLACE TOXICS

STUDY AREA: CHERRY FARMS SAMPLERS SIGNATURE: Robert Wagner

STATION#		DATE	TIME	SUBSAMPLE CODES	TOTAL #OF SAMPLES	REMARKS
CF #1	4920	3/27/81	0830	NORTH UP	3	UPSTREAM EXCAVATION (OCEAN) SUP
CF #1	4921	"	"	"	—	"
CF #1	4922	"	"	"	—	" "
CF # 2	4923	"	900	Middle UP	3	SUP SAND & CHAIN LINK
CF # 2	4924	"	"	"	—	"
CF #2	4915	"	"	"	—	"
CF # 3	4917	"	920	SOUTH UP DEEPEST UP	3	SUP RAIN COVERED
CF # 3	4909	"	"	SOUTH UP	"	"
CF # 3	4910	"	"	" "	"	"
CF # 4	4911	"	1000	NORTH DOWN	3	"
CF # 4	4912	"	"	"	"	"
CF # 4	4907	"	"	"	"	"

Relinquished By:	Date/Time:	Received By:	Comments:
Robert Wagner	3/27/81 1410		
Relinquished By:	Date/Time	Received By:	Comments:
Method of Shipment	Shipped By:	Received By:	Comments:

Recieved for Laboratory: _____ Authorization of Disposal: _____

Job #: 81-105CC Type of Disposal: _____

Date Time: 3/27/81 2:10 PM Date of Disposal: _____

RECRA RESEARCH, INC.

CHAIN OF CUSTODY RECORD

ROJECT#: _____ PROJECT NAME: DEC IN PLACE TOXICS

TUDY AREA: CHERRY FARMS SAMPLERS SIGNATURE: Robert Worstell

TATION#		DATE	TIME	SUBSAMPLE CODES	TOTAL #OF SAMPLES	REMARKS
CF # 5	4913	3/27/81	1020	Leachate	3	
F # 5	4914	"	"		—	
CF # 5	4926	"	"		—	
CF # 6	4908	"	1040	DOWN SOUTH	—	
F # 6	4919	"	"	" "	—	
CF # 6	4918	"	"	" "	—	
F # 7	4937	"	1200	ditch mouth at site SOUTH	1	
TC # 7	4938	"	"	" SOUTH	1	
C # 7	4939	"	"	"	2 1	
C # 8	4940	"	1245	ditch center at site SOUTH	1	
C # 8	4941	"	1245	"	1	
C # 8	4942	"	1245	"	2	

Relinquished By:	Date/Time:	Received By:	Comments:
Robert Worstell	3/27/81 1410		
Relinquished By:	Date/Time	Received By:	Comments:
Method of Shipment	Shipped By:	Received By:	Comments:

Recieved for Laboratory: [illegible] Authorization for Disposal: _____

Job #: 81-105CC Type of Disposal: _____

Date Time: 3/27/81 1:10 Date of Disposal: _____

RECRA RESEARCH, INC.

CHAIN OF CUSTODY RECORD

PROJECT#: _____ PROJECT NAME: DEC INPLACE TOXICS

STUDY AREA: TONAWANDA Coke SAMPLERS SIGNATURE: Robert Wenzel

STATION#		DATE	TIME	SUBSAMPLE CODES	TOTAL #OF SAMPLES	REMARKS
TC #9	4943	3/27/81	1315	DITCH SOUTH of S.L.	1	
TC #9	4944	3/27/81	1315	"	1	
TC #9	4945	3/27/81	1315	"	2	
TC II 9	4948	3/27/81	1315	"	2	
TC II 8	4946	3/27/81	1320	DITCH CENTER of S.L.	2	

elinquished By:	Date/Time:	Received By:	Comments:
Robert Wenzel	3/27/81 1410		
elinquished By:	Date/Time	Received By:	Comments:
ethod of Shipment	Shipped By:	Received By:	Comments:

Recieved for Laboratory: _____ Authorization for Disposal: _____

Job #: 81-105CC Type of Disposal: _____

Date/Time: 3/27/81 2:10PM Date of Disposal: _____

182. HUNTLEY POWER STATION #915063

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The geology of the unconsolidated deposits consists of glacial lacustrine deposits of sand, silt, and clay. This deposit overlies a bedrock of Camillus Shale. Thirteen test borings were drilled on the site and their locations are shown in figure 1. The geologic description of the borings is as follows:

Well No.	Depth (ft)	Description
1	0 - 19	Black cinder ash, wet at about 11 ft.
	19 - 26.5	Sand, gray, fine, "soupy." SAMPLE: 26.5 ft.
2	0 - 10	Cinder ash, black. Hit rocks at 10 ft; couldn't drill through. Moved inland 50 ft. Couldn't drill through again, moved 50 ft further inland.
	0 - 15	Cinder ash, black.
	15 - 16.5	Sand, fine, gray, "soupy." SAMPLE: 15 ft.
3	0 - 26.5	Cinder ash, black. Probably hit gray/green sand at 20 ft, but hole was so large that no no returns coming to surface. SAMPLE: Took sample from auger stem at 20 ft.
4	0 - 20	Cinder ash, black, wet at 11 ft.
	20 - 21.5	Sand, gray, wet. SAMPLE: 18 ft.

Well No.	Depth (ft)	Description
5	0 - 22	Cinder ash, black.
	22 - 26.5	Sand, gray-green, wet.
		SAMPLE: 22 ft.
6	0 - 18	Cinder ash, black.
	18 - 26.5	Sand, gray-green, wet.
		SAMPLE: 18 ft.
7	0 - 15	Fly ash, black.
	15 - 19	Sand, brown, wet.
	19 - 26.5	Sand, gray-green, wet.
		SAMPLE: 19 ft.
8	0 - 17	Fly ash, brownish color at about 11 ft, wet.
	17 - 26.5	Sand, gray-green. Lots of water in hole but couldn't make a well.
		SAMPLE: 17 ft.
9	0 - 21	Cinder ash, black. Hit exceptionally hard zone about 14 ft. Boulder?
	21 - 26.5	Sand, gray-green, wet.
		SAMPLE: 21 ft.
10	0 - 21.5	Fly ash, black. Hard drilling, but not rocks, at about 10 ft. At about 12 ft started getting rock sound - no returns. Started moving faster at 13 ft, but rock sound still present--must be loose rocks in large bore hole or cavity. All kinds of debris coming out; metal strapping, springs, rubber gloves, etc. Strong benzene odor. Swept with HNU: metal strappings give about 18 reading with 1.5 background.
		SAMPLE: 21 ft.
11	0 - 10	Fly ash, black. Hit boulders at 10 ft and couldn't drill through. Moved 50 ft inland at 12:51 p.m.
	21 - 26.5	Sand, gray-green, wet.
		SAMPLE: 21 ft.
12	0 - 21	Fly ash, black, brown, rusty colored layer at 10 ft.
	21 - 26.5	Sand, gray-green, wet.
		SAMPLE: 21 ft.
13	0 - 20	Fly ash, black; brown zone at about 11 ft.
	20 - 26.5	Sand, gray-green, wet.
		SAMPLE: 20 ft.

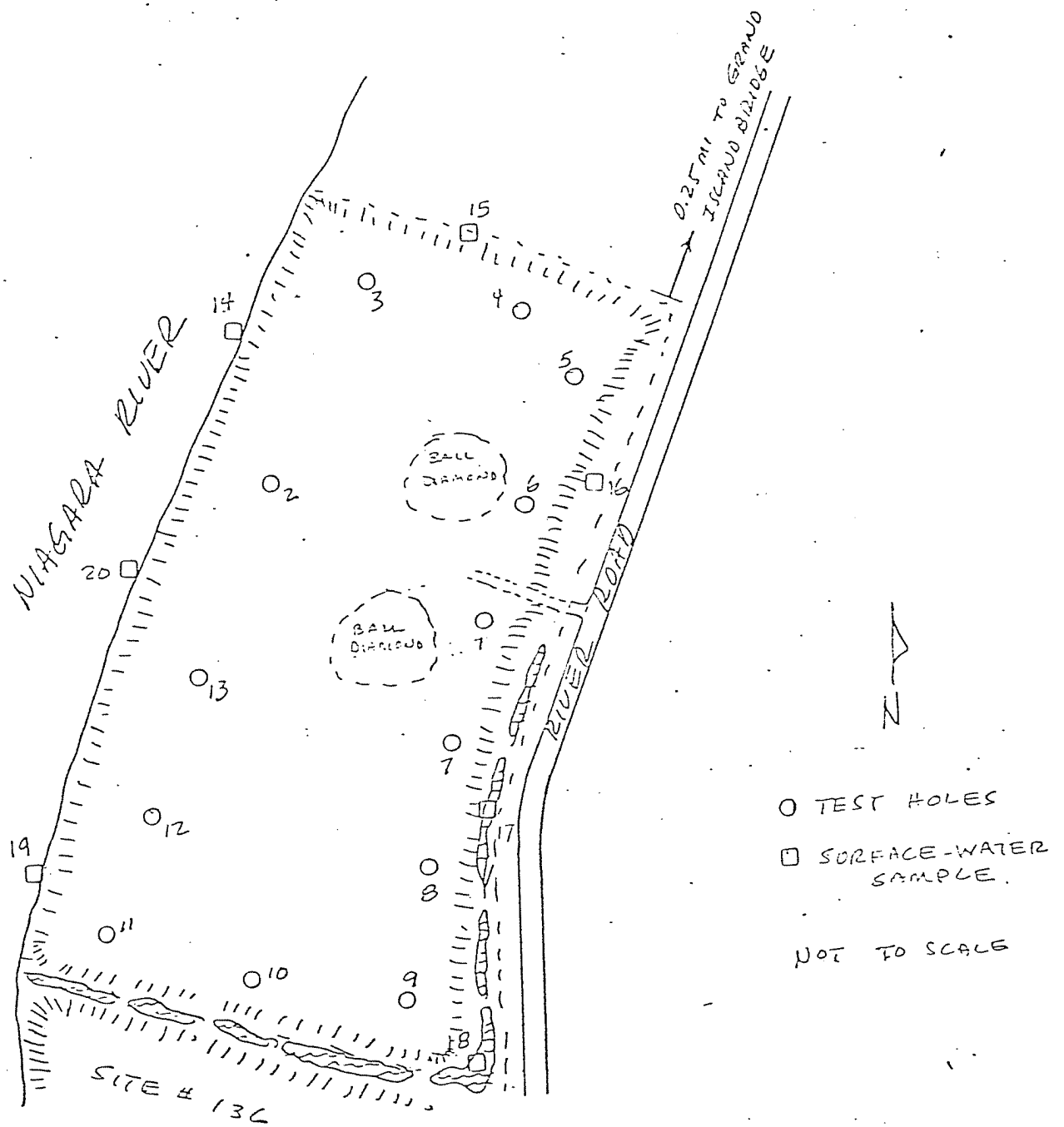


Figure 1. Location of sampling sites at the Huntley Power Station site.

Hydrologic Information

Ground water was found between eleven and sixteen feet below land surface within the fill material. The direction of ground-water flow is likely toward the Niagara River. Field inspection of the site indicates extensive surface-water runoff toward the river along the western boundary of the property.

Chemical Information

A soil sample was collected at each borehole as indicated in the geologic descriptions. The site was sampled for arsenic, cadmium, chromium, iron, lead, mercury, and nickel. The results of the analyses are shown in table 1. Each sample was also analyzed for organic compounds using a GC/MS acid-base neutral scan. The samples were analyzed at a high detection limit and the results were inconclusive as to the presence of organic compounds. The site will be resampled in May, 1983.

In figure 1, sites 14, 15, 16, 19, and 20 indicate that a surface water sample was collected. However, the sample taken was a substrate collected in a dry drainage ditch.

Electromagnetic Survey

An electromagnetic survey was conducted over the site in November, 1982. Ten survey lines were made and their locations are shown in figure 2.

With the possible exception of one reading (taken at the river's edge) all values of conductivity recorded in lines 1 and 2 showed evidence of artificial fill.

Lines 3, 4, and 5, however, were much less irregular in nature, and probably correspond to the presence of natural fill. The sharp rise in conductivity at the end of line 5 is due to the fact that the final station is 30 ft below the rest of the line, and by the edge of the Niagara River.

Table 1.—Analyses of substrate samples from Huntley Power Station, Tonawanda, New York

	Sample Number				
	1	2	3	4	5
Date collected	071582	071582	071582	071582	071582
Depth (ft)	26.5	15.0	20.0	15.0	22.0
Sample Type[1]	s	s	s	s	s
pH					
Conductivity (uMHOS)					
Temperature (°C)					
Inorganic Constituents[2]					
Antimony	<1000	<1000	<1000	<1000	<1000
Arsenic	1000	3000	1000	<1000	<1000
Cadmium	<1000	<1000	<1000		
Chromium				6500000	11000000
Copper	12000000	18000000	29000000	20000	10000
Iron	30000	120000	30000	<10	<10
Lead	<10	<10	<10	<10000	<10000
Mercury	10000	<10000	20000		
Nickel					
Selenium					
Zinc					
Flouride					
Sulfide					
Cyanide					
Organic Compounds[2]	(Mead)	(Mead)	(Mead)	(Mead)	(Mead)

1 Sample type: GW=ground water, SW=surface water, and S=substrate.
2 Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
3 Cu(D): analysis done by direct aspiration because of high iron concentration.
4 Identity determined by library match; no standard available. Concentration results are semiquantitative and are based on the response factor of the internal standard.
5 Identity based on less than library match; identification seemed reasonable. As for footnote 4, concentration results are semiquantitative.
6 Volatile found in GC/ms extractions. Concentration results probably less than actual.
7 Low surrogate recoveries.
8 Estimated value less than detection limit.
(Mead): Analyses performed by Mead CompuChem, Inc., Research Triangle Park NC

	6	7	8	9	10
Date collected	071532	071532	071542	071532	071542
Depth (ft)	18.0	19.0	17.0	21.0	21.0
Sample Type[1]	s	s	s	s	s
pH					
Conductivity (uMHOS)					
Temperature (°C)					
Inorganic Constituents[2]					
Antimony	<1000	<1000	<1000	<1000	<1000
Arsenic	1000	<1000	1000	1000	1000
Cadmium	<1000	<1000	<1000	<1000	<1000
Chromium					
Copper	13000000	15000000	13000000	25000000	15000000
Iron	30000	30000	20000	40000	30000
Lead	<10	<10	<10	<10	<10
Mercury	10000	10000	20000	10000	10000
Nickel					
Selenium					
Zinc					
Flouride					
Sulfide					
Cyanide					
Organic Compounds[2]	(Mead)	(Mead)	(Mead)	(Mead)	(Mead)

1 Sample type: gw=ground water, sw=surface water, and s=substrate.
2 Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
3 Cu(D): analysis done by direct aspiration because of high iron concentration.
4 Identity determined by library match; no standard available. Concentration results are semiquantitative and are based on the response factor of the internal standard.
5 Identity based on less than library match; identification seemed reasonable. As for footnote 4, concentration results are semiquantitative.
6 Volatile found in GC/ms extractions. Concentration results probably less than actual.
7 Low surrogate recoveries.
8 Estimated value less than detection limit.
(Mead): Analyses performed by Mead Compuchem, Inc., Research Triangle Park NC

Table 1 .--Analyses of substrate samples from Huntley Power Station, Tonawanda, New York—continued

	Sample Number				
	11	12	13	14	15
Date collected	071682	071682	071682	071682	071682
Deptn (ft)		21.0	20.0		
Sample Type[1]		s	s	s	s
pH					
Conductivity (uMHOS)					
Temperature (°C)					
Inorganic Constituents[2]					
Antimony		<1000	1000	<1000	<1000
Arsenic		1000	1000	<1000	1000
Cadmium		<1000	-<1000	<1000	<1000
Chromium					
Copper		31000000	12000000	5900000	8900000
Iron		40000	30000	20000	20000
Lead		<10	<10	<10	<10
Mercury		10000	10000	10000	10000
Nickel					
Selenium					
Zinc					
Flouride					
Sulfide					
Cyanide					
Organic Compounds[2]		(Mead)	(Mead)	(Mead)	(Mead)

1 Sample type: gw=ground water, sw=surface water, and s=substrate.
2 Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
3 Cu(D): analysis done by direct aspiration because of high iron concentration.
4 Identity determined by library match; no standard available. Concentration results are semiquantitative and are based on the response factor of the internal standard.
5 Identity based on less than library match; identification seemed reasonable. As for footnote 4, concentration results are semiquantitative.
6 Volatile found in GC/ms extractions. Concentration results probably less than actual.
7 Low surrogate recoveries.
8 Estimated value less than detection limit.
(Mead): Analyses performed by Mead CompuChem, Inc., Research Triangle Park NC

Table 1 .—Analyses of substrate samples from Huntley Power Station, Tonawanda, New York—continued

	Sample Number				
	16	17	18	19	20
Date collected	071682	071682	071682	071682	071682
Depth (ft)					
Sample Type[1]	s	sw	sw	s	s
pH		7.4	7.6		
Conductivity (uMHOS)		1640	1650		
Temperature (°C)		26.0	28.0		
Inorganic Constituents[2]					
Antimony					
Arsenic	<1000	5	3	<1000	<1000
Cadmium	1000	<1	1	<1000	<1000
Chromium	<1000	<1	<1	<1000	<1000
Copper					
Iron	8200000	110	530	12000000	12000000
Lead	20000	8	57	20000	30000
Mercury	<10	<0.1	<0.1	<10	<10
Nickel	10000	4	9	<10000	<10000
Selenium					
Zinc					
Flouride					
Sulfide					
Cyanide					
Organic Compounds[2]	(Mead)	(Mead)	(Mead)	(Mead)	(Mead)
Ethylbenzene[4]		3.5[3]	-		
Hexadecane[4]		-	15		

1 Sample type: gw=ground water, sw=surface water, and s=substrate.
2 Concentrations: ug/L for water and ug/Kg for substrate. Blank spaces indicate that no analyses were performed; dashes indicate that constituents and compounds were not found.
3 Cu(D): analysis done by direct aspiration because of high iron concentration.
4 Identity determined by library match; no standard available. Concentration results are semiquantitative and are based on the response factor of the internal standard.
5 Identity based on less than library match; identification seemed reasonable. As for footnote 4, concentration results are semiquantitative.
6 Volatile found in GC/ms extractions. Concentration results probably less than actual.
7 Low surrogate recoveries.
8 Estimated value less than detection limit.
(Mead): Analyses performed by Mead CompuChem, Inc., Research Triangle Park NC

APPENDIX B

NYS REGISTRY FORM

HAZARDOUS WASTE DISPOSAL SITES REPORT
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Code: _____

Site Code: 915063

Name of Site: Niagara Mohawk - Huntley Power Station Region: 9

County: Erie Town/City Tonawanda

Street Address River Road

Status of Site Narrative:

The site was once part of "Cherry Farms" and was used by Hooker Durez for disposal of phenol tars (some which may contain chlorinated benzenes). Contiguous to this area is a site formerly owned by Irvig Rosen where slag and foundry sand were dumped.

Type of Site: Open Dump [X] Treatment Pond(s) [ ] Number of Ponds _____
Landfill [ ] Lagoon(s) [ ] Number of Lagoons _____
Structure [ ]

Estimated Size 54 Acres

Hazardous Wastes Disposed? Confirmed [X] Suspected [ ]

*Type and Quantity of Hazardous Wastes:

TYPE	QUANTITY (Pounds, drums, tons, gallons)
Phenol tars (some which vary contain	
chlorinated benzenes)	625 tons
foundry sand and slag	Unknown

* Use additional sheets if more space is needed.

APPENDIX C

GENERIC HEALTH AND SAFETY PLAN

APPENDIX C

HEALTH AND SAFETY PLAN OUTLINE

I. PURPOSE

The purpose of this plan is to assign responsibilities, establish personnel protection standards, mandatory operating procedures, and provide for contingencies that may arise while operations are being conducted at the site.

II. APPLICABILITY

The provisions of the plan are mandatory for all on-site investigation personnel and personnel under contract while initial site reconnaissance and/or preliminary investigation activities are being conducted at the site. These activities include investigation, sampling, and monitoring undertaken on the site or at any off-site areas which may be affected by contamination from the site.

III. RESPONSIBILITY

1. Principal Investigator (PI)

   a. The PI shall direct on-site investigation efforts for each discipline. At the site, the PI, assisted by the Team Safety Officer, has the primary responsibility for:

      1) Assuring that appropriate personnel protection equipment is available and properly utilized by all on-site personnel and subcontractor personnel.
      2) Assuring that personnel are aware of the provisions of this plan, are instructed in the work practices necessary to

ensure safety, and in planned procedures for dealing with emergencies (Provisions, Work Practices and Emergency Procedures) appropriate to this investigation.

3) Assuring that personnel are aware of the potential hazards associated with site operations.
4) Supervising the monitoring of safety performance by all personel to ensure that required work practices are employed.
5) Correcting any work practices or conditions that may result in injury to personnel or exposure to hazardous substances.

HEALTH AND SAFETY PRELIMINARY SITE INVESTIGATION

Based on the appropriate listed field activity plans, as well as other site information (such as waste types and chemistry) as learned from the data collecting and analysis, the Principal Investigator/Team Safety Officer will develop an appropriate health and safety plan for the site.

Planning for Site Entry

In order to determine whether it is safe for the investigative team to proceed with the study and/or to determine what appropriate level of protective clothing and equipment should be used, the nature and extent of the on-site hazards will be assessed prior to site inspection. An on-site reconnaissance utilizing appropriate monitoring equipiment will check for:

- exposivity
- atmospheric concentrations of hazardous vapors, bases, fumes, and dusts
- oxygen deficiencies
- physical hazards posed by site features/topography

If during the initial site reconnaissance, the monitoring equipment detects evidence of fire or explosion potential or high levels of radiation, further entry into the site will not be allowed. The site inspection will be delayed until such problems can be resolved appropriately.

The initial site reconnaissance will be performed by team personnel equipped with the level of protective clothing and any additional gear

that is required for their safe entry to the site. In order to provide sufficient lead time to "fine tune" safety and data gathering plans, this initial site reconaissance should be performed at least one week before the scheduled site investigation.

Based on this information regarding the associated conditions, a detailed plan providing for the safety of field personnel and the public will be developed in accordance with EPA and OSHA and regulations and USAF operating procedures. This plan may address such factors as (dependent on specific site/waste conditions):

- Types of exposures to hazardous materials (e.g., inhalation, skin absorption, ingestion, and eye contact), and the potential effects of each exposure pathway for each hazardous waste.
- High risk areas (surface contamination, exposed containers, or areas containing concentrations of chemical vapor, oxygen deficiency, explosive or flammable potential or radioactivity).
- Required protective and related equipment and procedures to adequately protect field personnel from perceived hazards on site.
- Decontamination procedures.
- Procedures for the prevention of accidental releases of hazardous substances to the air, soil, or surface water and procedures for implementation of proper contingency plans if such releases do occur.
- Procedures for the proper disposal of hazardous wastes generated in the course of the site inspection.
- Equipment and procedures for handling special site inspection conditions (e.g., prolonged operations, weather extremes, etc.).
- Emergency procedures.
- Arrangements with local hospitals and other local authorities.

The site-specific safety plan should be sufficient to provide the site inspection team with all applicable information assure health and safety. However, additional procedures may need to be considered and developed given site-specific conditions identified both before and during the site inspection.

Site Entry and Field Activities

Three sequential stages are identified to constitute the field activities:

- Initial setup
- Exploration and sampling
- Demobilization

Initial Setup

The main functions in this step are to secure entry and establish safety criteria. All operations will be managed from a central point, including:

- General supervision of area activities
- Decontamination process coordination
- Field communication
- Safety and medical coordination
- Equipment staging
- Recordkeeping
- Other functions as required

Exploration and Sampling

During this stage most field activities will be performed by pairs or small groups of team members. These tasks will include the following:

- Observation of visible spills, leachate seeps, etc., and sampling water and/or soils at these areas.
- Photography.
- Geophysical surveys (Electromagnetic or Metal Detection).
- Electrical resistivity measurements to detect ground-water contamination.
- Soil sampling using hand-operated equipment and drilling rigs.
- Ground-water sampling and water level measurements from existing wells.
- Surface water sampling.

Demobilization

This is the final stage of field activities in which field personnel will:

- Decontaminate used equipment.
- Transfer equipment and samples obtained to the decontamination staging area.
- Undergo personnel decontamination procedures.
- Load all equipment and samples on to the project vehicle(s).

The PI will supervise all the above steps through its conclusion. Field team members should not depart until all subcontractors personnel and equipment have left the site.

APPENDIX D

GENERAL FIELD PROCEDURES

APPENDIX D

General Field Procedures

Installation of Groundwater Quality Monitoring Wells

To investigate the groundwater quality within the aquifer of concern, groundwater monitoring wells will be installed. To accomplish the purposes of the monitoring wells a series of separate field procedures have been prepared. These include:

A - Drilling Procedures
B - Monitoring Well Construction Procedures
C - Water Sampling Procedures

The field program will be under the overall direction of the geologist in charge. Detailed supervision of the field work will be the responsibility of the field geologist. In particular, the field geologist will have the following responsibilities.

- Supervision of all drilling work and well construction
- Maintenance of the boring log for each boring
- Collection, labeling, and identification of formation samples, including rock cores.
- Conducting in cooperation with the driller, required in situ falling head tests and pumping tests.
- Performance of the water sampling program.
- Maintenance of pertinent notes in his/her field notebook and on daily field memos.

Health and safety procedures as set forth by the site Health and Safety Plan will be adhered to for all field operations.

A. Drilling Procedures

General Procedures

A qualified drilling subcontractor will be selected to provide all the equipment materials and skilled labor necessary to advance the test borings to the depths specified by the field geologist.

Order of Drilling Wells — All wells will be drilled in numerical sequence from what is considered the upgradient location (least contaminated) to the downgradient (most contaminated) with the upgradient boring being labeled "B-1".

Method of Drilling — Minimum of 4" ID hollow stem augers. If formational materials preclude the use of augers rotary drilling methods will be employed (e.g. for coring of bedrock).

Formational Sampling — Samples will be collected at a minimum of every 5 feet in the borings and at each lithographic change noted. A D&M sampler will be used to obtain one sample from each major layer in each boring. Other samples will be obtained with a standard split spoon sampler. Bedrock will be sampled continuously by coring with an NX double tube core barrel. All sampling equipment will be thoroughly cleaned after obtaining each sample.

The cleaning method employed will be dependent upon the type of contaminant suspected to be present at that location.

Measurements — The depth to the water level in each boring being drilled should be measured each morning and just prior to installation of any monitoring devices into a boring. The depth of the boring should be measured and recorded on the boring log upon reaching final depth.

Decontamination Requirements

All downhole equipment and above hole equipment that may come in contact with subsurface materials will be steam cleaned at the drilling location prior to initiating any drilling and between each boring and at the conclusion of the drilling program. The steam cleaning rinse water will be allowed to discharge to the ground surface at the well site. Care will be taken to assure this water does not come in contact with any surface water source.

Site Cleanup

All drill cuttings remaining after well installation will be removed for proper disposal.

All debris, paper, etc. will be removed and all depressions resulting from drilling operations will be filled in.

Drilling Procedures for Bedrock Boring

1. Sample formation every 5 feet and at every major lithologic change.

2. Drill and sample the unconsolidated formations until bedrock is encountered.

3. Ream the hole to at least 6 inches in diameter.

4. Make ready an appropriate length of steel casing by cleaning.

5. Place enough volclay pellets in the hole to make a layer of about one-foot thickness at the bottom of the boring.

6. Place the steel casing in the hole, and bottom it snugly into the bentonite. Once the casing is set, it should not be lifted until the completion of the well.

7. Circulate the drilling fluid; drill a few inches below the bottom of the volclay layer and circulate for a few minutes to clean the boring of most of the bentonite. Clean out this part of the boring by circulating clean water.

8. Drill into the bedrock the required depth using the NX double-tube core barrel.

9. Store the rock cores in specially constructed wooden rock-core boxes, for inspection and description by the field geologist.

10. Measure water level in boring.

11. Construct well in the boring

Drilling Procedures for Soil Borings

1. Sample formation every 5 feet and at every major lithologic change.

2. Drill to the depth estimated.

3. Measure water level in boring.

4. Construct well in boring.

Procedure for Abandoning a Boring

A cement slurry containing about 5 lbs. bentonite and one bag of cement per 8 to 10 gallons of water should be pumped into the hole to the ground surface.

B. MONITORING WELL CONSTRUCTION PROCEDURES

General Specifications and Procedures

Casing and Well Screen:	2-inch I.D. Schedule 40 PVC with flush screw joints or 2-inch I.D. stainless steel with flush screw joints.
Screen Slot Size:	Based upon materials encountered in boring.
Storage of Casing and Screen:	The casing and screen lengths will not be stored directly on the ground. The well string shall be prepared on a clean plastic sheet spread out over level ground.
Cleaning of Casing and Screen:	Casing and screen shall be cleaned before installing in the boring.
Bottom Cap and Blank Casing:	A length of blank casing of about two feet complete with a bottom cap shall be placed below the well screen in all cases.
Gravel Pack:	The gravel pack material will be 90 percent by weight larger than the screen size and should have a uniformity coefficient of 2.5 or less.
Placement of the Gravel Pack:	The gravel pack should be emplaced so that it extends to three feet above the top of the well screen. This should be confirmed by measuring down the annular space with a weighted tape or with a measured small-diameter pipe. The volume of gravel pack material emplaced should be compared with the volume computed as required, based on the screen diameter and length. The gravel pack may be poured directly down the annular space provided the well is pressurized and an upward flow of pure water is maintained in the annular space by introducing the water at a low rate through the well casing which would enter the annular space through the well screen openings.

Bentonite Seal:	A bentonite seal shall be placed in the annular space above the gravel pack in each well by emplacing 1/4-inch diameter volclay pellets in the annular space during which time the low flow rate up the annular space in maintained. This bentonite seal should be at least 2 feet thick. The bentonite shall be compacted with a donut shaped weight that slides over the well casing.
Well Development:	Each well should be developed for about 30 minutes to one hour using an air-lift surging method. Appropriate piping should be assembled for the discharge water so as to discharge it and dispose of it in a manner to limit contamination of the surrounding area. The discharge during development should be estimated by using a 5-gallon bucket and a stop watch. In the course of development, if a well turns out to have a very low specific capacity, it may prove necessary to add some clean water in order to remove as many fines as possible from the vicinity of the well screen. Development should be continued until all but a trace amount of fines and suspended solids appear in the discharge water. Following development, the air line hose or pipe and associated fittings should be thoroughly cleaned and then rinsed.
Grouting Annular Space:	A bentonite-cement grout (5 lbs. bentonite and one bag of cement to 8-10 gallons of water) will be pumped into the annular space to fill the space from the top of the volclay bentonite seal to the ground surface.
Protective Casing:	A length of 6-inch I.D. steel casing with a lockable cap should be placed over the well casing in each case to protect it. It should be set about one foot into the bentonite cement grout in the annular space, and should stick up above ground about 2 to 3 feet.

Well Labeling: The full number of each monitoring well should be painted on the protective casing and cap.

Surveying: A level survey will be performed in which the elevation of the top of the inside casing of each well will be determined 0.01 ft. and the reference point marked.

The Construction site makes it impossible to prescribe one single Deep or Shallow well construction configuration. Therefore a generic well construction configuration for both deep and shallow wells has been developed.

Deep Well Construction

1. Place well screen so as to screen entire thickness of lower sand and gravel layer (if it exists), unless the layer exceeds 20 feet in thickness; the well screen should extend about two feet into the top of bedrock.

2. If a clay layer immediately overlies the bedrock and the overlying surficial sand and gravel is less than 30 feet, place the screen in only the upper five feet of bedrock.

3. If no significant clay/lacustrine layer exists and if the surficial sand and gravel layer is greater than 20 feet thick place screen in lower 15 to 20 feet of the sand and gravel layer, extending also two feet into bedrock.

4. If no significant clay/lacustrine layer exists and if the surficial sand and gravel layer is less than 20 feet in thickness screen entire saturated thickness, in addition to about 5 feet above the summer static water level and about two feet into the underlying bedrock.

5. After installation of the well screen and casing, and the gravel pack, emplace volclay pellets to form a 2 to 4 foot thick seal in the annular space above the gravel pack. Use 1/4-inch diameter pellets and maintain a low flow rate up the annular space during emplacement so as to insure that they settle in place evenly around the annular space. Measure the depth to the top of the seal.

6. Using a bentonite-cement grout (described in the foregoing section), pump grout into the annular space so as to grout up to the top of the clay layer.

7. Jack the 6-inch casing out of the hole.

8. Develop the well and complete it as described under the foregoing section.

Shallow Well Construction

1. Place the well screen so that it extends from the top of any clay layer (if it exists) to about 5 feet above the summer static water level, unless the saturated thickness is greater than 20 feet, in which case the screen should be placed opposite the upper 20 feet of the saturated part of the unit, extending as well about 5 feet above the summer static water level. In the case of shallower wells less than 20 feet deep, place screen from bottom of hole to within 5 feet of land surface. For very shallow water table, the top of screen should be two feet above the estimated high water table or no closer than two feet to the land surface.

2. Emplace the volclay pellets as described above for the deep wells. A one-foot thick bentonite seal should be adequate.

3. Develop and complete the well as described under General Specifications Procedures.

C. GROUNDWATER SAMPLING PROCEDURES

Following the installation of the well, individual groundwater samples will be collected according to the procedures included below from each well for analyses. These samples will be collected using a positive displacement sampling device made entirely from stainless steel and teflon. This procedure will permit us to collect a sample that is more representative of the aquifer water and to limit the possibility of degassing and volatilization. The well storage water will be evacuated with a submersible pump or air lift system whereby the air is not permitted to come in direct contact with the aquifer. The

sampling pump will be cleaned between wells by immersion into a solvent, followed by a distilled deionized water rinse. A quantity of each of these will be pumped through the pump and teflon tubing.

As a part of our ongoing QA program, field blanks, consisting of distilled deionized water from the discharge of the pump following cleaning will be taken between selected wells to monitor the effectiveness of the cleaning procedures. Two typed of trip blanks will also be taken. The first type consists of a sample bottle filled with distilled, deionized water that will be capped and accompany the samples at all times. The second type will consist of a sample bottle filled with distilled, deionized water and set aside open to the atmosphere, during the sampling of the wells. The purpose of these trip blanks is to evaluate the potential for atmospheric contamination, and to assure that proper sample bottle preparation and handling techniques have been employed.

The samples collected from these sampling efforts will be analyzed for indicator parameters identified during the Phase I.

WATER SAMPLING PROCEDURES.

1. Open well and trip blank and record initial static water levels.

2. Wash down pump:

- For organics use hexane followed by methanol and finally distilled water

- Collect wash solvents and rinse in a bucket, etc. (a 5 gal. container w/ a large funnel works well)

- Wash pump inside and outside

3. Install pump in well: Use stainless steel pump and teflon tubing

- Each well should have its own tubing. Tubing should be cleaned and thoroughly rinsed between sampling events.

- Pump should have a check valve, preventing water having been in internal contact with the pump and the tubing from draining back into the well.

4. Pump at least two exchanges of water

- Care should be taken so as not to over pump, whereby excessive concentrations are drawn into the well. The number of exchanges pumped should be based upon the soil typed, flow patterns and aquifer properties of each well.

5. Take a sample:

- From pump discharge: Insert discharge tube to bottom of jar. Withdraw tube ahead of the sample so that aeration and turbulence is minimized.

- Some samples must be filtered in the field. This should be done prior to filling the sample container.

- For volatile organics samples should not be taken from the pump discharge. Aeration from the pump will destroy organic volatiles.

6. Immediately perform field tests such as temperature, pH, specific conductivity and D.O.

7. Refrigerate samples at $4^{o}C$.

8. Cap well and trip blank.

9. Wash all equipment.

NOTES: - The sampling procedures should reflect the sample parameters. Those parameters subject to change with changes in pH, D.O. may need to be sampled using stainless steel bailers.

- Some sample parameters require filtering in the field.

- For accountability and traceability of the samples, two forms are included which are examples of what we presently use.

EQUIPMENT BLANKS:

- Wash pump with solvents, collecting solvent rinse. Care must be taken in the selection of solvents, so damage to the pump will not occur. Rinse with distilled water.

- Take a sample of "clean" water,

- Turn on pump, sample first "slug" of water from the pump

- Pump volume equivalent to amount typically pumped from the well. DO NOT recirculate the water.

- Take sample from pump at end of pumping period

- Refrigerate samples.

APPENDIX E

QUALITY ASSURANCE

APPENDIX E

OUTLINE OF QUALITY ASSURANCE PROCEDURES

1.0 GROUND-WATER SAMPLING

1.1 General Requirements

(a) Obtain representative ground-water quality samples
  (1) Wells located properly
  (2) Sampling zone defined
  (3) Well constructed properly
  (4) Well developed properly
(b) Select sampling method in accordance with analyses of interest and well characteristics, see Figure B.1.
(c) Sampling procedures should not materially alter sample, see Figure B.2.
(d) Storage/shipment procedure must not alter sample

1.2 Procedures for Monitoring Well Development

(a) Perform prior to each sampling effort
(b) Measure water level
(c) Determine volume of water stored in casing
(d) Remove three to five volumes of water from well
  (1) Bail
  (2) Pump
(e) Insure that device does not introduce contaminants into well
(f) Measure water level recovery
(g) Sample after complete recovery
(h) Perform in-situ tests
  (1) Flow direction & velocity (Flow Meter®)
  (2) Quality (Hydrolab®)
  (3) Permeability
(i) Insure that in-place testing does not contaminate well prior to sample acquisition

1.3 Sampler Construction Material

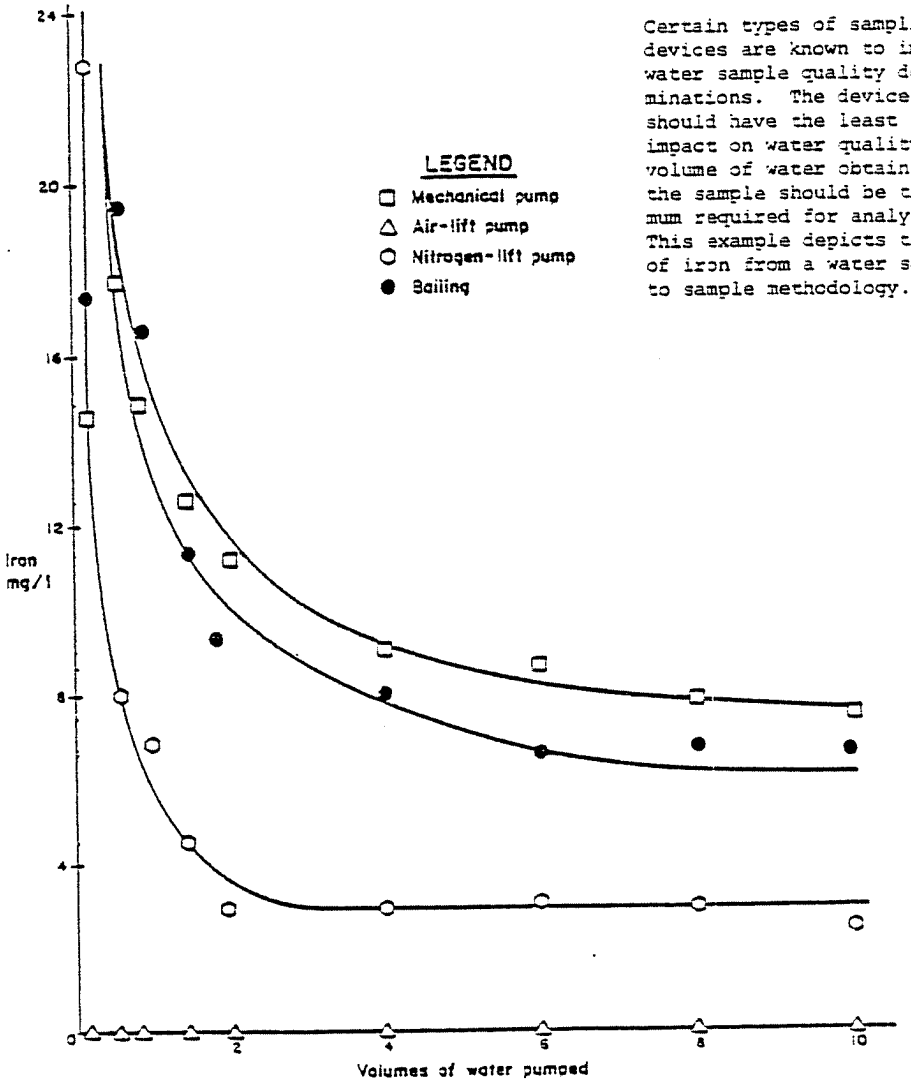
A major point to consider is the type of contaminants anticipated in the ground-water system. A sampling device should be constructed of inert materials that will not alter the trace concentrations of chemical parameters. Sampler construction materials are listed in order of preference.

Sampler Construction Materials:

(a) Glass
(b) Teflon®

FIGURE E.1

Effects of Various Sampling Methodologies on Water Quality



Certain types of sampling devices are known to impact water sample quality determinations. The device selected should have the least negative impact on water quality. The volume of water obtained for the sample should be the minimum required for analysis. This example depicts the loss of iron from a water sample due to sample methodology.

SOURCE: "Monitoring Well Sampling and Preservation Techniques," Proceedings of the Sixth Annual Research Symposium / Disposal of Hazardous Wastes, March, 1980.

FIGURE E.2

SAMPLING EQUIPMENT SELECTION

Diameter Casing	Bailer	Peristaltic Pump	Vaccum Pump	Airlift	Diaphragm "Trash" Pump	Submersible Diaphragm Pump	Submersible Electric Pump	Submersible Electric Pump w/Packer
1.25-Inch								
Water level <20 ft.		X	X	X	X			
Water level >20 ft.				X				
2-Inch								
Water level <20 ft.	X	X	X	X	X	X	X	
Water level >20 ft.	X			X		X	X	
4-Inch								
Water level <20 ft.	X	X	X	X	X	X	X	X
Water level >20 ft.	X			X		X	X	X
6-Inch								
Water level <20 ft.				X	X		X	X
Water level >20 ft.				X			X	X
8-Inch								
Water level <20 ft.				X	X		X	X
Water level >20 ft.				X			X	X

(c) Stainless Steel
(d) PVC
(e) Other dense plastics

Note: Do not use rubber or synthetic rubber such as that used in packers or older bladder pumps.

1.4 Sampling

1.4.1 Typical Ground-Water Sampling Devices

(a) Bailers
Kemmerer
Tube
(b) Suction Lift Pump
Peristaltic
Hand operated diaphragm
(c) Submersible Pump
(d) Air-lift Device
(e) Tomson Pump (all glass)
(f) Gas Operated Bladder Pump
(g) Gas Driven Piston Pump
(h) Specialized Organic Material Samplers
Grab Sampler
Continuous Sampler
Microbiological Sampler
Soil-Water Sampler

Detailed discussion of the above listed sampling devices is given in the Manual of Ground-Water Sampling Procedures, pp. 45-54.

1.4.4 Specialized Organic Material Samplers

(a) Grab Sampler (at well head) for non-volatile organics may be used with peristaltic pumps (ground-water depth 20 ft)® or non-contaminating submersible pumps. A Teflon bailer may be used for volatile organic sample acquisition.

(b) Continuous Sampler (at well head) uses a peristaltic pump (shallow conditions) or a non-contaminating submersible pump to force a continuous stream of water through a fixing column using selected adsorbents to concentrate organic materials.

(c) Microbiological Sampler (at well head) uses a vacuum pumping system to draw water samples from shallow depths. Samples to be tested for microbial agents may be collected in a flask; samples to be tested for viruses of pathogenic bacteria may be collected on filters installed in the system.

(d) Soil-Water Sampler (unsaturated zone) can be used to obtain small unsaturated zone samples drawn through a collection trap in shallow applications.

A detailed discussion of these devices and their utilization is presented in the Manual of Ground-Water Sampling Procedures, pp 53-60.

1.5 Field Tests and Sample Preservation

1.5.1 Field Testing

Many parameters are relatively stable. Others such as pH, temperature, etc., will begin to alter immediately upon collection. In order to mitigate this unwanted modification of water quality, testing of sensitive parameters must be performed in the field. Testing may be performed at the well head following sample removal or in-situ by use of a Hydrolab or similar down-hole device.

Samples requiring more complicated analysis procedures must be preserved and transported to a laboratory. Preservation must be performed in the field, contingent upon analytical parameters of interest. Laboratory analyses should be performed as soon as possible in accordance with EPA Guidelines.

1.5.2 Sample Preservation

1.5.2.1 General typical preservatives currently employed, actions and applications are given:

Preservative	Action	Applicable to:
$HgCl_2$	Bacterial Inhibitor	Nitrogen forms, phosphorus forms
Acid (HNO_3)	Metals solvent, prevents precipitation	Metals
Acid (H_2SO_4)	Bacterial Inhibitor	Organic samples (COD, oil and grease, organic carbon)
	Salt formation with organic bases	Ammonia, amines
Alkali (NaOH)	Salt formation with volatile compounds	Cyanides, organic acids

Preservative	Action	Applicable to:
Refrigeration	Bacterial Inhibitor	Acidity - alkalinity, organic materials, BOD, color, odor, organic P, organic N, carbon, etc., biological organism (coliform, etc.)

1.5.2.2 Organic Parameters

The general method of preserving samples for organic analysis is to exclude air, pack in ice, and transport promptly. Specific recommendations are furnished in the Manual of Ground Water Sampling Procedures, p. 62.

1.5.2.3 Microbiological Parameters

Due to the complicated nature of this type of sampling, reference is made to the Manual of Ground-Water Sampling Procedures, p. 62.

1.5.2.4 Sampling and Preservation Requirements

The following Table B.1, presented from the Manual of Ground-Water Quality Sampling Procedures, pp 63-66, is included to provide specific collection and preservation data in accordance with the analyses of interest. It may be quickly observed that numerous variations occur in volume of sample required per test, type of container, preservative, and holding time. Preservation techniques must be chosen to be consistent with the selected analyses.

TABLE E.1.

RECOMMENDATION FOR SAMPLING AND PRESERVATION OF SAMPLES ACCORDING TO MEASUREMENT[a]

Measurement	Vol. Req. (ml)	Container[b]	Preservative	Holding Time[c]
Physical Properties				
Color	50	P, G	Cool, 4°C	24 Hrs.[d]
Conductance	100	P, G	Cool, 4°C	24 Hrs.[d]
Hardness	100	P, G	Cool, 4°C HNO_3 to pH<2	6 Mos.[e]
Odor	200	G only	Cool, 4°C	24 Hrs.
pH	25	P, G	Det. on site	6 Hrs.
Residue				
Filterable	100	P, G	Cool, 4°C	7 Days
Non-Filterable	100	P, G	Cool, 4°C	7 Days
Total	100	P, G	Cool, 4°C	7 Days
Volatile	40	P, G	Cool, 4°C	7 Days
Settleable Matter	1000	P, G	None Req.	24 Hrs.
Temperature	1000	P, G	Det. on site	No Holding
Turbidity	100	P, G	Cool, 4°C	7 Days
Metals				
Dissolved	200	P, G	Filter on site HNO_3 to pH<2	6 Mos.[e]
Suspended	200		Filter on site	6 Mos.
Total	100	P, G	HNO_3 to pH<2	6 Mos.[e]
Mercury				
Dissolved	100	P, G	Filter on site HNO_3 to pH<2	38 Days (Glass) 13 Days (Hard Plastic)
Total	100	P, G	HNO_3 to pH<2	38 Days (Glass) 13 Days (Hard Plastic)

TABLE E.1 (Continued)

Measurement	Vol. Req. (ml)	Container[b]	Preservative	Holding Time[c]
Inorganics, Non-Metallics				
Acidity	100	P, G	None Req.	24 Hrs.
Alkalinity	100	P, G	Cool, 4°C	24 Hrs.
Bromide	100	P, G	Cool, 4°C	24 Hrs.
Chloride	50	P, G	None Req.	7 Days
Chlorine	200	P, G	Det. on site	No Holding
Cyanides	500	P, G	Cool, 4°C NaOH to pH 12	24 Hrs.
Fluoride	300	P, G	None Req.	7 Days
Iodide	100	P, G	Cool, 4°C	24 Hrs.
Nitrogen				
Ammonia	400	P, G	Cool, 4°C H_2SO_4 to pH<2	24 Hrs.
Kjeldahl, Total	500	P, G	Cool, 4°C H_2SO_4 to pH<2	24 Hrs.[f]
Nitrate plus Nitrite	100	P, G	Cool, 4°C H_2SO_4 to pH 2	24 Hrs.[f]
Nitrate	100	P, G	Cool, 4°C	24 Hrs.
Nitrite	50	P, G	Cool, 4°C	48 Hrs.
Dissolved Oxygen				
Probe	300	G only	Det. on site	No Holding
Winkler	300	G only	Fix on site	4-8 Hrs.
Phosphorus	50	P, G	Filter on site Cool, 4°C	24 Hrs.
Ortho-phosphate, Dissolved	50	P, G	Cool, 4°C	24 Hrs.[f]
Hydrolyzable	50	P, G	Cool, 4°C H_2SO_4 to pH<2	24 Hrs.[f]
Total	50	P, G	Cool, 4°C H_2SO_4 to pH<2	24 Hrs.[f]

TABLE E.1 (Continued)

Measurement	Vol. Req. (ml)	Container[b]	Preservative	Holding Time[c]
Total, Dissolved	50	P, G	Filter on site Cool, 4°C H_2SO_4 to pH<2	24 Hrs.[f]
Silica	50	P only	Cool, 4°C	7 Days
Sulfate	50	P, G	Cool, 4°C	7 Days
Sulfide	500	P, G	2 ml zinc acetate	24 Hrs.
Sulfite	50	P, G	Det. on site	No Holding
Routine Organics				
BOD	1000	P, G	Cool, 4°C	24 Hrs.
COD	50	P, G	H_2SO_4 to pH<2	7 Days[f]
Oil & Grease	1000	G only	Cool, 4°C H_2SO_4 or HCL to pH<2	24 Hrs.
Organic Carbon	25	P, G	Cool, 4°C H_2SO_4 or HCL to pH<2	24 Hrs.
Phenolics	500	G only	Cool, 4°C H_3PO_4 to pH<4 1.0 g $CuSO_4$/1	24 Hrs.
MBAS	250	P, G	Cool, 4°C	24 Hrs.
NTA	50	P, G	Cool, 4°C	24 Hrs.

a. A general discussion on sampling of water and industrial wastewater may be found in ASTM, Part 31, p. 72-82 (1976) Method D-3370.

b. Plastic (P) or Glass (G). For metals polyethylene with a polypropylene cap (no liner) is preferred.

c. It should be pointed out that holding times listed above are recommended for properly preserved samples based on currently available data. It is recognized that for some sample types, extension of these times may be possible while for other

types, these times may be too long. Where shipping regulations prevent the use of the proper preservation technique or the holding time is exceeded, such as the case of a 24-hr composite, the final reported data for these samples should indicate the specific variance procedures.

d. If the sample is stabilized by cooling, it should be warmed to 25°C for reading, or temperature correction made and results reported at 25°C.

e. Where HNO_3 cannot be used because of shipping restrictions, the sample may be initially preserved by icing and immediately shipped to the laboratory. Upon receipt in the laboratory, the sample must be acidified to a pH <2 with HNO_3 (normally 3 ml 1:1 HNO_3/liter is sufficient). At the time of analysis, the sample container should be thoroughly rinsed with 1:1 HNO_3 and the washings added to the sample (volume correction may be required).

f. Data obtained from National Enforcement Investigations Center-Denver, Colorado, support a four-week holding time for this parameter in Sewerage Systems. (SIC 4952).

2.0 SAMPLING SUBSURFACE SOLIDS (Earth Materials)

2.1 General

The sampling and testing of earth materials may be necessary to augment a ground-water quality study as contamination typically occurs in the unsaturated zone first, before entering the saturated zone. Several reasons exist for solids testing:

(a) Study effects of alteration
(b) Determine actual extent of contamination - not just in saturated zones
(c) Obtain accurate evaluation of microbial populations that may alter pollutants
(d) Solids provide best samples of aquifer microorganisms (samples obtained from saturated zone).

2.2 Sampling Procedures

Sampling of subsurface solids may be conducted by split spoon by Standard Penetration Test (ASTM D-1586-67) equipped with non-contaminating soil sample retainer or by undisturbed methods (ASTM D-1587-67). In any event, sampling, sample extrusion, preservation, shipment and testing must be accomplished in a sterile environment.

Due to the complex nature of the task, the possibility of introducing cross-contamination and the difficulty involved in sample processing, reference is made to the Manual of Ground-Water Sampling Procedures, pp. 72-79, which provides detailed guidelines for soil sample handling.

3.0 SAMPLE RECORDS AND CHAIN-OF-CUSTODY

3.1 General

The maintenance of complete sample records is critical to the monitoring process. The following is a basic guideline for development of sample records and chain-of-custody procedures:

3.2 Sample Records

(a) Sample description--type (ground water, surface water), volume;

(b) Sample source--well number, location;

(c) Sampler's identity--chain of evidence should be maintained; each time transfer of a sample occurs, a record including signatures of parties involved in transfer should be made. (This procedures has legal significance.);

(d) Time and date of sampling;

(e) Significant weather conditions;

(f) Sample laboratory number;

(g) Pertinent well data--depth, depth to water surface, pumping schedule, and method;

(h) Sampling method--vacuum, bailer, pressure;

(i) Preservatives, (if any)--type and number (e.g., NaOH for cyanide, H_3PO and $CuSO_4$ for phenols, etc.);

(j) Sample containers--type, size, and number (e.g., three liter glass-stoppered bottles, one gallon screw-cap bottle, etc.);

(k) Reason for sampling--initial sampling of new landfill, annual sampling, quarterly sampling, special problem sampling in conjunction with contaminant discovered in nearby domestic well, etc.;

(l) Appearance of sample--color, turbidity, sediment, oil on surface, etc.;

(m) Any other information which appears to be significant--(e.g., sampled in conjunction with state, county, local regulatory authorities; samples for specific conductance value only; sampled for key indicator analysis; sampled for extended analysis; resampled following engineering corrective action, etc.);

(n) Name and location of laboratory performing analysis;

(o) Sample temperature upon sampling;

(p) Thermal preservaton--(e.g., transportation in ice chest);

(q) Analytical determinations (if any) performed in the field at the time of sampling and results obtained--(e.g., pH, temperature, dissolved oxygen, and specific conductance, etc.);

(r) Analyst's identity and affiliation.

3.3 Chain-of-Custody

(a) As few people as possible should handle the sample.

(b) Samples should be obtained by using standard field sampling techniques, if available.

(c) The chain-of-custody records should be attached to the sample container at the time the sample is collected, and should contain the following information: sample number, date and time taken, source of the sample (include type of sample and name of firm), the preservative and analysis required, name of person taking sample, and the name of witness. The prefilled side of the card should be signed, timed, and dated by the person sampling. The sample container should then be sealed, containing the regulatory agency's designation, date, and sampler's signature. The seal should cover the string or wire tie of the chain of custody record, so that the record or tag cannot be removed and the container cannot be opened without breaking the seal. The tags and seals should be filled out in legible handwriting. When transferring the possession of samples, the transferee should sign and record the date and time on the chain-of-custody record. Custody transfers, if made to a sample custodian in the field, should be recorded for each individual sample. To prevent undue proliferation of custody records, the number of custodians in the chain of possession should be as few as possible. If samples are delivered to the laboratory when appropriate personnel are not there to receive them, the samples should be locked in a designated area within the laboratory so that no one can tamper with them.

(d) Blank samples should be collected in containers, with and without preservatives, so that the laboratory analysis can be performed to show that there was no container contamination.

(e) A field book or log should be used to record field measurements and other pertinent information necessary to refresh the sampler's memory in the event he later becomes a witness in an enforcement proceeding. A separate set of field notebooks should be maintained for each survey and stored in a safe place where they can be protected and accounted for at all times. A standard format should be established to minimize field entries and should include the types of information listed above. The entries should then be signed by the field sampler. The responsibility for preparing and retaining field notebooks during and after the survey should be assigned to a survey coordinator or his designated representative.

(f) The field sampler is responsible for the care and custody of the samples collected until properly dispatched to the receiving laboratory or turned over to an assigned custodian. He must assure that each container is in his physical possession or in his view at all times or stored in a locked place where no one can tamper with it.

(g) Photographs can be taken to establish exactly where the particular samples were obtained. Written documentation on the back of the photograph should include the signature of the photographer, the time, date, and site location.

(h) Each laboratory should have a sample custodian to maintain a permanent log book in which he records for each sample the person delivering the sample, the person receiving the sample, date and time received, source of sample, sample number, method of transmittal to the lab, and a number assigned to each sample by the laboratory. A standardized format should be established for log-book entries. The custodian should insure that heat-sensitive or light-sensitive samples or other sample materials having unusual physical characteristics or requiring special handling are properly stored and maintained. Distribution of samples to laboratory personnel who are to perform analyses should be made only by the custodian. The custodian should enter into the log the laboratory sample number, time, date, and the signature of the person to whom the samples were given. Laboratory personnel should examine the seal on the container prior to opening and should be prepared to testify that their examination of the containers indicated that it had not been tampered with or opened.