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Project Site numbers will be proceeded by the following:

Municipal Brownfields - B

Superfund - HW

Spills - SP

ERP - E

VCP - V

BCP - C

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

Brzezinski Property
Town of Wheatfield

Site No. 932006
Niagara County

DATE: March 1990

VOLUME II - APPENDICES



Prepared for:
**New York State
Department of
Environmental Conservation**

50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, *Commissioner*

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

By:
Lawler, Matusky & Skelly Engineers

ENGINEERING INVESTIGATIONS AT
INACTIVE HAZARDOUS WASTE SITES
IN THE STATE OF NEW YORK
PHASE II INVESTIGATIONS

Brzezinski Property
Town of Wheatfield, Niagara County
Site No. 932006

Volume II - Appendices

Prepared for

Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-0001

Prepared by

LAWLER, MATUSKY & SKELLY ENGINEERS
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

March 1990

LMSE-90/0191&576/017

APPENDIX A
REFERENCE DOCUMENTATION

APPENDIX A

REFERENCES

- [1] Phase II field notes.
- [2] Bouwer, H., and R.C. Rice. 1976. A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. Water Resources Research. Vol. 12, No. 3, pp. 423-428.
- [3] Phase II permeability calculations.
- [4] Recra Research, Inc. 1983. New York State Superfund phase I summary report. Prepared for New York State Department of Environmental Conservation, pp. 1-10.
- [5] New York State Department of Environmental Conservation. 9 February 1990. Written communication regarding river pollution. Personal communication with S. Brzezinski.
- [6] Niagara County Health Department. 1982. Site history. Prepared by M. Hopkins. 4 p.
- [7] Interagency Task Force on Hazardous Wastes. Date unknown. Information on Bell Aerospace Textron. 2 p.
- [8] Niagara County Department of Health. 1968, 1969, 1985. Report of investigation.
- [9] Niagara Department of Health. 1970. Letter of Permit to J. Brzezinski.
- [10] Niagara State Department of Health. Letter from Mr. Paul Dicky regarding Niagara County Water District expanding capacity.
- [11] New York State wetlands map.
- [12] USGS field reconnaissance. 19 June 1982.
- [13] Earth Dimensions, Inc. 4-7 November 1983. Soil borings. Recra Environmental analytical data. 20 December 1983. Prepared for First Metropolitan Realty Corp.
- [14] U.S. Department of Agriculture, Soil Conservation Service. 1972. Soil survey of Niagara County, New York.
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- [16] Friberg, L., G.F. Nordberg, and V.B. Vouk (eds.) 1979. Handbook on the Toxicology of Metals. Amsterdam: Elsevier/North-Holland Biomedical Press, 709 pp.
- [17] Bohn, H.L., B.L. McNeal, and G.A. O'Connor. 1979. Soil Chemistry. New York: John Wiley & Sons, 329 p.
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- [19] Verschueren, K. (ed). 1982. Handbook of Environmental Data on Organic Compounds. 2nd ed. New York: Van Nostrand Reinhold, 1310 pp.
- [20] Bath Toxicology Group Inc. Median elemental composition of soils. Marlboro, NJ.
- [21] New York State Department of Environmental Conservation. 1987. Inactive hazardous waste disposal site report.
- [22] U.S. Environmental Protection Agency (EPA), Office of Solid Waste. 1987. Characterization of MWC ashes and leachates from MSW landfills, monofills, and co-disposal sites. Summary - Volume I of VII. EPA/530-SW-87-028A.

REFERENCE 1

Dr. Smith 210
576 017
12-26-88
KME + 114

(1)

GW2

- 0830 - Arrive on site - Stanley + Tony Berezinski are here - review work scope - go to call Ed Markish and Mike Kowalski
- 0930 - Agree to start at GW-2 - try to get back
- rig gets bogged down - 1/2 of standing water + marshy areas with humps 2-4' high throughout site.
- 1000 - get rig out - try and find access way to GW-2 + 3.
- 1010 - Berezinski get friend w/ payload (backhoe) on site - we pick path from River road, and he clears mounds out of way.
- 1030 - Driller's steam cleaning mud out of wheels before progressing to sites
- 1130 - Moving on site
- 1145 - start drilling SS sample - C-2'
- 1200 - SS sample 6-8
- 1210 - SS sample 8-10 - HNU hits a 9.5-10 sample very like felsic sandstone - still dry
- 1220 - SS sample 10-12 - situation - HNU - 11-50
- 1230 - driller's steam cleaning spoons.
- 1255 - SS sample 12-14

(2)

576-017
10-26-85

Stanley Brozowski says blk ashy material is fly ash from cardboard incinerator + lots of grinding wheels, sand paper + excess stock was dumped here

- says clay was just fill brought in when excavating for high way.

1305 - SS sample 14-16' - cuttings from 12-14 were very damp but spoon was dry
- 4-16 - saturated - W.T. at 13'
- w/ w.T. at 13 screen would run 12-22
- but should screen + sand pack be below fill?

1325 - SS sample 18-20'

1335 - SS sample 20-22

1350 - call Mike K & Ed M agree to set well from 20 to 12' - and send 10-12' sample to Kern for analysis.

1410 - Drillers loading 400 gal tank into small pit because lg. V-haul w/100 gal tank & can't get back to site - Fill tank, steam clean spoons screen, + casing - broke mottler on pit and rigging it to stay off ground.

1530 - Flush hole out.

1545 - Installing casing - 2-10' casing sections - 2" I.D.
PVC schedule 40 - 1-10' screen 10 slot

576 - 017
Breckin. W. H.
10-26-27-55

1550 - setting sand pack

1630 - Finished sand for 23' to 10' - 3 bags

- leaving site to drop off 10-12" sample at
Recra for analysis. and then down to Blisdel
to pick up the pick up.

2330 - speak to Ed. M. about moving GW-3

10-27-55

0800 - Arrive on site

0815 - Drillers arrive - but leave to get cement + sand

0915 - Drillers return - no sand will have to go back later
- getting water

0945 - Begin setting seal - above water - laying
6" pellets - hydrating + repeating for 2' up to
8' - used 1/2" pellets.

1030 - Finished seal - cable on which broke pulling tape -
fixing cable while pellets saturate.

1130 - Finished grout + protective casing installation.
- moving rig onto GW-3

1145 - Stem cleaning augers + other drilling equip.

1220 - Begin GW-3

1225 - 55 sample 0-2

576 C17
Drezenki Ld fill
E-3
T.M. + K. H. C.
10-27-58

- 1235 - SS sample 4-6' - fibrous material in spoon sample
fiber glass or asbestos like needles in mats. - dry
- 1245 - SS sample 9-11' - saturated w.r. $\approx 10'$
- sheer on water.
- 1255 - SS sample 11-13' - at $\approx 12'$ hammer starts becoming
dramatically like we were hitting a tire or something.
- seems like we were pushing whatever it is instead of
breaking through.
- drillers go to stem clean spoons
- seemed that we Augered through whatever we had hit
- 1310 - SS sample 13-15' - fill ends at 13.5'
- 1320 - SS sample 15-17'
- 1330 - SS sample 17-14'
- Going to Auger to 20' - set screen 19-9'
- drillers still need to get sand + cement
- 1345 - John + I are going to go get sand + cement while
Lee gets water + flushes hole out.
- 1440 - Return of sand + cement - hole is flushed + casing
+ screen are stem cleaned - begin setting well.
- 1545 - Finished setting sand pack - must be some
sort of void $\approx 10-11'$ - took at least 1 day - 5"
- because screened 19 to 9 - casing would come 9 to +1
leaving only 1" stick up - instead of using whole 10' section
for 1' - adding scrap 1' piece w/ coupler to top.

Time + Materials Summary

Ferro Corp

1100 - 1815 10-24-88

ss samples - 3

Augered 10' - 2 hrs.

Cored 5' run

1 core box

0800 - 1400 10-25-88

1400 - 1700 - mobilization
to Brezinski.

2 bags cement to
plug hole.

Steam cleaning - 1 hr.

Brezinski Landfill

GW-2

0830 - 1830 10-26-88

ss samples - 8

Augered to - 23'

Flushed hole out

Steam cleaning 1 hr.

2" PVC casing - 10' sections - 2

2" PVC screen - 10' sections - 1

1 well centralizer

1 cap + bottom plug

3 bags sand

0830 - 10-27-88

4 bags cement

- Quick gel

1 pail bentonite pellets

- Volclay.

3.5 hrs well installation

1 Steam clean

1 Protective casing + lock

GW-3

Augered to 20'

ss samples - 7

Flushed hole out

Steam clean 1 hr.

2" PVC casing - 10' sections - 1

2" PVC screen - 1

- add 1" of PVC to top
of screen w/cap

1 cap + bottom plug

6 bags sand

2 bags cement

1 bag Volclay

3 hrs well installation

1 Protective casing + lock

576-017
K.450 + A.7

1630 - Finish drilling + setting protective casing on
BW-3

= moved to front of site + steer, lean rig
augers, grout pan etc + load sand + cement
into U-haul.

1730 - Leave site

10-28-88

0800 Arrive on site - weather - 45° pouring rain

- moving equip onto GW-4

0815 - Take 0-2' spoon - no signs of fill

0855 - ss sample @ 4-6" - natural strata

0910 - ss sample 9-11' sample

0916 - ss sample 14-16 - moist

0922 - " " 16-18 moist

0930 - " " 18-20 moist - no free water

have to pry spoons open

0937 - 20-22 same

0945 - ss sample 22-24 - hit something very hard
spoon has clay throughout w/ siltstone or limestone
frag. in nose.

2100 - go to call Mike K. because there is no reason
for well here.

576-017
10-28-88

1130 - Decided not to go on Lynch Pk. side, ~~Est~~
because USGS borings show some clay inland.
Going to try core/shore boundary on western side
of site - try + hit sands at bottom of core.

- Drillers plugging GW-4A + steam cleaning.

1230 - moved on to GW-4B - SS sampling 0-2'

- Augering 0-2', perched GW at 1' - lots
of standing water at surface - .5' puddles

- Augering down for 4-6' - spoon - past 2' hit
blk sooty silty sand + gravel w/ some wood - slight
fatty petro odor - but no HNU readings

~ 3' going through what appears to be grinding wheels

1245 - SS sample 4-6' - fill - dry

1255 - SS sample 9-11 - dry some fill - clay.

- Augering to 14 - gets wet ~ 12' - scoop
some cuttings - 1-2 ppm HNU

1310 - SS sample 14-16 - up to 600 ppm in clay
- brown staining material seeped out of
clay when compressed

1330 - on phone w/ Mike K - analyze sample for HSC volatiles
+ semi volatiles, pest. + PCB's, inorganic ~~total~~ S,
cyanide,

- brown cuttings dug hole
auger cuttings
MSDEC date location

576 - 017
10-28-88
KMG + AM

1350 - calling E&M - drillers pulling augers + drumming cuttings - gave them coated truck sleeves + nitrile gloves. Tony is monitoring air over breathing space + open augers.

1355 - 0-10 PPM IN BREATHING SPACE WHILE DRILLERS PULL UP AUGERS AND DRUM CUTTINGS.

1400 - LAST AUGER UP. 20-30 PPM OVER BORE HOLE
DRILLERS BEGIN STEAM CLEANING.

1445 - Finishing packing up - hole plugged
cuttings drummed

Site: 111700-01

Job No: _____

Thermometer No:

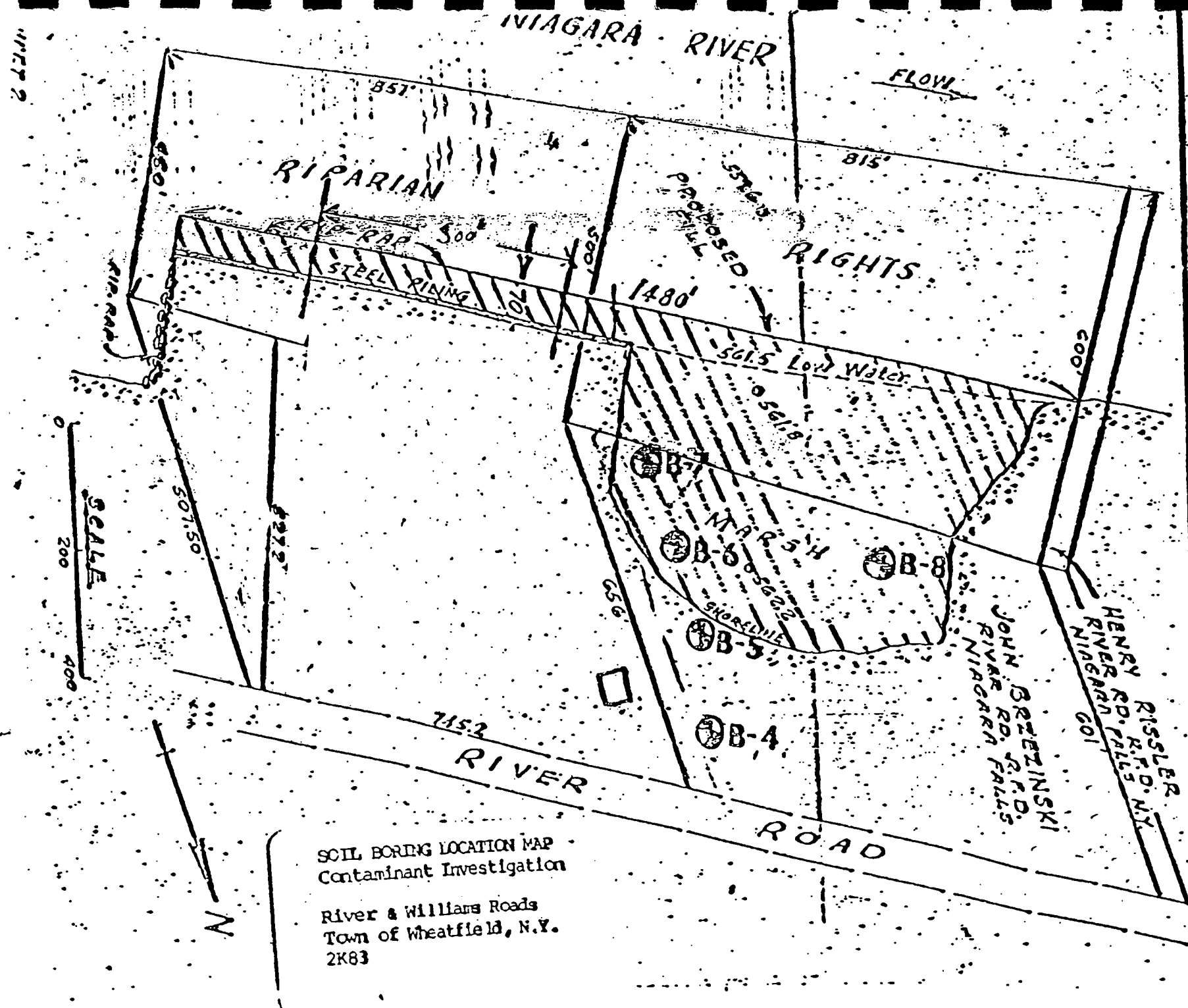
[illegible]

CHAIN OF CUSTODY RECORD

Destination: (Original document's shipment) copy to coordinator field files.

pH No: 4770
Thermometer No: 553
SCT No: 500
Velocity Meter No:

[illegible]



Site: _____
Oper: _____
Calib. By: _____

^b Include % Diff. calculation for conductivity calibration checks: % Diff = $\frac{Ex - Ob}{Ex} \times 100$

Site: Point of View
Oper: K. P. M.
Calib. By: K. P. M.

$$^b \text{Include \% Diff. calculation for conductivity calibration checks: \% Diff} = \frac{\text{Ex} - \text{Ob}}{\text{Ex}} \times 100$$

LAWLER, MATUSKY & SKELLY ENGINEERS
H.NU METER FIELD CALIBRATION
DATA SHEET

Job No: 576-017
Site: 132 E. 1st St. S.E.
Crew: 1/24/01
Oper: 1/24/01

[illegible]

(Signature): _____

(Date) : _____

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the Best Copy
Available**

BIEL'S

LAWLER, MATUSKY & SKELLY ENGINEERS
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS
 ONE BLUE HILL PLAZA
 POST OFFICE BOX 1509
 PEARL RIVER, NEW YORK 10965

JOB NO. 591-18
 LMS Personnel 1/11/88

SUBSURFACE EXPLORATION — TEST BORING LOG

Project Lesinski Landfill

Report No. _____

Client NYSDEC

Location of Boring 300-2

Boring No. GW-2 Sheet _____ of _____

Date, start 10-26-88 Finish _____

Casing Hammer

Sampler Hammer

Ground Water Observations

Wt. _____ lbs. Wt. 40 lbs.
 Fall _____ in. Fall 30 in.

Date _____ Time _____ Depth _____ Casing at _____

Ground Elev. _____

H.S. Auger _____ I.D. _____

While Drilling _____
 Before Casing _____
 Removed _____
 After Casing _____
 Removed _____

DEPTH	CLOG CLOG BLOWS/FT	SAMPLE No.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL	STANDARD PENETRATION NUMBER
			FROM	TO					
0			0			1			
1						1			
2	0	1	6	2		3			
3						6			
4						3			
5		2	8	5		2			
6						1			
7						1			
8						3			
9						10			
10		3	10			2			
11						3			
12		4	12			2			
13						2			
14						2			
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ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO.

[illegible]

LAWLER, MATUSKY & SKELLY ENGINEERS
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

ONE BLUE HILL PLAZA
 POST OFFICE BOX 1509
 PEARL RIVER, NEW YORK 10965

JOB NO. _____

LMS Personnel _____

SUBSURFACE EXPLORATION — TEST BORING LOG

Project _____

Report No. _____

Client _____

Location of Boring _____

Date, start _____ Finish _____

Boring No. _____ Sheet _____ of _____

Ground Water Observations

Casing Hammer

Sampler Hammer

Date _____ Time _____ Depth _____ Casing at _____

Wt. _____ lbs. Fall _____ in.

Wt. _____ lbs. Fall _____ in.

Casing _____

Ground Elev. _____ H.S. Auger _____ I.D. _____

While Drilling _____
 Before Casing _____
 Removed _____
 After Casing _____
 Removed _____

DEPTH	CASSING BLOWS/FT	SAMPLE No.	DEPTH OF SAMPLE		TYPE SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL		STANDARD PENETRATION NUMBER
			FROM	TO				f-fine m-medium c-coarse	and — 35-50% some — 20-35% little — 10-20% trace — 0-10%	
1										
2										
3										
4	2		4	2						
5										
6				6						
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*SS—SPLIT SPOON SAMPLE U—UNDISTURBED TUBE P—PISTON TUBE C—CORE SAMPLE
 DRILLERS _____

LAWLER, MATUSKY & SKELLY ENGINEERS
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

ONE BLUE HILL PLAZA
 POST OFFICE BOX 1509
 PEARL RIVER, NEW YORK 10985

JOB NO. _____
 LMS Personnel _____

SUBSURFACE EXPLORATION — TEST BORING LOG

Project _____

Report No. 576-07

Client M. J. E. C.

Location of Boring _____

Boring No. 576-4 Sheet 1 of _____

Date, start _____ Finish _____

Casing Hammer

Sampler Hammer

Ground Water Observations

Wt. _____ lbs. Wt. _____ lbs.

Fall _____ in. Fall _____ in.

Ground Elev. _____

H.S. Auger _____ I.D. _____

Date	Time	Depth	Casing at
	While Drilling		
	Before Casing		
	Removed		
	After Casing		
	Removed		

DEPTH	CASING BLOWS/FT	SAMPLE No.	DEPTH OF SAMPLE		TYPE OF SAMPLE	BLOWS ON SAMPLER PER 6" SAMPLER O.D. 2"	DEPTH OF CHANGE	CLASSIFICATION OF MATERIAL	STANDARD PENETRATION NUMBER
			FROM	TO					
			0		SS	1			
						2			
		1		10		3			
						4			
						5			
		2				6			
						7			
						8			
		3				9			
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						35			

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10985

LMS Personnel

Project _____ Client <u>AYCO INC</u> Boring No. <u>10-10-10</u> Sheet <u>1</u> of <u>1</u> Casing Hammer Wt. _____ lbs. Fall _____ in. Ground Elev. _____ Sampler Hammer Wt. _____ lbs. Fall _____ in. Casing _____ H.S. Auger _____ I.D.	Report No. _____ Location of Boring _____ Date, start _____ Finish _____ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center;">Ground Water Observations</th> </tr> <tr> <th style="width: 25%;">Date</th> <th style="width: 25%;">Time</th> <th style="width: 25%;">Depth</th> <th style="width: 25%;">Casing at</th> </tr> </thead> <tbody> <tr> <td></td> <td>While Drilling</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Before Casing</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Removed</td> <td></td> <td></td> </tr> <tr> <td></td> <td>After Casing</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Removed</td> <td></td> <td></td> </tr> </tbody> </table>	Ground Water Observations				Date	Time	Depth	Casing at		While Drilling				Before Casing				Removed				After Casing				Removed		
Ground Water Observations																													
Date	Time	Depth	Casing at																										
	While Drilling																												
	Before Casing																												
	Removed																												
	After Casing																												
	Removed																												

← Record

C-CORE SAMPLE

DRILLERS

AMERICAN AUGER & DITCHING CO., INC.

SUBSURFACE EXPLORATION — TEST BORING LOG

Project B.1.6.20.201

Report No. 516-017

Client NY 1.5C

Location of Boring _____

Date, start 10-31-54 Finish

Boring No. Gw-1 Sheet _____ of _____

Ground Water Observations

Casing Hammer Sampler Hammer

Date	Time	Depth	Casing at

Wt. 146.15 lbs. Wt. 146.15 lbs.

While Drilling _____

Fall 30 in. Fall in.

Before Casing

Casing _____

Removed

Ground Elev. 145'

After Casing

H.S. Auger 4 I.D.

Removed

[illegible]

* SS—SPLIT SPOON SAMPLE

U-UNDISTURBED TUBE

P—PISTON TUBE

C-CORE SAMPLE

DRILLERS

AMERICAN AUGER & DITCHING CO., INC.

SUBSURFACE EXPLORATION — TEST BORING LOG

Project DAF 1000

Report No. 24

Client _____

Location of Boring _____

Date, start _____ Finish _____

Boring No. 1001 Sheet 2 of 2

Ground Water Observations

Casing Hammer

Sampler Hammer

Wt. _____ lbs. Wt. _____ lbs.

Fall _____ in. Fall _____ in.

Casing _____

Ground Elev. _____

H.S. Auger _____ I.D.

Date	Time	Depth	Casing at

While Drilling

Before Calling

11-1-83 Before Casing
Removed 4.3' 18'

After Casing

After Casing
Removed

[illegible]

* SS—SPLIT SPOON SAMPLE

U—UNDISTURBED TUBE

P—PISTON TUBE

C-CORE SAMPLE

DRILLERS

AMERICAN AUGER & DITCHING CO., INC.

SUBSURFACE EXPLORATION — TEST BORING LOG

Project: 6-10-18

Report No. 576-D-7

Client NY-DEC.

Location of Boring _____

Date, start _____ Finish _____

Boring No. _____ Sheet _____ of _____

Ground Water Observations

Casing Hammer

Sampler Hammer

Wt. _____ lbs. Wt. _____ lbs.

Fall _____ in. Fall _____ in.

Casing _____

Ground Elev. _____

H.S. Auger _____ I.D.

Date	Time	Depth	Casing at

While Drilling

Before Casing

Removed

After Casing

Removed

[illegible]

3S—SPLIT SPOON SAMPLE

U—UNDISTURBED TUBE

P—PISTON TUBE

C-CORE SAMPLE

DRILLERS

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BIEL'S

BY _____ DATE _____

LAWLER, MATUSKY & SKELLY ENGINEERS

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT PERMIT TO DISCHARGE

MSA 361

662 20.00
100.00

(2.4)

1.10.77 STARTED 1.15.78
OR CHLORINATION AS BOTTLED CREATION
TYPE C) GASEOUS

1.10.77 1.15.78 1.15.78 2.1.78

1.10.77 1.15.78 1.15.78 2.1.78

1.10.77 1.15.78

WILL CHLORINATE AND BE SAMPLED

MSA 361 16.04 10.31.88

H₂S STANDARD GAS READ 10.00
WILL AUGUST 10

LEL GAS METHANOL 50% LEL READ 70%

WILL AUGUST TO 57 LOW FERTILE ON
WATER

LEL READ 10.00

1.10.77 1.15.78 1.15.78 2.1.78
WILL AUGUST TO 57 LOW FERTILE ON
WATER

LEL READ 10.00

BREND 10.00 19.6% TOX APPM LEL 2%

1.10.77 1.15.78 1.15.78 2.1.78
WILL AUGUST TO 57 LOW FERTILE ON
WATER

LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

9-11' 2' ...
MSA ... 3% ... LEL ... ppm

Stopped ... 11/18

REF

9-11-1-33

Analysis ...
Sample

AT ...
MSA ...

At ... 57, ppm
@ 9.8 SPAN

MSA LEL REELS 58
O₂ RANGE 14.5
H₂ RANGE 11 ppm

49-50 ...
11.75 ...

NOTED @ 7.5 ...
for ...

ANALYSIS ...
STILL ...

RET ...

LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

CHKD. BY _____ DATE 11-1-86

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. 805-11

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LAWLER, MATUSKY & SKELLY ENGINEERS

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ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

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POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. 100-100

SUBJECT DEER AT 100-100

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DEER ARRIVED AT 0930

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SPENT @ FROM 27-28 24-11.5

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CEMENT FROM 4-5 INCHES

SPENT 200 MINUTES

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@ 14:10

FINISHED MEAT @ 16:45

STATION BENCH MARKED UP 17:45

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LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

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ONE BLUE HILL PLAZA
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PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

REFERENCE 2

A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells

HERMAN BOUWER AND R. C. RICE

U.S. Water Conservation Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Phoenix, Arizona 85040

A procedure is presented for calculating the hydraulic conductivity of an aquifer near a well from the rate of rise of the water level in the well after a certain volume of water is suddenly removed. The calculation is based on the Thiem equation of steady state flow to a well. The effective radius R_e over which the head difference between the equilibrium water table in the aquifer and the water level in the well is dissipated was evaluated with a resistance network analog for a wide range of system geometries. An empirical equation relating R_e to the geometry of the well and aquifer was derived. The technique is applicable to completely or partially penetrating wells in unconfined aquifers. It can also be used for confined aquifers that receive water from the upper confining layer. The method's results are compatible with those obtained by other techniques for overlapping geometries.

With the slug test the hydraulic conductivity or transmissibility of an aquifer is determined from the rate of rise of the water level in a well after a certain volume or 'slug' of water is suddenly removed from the well. The slug test is simpler and quicker than the Theis pumping test because observation wells and pumping the well are not needed. With the slug test the portion of the aquifer 'sampled' for hydraulic conductivity is smaller than that for the pumping test even though with the latter, most of the head loss also occurs within a relatively small distance of the pumped well and the resulting transmissibility primarily reflects the aquifer conditions near the pumped well.

Essentially instantaneous lowering of the water level in a well can be achieved by quickly removing water with a bailer or by partially or completely submerging an object in the water, letting the water level reach equilibrium, and then quickly removing the object. If the aquifer is very permeable, the water level in the well may rise very rapidly. Such rapid rises can be measured with sensitive pressure transducers and fast-response strip chart recorders or x-y plotters. Also it may be possible to isolate portions of the perforated or screened section of the well with special packers for the slug test. This not only reduces the inflow and hence the rate of rise of the water level in the well, but it also makes it possible to determine the vertical distribution of the hydraulic conductivity. Special packer techniques may have to be developed to obtain a good seal, especially for rough casings or perforations. Effective sealing may be achieved with relatively long sections of inflatable stoppers or tubing. The use of long sections of these materials would also reduce leakage flow from the rest of the well to the isolated section between packers. This flow can occur through gravel envelopes or other permeable zones surrounding the casing. Sections of inflatable tubing may have to be long enough to block off the entire part of the well not used for the slug test. High inflation pressures should be used to minimize volume changes in the tubing due to changing water pressures in the isolated section when the head is lowered.

So far, solutions for the slug test have been developed only for completely penetrating wells in confined aquifers. Cooper *et al.* [1967] derived an equation for the rise or fall of the water level in a well after sudden lowering or raising, respectively. Their equation was based on nonsteady flow to a pumped,

completely penetrating well, and the solution was expressed as a series of 'type curves' against which observed rates of water level rises were matched. Values for the transmissibility and storage coefficient were then evaluated from the curve parameter and horizontal-scale position of the type curve showing the best fit with the experimental data. Skibitzke [1958] developed an equation for calculating transmissibility from the recovery of the water level in a well that was repeatedly bailed. The technique is limited to wells in confined aquifers with sufficiently shallow water levels to permit short time intervals between bailing cycles [Lohman, 1972].

To use the slug test for partially penetrating or partially perforated wells in confined or unconfined aquifers, some solutions developed for the auger hole and piezometer techniques to measure soil hydraulic conductivity [Bouwer and Jackson, 1974] may be employed. However, the geometry of most groundwater wells is outside the range in geometry covered by the existing equations or tables for the auger hole or piezometer methods. For this reason, theory and equations are presented in this paper for slug tests on partially or completely penetrating wells in unconfined aquifers for a wide range of geometry conditions. The wells may be partially or completely perforated, screened, or otherwise open along their periphery. While the solutions are developed for unconfined aquifers, they may also be used for slug tests on wells in confined aquifers if water enters the aquifer from the upper confining layer through compression or leakage.

THEORY

Geometry and symbols of a well in an unconfined aquifer are shown in Figure 1. For the slug test the water level in the well is suddenly lowered, and the rate of rise of the water level is measured. The flow into the well at a particular value of y can be calculated by modifying the Thiem equation to

$$Q = 2\pi KL \frac{y}{\ln(R_e/r_w)} \quad (1)$$

where Q is the flow into the well (length³/time), K is the hydraulic conductivity of the aquifer (length/time), L is the height of the portion of well through which water enters (height of screen or perforated zone or of uncased portion of well), y is the vertical distance between water level in well and equilibrium water table in aquifer, R_e is the effective radius over which y is dissipated, and r_w is the horizontal distance

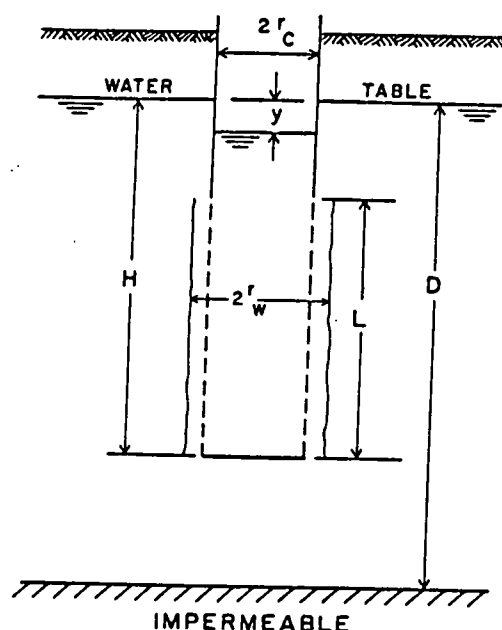


Fig. 1. Geometry and symbols of a partially penetrating, partially perforated well in unconfined aquifer with gravel pack or developed zone around perforated section.

from well center to original aquifer (well radius or radius of casing plus thickness of gravel envelope or developed zone).

The terms L , y , R_e , and r_w are all expressed in units of length. The effective radius R_e is the equivalent radial distance over which the head loss y is dissipated in the flow system. The value of R_e depends on the geometry of the flow system, and it was determined for different values of H , L , D , and r_w (Figure 1) with a resistance network analog, as will be discussed in the next section. Equation (1) is based on the assumptions that (1) drawdown of the water table around the well is negligible, (2) flow above the water table (in the capillary fringe) can be ignored, (3) head losses as water enters the well (well losses) are negligible, and (4) the aquifer is homogeneous and isotropic. These are the usual assumptions in the development of equations for pumped hole techniques [Bouwer and Jackson, 1974, and references therein].

The value of r_w in (1) represents the radial distance between the undisturbed aquifer and the well center. Thus r_w should include gravel envelopes or 'developed' zones if they are much more permeable than the aquifer itself (Figure 1).

The rate of rise, dy/dt , of the water level in the well after suddenly removing a slug of water can be related to the inflow Q by the equation

$$dy/dt = -Q/\pi r_c^2 \quad (2)$$

where πr_c^2 is the cross-sectional area of the well where the water level is rising. The minus sign in (2) is introduced because y decreases as t increases.

The term r_c is the inside radius of the casing if the water level is above the perforated or otherwise open portion of the well. If the water level is rising in the perforated section of the well, allowance should be made for the porosity outside the well casing if the hydraulic conductivity of the gravel envelope or developed zone is much higher than that of the aquifer. In that case the (open) porosity in the permeable zone must be included in the cross-sectional area of the well. For example, if the radius of the perforated casing is 20 cm and the casing is

surrounded by a 10-cm permeable gravel envelope with a porosity of 30%, r_c should be taken as $[20^2 + 0.30(30^2 - 20^2)]^{1/2} = 23.5$ cm to obtain the cross-sectional area of the well that relates Q to dy/dt . The value of r_w for this well section is 30 cm.

Combining (1) and (2) yields

$$\frac{1}{y} dy = -\frac{2KL}{r_c^2 \ln(R_e/r_w)} dt \quad (3)$$

which can be integrated to

$$\ln y = -\frac{2KLt}{r_c^2 \ln(R_e/r_w)} + \text{constant} \quad (4)$$

Applying this equation between limits y_0 at $t = 0$ and y_t at t and solving for K yield

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_t} \quad (5)$$

This equation enables K to be calculated from the rise of the water level in the well after suddenly removing a slug of water from the well. Since K , r_c , r_w , R_e , and L in (5) are constants, $(1/t) \ln y_0/y_t$ must also be constant. Thus field data should yield a straight line when they are plotted as $\ln y_t$ versus t . The term $(1/t) \ln y_0/y_t$ in (5) is then obtained from the best-fitting straight line in a plot of $\ln y$ versus t (see the example). The value of $\ln R_e/r_w$ is dependent on H , D , L , and r_w and can be evaluated from the analog results presented in the next section. The transmissibility T of the aquifer is calculated by multiplying (5) by the thickness D of the aquifer or

$$T = \frac{Dr_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_t} \quad (6)$$

This equation is based on the assumption that the aquifer is uniform with depth.

Equations (5) and (6) are dimensionally correct. Thus K and T are expressed in the same units as the length and time parameters in the equations.

EVALUATION OF R_e

Values of R_e , expressed as $\ln R_e/r_w$, were determined with an electrical resistance network analog for different values of r_w , L , H , and D (Figure 1), using the same assumptions as those for (1). An axisymmetric sector of 1 rad was simulated by a network of electrical resistors. The vertical distance between the nodes was constant, but the radial distance between nodes increased with increasing distance from the center line (Figure 2). This yielded a network with the highest node density near the well, where the head loss was greatest, and a decreasing node density toward the outer reaches of the system. For a more detailed discussion of graded networks for representing axisymmetric flow systems, see Liebmman [1950] and Bouwer [1960].

The radial extent of the medium represented on the analog was more than 60,000 times the largest r_w value used in the analyses. Thus the radial extent of the analog system was essentially infinite, as evidenced by the fact that a reduction in radial extent by several nodes did not have a measurable effect on the observed value of R_e .

The value of R_e for an infinitely deep aquifer ($D = \infty$) was determined by simulating an impermeable and then an infinitely permeable layer at a certain value of D . If this value of D is taken to be sufficiently large, the flow in the system when the layer at D is taken as being impermeable is only slightly

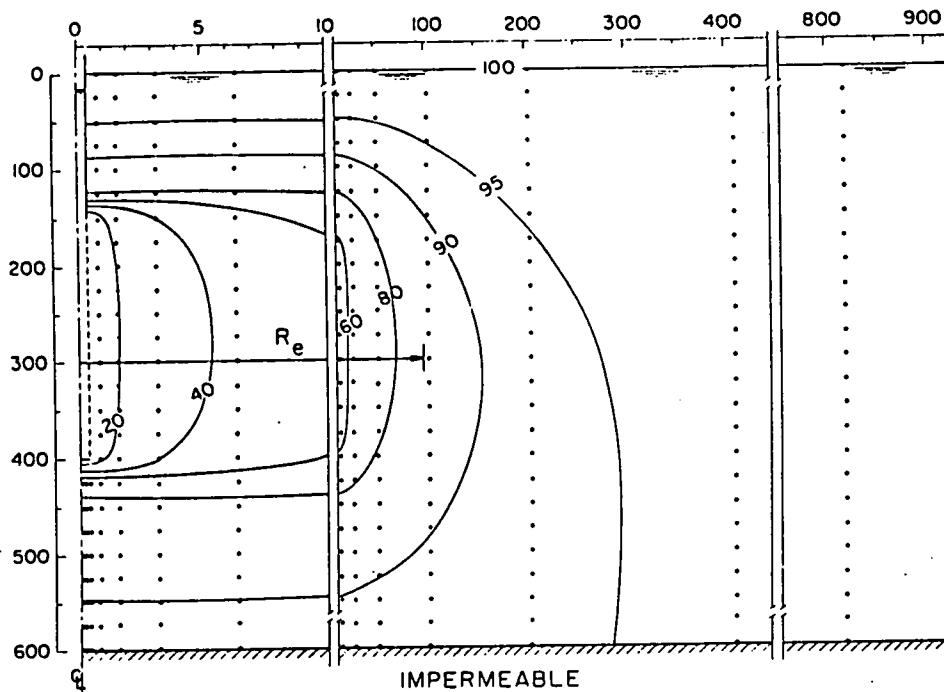


Fig. 2. Node arrangement (dots) for resistance network analog and potential distribution (indicated as percentages on equipotentials) for system with $L/r_w = 625$, $H/r_w = 1000$, and $D/r_w = 1500$. The numbers on the left and at the top of the figure are arbitrary length units (note breaks in horizontal scale).

less than the flow when the layer is taken as being infinitely permeable. The average of the two flows can then be taken as a good estimate of the flow that would occur if the aquifer were represented on the analog as being uniform to infinite depth [Bouwer, 1967]. This average flow was used to calculate R_e for $D = \infty$.

The analog analyses were performed by simulating a system with certain values of r_w , H , and D . The electrical current entering the 'well' was then measured for different values of L , ranging from near H to near 0. This was repeated for other values of r_w , H , and D . The condition where $L = H$ could not be simulated on the analog because it would mean a short between the water table as the source and the well as the sink. The electrical current flow in the analog was converted to volume per day, and $\ln R_e/r_w$ was evaluated with (1) for each combination of r_w , H , L , and D used in the analog.

For a given geometry described by r_w , H , and D , the current flow Q_i into the simulated well varied essentially linearly with L and could be described by the equation

$$Q_i = mL + n \quad (7)$$

Because of the linearity between Q_i and L the results of the analyses could be extrapolated to the condition $L = H$. The values of m in (7) appeared to vary inversely with $\ln H/r_w$. The values of n varied approximately linearly with $\ln [(D - H)/r_w]$, the slope A and intercept B in these relations being a function of L/r_w . This enabled the derivation of the following empirical equation relating $\ln R_e/r_w$ to the geometry of the system:

$$\ln \frac{R_e}{r_w} = \left[\frac{1.1}{\ln (H/r_w)} + \frac{A + B \ln [(D - H)/r_w]}{L/r_w} \right]^{-1} \quad (8)$$

In this equation, A and B are dimensionless coefficients that are functions of L/r_w , as shown in Figure 3. If $D \gg H$, an increase in D has no measurable effect on $\ln R_e/r_w$. The analog

results indicated that the effective upper limit of $\ln [(D - H)/r_w]$ is 6. Thus if D is considered infinity or $(D - H)/r_w$ is so large that $\ln [(D - H)/r_w]$ is greater than 6, a value of 6 should still be used for the term $\ln [(D - H)/r_w]$ in (8).

If $D = H$, the term $\ln [(D - H)/r_w]$ in (8) cannot be used. The analog results indicated that for this condition, which is the case of a fully penetrating well, (8) should be modified to

$$\ln R_e/r_w = \left(\frac{1.1}{\ln (H/r_w)} + \frac{C}{L/r_w} \right)^{-1} \quad (9)$$

where C is a dimensionless parameter that is a function of L/r_w as shown in Figure 3.

Equations (8) and (9) yield values of $\ln R_e/r_w$ that are within 10% of the actual value as evaluated by analog if $L > 0.4H$ and within 25% if $L \ll H$ (for example, $L = 0.1H$).

The analog analyses were performed for wells that were closed at the bottom. Occasionally, however, wells with open bottoms were also simulated. The flow through the bottom appeared to be negligible for all values of r_w and L used in the analyses. If L is not much greater than r_w (for example, $L/r_w \ll 4$), the system geometry approaches that of a piezometer cavity [Bouwer and Jackson, 1974], in which case the bottom flow can be significant. Equations (8) and (9) can also be used to evaluate $\ln R_e/r_w$ if a portion of the perforated or otherwise open part of the well is isolated with packers for the slug test.

Equipotentials for the flow system around a partially penetrating, partially perforated well in an unconfined aquifer after lowering the water level in the well are shown in Figure 2. The numbers along the symmetry axis and the water table represent arbitrary length units. The numbers on the equipotentials indicate the potential as a percentage of the total head difference between the water table (100%) and the open portion of the well (0%) shown as a dashed line.

The value of R_e for the case in Figure 2 is 96.7 length units. As shown in the figure, this corresponds approximately to the

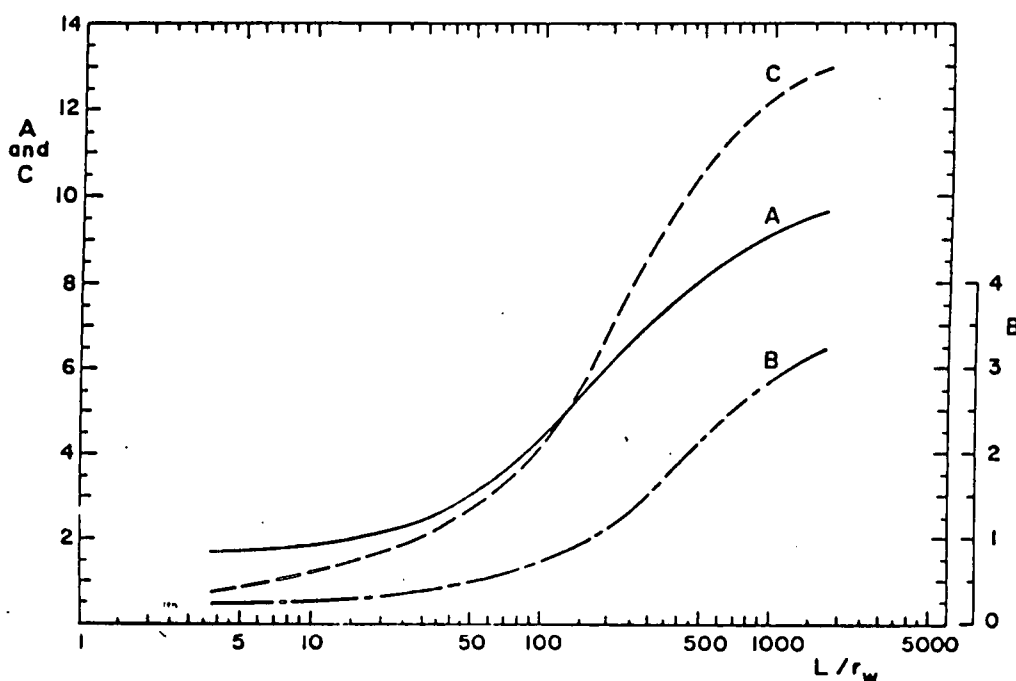


Fig. 3. Curves relating coefficients A , B , and C to L/r_w .

85% equipotential when R_e is laterally extended from the center of the open portion of the well. Thus most of the head loss in the flow system occurs in a cylinder with radius R_e , which is indicative of the horizontal extent of the portion of the aquifer sampled for K or T . The vertical extent is somewhat greater than L , as indicated by, for example, the 80% equipotential in Figure 2.

To estimate the rate of rise of the water level in a well after it is suddenly lowered, (5) can be written as

$$t = \frac{r_e^2}{2KL} \ln \frac{R_e}{r_w} \ln \frac{y_0}{y_t} \quad (10)$$

By taking $y_t = 0.9y_0$, (10) reduces to

$$t_{90\%} = 0.0527 \frac{r_e^2}{KL} \ln \frac{R_e}{r_w} \quad (11)$$

where $t_{90\%}$ is the time that it takes for the water level to rise 90% of the distance to the equilibrium level. By assuming a permeable aquifer with $K = 30$ m/day, a well with $r_e = 0.2$ m and $L = 10$ m, and $\ln(R_e/r_w) = 3$, (11) yields $t_{90\%} = 1.82$ s. Thus if y_0 is taken as 30 cm, it takes 1.8 s for the water level to rise 27 cm, another 1.8 s for the next 2.7 cm (90% of the remaining 3 cm), and another 1.8 s for the next 0.27 cm, or a total of 5.4 s for a rise of 29.97 cm. Measurement of this fast rise requires a sensitive and accurate transducer and a fast-response recorder. The rate of rise can be reduced by allowing groundwater to enter through only a portion of the open section of the well, as can be accomplished with packers.

For a moderately permeable aquifer with, for example, $K = 1$ m/day, a well with $r_e = 0.1$ m and $L = 20$ m, and $\ln(R_e/r_w) = 5$, (11) yields $t = 11.4$ s. In this case, it would take the water level 22.8 s to rise from 30 cm to 0.3 cm below static level.

EXAMPLE

A slug test was performed on a cased well in the alluvial deposits of the Salt River bed west of Phoenix, Arizona. The well, known as the east well, is located about 20 m east of six

rapid infiltration basins for groundwater recharge with sewage effluent [Bouwer, 1970]. The static water table was at a depth of 3 m, $D = 80$ m, $H = 5.5$ m, $L = 4.56$ m, $r_e = 0.076$ m, and r_w was taken as 0.12 m to allow for development of the aquifer around the perforated portion of the casing. A Statham PM131TC pressure transducer was suspended about 1 m below the static water level in the well (when trade names and company names are included, they are for the convenience of the reader and do not imply preferential endorsement of a particular product or company over others by the U.S. Department of Agriculture). A solid cylinder with a volume equivalent to a 0.32-m change in water level in the well was also placed below the water level. When the water level had returned to equilibrium, the cylinder was quickly removed. The transducer output, recorded on a Sargent millivolt recorder, yielded the y - t relationship shown in Figure 4 with y plotted on a logarithmic scale. The straight-line portion is the valid part of the readings. The actual y_0 value of 0.29 m indicated by the straight line is close to the theoretical value of 0.32 m calculated from the displacement of the submerged cylinder.

Extending the straight line in Figure 4 shows that for the arbitrarily selected t value of 20 s, $y = 0.0025$ m. Thus $(1/t) \ln y_0/y_t = 0.238$ s⁻¹. The value of $L/r_w = 38$, for which Figure 3 yields $A = 2.6$ and $B = 0.42$. Substituting these values into (8) and using the maximum value of 6 for $\ln[(D-H)/r_w]$ (since $\ln[(D-H)/r_w]$ for the well exceeds 6) yield $\ln(R_e/r_w) = 2.37$. Equation (5) then gives $K = 0.00036$ m/s = 31 m/day. This value agrees with K values of 10 and 53 m/day obtained previously with the tube method on two nearby observation wells [Bouwer, 1970]. These K values were essentially point measurements on the aquifer immediately around the well bottoms, which were at depths of 9.1 and 6.1 m, respectively.

COMPARISONS

Piezometer method. The geometry to which (8) and (9) and the coefficients in Figure 3 apply overlaps the geometry of the

piezometer method at the lower values of L/r_w . With the piezometer method a cavity is augered out in the soil below a piezometer tube. The water level in the tube is abruptly lowered, and K of the soil around the cavity is calculated from the rate of rise of the water level in the tube [Bouwer and Jackson, 1974]. The equation for K is

$$K = \frac{\pi r_w^2}{A_v} \frac{1}{t} \ln \frac{y_0}{y_t} \quad (12)$$

where A_v is a geometry factor with dimension of length. Values of A_v were evaluated with an electrolytic tank analog by Youngs [1968], whose results were expressed in tabular form as A_v/r_w for different values of L/r_w (ranging between 0 and 8), $(H - L)/r_w$, and $(D - H)/r_w$.

Taking a hypothetical case where $L/r_w = 8$, $H/r_w = 12$, and $D/r_w = 16$, K calculated with (5) is 18% below K calculated with (12). This is more than the 10% error normally expected with (8) and (9) for the L/H value of 0.67 in this case. The larger discrepancy may be due to the difference in methodology, or to the fact that the L/r_w value is close to the lower limit of the range covered on the resistance network analog.

An approximate equation for calculating K with the piezometer method was presented by Hvorslev [1951]. The equation, which is based on the assumptions of an ellipsoidal cavity or well screen and infinite vertical extent (upward and downward) of the flow system, contains a term $[1 + (L/2r_w)^2]^{1/2}$. For most well-slug-test geometries, $L/2r_w$ will be sufficiently large to permit replacement of this term by $L/2r_w$. In that case, however, Hvorslev's equation for Q yields $R_e = L$, which is not true. In reality, R_e is considerably less than L . For example, if $L = 40$ m, $r_w = 0.4$ m, $H = 80$ m, and $D = \infty$, (8) shows that $R_e = 11.9$ m, which is much less than the value of 40 m indicated by Hvorslev's equation. However, since the calculation of K is based on $\ln(R_e/r_w)$ as shown by (5), the error in K is less than the error in R_e (i.e., 36 and 236%, respectively, in this case).

If, for the above example, the top of the well screen or cavity had been taken at the same level as the water table ($H = 40$ m), R_e would have been 8.6 m and Hvorslev's equation would have yielded a K value that is 50% higher than K given by (5). The larger error is probably due to Hvorslev's assumption of infinite vertical (upward) extent of the flow system, which is not met when the cavity is immediately below the water table. Using Hvorslev's equation for cavities immediately below a confining layer would increase the error to 73%, but this, of course, is due to the fact that a water table is not a solid boundary. Hvorslev's equation for the confining layer case can be shown to yield $R_e = 2L$.

Auger hole method. The analog analyses for (8) and (9) and Figure 3 were performed for $L < H$, because short circuiting between the water table and the well prevented simulation of the case where $L = H$. If the analog results are extrapolated to $L = H$, however, the geometry of the system in Figure 1 becomes similar to that of the auger hole technique, for which a number of equations and graphs have been developed to calculate K from the rise of the water level in the well [Bouwer and Jackson, 1974]. Boast and Kirkham [1971], for example, developed the equation

$$K = C_{HK} \frac{\Delta y}{\Delta t} \quad (13)$$

where C_{HK} was determined mathematically and expressed in tabular form for various values of L/r_w , $(D - H)/r_w$, and y_0/H . Since the rate of rise of the water level in the hole after

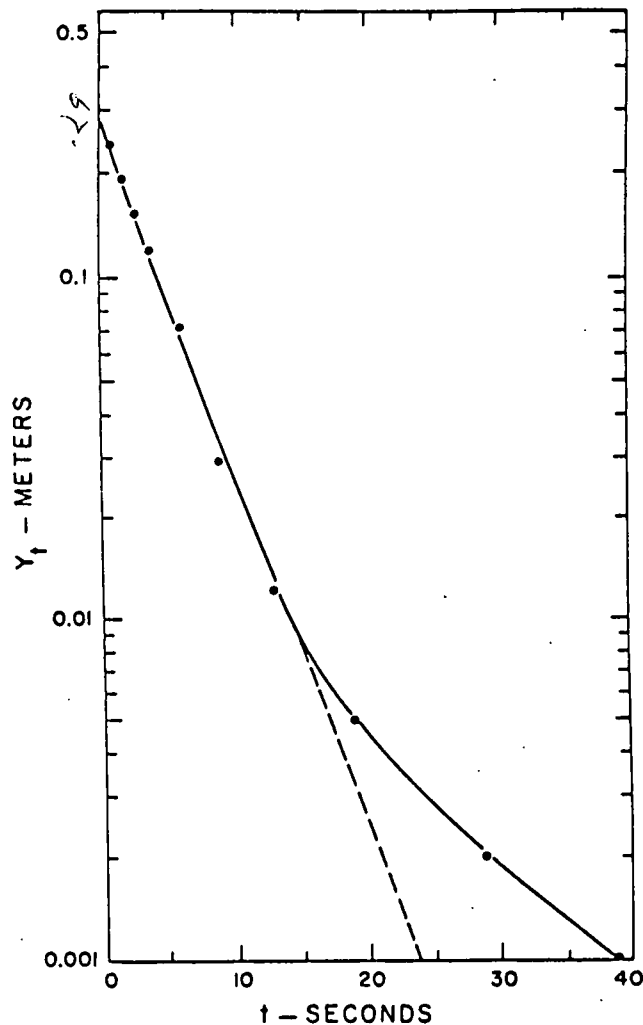


Fig. 4. Plot of y versus t for slug test on east well.

the removal of a slug of water decreases with decreasing y , $\Delta y/\Delta t$ is not a constant and the value of K obtained with this procedure depends on the magnitude of Δy used in the field measurements. The general rule is that Δy should be relatively small.

Taking a hypothetical case where $y_0 = 2.5$ m, $y_t = 2.4$ m, $\Delta t = 10$ s, $L = H = 5$ m, $D = 6$ m, and $r_w = 0.1$ m, (5) yields a K value that is 36% lower than K calculated with (13). However, if y_t is taken as 0.5 m, which should give $\Delta t = 394$ s according to the theory that $(1/t) \ln y_0/y_t$ is constant, the K value yielded by (5) is 26% higher than K obtained with (13). If y_t is taken as 0.9 m, (5) and (13) give identical results.

Slug test on wells in confined aquifers. The confined aquifer for which the slug test by Cooper et al. [1967] was developed is an aquifer with an internal water source, for example, recharge through aquitards or compression of confining layers or other material. This situation is similar to that of the unconfined aquifer presented in this paper because the water table is considered horizontal, like the upper boundary of a confined aquifer, and the water table is a plane source. Thus K or T calculated with (5) or (6) should be of the same order as K calculated with the procedure of Cooper et al. [1967], which involves plotting the rise of the water level in the well and finding the best fit on a family of type curves. Cooper et al. [1967] presented an example of the calculation of T for a well

with $r_c = r_w = 0.076$ m and $L = 98$ m. The resulting value of T was 45.8 m²/day. Values of D and H for this well were not given. However, since the well was 122 m deep and completely penetrating (at least theoretically), D and H must have been between 98 and 122 m. Assuming that both D and H were 100 m, (6) yields $T = 62.8$ m²/day, which is compatible with T obtained by Cooper et al.

CONCLUSIONS

The hydraulic conductivity of an aquifer near a well can be calculated from the rise of the water level in the well after a slug of water is suddenly removed. The calculation is based on the Thiem equation, using an effective radius R_e for the distance over which the head difference between the equilibrium water table in the aquifer and the water level in the well is dissipated. Values of R_e were evaluated by electrical resistance network analog. An empirical equation was then developed to relate R_e to the geometry of the system. This equation is accurate to within 10–25%, depending on how much of the well below the water table is perforated or otherwise open. The technique is applicable to partially or completely penetrating wells in unconfined aquifers. It can also be used to estimate the hydraulic conductivity of confined aquifers that receive water from the upper confining layer through recharge or compression.

The vertical distance between the rising water level in the well and the equilibrium water table in the aquifer must yield a straight line when it is plotted on a logarithmic scale against time. This can be used to check the validity of field measurements and to obtain the best-fitting line for calculating the hydraulic conductivity. Permeable aquifers produce rapidly rising water levels that can be measured with fast-response pressure transducers and strip chart recorders or x-y plotters. The portion of the aquifer sampled for hydraulic conductivity with the slug test is approximately a cylinder with radius R_e and a height somewhat larger than the perforated or otherwise open section of the well.

Hydraulic conductivity values obtained with the proposed slug test are compatible with those yielded by the auger hole and piezometer techniques where the geometries of the systems overlap, and by a slug test for completely penetrating wells in confined aquifers.

REFERENCES

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(Received June 2, 1975;
revised January 19, 1976;
accepted January 23, 1976.)

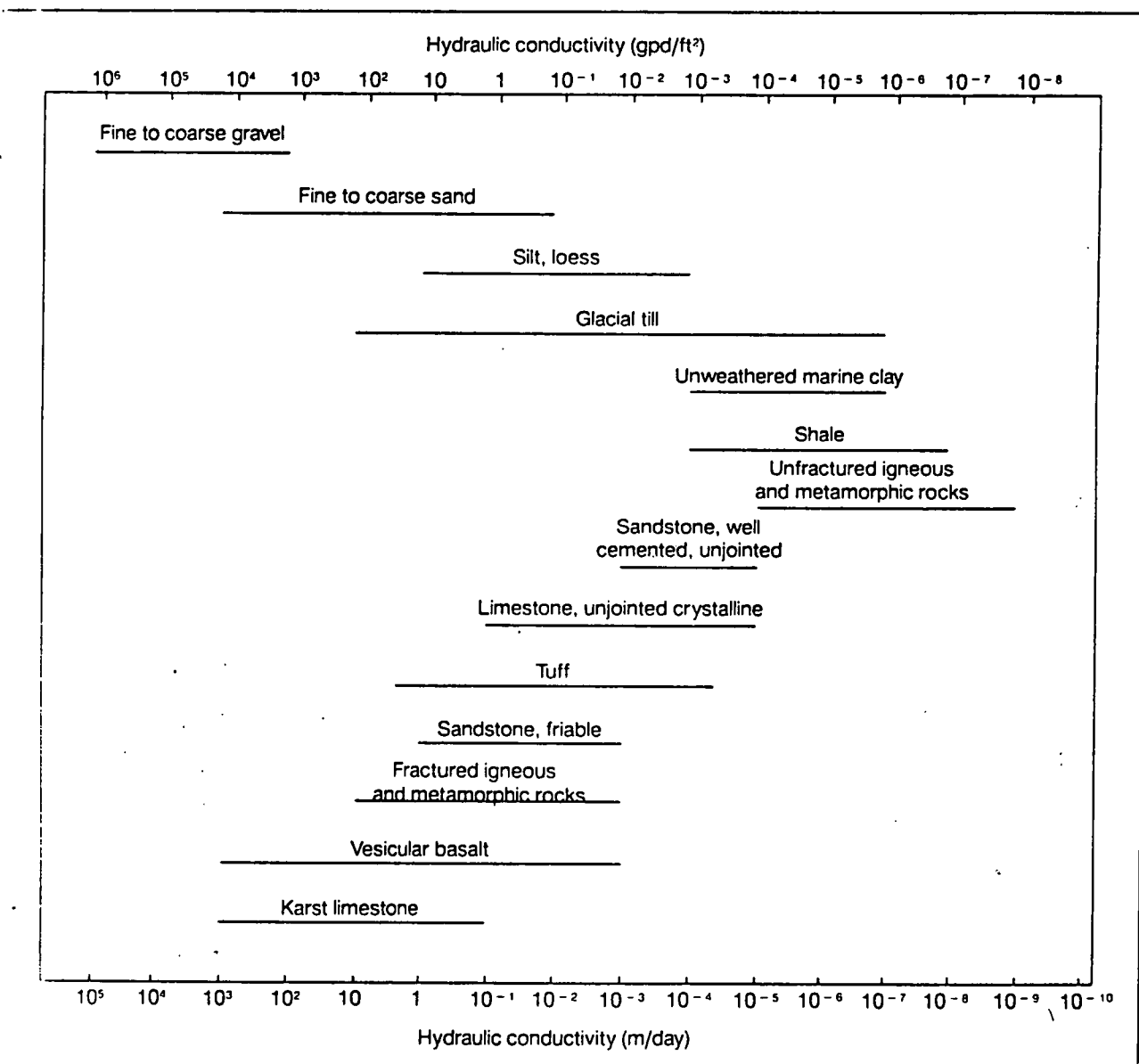


Figure 5.14. Typical K values for consolidated and unconsolidated aquifers. (After Davis, 1969; Dunn and Leopold, 1978; Freeze and Cherry, 1979).

REFERENCE 3

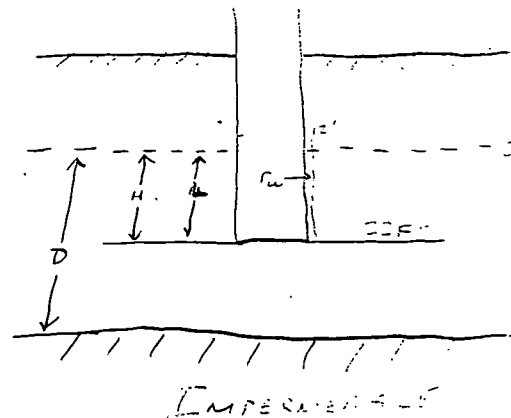
SCREENED 12 FT - 22 FT = 10 FT

DIS @ t_0 : $y_0 = 12.15'$ $y_c = 12.00$

$L = 9.85$ FT $H = 9.85$ FT

$r_w = .33$ FT

$$L/r_w = \frac{9.85}{.33} = 29.8$$



FROM CURVES RELATING COEFFICIENTS A, B, + C TO L/r_w

$A = 2.5$

$B = .375$

$$\ln \frac{R_c}{r_w} = \left[\frac{1.1}{\ln(L/r_w)} + \frac{A + B \ln[(D-H)/r_w]}{L/r_w} \right]^{-1}$$

$$= \left[\frac{1.1}{\ln(9.85/.33)} + \frac{2.5 + .375 \ln[(50 \text{ FT} - 9.85 \text{ FT})/.33]}{9.85/.33} \right]^{-1}$$

$$= [0.3238977 + 0.4632112]^{-1}$$

$$\ln \frac{R_c}{r_w} = 1.2704722$$

$$r_c^2 = (2.54 \text{ cm})^2 + (.42) [(10.16 \text{ cm})^2 - (2.54 \text{ cm})^2]$$

$$= 6.4516 + (.42)(96.774)$$

$$= 6.4516 + 40.645$$

$$r_c^2 = 47.1 \text{ cm}^2$$

$$r_c = 6.86 \text{ cm}$$

OR

$$\frac{6.86 \text{ cm}}{30.48 \text{ cm/FT}} = 0.225 \text{ FT}$$

$$r_c = 0.225 \text{ FT}$$

$$r_c^2 = 0.0507 \text{ FT}^2$$

$$K = \frac{r_c^2 \ln(R_c/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_c}$$

$$= \frac{0.0507 \text{ FT}^2 (1.27)}{2(9.85)} \frac{1}{29 \text{ SEC}} \ln \frac{12.15 \text{ FT}}{12.00 \text{ FT}}$$

$$= (0.0032684)(.0034364)(0.0124225)$$

$$= 1.3952 \times 10^{-7} \frac{\text{FT}}{\text{SEC}} \times \frac{60 \text{ SEC}}{\text{MIN}} \times \frac{6 \text{ MIN}}{\text{HR}} \times \frac{24 \text{ HR}}{\text{DAY}} \times \frac{1 \text{ IN}}{3.3 \text{ FT}}$$

$$1.3952 \times 10^{-7} \frac{\text{FT}}{\text{SEC}} \times 2.54 \frac{\text{IN}}{\text{FT}}$$

$$K = 3.5438 \times 10^{-7} \text{ CM/SEC}$$

OR

$$K = 3.6529 \times 10^{-3} \text{ IN/DAY}$$

$$K = 9.0129 \times 10^{-2} \text{ gpd/FT}^2$$

BRZEZINSKI LANDFILL PERMEABILITY CALCULATION
FOR GW-3

D73-017

SCREENED 9-14 FT

$$DTW @ t_0 = y_0 = 11.54 \text{ FT} \quad y_t = 11.39 \text{ FT}$$

$$L = 7.46 \text{ FT} \quad H = 7.46 \text{ FT}$$

$$r_w = \sim .33 \text{ FT}$$

$$L/r_w = 7.46 / .33 = 22.6$$

FROM CURVES RELATING COEFFICIENTS A, B, + C TO L/r_w

$$A = 2.25$$

$$B = .375$$

$$\ln R_e/r_w = \left[\frac{1.1}{\ln(L/r_w)} + \frac{A + B \ln[(D-H)/r_w]}{L/r_w} \right]^{-1}$$

$$= \left[\frac{1.1}{\ln(7.46/.33)} + \frac{2.25 + .375 \ln[(50 - 7.46)/.33]}{7.46/.33} \right]^{-1}$$

$$= \left[(0.3528) + (2.5644) \right]^{-1}$$

$$\ln R_e/r_w = \underline{1.09}$$

$$r_c^2 = 0.0507 \text{ FT}^2$$

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_t}$$

$$= \frac{(0.0507 \text{ FT}^2)(1.09)}{2(7.46) \text{ FT}} \frac{1}{3.65 \text{ SEC}} \ln \frac{11.54 \text{ FT}}{11.39 \text{ FT}}$$

$$= (0.0037039) (0.2739726) (0.6130834)$$

$$= 1.3276 \times 10^{-5} \frac{\text{FT}}{\text{SEC}} \times \frac{60 \text{ SEC}}{1 \text{ MIN}} \times \frac{60 \text{ MIN}}{1 \text{ HR}} \times \frac{24 \text{ HR}}{1 \text{ DAY}} \times \frac{1 \text{ M}}{3.3 \text{ FT}}$$

$$\underline{K = 3.476 \times 10^{-1} \text{ M/DAY}}$$

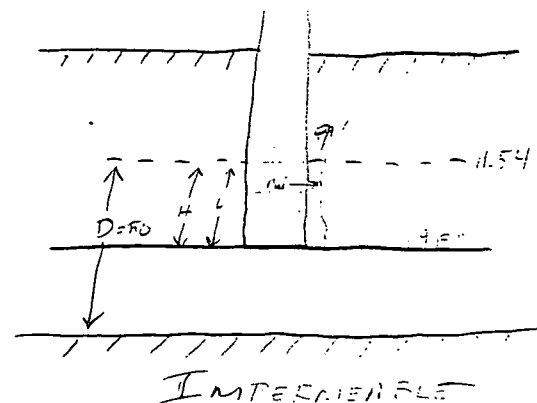
$$\text{OR } 1.3276 \times 10^{-5} \text{ FT/SEC} \times 6.46 \times 10^5$$

OR

$$1.3276 \times 10^{-5} \text{ FT/SEC} \times 2.54 \frac{\text{CM}}{\text{FT}}$$

$$\underline{K = 3.3721 \times 10^{-5} \text{ CM/SEC}}$$

$$\underline{K = 8.5762 \text{ gpd/FT}^2}$$



BY _____ DATE 11/2/88

LAWLER, MATUSKY & SKELLY ENGINEERS

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. 5011

SUBJECT BEEFING SPW 1000

GW-2 SUC 12:15

PO-BS Set At 12:00

Time from 12:00 to 12:15
SUC =

4 MINUTES = 240 SECONDS

4 min 34.11 sec → 274.11 SEC

AVERAGE: 291.000

4 min 53.27 sec → 298.27 SEC

4 min 45.36 sec → 285.36 SEC

OR 291

4 min 51.25 sec → 299.75 SEC

4 min 57.25 sec → 297.25 SEC

Time from 12:15 to 12:30
SUC =

PO-BS Set At 12:30

5 min 17.73 sec

BY _____ DATE 11.3.86
CHKD. BY _____ DATE _____

LAWLER, MATUSKY & SKELLY ENGINEERS
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS
ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

SHEET NO. 1 OF _____
JOB NO. 50005

SUBJECT PERMEABILITY
PERMEABILITY

GW-3 SWL 11.54
SET PROBE AT 11.39

TIME FOR WATER TO RECOVER FOLLOWING
SLUG.

1	3.32 sec	AVERAGE <u>3.65</u> SEC
2	3.54 sec	
3	3.70 sec	
4	4.09 sec	
5	3.65 sec	

TIME FOR WATER TO RECOVER FOLLOWING
RECOVERY OF SLUG

THROU SET AT 11.69

11.23
11.23
11.23
11.23
11.23

REFERENCE 4

N

BRZEZINSKI LANDFILL

(LYNCH PARK)

NEW YORK STATE SUPERFUND

PHASE I SUMMARY REPORT

DRAFT

September 6, 1983

Prepared by:

Recra Research, Inc.

4248 Ridge Lea Road

Amherst, New York 14226

For:

New York State Department of Environmental Conservation

50 Wolf Road

Albany, New York 12233-0001

1.0 EXECUTIVE SUMMARY

The Brzezinski Landfill (Lynch Park) is a 20-acre inactive landfill located adjacent to the Niagara River in the Town of Wheatfield, Niagara County, New York. The site is adjacent to the 200-unit Lynch Trailer Park and several seasonal residences. The 15 acre section of the site formerly used for landfilling is now elevated approximately 10 to 15 feet above the surrounding terrain on its west side. The surface of the site was originally graded to be level; but additional loads of clean fill have been received and were not graded. Little evidence of either ponded water or leachate breakouts water exists around the site.

During its active life from 1965 through 1972, the landfill received mostly inert industrial wastes from Carborundum Company and Bell Aerospace in Niagara Falls. Some incinerator ash was also received from a City of Niagara Falls facility. There are no records indicating that hazardous wastes were deposited at this site and there has been a minimum of sampling at the site. Of the three soil samples taken from the landfill, one has shown some evidence of organic chemicals.

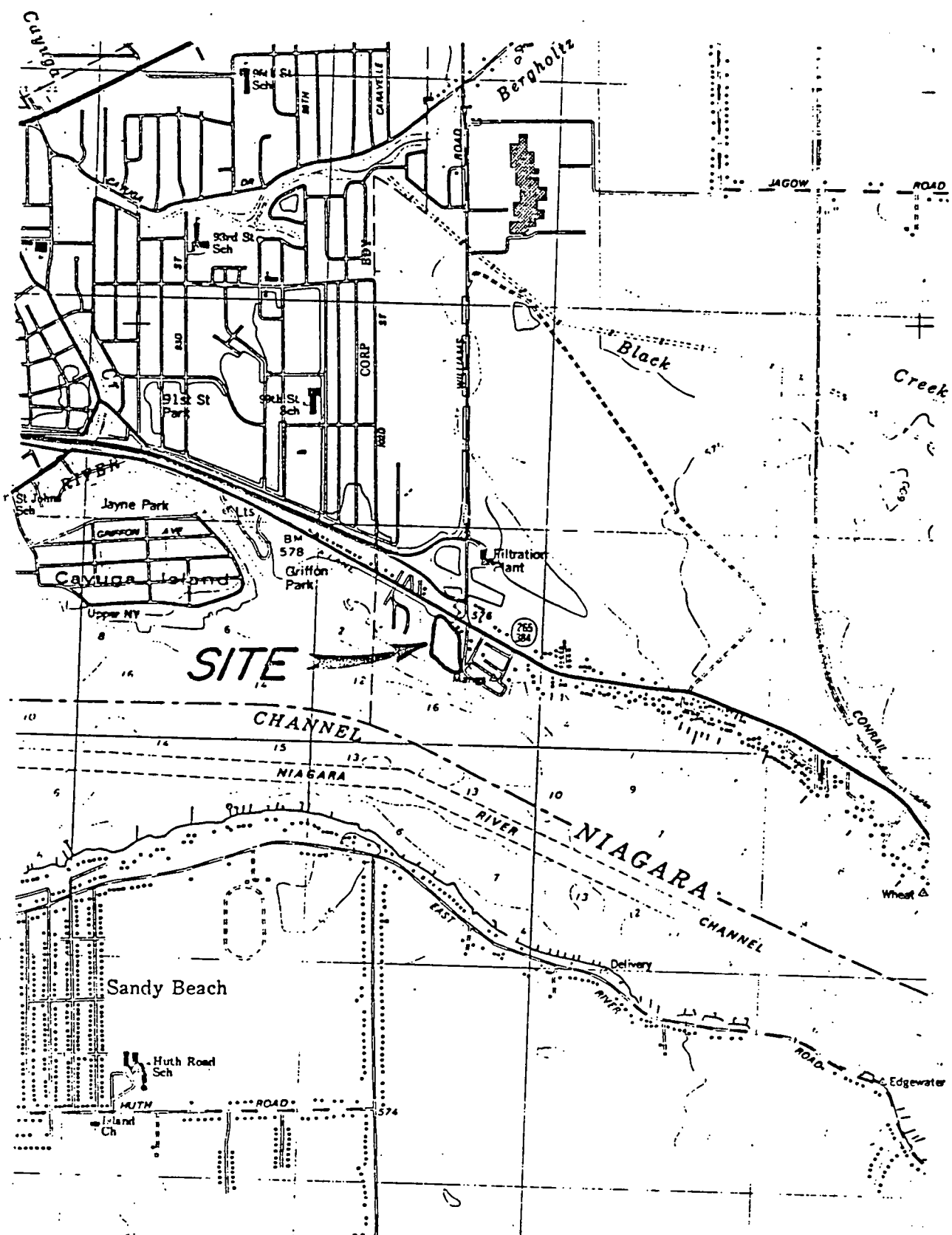
The site has a low potential to impact either public health or the environment. Although the landfill is located immediately adjacent to the Niagara River, there are no known water intakes within three miles of the site. In addition, the local groundwater is not used for drinking purposes, and there are no critical habitats or designated wetlands downgradient of the site.

2.0 SITE DESCRIPTION

The Brzezinski Landfill is located within the Town of Wheatfield, Niagara County, New York (Figure 1). The site was operated from 1965 through 1972, and during this period it received solid waste primarily from Carborundum Company's Bonded Abrasives Division and Bell Aerospace Textron, both of Niagara Falls. Approximately twenty-five loads of ash from the City of Niagara Falls incinerator were also deposited at the site. Most of the cover material used at the site was received from a sewer project being implemented in the vicinity of the landfill.

The land the site is located on was reclaimed from the Niagara River channel. An earthen berm was constructed across the mouth of a small cove in the 1960's, and was subsequently reinforced with concrete rubble and other similar materials. The site, which is presently inactive, shows few signs of ponded water on its surface, and exhibits no evidence of leachate breakouts (Figure 2). The only analytical testing completed to date has been on three soils samples taken by the USGS.

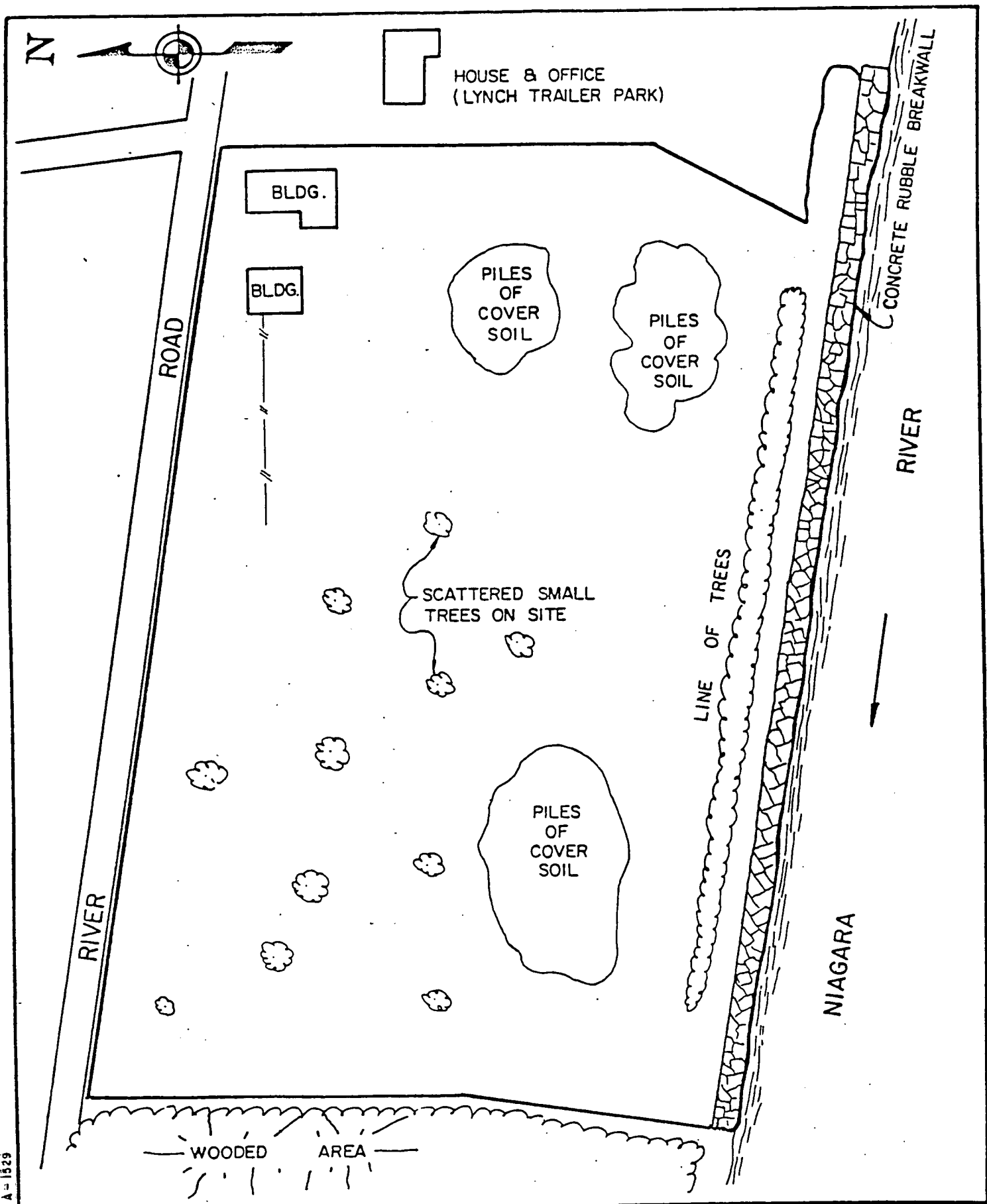
The present owners of the site property are all siblings, having received ownership following the death of their mother, who had purchased the land in 1962. Stanley Brzezinski, one of the four owners, also operated the site during its use as a landfill, and still is responsible for maintenance of the site.



USGS TOPOGRAPHIC 7.5 MINUTE
TONAWANDA WEST QUAD. 1976

VICINITY MAP
BRZEZINSKI LANDFILL

FIGURE NO. 1



A-1529

URS URS Company, Inc.
CONSULTING ENGINEERS
NEW YORK NEW JERSEY

SITE MAP
BRZEZINSKI LANDFILL

FIGURE 2

4.0 SITE HISTORY

The site of the Brzezinski Landfill was purchased in 1962 by Anna Brzezinski, and was an undeveloped area at that time (Ref. 3). A cove in the Niagara River bank which extended almost to River Road was located on this site. Several reports of dumping on this site as early as the 1930's are incorrect, as most of the land was under water. This — dumping by the Carborundum Company did occur adjacent to the landfill area and extended west all the way to the City of Niagara Falls corporate limits (Ref. 3).

An earthen berm was build across the mouth of the cove in the middle 1960's, creating a pond behind it. This berm was reinforced with concrete rubble and similar materials (Ref. 9). Filling activities began at the site around 1965, with refuse being comprised of inert materials from Carborundum Company and Bell Aerospace Corporation (Ref. 16). Complaints were first registered in 1968 with the Niagara County Department of Health (NCDH) concerning the pumping of the pond water into the Niagara River (Ref. 17). In June of 1969, Stanley Brzezinski, who operated the landfill for his family, was cited for burning refuse at the landfill by the NCDH (Ref. 18). Later that year, local residents also registered complaints about the disposal of approximately 25 truckloads of incinerator ash from a City of Niagara Falls facility (Refs. 19, 20).

In 1970, Mr. John Brzezinski received approval from the NCDH to operate the refuse disposal area (Ref. 21). The disposal of wastes here ceased in 1972 when the site's capacity was reached, and the landfill was subsequently closed (Ref. 3). Since that time only clean fill dirt has been hauled to the site and piled for future use. In 1982, following the death of Anna Brzezinski, four of her children became owners of the site (Ref. 22).

5.0 SITE DATA

5.1 Site Area Surface Features

5.1.1 Topography and Drainage - The Brzezinski Landfill is located on land which was reclaimed from the Niagara River. An earthen berm was originally constructed across the mouth of a former cove to create the site. The bank along the shore was subsequently riprapped with concrete rubble and other similar materials. The topography of the site is nearly flat, but slopes very gently toward the river. Numerous mounds of clean fill dirt are located throughout the site, which as of yet have not been leveled.

No streams or ditches run directly through or adjacent to the landfill, but an un-named intermittent stream enters the Niagara River less than one mile to the east of the site. Little evidence of ponded water or wet areas exists on the site other than scattered clumps of cattails.

5.1.2 Environmental Setting - The Brzezinski landfill is located approximately one-half mile south of designated wetland area TW-6 (Ref. 14); however, this wetland is located up-gradient from the site. There are no critical habitats of endangered species located in the vicinity of the disposal area (Ref. 15). The site does lie within the 100-year flood boundary of the Niagara River, as designated by the Federal Emergency Management Agency (Ref. 23).

5.2 Hydrogeology

5.2.1 Geology - The uppermost bedrock formation in the vicinity of the site is Lockport dolomite, which in this area is a massive bed approximately 150 feet thick (Ref. 1). The landfill area itself is covered with glacio-lacustrine deposits to an unknown depth.

5.2.2 Soils - The natural overburden soils developed from stillwater lacustrine deposits of silt, very fine sand and clay (Ref. 6). These Canandaigua soils are deep and are usually located in depressions receiving runoff from adjacent areas. Ponded water occurs commonly. Based upon soil borings which have been taken on the site, a typical profile of the uppermost natural soil layers would be: topsoil to 3 feet, green-gray clay to 6 feet, coarse sand to 8 feet (Ref. 2).

5.2.3 Groundwater - Groundwater occurs in both the unconsolidated deposits and the bedrock beneath the Brzezinski landfill. The primary aquifer in this region is the Lockport dolomite, which yields water primarily through fractures and solution cavities within its structure (Ref. 1). The water table beneath the site exists at approximately river level, which is higher than a portion of the original natural soil surface. The saturated overburden materials are mainly clay with sand stringers, and don't yield sufficient water to warrant the installation of monitoring wells on the site (Ref. 2). The groundwater flow pattern should be toward the Niagara River to the south, and any contaminants leaving the site via this route would be discharged to the river.

5.3 Previous Sampling and Analysis

5.3.1 Groundwater Quality Data - No groundwater samples have been taken on or near the site.

5.3.2 Surface Water Quality Data - There has been no sampling of the Niagara River related to the Brzezinski Landfill.

5.3.3 Air Quality Data - No atmospheric sampling has been completed on site related to the release of chemical contaminants.

5.3.4 Other Analytical Data - Soil samples were taken by the USGS at three locations on site which were thought to be near the edge of the filled area (Ref. 2). The results obtained from this sampling and analysis are presented on the colored pages following this section, along with a sampling site location map. These preliminary results indicate the presence of two organic compounds in the soil profile.

Table 1. Analyses of substrate samples from Lynch Park, Wheatfield, New York

	Sample Number		
	1	2	3
Date collected	061982	061982	061982
Depth (ft)	6.5	6.5	12.6
Sample type ¹	s	s	s
pH			
Conductivity (uMOS)			
Temperature (°C)			
Inorganic Constituents ²			
Antimony			
Arsenic			
Barium			
Chromium			
Copper	5000	61000	13000
Iron	23000000	20000000	7400000
Lead			
Mercury	<10	<10	<10
Nickel			
Selenium			
Zinc			
Fluoride			
Sulfide			
Cyanide			
Organic Compounds ²			
3,5-dimethyl-2-pyroxoline-1-carboxamide ⁴		15700	-
4,4,5-trimethyl-2-hexene	-	512	-

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.

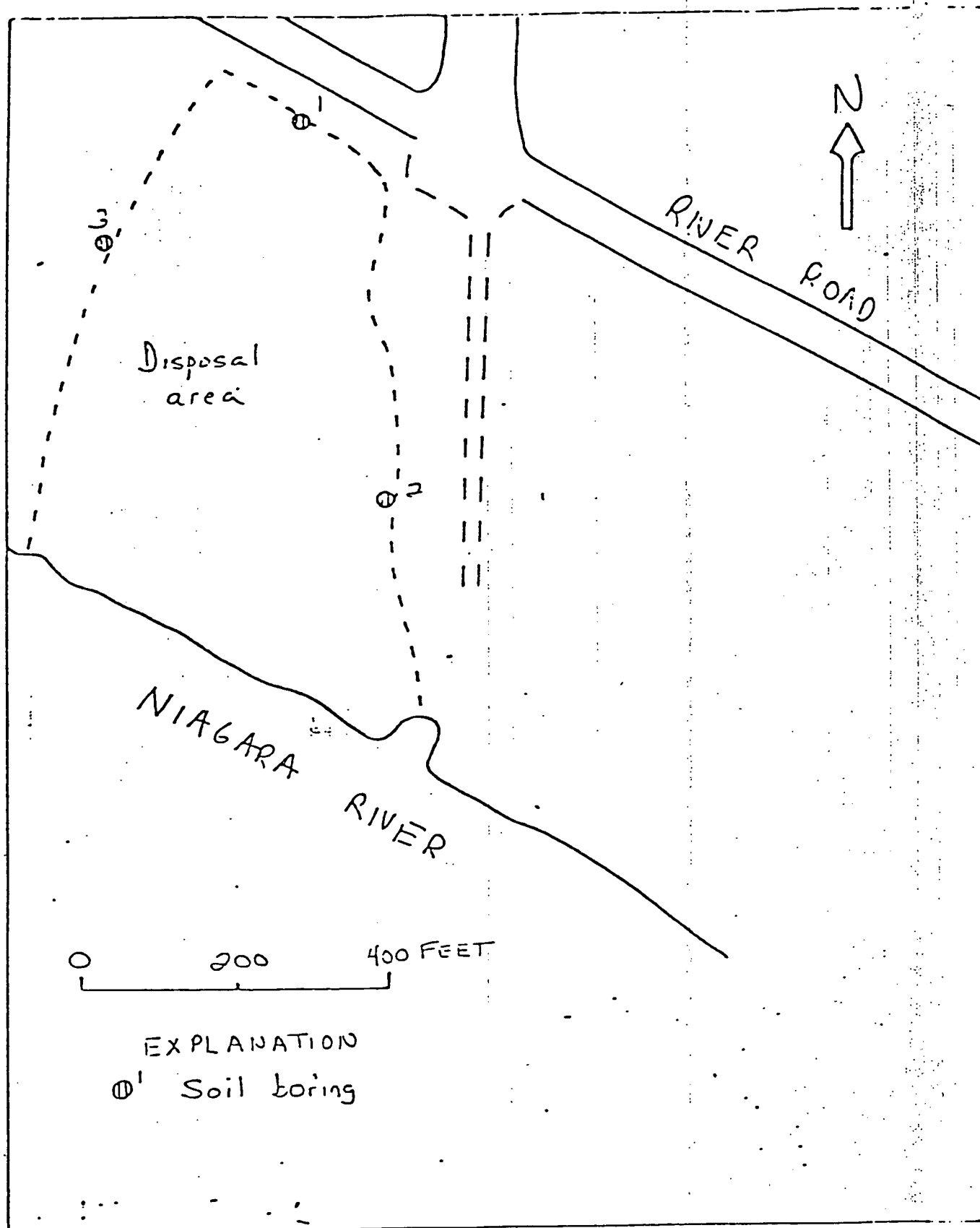


Figure 1 - Location of sampling sites, Lynch Park

6.0 ADEQUACY OF AVAILABLE DATA

For the purpose of developing a Hazard Ranking System Score, the existing data base for the Brzezinski Landfill is inadequate in the following respects.

- o There has been no analytical testing to date for substances of concern in groundwater or surface water at the site, and consequently, there is no way of ascertaining possible releases from the site.
- o There are no available records indicating that hazardous substances may have been disposed of at the landfill. Some of the industries using the facility are known, as are the types of wastes that they disposed of. However, there was no physical checking of the vehicles entering the site, and unapproved dumping of hazardous substances and residues may have taken place.
- o The population served by and uses of surface water and groundwater have been estimated.
- o Some geologic data, such as soil permeability, have been estimated from information which is not considered highly reliable.

REFERENCE 5



WRITTEN CONFIRMATION OF VERBAL COMMUNICATION

Project: Brezezinski LF (932006)

Date: 2-9-90

Time: P.M.

☒ Telephone

☐ Meeting

From: STAN BREZEZINSKI

Location: _____

To: Mike KOMOROSKE

Attendees: _____

Telephone Number: (716) 693-9948

Mr Brezezinski called to determine the status of the Phase II Investigation. I told him that the draft report had been reviewed by Niagara Co H.D., DEC-Region 9, NYSDaH, and this office. The consensus is that at a minimum additional soil boring and sampling is necessary. I would try to schedule the work for this Spring or Summer. He requested a copy of the report. I said I would send it. I told him the results indicate soils contaminated with solvents (degreasers) and that groundwater standards have been violated. We have not yet classified the site, it is still a suspected site. We could not delist the site.

I asked him whether petroleum waste or sludges were dumped at the site. He said no, that prior to strip rapping, the mouth of the cove, waste from the Niagara River would accumulate in the cove. He said Ashland Oil used to clean out their barges upriver. Also National Lead (Zn) discharged waste upriver. Similar situations up & down River.

I explained to him that if site classified a 2, he could petition the Commissioner or possibly get a hearing. I said I would send him a copy of the draft report. He said his parents operated the landfill which was permitted and inspected by Niagara County. I gave him Jo. Scuscia name of the to call if he liked. We concluded with the understanding that I would call him when field work scheduled.

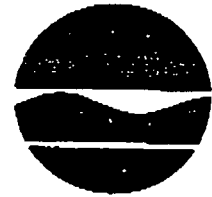
Signature _____

CC. file
T.M.

*
under
within
planting
of
analytical
results

914/735-7466

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



Thomas C. Jorling
Commissioner

TO: Chris Fern - LMS Engineers

FROM: Mike Komoroske - NYSDEC

DATE: 3-5-90

NUMBER OF PAGES: 1 + cover

FOR VERIFICATION OF PROBLEMS CALL me AT 457-0639

This message is sent from Pitney Bowes 8000

OUR RECEIVING TELECOPIER - RAPICOM 230 - (518) 457-1088

**The Following
Image(s) are
the Best Copy
Available**

BIEL'S

Lawler, Matusky & Skelly Engineers

Environmental Science & Engineering Consultants

One Blue Hill Plaza

Pearl River, New York 10965

MEMORANDUM OF
CONVERSATION

JOB Phase II Bronxville site JOB No. 576-111

DATE 12-8-73 TIME 1:30 PM

THE WRITER SPOKE TO:

M B. Bronowski OF Bronxville Site
owner 711, 675-4941

CONCERNING: _____

AND DECIDED: _____

Said. and limits of study are to that area
the river & reflect in the site. The study
people along the river who will be affected
by the proposed changes. That is, the
life of the community is affected.

National Association

Recreation Area

Industries, Paper

Building

Building Fee

CC: _____ SIGNED: Chris E.

CC: _____ SIGNED: _____

REFERENCE 6

NAME

LYNCH PARK (DEC #932006)

LOCATION

This site is a roughly 20 acre parcel located between the Niagara River and River Road (2040) in Wheatfield. The suspected disposal area included the lot west of the Lynch Park Trailer Court and a narrow (100') strip along the river south of the Trailer Park.

A site sketch is attached.

OWNERSHIP

The property described above was owned by Anna Brzezinski, who is recently deceased. Any correspondence regarding this site should be directed to Stanley Brzezinski, 2080 River Road, Wheatfield, NY 14304.

HISTORY

This site was used as a dumping area for clean fill and "hard" industrial waste until 1972. The fill material was used to extend the shoreline and fill a cove of the Niagara River.

The fill material consists of clean fill from the River Road sewer project excavations, broken concrete and wastes from the Carborundum Bonded Abrasives Plant in Niagara Falls. The Carborundum wastes included fly ash, sand, fire bricks, dust collector fines, kiln furniture, carborundum wheels, scrap globars, solid abrasive grains and plaster molds. The wastes were hauled by Carborundum trucks and the site was operated by Carborundum personnel, according to Mr. Brzezinski.

Mr. Brzezinski stated that no garbage or similiar wastes were disposed of at this site. A permit to operate issued in 1970 indicates that wood and other burnable materials were to be separated and taken to the County operated site on Witmer Road in Wheatfield.

During the middle 1960's an earthen berm was constructed across the mouth of the cove. This formed a pond which was then pumped dry and filled. Mr. Brzezinski said that a permit was obtained from the Army Corp. of Engineers for this project.

Niagara County Health Department files show that occasional complaints were received while the site was active. Typical complaints were with regard to open burning and dust. One complaint alledging that pumping from the ponded area was discoloring the river was received in 1966.

INVESTIGATION

An inspection was made by Michael Hopkins of the Niagara County Health Department on March 2, 1982. The area west of the Trailer Park was

MFHD
Hopkins
3-2

INVESTIGATION (continued)

covered with small mounds of earth. This mounded material appears to be clean fill material. A sparse tall grass cover and several small trees and bushes are established on the section. According to Mr. Brzezinski, despite the rough grading of the surface, water does not pool in this area.

The bank along the rivershore is riprapped with concrete rubble and similiar material. The shoreline area was well maintained and no erosion was apparent. A stockpile of concrete rubble, located on site was available for possible emergency use in case of severe evasion. Concrete cell bottoms from Hooker were placed along the shoreline south of the Trailer Park.

No signs of leachate were found. No exposed wastes were found except for concrete rubble and small quantities of pipe and other debris near the center of the site.

The visual inspection revealed no problems at this time.

PREVIOUS SAMPLING

There is no record of any previous sampling being done at this site.

EXAMINATION OF AERIAL PHOTOGRAPHS

1":660' USDA aerial photographs, numbers ARE-2V-33(1958) and ARE 2GC-16 (1966), were examined. These photos confirmed that the shoreline has been extended into the river since 1958 and that a "pond" was created in 1966 by dilling off a cove. No other information was obtained from these photos.

SOILS/GEOLOGY

The soils on this site are suspected to be largely composed of fill material, therefore the properties of the soil are unknown. Unconsolidated material is expected to extend to well below river level. Bedrock is Lockport Dolomite, over 120 feet thick. No boring or well records giving more accurate information were found.

GROUNDWATER

The depth to groundwater was not determined, but it is expected that the water table is near the level of the river. The direction of flow is unknown, but again it is suspected to flow toward the river.

There are no wells known to be used for drinking water in this area, although some old and/or abandoned wells may still exist. There are no industrial or commercial users of groundwater within three miles.

SURFACE WATER

The disposal area is adjacent to the Niagara River. The possibility of leaching into the river exists, although no leachate or signs of leachate were found at the time of this inspection.

The City of Niagara Falls water intakes are over three miles downstream.

The potential for flooding appears to be small since the surface grade of the disposal area is at least four to six feet above river level.

There are no major wetlands within one mile.

AIR QUALITY - FIRE - EXPLOSION

Health Department files show no record of complaints of odors or other problems attributable to this site since closure in 1972. Due to the nature of the wastes believed to be present here, no problems are expected. In addition, the potential for fire or explosion is considered to be small.

It is estimated that 400 to 500 people live within one-half mile of the site, 600 to 800 live within one mile and over 2,000 live within two miles. Over 1,000 buildings and 200 mobile homes are located within two miles, although many of these are within the Love Canal area and have been evacuated. The nearest residence is over 200 feet from the filled area.

Agricultural lands are less than one mile northeast. A major commercial center, Summit Park Mall, is 1.25 miles north. There is no major industry within two miles.

DIRECT CONTACT

The wastes appear to generally be covered. The site is posted with "No Trespassing" signs although it is not fenced.

CONCLUSIONS

If the wastes present are only the types of waste reported by the Interagency Task Force and by Mr. Brzezinski, the amount of hazardous substances present should be small. If any other wastes are present, the proximity of the disposal area to the Niagara River could provide for the leaching of pollutants into the river. However, no evidence has been found which suggests that such materials are buried here.

If deemed necessary, samples could be taken from nearly anywhere on the property. Periodic surveillance and monitoring should be maintained to assure that surface ponding of water and shoreline erosion do not become problems.

If any excavation is done on this site in the future, the DEC or Niagara County Health Dept. should examine the open excavations to verify that hazardous materials are not present.

WILLIAMS
ROAD

95.

RIVER
ROAD

BARBER
SHOP

STORE

REPORTEDLY
NOT ON FILLED
AREA

LYNCH PARK
TRAILER
COURT

SUSPECTED
DISPOSAL
AREA

ORIGINAL SHORELINE (AS ESTIMATED
FROM 1958 AERIAL
PHOTOGRAPH)

EARTHEN BERM
FACED WITH CONCRETE
PUSSLE

NIAGARA
RIVER

← Flow

CELL
PARTS

LYNCH PARK SITE
(DEC # 932006)

NORTH



NOT TO SCALE

M. Hopkin NCHD
3/2/82

REFERENCE 7

INTERAGENCY TASK FORCE ON HAZARDOUS WASTES
H.P.O. Box 561
Niagara Falls, New York 14302
(716) 285-3057

I. General Information

1. Company Name BELL AEROSPACE TEXTRON

Mailing Address P.O. BOX 1, BUFFALO, N.Y. 14240
Street City State Zip

Present Plant Location ☐ Same as Above

NIAGARA FALLS BLDG., NIAGARA FALLS, N.Y.
Street City State Zip

2. If Subsidiary or Division, Name of Parent Company TEXTRON

3. Person Responsible for Present Plant Operations MR. N. E. WILCOX
Name

EXECUTIVE VICE PRESIDENT 297-1000
Title Telephone

4. Person Answering this Questionnaire MR. I. GOSS
Name

MANAGER, PLANT SAFETY ENGINEERING
Title Telephone

II. Company History

1. Date Company Founded "SEE ATTACHED SHEETS"

Date and State of Incorporation _____

Date Company Began Operations in Erie or Niagara County _____

2. Other Company Names since 1930 (specify time periods) _____

3. Other Plant Locations In Erie or Niagara County since 1930 (specify locations and time periods) _____

4. Names of Companies Acquired which have Operated Plants in Erie or Niagara County since 1930 (specify name of company, date of acquisition, location of plant, and periods of operation). _____

5. Identify all Treatment or Disposal Sites In Erie or Niagara County used since 1930 (use separate sheet for each site).

- a. Name of Site UNKNOWN 5, 12, 9, 32, 200
- b. Location FOOT OF WILLIAMS RD.
- c. Owner or Operator STANLEY BREZERNISKI
- d. Time Period Site was Used 1962 TO 1966

e. Describe Waste Types Treated or Disposed at this Site	Physical State	Total Quantity	Type of Container If Any
(1) <u>PLASTER MOLDS</u>	<u>SOLID</u>	<u>UNKNOWN</u>	<u>NONE</u>
(2) _____	_____	_____	_____
(3) _____	_____	_____	_____
(4) _____	_____	_____	_____
(5) _____	_____	_____	_____

- f. Wastes Were ☒ land disposed ☐ incinerated ☐ reclaimed ☐ treated ☐ other (specify) _____

g. Names of waste haulers including your company transporting such wastes to this site, if a disposal site.

BELL AEROSPACE TEXTON (716) 297-1000
 Name Telephone
P.O. BOX 1 BUFFALO N.Y. 14240
 Street City State

Time Periods such Hauler Transported to this Site 1962 TO APPROX. 1966

 Name Telephone

 Street City State

Time Periods such Hauler Transported to this Site _____

h. List Names and Addresses of other Companies using this Site, if a disposal site.

UNKNOWN
 Name of Company

 Street City State

Time Periods such Other Company Used this Site _____

REFERENCE 8

**NIAGARA COUNTY
DEPARTMENT OF HEALTH**

File Lynch Park
inactive LF

Code Activity

Code Location

Service Request No.

Date Received Complaint

Service Request Inactive LF inspection - Lynch Park

Originator of Complaint NYS DOH - Bill Gilday Address

Owner Stanley Brezinski & Paul McCarthy Address

Occupant Lynch Park Trailer Court & adjacent lot Address River Road, Wheatfield

Date Hours

REPORT OF INVESTIGATION

5/2/85 2pm I inspected the Lynch Park site with Bill Gilday, Mr. Brezinski and Mr. McCarthy. Mr. McCarthy has now purchased the trailer court from Mr. Brezinski. Mr. Brezinski still owns the area to the west (the former dumpsite), however he may sell it to Mr. McCarthy at some future time. Mr. McCarthy may be interested in expanding the trailer court onto this area.

The following was noted during the inspection:

- 1) Physical site conditions are unchanged since previous inspections
- 2) The owners have contracted with Reera Research to conduct borings and collect samples for analysis. No results were available at this time
- 3) It was noted that the intake line to the Niagara County water District is on an ROW adjacent to the site
- 4) Mr. Brezinski has ~~petition~~ petitioned DEC to have the site removed from the registry. He has not yet received a response on this matter

M. Rappin

Date Abated

By

AF 140
Lynch 8-9

Code Activity

Code Location

Service Request No.

Date Received Complaint 11/6/69

Service Request Information Request

Originator of Complaint _____ Address _____

Owner Niagara Falls Incinerator Address New Rd. Niagara Falls, N.Y.

Occupant _____ Address _____

REPORT OF INVESTIGATION

Time	Hours	REPORT OF INVESTIGATION
6/6/69		Went to Niagara Falls Incinerator Plant

4:35 PM. as ordered by Mr. John Malinchocky, Sanitarian, D. C. H. D. in order to receive the following information regarding incinerator waste. I spoke to Mr. Walter J. Wozniak, 2nd shift foreman, who gave me the necessary information.

(1) Trucks leaving the incinerator, bring the waste materials to the Niagara County Solid Waste Dump at Witmer Rd. Town of Wheatfield.

② The truck model# is 5282-Res.

③ Loads: - Eight loads are delivered to the dump in a 24 hour period.

④ Capacity: 20 yards

⑤ The license no is 11074F

Date Abated 11/6/69 By A. J. Caggiano

Code Activity 81
Code Location A7
Service Request No. 12403
Date Received Complaint 11/6/04

Date	Hours	REPORT OF INVESTIGATION
1/11/68	4:00	There were 20 to 30 trucks loaded with manure waste on an area which Mrs. Etanien B. B. is making from the location. Bacteria have not been observed since the rain but it is in an area that is located in the surrounding area and about 20' from the city. It is from the city of New York. Further information is being gathered from the CHD and when facts are all in a book by the Department of Health, it is in question, will be kept up.

Date Abated 11/6/99 By A. J. [Signature]

Date Received Complaint 8-14-68

Occupant _____ Address River Road - Tennessee School of

100 Kings
8-9

Date Abated _____ By _____

*Brzezinski
Dump*

*Town of
Wheatfield
Dump*

June 2, 1969

Mr. Stanley Brzezinski
2080 River Road
Niagara Falls, New York

Dear Sir:

On Thursday morning, May 29, 1969, at 9:10 A.M., I observed open burning on your refuse disposal area on River Road. I notified one of my environmental health personnel by radio to contact you so that you could have the open burning extinguished. Your reply indicated that you could not or would not be able to do anything about the illegal open burning until after 5:00 P.M. because it would be an inconvenience for the volunteer fire company serving the Town of Wheatfield.

I cannot understand your frivolous attitude regarding your responsibilities as the operator of a refuse disposal area and your lack of concern for the provisions of the Niagara County and New York State Sanitary Codes which prohibit open burning. You are responsible for all activities on your refuse disposal site. If you cannot call on your volunteer fire company during certain hours, I shall insist that you have your own fire fighting capability located at the refuse disposal site to enable you to immediately extinguish all fires, regardless of their origin.

In the event that this department again observes illegal open burning at your disposal area, I shall recommend that the Niagara County Board of Health conduct a formal hearing to review our complete file on your past and present operation of this disposal area. I am confident that any additional violations would be sufficient reason for the Board to consider issuing an order for the immediate and permanent discontinuance of the operation of this disposal site. I expect that your future activity at the disposal area will insure that a formal hearing will not be necessary.

Very truly yours,

Ernest R. Gedeon
Assistant Commissioner for
Environmental Health (Acting)

ERG:ms

*WFHD
Hopkins 8-9*

REFERENCE 9

7
Town of Niagara
September 21, 1970

Mr. John Erzezinski
2030 River Road
Niagara Falls, New York

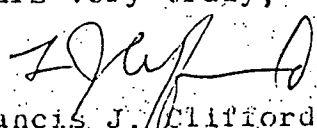
Re: Refuse Disposal Area

Dear Sir:

Your application for approval to operate a new refuse disposal area in Niagara County has been approved. This letter will serve as your permit to operate this new disposal facility, and the continued operation must be in compliance with Part 19 of the New York State Sanitary Code.

This disposal site will be used only for the materials outlined in your application. No food or garbage will be placed in this area. Sufficient cover will be used. No open burning will be allowed, and proper supervision must be provided by your employees for this operation. Please call this office if you have any questions regarding this matter.

Yours very truly,


Francis J. Clifford, M.D.
Acting Commissioner of Health

FJC:ms

RECEIVED
DATE

SEP 23 1970

FROM: HEALTH DIVISION
TO: MR. JAMES J. CLIFFORD

MEMORANDUM



Reference 9 Appendix H
f

NIAGARA COUNTY HEALTH DEPARTMENT

To Mr. Yavus Erk/DEC-Region Nine Office

Date June 16, 1989

From Mr. Paul Dicky

Subject Brzezinski Property
Town of Wheatfield, Niagara County
Site No. 932006
Draft Phase II Investigation, May, 1989

The following deficiencies were noted in the above noted report:

Page 4-2, paragraph 3 - The Niagara County Health Department issued a Permit to John Brzezinski to operate this site on September 21, 1970. The attached correspondence served as his Permit to receive abrasive materials and various wheels and sand from Carborundum Bonded Division on Buffalo Avenue, Niagara Falls. It is noted that a large percentage of the landfill had already been used prior to Mr. Brzezinski's application for this Permit.

Page 4-3, paragraph 1 and page 4-16, paragraph 1 - Only one of two City of Niagara Falls water intakes is not in use. The Niagara Falls Plant currently uses the emergency tunnel which draws water from the east branch of the Niagara River.

The department agrees with the recommendations for further investigation at this site.

PD:ms

REFERENCE 10

MEMORANDUM

NIAGARA COUNTY HEALTH DEPARTMENT

TO: Mr. Ronald Gwozdek, P.E.

FROM: Mr. Paul Dicky *Paul Dicky*

SUBJECT: NCWD EIS Scoping Meeting
November 21, 1989

DATE: November 27, 1989

The meeting was attended by:

Three representatives of R & D Engineering and Land Surveying
One representative for Grand Island
Two representatives for Niagara County Planning Department:
Mr. Harvey Albond and Mr. Ted Bellings
One representative for Niagara County Health Department:
Mr. Paul Dicky

A typo was noted on the second page of the SEQR Positive Declaration dated 10/6/89. The first sentence should read, "This project will result in the additional use of 16 MGD of surface water from the Niagara River."

The plant capacity will rise from 32 MGD to 48 MGD. The water district already has approval to remove 50 MGD so that the Permit will not need to be revised.

Grand Island expressed some concern as to the route of the new water line with respect to existing utilities. Also requested were safeguards which would ensure an undisrupted water supply during expansion.

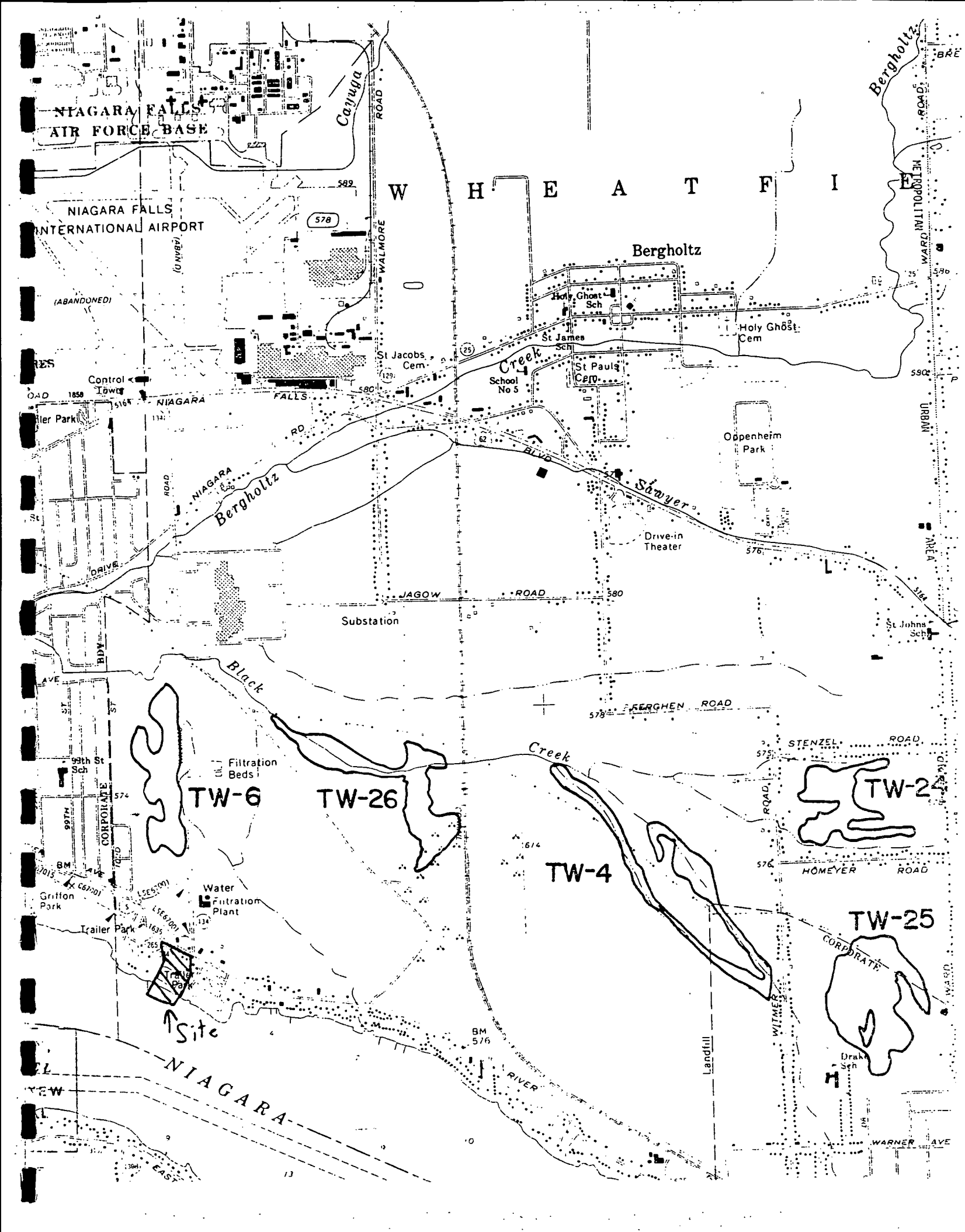
Niagara County Health Department informed R & D Engineering of the Draft Phase II Report of the Brezinski Landfill (#932006) which indicated extensive solvents contamination at the north end of the landfill. It was noted that the plume of contamination has not yet been defined and that the New York State Department of Environmental Conservation should be contacted to see what their intensions are for the site. R & D reported that they had spoken to DEC and were verbally told the project is outside the landfill area. Mr. Dicky explained that the contamination was discovered north of the fill area and it was expected to extend in a southerly direction. Further investigation would be required to positively locate the contamination plume.

The meeting lasted approximately 45 minutes.

PD:ms

file
Brezinski
LF
#932006

REFERENCE 11



REFERENCE 12

L
RERA 8-8

6. LYNCH PARK (USGS field reconnaissance)

NYSDFC 932006

General information and chemical-migration potential.--Lynch Park, in the town of Wheatfield, was used to deposit clean fill from a sewer project and assorted rubble from an abrasives plant.

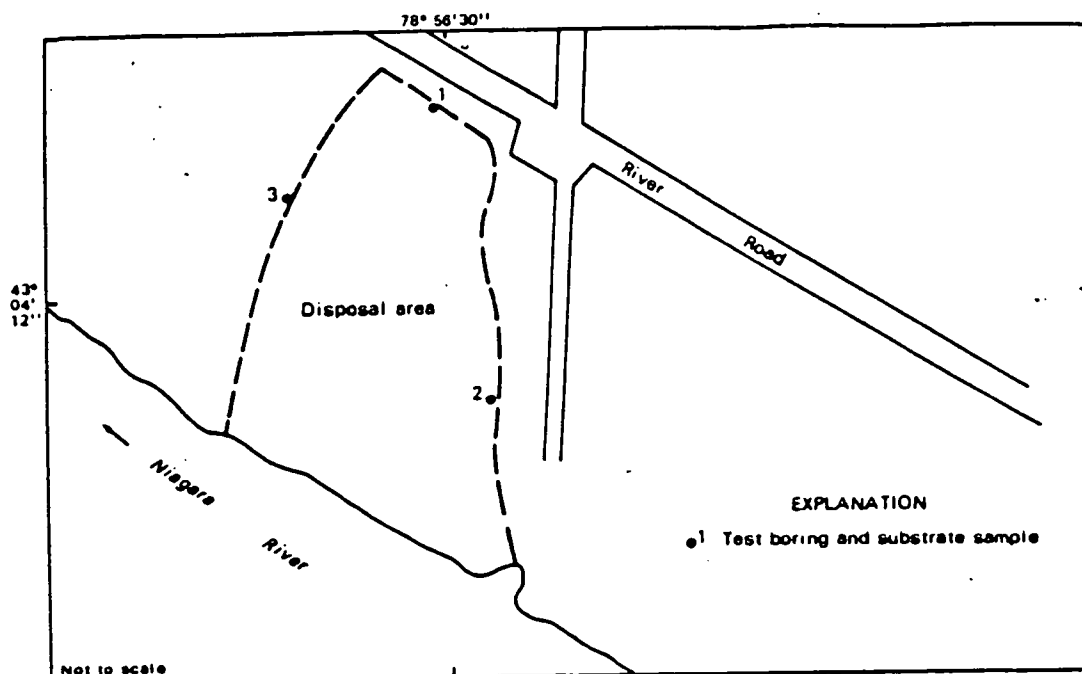
Geologic data indicate some potential for contaminant migration offsite, but the actual potential is indeterminable. One substrate sample contained a high concentration of copper. Additional sampling and monitoring would be needed to evaluate the extent of migration.

Geologic information.--The site consists of fill overlying lacustrine clay deposits containing sand stringers. The U.S. Geological Survey drilled three test holes on the site in 1982; the locations are shown in fig. C-35. The geologic logs are as follows:

<u>Boring no.</u>	<u>Depth (ft)</u>	<u>Description</u>
1	0 - 2.9	Brown topsoil.
	2.9 - 4.6	Clay, greenish-gray with rust stains.
	4.6 - 6.3	Clay, green-gray.
	6.3 - 8.0	Sand, fine to coarse, wet.
		Clay, pinkish. SOIL SAMPLE: 6.5 ft.
2	0 - 3.4	Topsoil, dark brown, clay, gray.
	3.4 - 5.0	Reddish fill.
	5.0 - 6.6	Clayey, black, oily, sandier lower 8 inches.
	6.6 - 8.1	Clay, tan, tight.
	8.1 - 11.8	Black organic debris.
	11.8 - 13.3	Sand, black-gray, fine to very fine, wet. SOIL SAMPLE: 12 ft.
3	0 - 2.0	Topsoil.
	2.0 - 3.5	Debris, fill material, clay, gray, tight, dry.
	3.5 - 5.0	Black carbonlike material.
	5.0 - 6.6	Black organic material.
	6.6 - 8.7	Black, oily, sandy material.
	8.7 - 10.2	Clay, black, sandy, wet.
	10.3 - 11.8	Sand, fine to medium, black, saturated. SOIL SAMPLE: 11 ft.

Hydrologic information.--Ground water was encountered in each test boring at 6 to 11 ft below land surface. That saturated material was mainly fine-grained sand but did not produce sufficient water to warrant the installation of monitoring wells. Ground-water flow is southwestward toward the Niagara River.

Chemical information.--The U.S. Geological Survey collected three soil samples for copper, iron, mercury, and organic-compound analyses; results are given in table C-17. Copper was above background levels in sample 2. Only two organic nonpriority pollutants were detected.



Base from USGS field sketch, 1982

Figure C-35. Location of sampling holes at Lynch Park, site 76, Wheatfield.

Table C-17.--Analyses of substrate samples from Lynch Park, site 76, Wheatfield, N.Y., June 19, 1982.

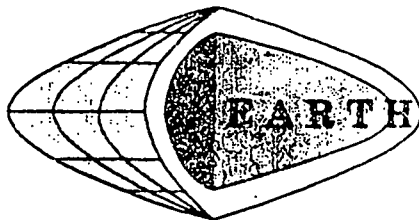
(Locations shown in fig. C-34. Concentrations are in $\mu\text{g}/\text{kg}$; dashes indicate that constituent or compound was not found.)

	Sample number and depth below land surface (ft)		
	1 (6.5)	2 (6.5)	3 (12.6)
<u>Inorganic constituents</u>			
Copper	5,000	61,000††	13,000
Iron	2,300,000	20,000,000	7,400,000
Mercury	--	--	--
<u>Organic compounds</u>			
<u>Nonpriority pollutants</u>			
3,5-Dimethyl-2-pyroxoline-1-carboxamide ¹	--	15,700	--
4,4,5-Trimethyl-2-hexene ¹	--	512	--

¹ Tentative identification based on comparison with the National Bureau of Standards (NBS) library. No external standard was available. Concentration reported is semiquantitative and is based only on an internal standard. GC/MS spectra were examined and interpreted by GC/MS analysts.

†† Exceeds concentrations in samples taken from Niagara Falls area. Undisturbed soils not analyzed for iron.

REFERENCE 13



EARTH DIMENSIONS, INC.

Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

BORE HOLE NO. 5

SURF. ELEV. _____

2K83 PROJECT Contaminant Study
River & Williams Rd., Tn. of Wheatfield

See location map

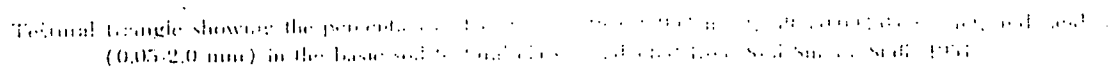
CLIENT THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DATE STARTED 11/7/83 COMPLETED 11/7/83

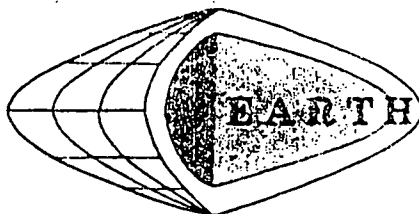
DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER					DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		4	6	12	18	24		
	1	4					Moist distinctly mottled mixed and in layers reddish brown silty clay (CLAYEY-SILT) fill and grayish brown gravelly loam (SAND-SILT-CLAY) fill with 15 to 30% gravel, hard and dense	Soil fill and non- soil industrial fill to 11.0 feet over clayey lake sediment to 27.5 feet over loamy glacial till to end of boring.
			11					
				20				
					29			
	2	29					----- clear transition to -----	2.6
			41				Moist faintly mottled grayish brown gravelly silty clay loam (CLAYEY- SILT) fill with 15 to 40% gravel and occasional cobble, hard	
				35				
					36			
	3	9					----- clear transition to -----	3.0
5			25				Moist faintly mottled reddish brown gravelly silty clay loam (CLAYEY- SILT) fill with 15 to 30% gravel & occasional cobble, hard	
				43			----- clear transition to -----	4.5
					32		Moist distinctly mottled olive gray silt loam (CLAYEY-SILT) fill, hard	
	4	6					----- clear transition to -----	5.0
			10				Moist distinctly mottled olive gray and black silt loam (CLAYEY-SILT) fill with 5 to 15% gravel & occ- asional cobble, hard (with sand paper and/or industrial fill below 7.5 feet)	No recovery to sample 5.
				14			----- grades downward to -----	9.5
					11		Wet black cindery industrial fill	
	5	1						11.0
			24					
				32				
10					9			
	6	3						
			7					
				8				
					15			
						15		
15	7	4					Moist reddish brown & gray silty clay (CLAYEY-SILT), very stiff, thinly laminated with nearly vertical gray desiccation cracks and very thin coarse silt lenses	12.0
			8				----- grades downward to -----	
					12		Extremely moist reddish brown and gray silty clay (CLAYEY-SILT), very stiff, thinly laminated with occas- ional very thin coarse silt lenses	

Continued on 2....

N = NUMBER OF BLOWS TO DRIVE 2 "S" IN 12 " WITH 140 LB. WT. FALLING 30 " PER BLOW.

LOGGED BY George Moreau/Natural Resource Specialist





EARTH DIMENSIONS, INC.

Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

BORE HOLE NO. 5 continued

SURF. ELEV. _____

2K83 PROJECT Contaminant Study
River & Williams Rd., Tn. of Wheatfield

See location map

CLIENT First Petroleum Inc. (FPI) 2000

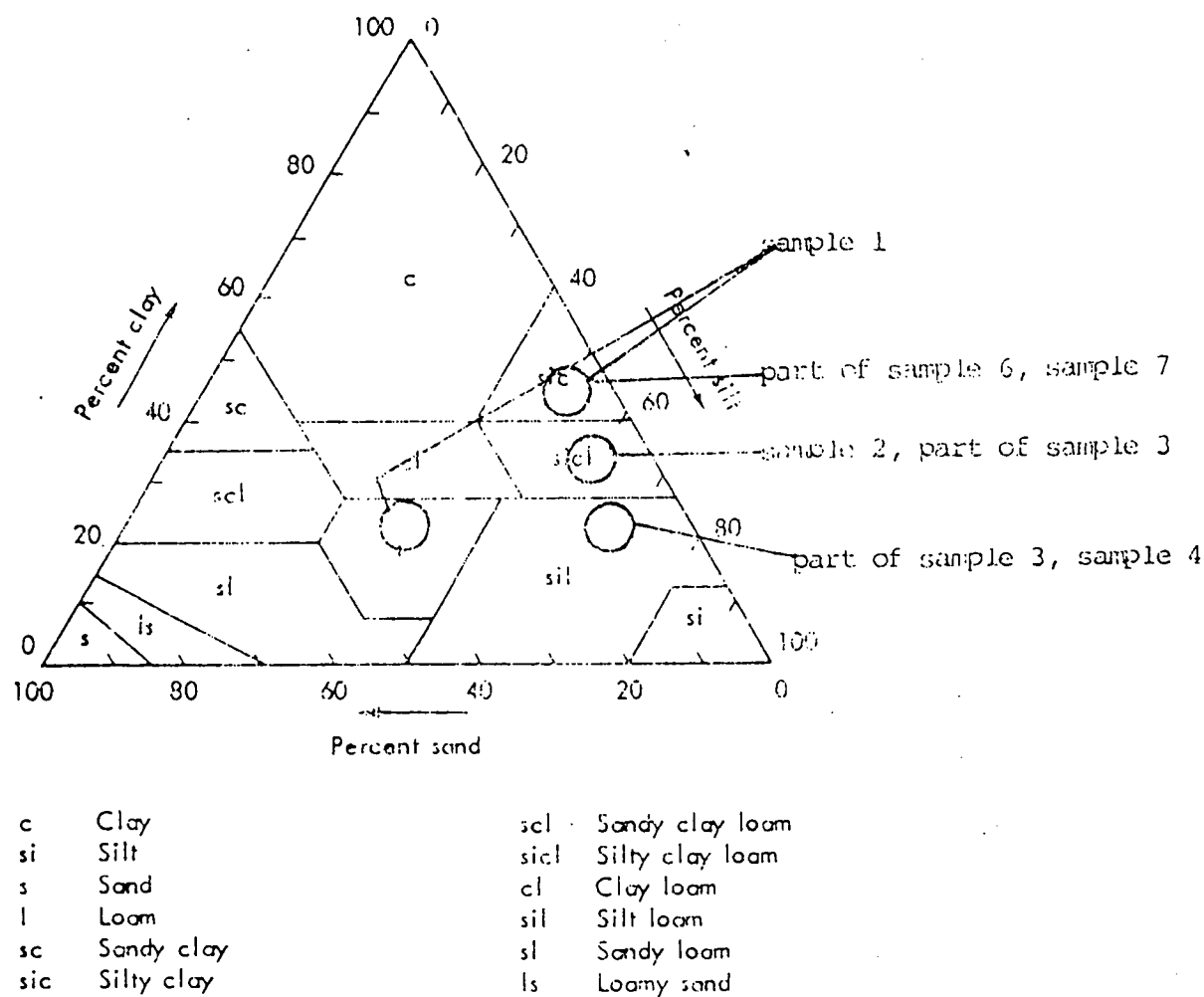
DATE STARTED 11/7/83 COMPLETED 11/7/83

DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER						DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		0 6	6 12	12 18	18 24	N			
								See previous sheet ----- grades downward to -----	18.0
20	8	1						Extremely moist reddish brown and gray silty clay (CLAYEY-SILT), stiff, thinly laminated with occasional very thin coarse silt lenses	22.5
			5			11		----- grades downward to -----	
				6				Wet reddish brown and gray silty clay (CLAYEY-SILT), firm, thinly laminated with occasional very thin coarse silt lenses which tend to liquefy when disturbed	27.5
								----- grades downward to -----	
25	9	1							
			3			6		Extremely moist reddish brown shaly clay loam (SAND-SILT-CLAY) with 15 to 30% mostly black shale channels and gravel, very stiff, massive soil structure	
				3					
30	10	5							
			8			16			
				8					31.5
					7				
								Boring completed at 31.5 feet.	
35									

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 LB. WT. FALLING 30 " PER BLOW.

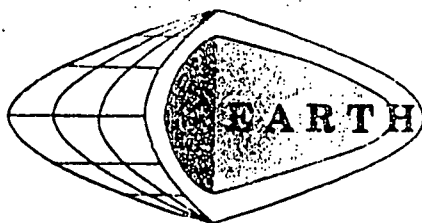
LOGGED BY George Moreau/Natural Resource Specialist

SHEET 2 OF 2



Textural triangle showing the percentages of clay (less than 0.002 mm), silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural classes (adapted from Soil Survey Staff, 1951).

ESTIMATED FIELD TEXTURE



EARTH DIMENSIONS, INC.

Test Borings and Logs

East Aurora, New York 14052 • (716) 656-1717

BORE HOLE NO. 4

SURF. ELEV. _____

2K83 PROJECT Contaminant Study
River & Williams Rd., Tn. of Wheatfield

North end of fill area

CLIENT FIRST FLOOR, 10000, 10000, 10000

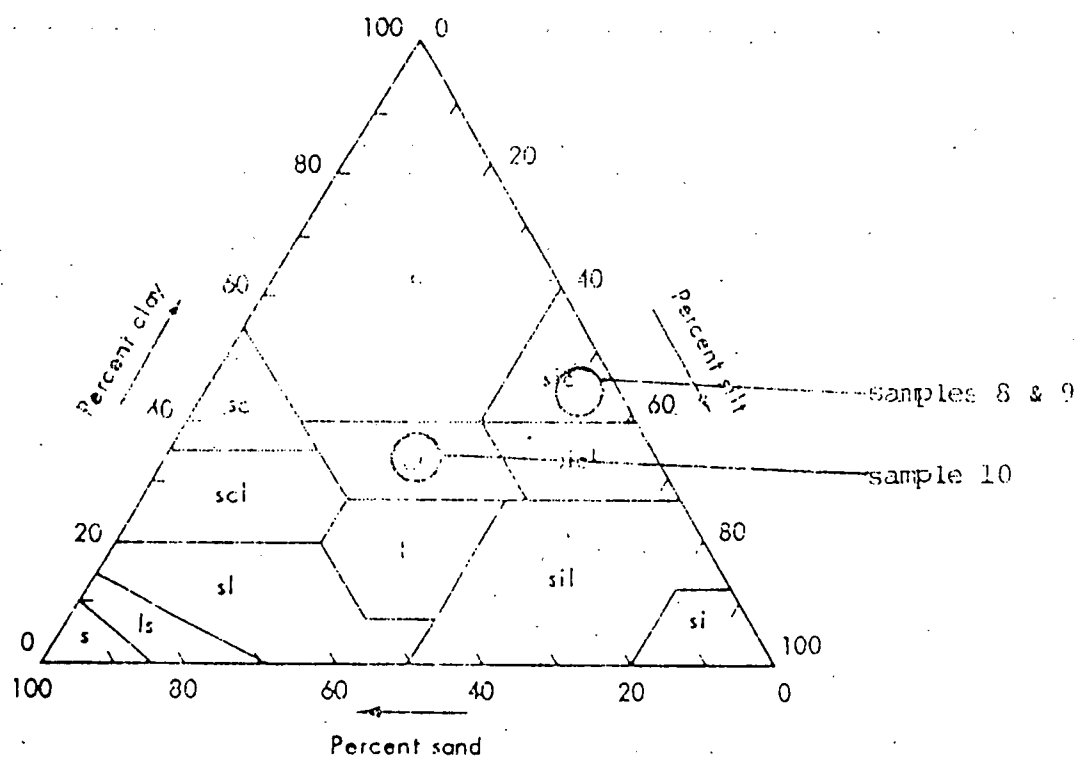
DATE STARTED 11/4/83 COMPLETED 11/4/83

DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER						DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		6 4	6 12	12 18	18 24	24 30	N		
	1	4						Moist distinctly mottled grayish brown mixed silty clay (CLAYEY-SILT) and loam (SANDY-SILT) fill with 5 to 15% gravel, compact, very stiff	Soil fill to 6.5 feet over clayey lake sediment to end of boring
			15				43	----- clear transition to -----	
				28			40		
	2	21						Moist faintly mottled reddish brown gravelly silty clay (CLAYEY-SILT) fill or reworked material with 15 to 25% gravel and occasional cobble, hard	2.0
			26				68	----- clear transition to -----	
				42			67		
5	3	5						Moist distinctly mottled reddish brown and black mixed and in layers silty clay (CLAYEY-SILT) fill and silt loam (CLAYEY-SILT) fill, very dense, hard	6.5
			18				38	----- clear transition to -----	
				20			22		
	4	3						Moist distinctly mottled reddish brown silty clay (CLAYEY-SILT), hard, thinly laminated with nearly vertical gray desiccation cracks and very thin coarse silt lenses	10.6
			15				53	----- clear transition to -----	
				38			57		
	5	9						Extremely moist reddish brown silty clay (CLAYEY-SILT), hard, thinly laminated with very thin coarse silt lenses	12.0
			23				56		
				33			51		
10	6	11							Boring completed at 12.0 feet.
			20				43		
				23			27		
									No water at completion
15									

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 LB. WT FALLING 30 " PER BLOW

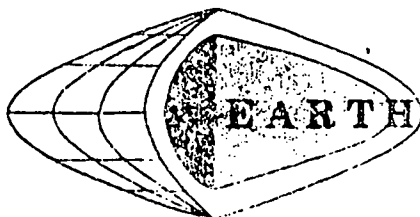
LOGGED BY George Moreau/Natural Resource Specialist

SHEET 1 OF 1



c	Clay	scl	Sandy clay loam
si	Silt	scli	Silty clay loam
s	Sand	cl	Clay loam
l	Loam	sil	Silt loam
sc	Sandy clay	sl	Sandy loam
sic	Silty clay	ls	Loamy sand

Textural triangle showing the percentages of clay, less than 0.002 mm, silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural class (adapted from Soil Survey Staff, 1951).



EARTH DIMENSIONS, INC.

Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

BORE HOLE NO. 6

SURF ELEV. _____

2K93 PROJECT Contaminant Study:
River & Williams Rd., Th. of Wheatfield

See location map

CLIENT 1985 METROPOLITAN POLICE DEPT. - NY

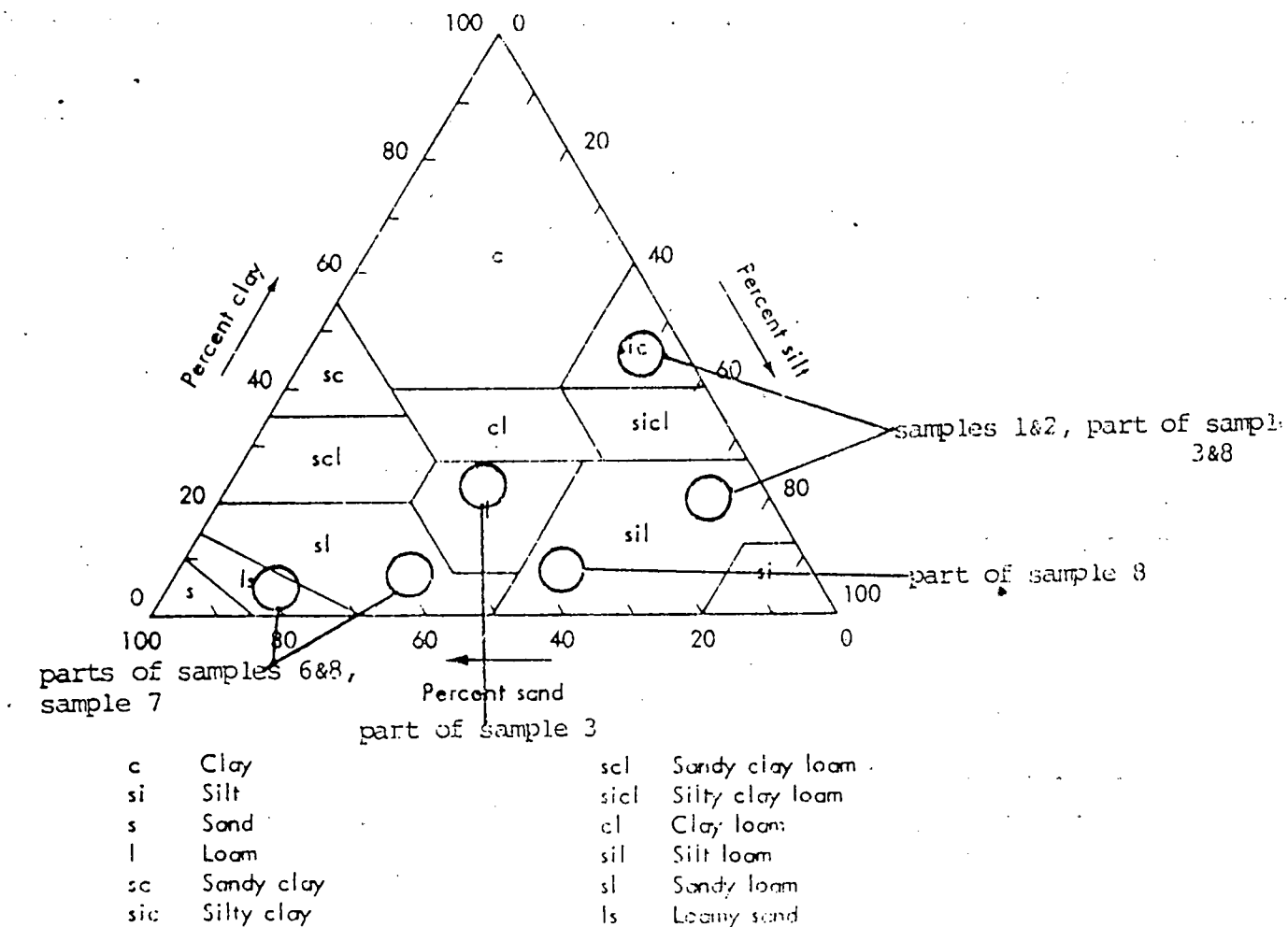
DATE STARTED 11/7/83 COMPLETED 11/7/83

DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER						DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		0 6	6 12	12 18	18 24	24 30	N		
	1	2						Extremely moist mixed and in layers silty clay (CLAYEY-SILT) and distinctly mottled grayish brown gravelly silt loam (CLAYEY-SILT) fill with 15 to 25% gravel, firm	4.5
			3				8		
				5					
					6				
	2	7						----- clear transition to ----- Extremely moist distinctly mottled olive gray loam (SAND-SILT-CLAY) fill with 5 to 15% gravel and occasional cobble, hard	5.5
			23				44		
				21					
					24				
	3	18						----- clear transition to ----- Wet black industrial fill, cinders and slag, very dense No recovery to sample 4 ----- grades downward to ----- Wet black industrial fill, slag and cinders, compact	7.0
5			39				70		
				31					
					100/4.5"				
	4	50/1" NR						Wet faintly mottled olive gray loamy sand (SAND) medium size, interbedded with gray fine sandy loam (SILTY-SAND), tends to liquefy when disturbed readily liquefies below 12.0 feet, compact, thinly bedded	10.5
	5	4						----- clear transition to ----- Wet gray silt loam (SANDY-SILT) alluvium with shell fragments, very loose, thinly bedded	15.0
			7				18		
				11					
10							18		
	6	6						----- clear transition to ----- Wet reddish brown and gray silty clay (CLAYEY-SILT), soft, thinly laminated with very thin coarse silt lenses	16.0
			9				20		
				11					
					16				
	7	4						Boring completed at 16.0 feet.	
			3				8		
				5					
					5				
	8	2							
15			1				2		
				1					
					2				

N = NUMBER OF BLOWS TO DRIVE _____ 10 _____ 12 _____ 140 _____ 30 _____ PER BLOW

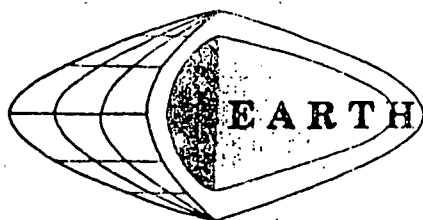
2K83

BORE HOLE 6



Textural triangle showing the percentages of clay (less than 0.002 mm), silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural classes adapted from Soil Survey Staff, 1951

ESTIMATE SOIL TEXTURES



EARTH DIMENSIONS, INC.

Test Borings and Logs

East Aurora, New York 14052 • (716) 655-1717

BORE HOLE NO. 7

SURF. ELEV. _____

2K83 PROJECT Contaminant Study
River & Williams Rd., Tn. of Wheatfield

See location map

CLIENT First Metropolitan Capital Corp

DATE STARTED 11/7/83 COMPLETED 11/7/83

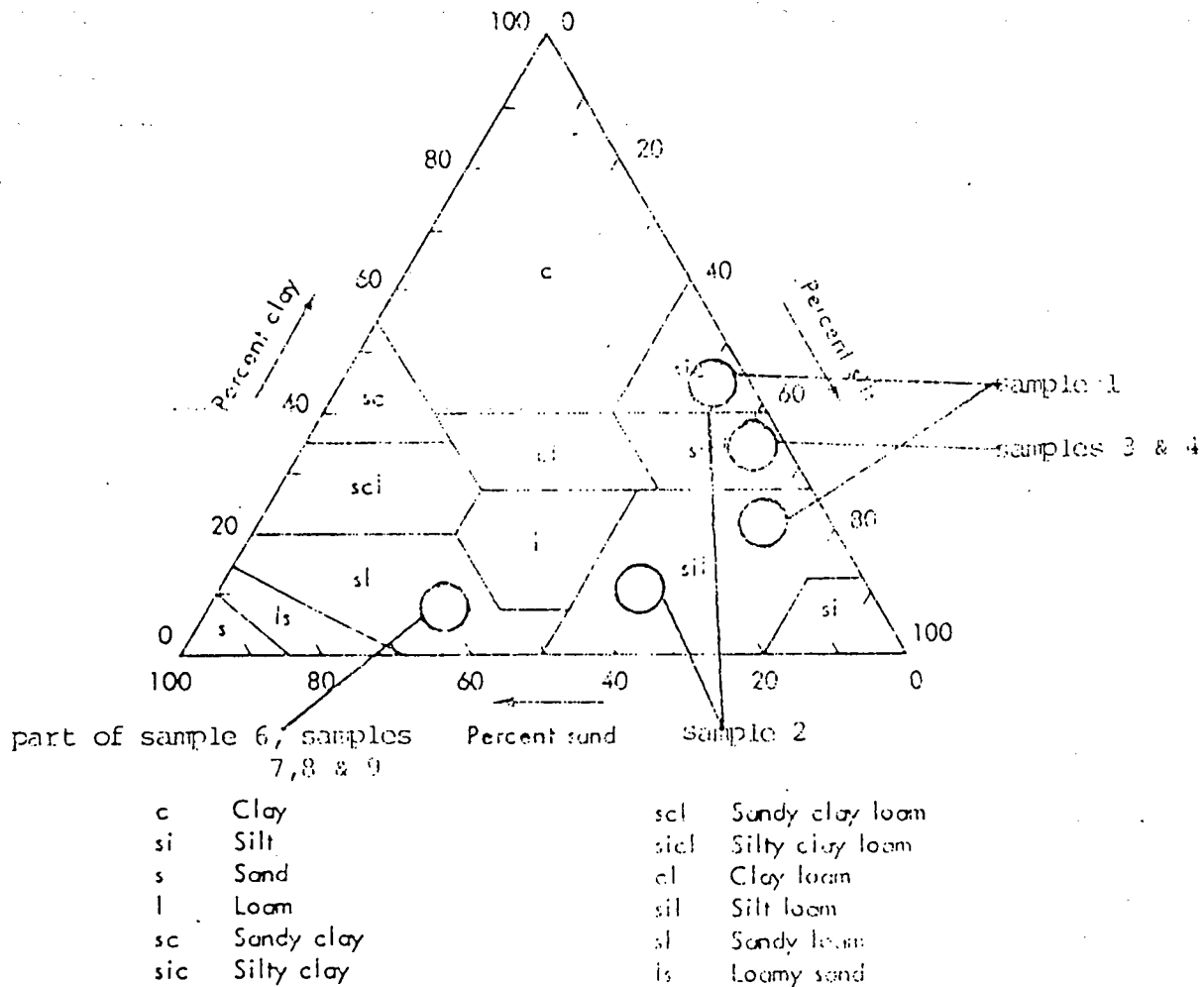
DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER							DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		1	2	3	4	5	6	N		
	1	2							Extremely moist distinctly mottled mixed and in layers reddish brown silty clay (CLAYEY-SILT) fill and brownish gray silt loam (CLAYEY-silt) fill with 5 to 15% gravel, stiff	Soil fill and nonsoil industrial fill to 10.5 feet over water
			4					10		
				6				10		
	2	11								
			22					3	----- clear transition to -----	2.0
				31					Moist distinctly mottled in layers reddish brown silty clay (CLAYEY-SILT) fill and silt loam (SANDY-SILT) fill, hard and very dense	
					47					
5	3	23								4.0
			19					57	----- clear transition to -----	
				38					Moist faintly mottled black and grayish brown gravelly silty clay loam (CLAYEY-SILT) fill with 15 to 25% gravel and cindery industrial fill and slag, hard	
					37					6.0
	4	4							----- clear transition to -----	
			7					18	Extremely moist faintly mottled black silty clay loam (CLAYEY-SILT) fill with 10 to 25% gravel and occasional cobble with industrial fill and wood fragments, very stiff	
				11						8.0
					80				----- clear transition to -----	
	5	2							Wet black industrial fill, including slag and cinders	10.5
			5					20		
10				15					Wet gray fine sandy loam (SILTY-SAND) with a slight tendency to liquefy when disturbed, dense, thinly bedded	
					20				----- clear transition to -----	12.0
	6	8							Wet gray fine sandy loam (SILTY-SAND), tends to liquefy when disturbed, compact, thinly bedded	
			14					30		
				16						
					13					
	7	2								
			8					18		
					10				----- clear transition to -----	
						15				
15	8	3								
			5					11		
				6						
					9					
	9	1								
			2					5		
					3					

Continued on 2.....

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 LB WT. FALLING 30 " PER BLOW.

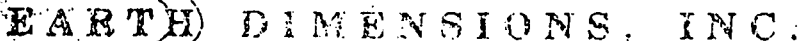
LOGGED BY George Moreau/Natural Resource Specialist

SHEET 1 OF 2



Textural triangle showing the percentages of clay (less than 0.002 mm), silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural classes (adapted from Soil Survey Staff, 1951).

ESTIMATED FIELD TEXTURES



East Aurora, New York 11052 • (716) 654-1717

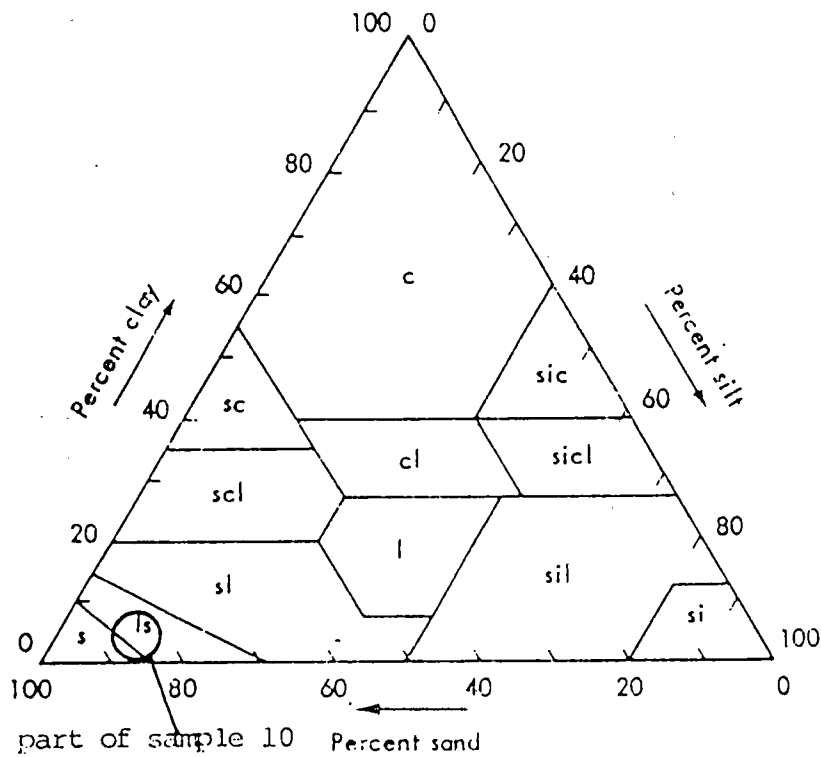
SURF. ELEV.

See location map

DATE STARTED 11/7/83 COMPLETED 11/7/83

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 LB. WT. FALLING 30 " PER BLOW

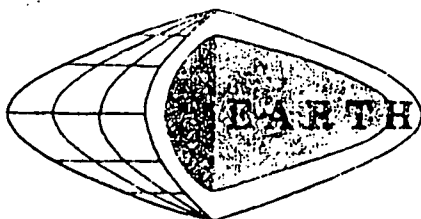
SHEET 2 OF 2



c	Clay	scl	Sandy clay loam
si	Silt	siel	Silty clay loam
s	Sand	cl	Clay loam
l	Loam	sil	Silt loam
sc	Sandy clay	sl	Sandy loam
sic	Silty clay	ls	Loamy sand

Textural triangle showing the percentages of clay, silt, and sand (0.002-0.075 mm), and sand (0.075-2.0 mm) in the loam soil texture. (Adapted from USDA Soil Survey Staff, 1951)

ESTIMATED FIELD TEXTURE



EARTH DIMENSIONS, INC.

Test Borings and Logs
East Aurora, New York 14052 • (716) 655-1717

BORE HOLE NO. 8

SURF. ELEV. _____

2K83 PROJECT Contaminant Study
River & Williams RD., Th. of Wheatfield

See location map

CLIENT East Aurora, New York

DATE STARTED 11/7/83 COMPLETED 11/7/83

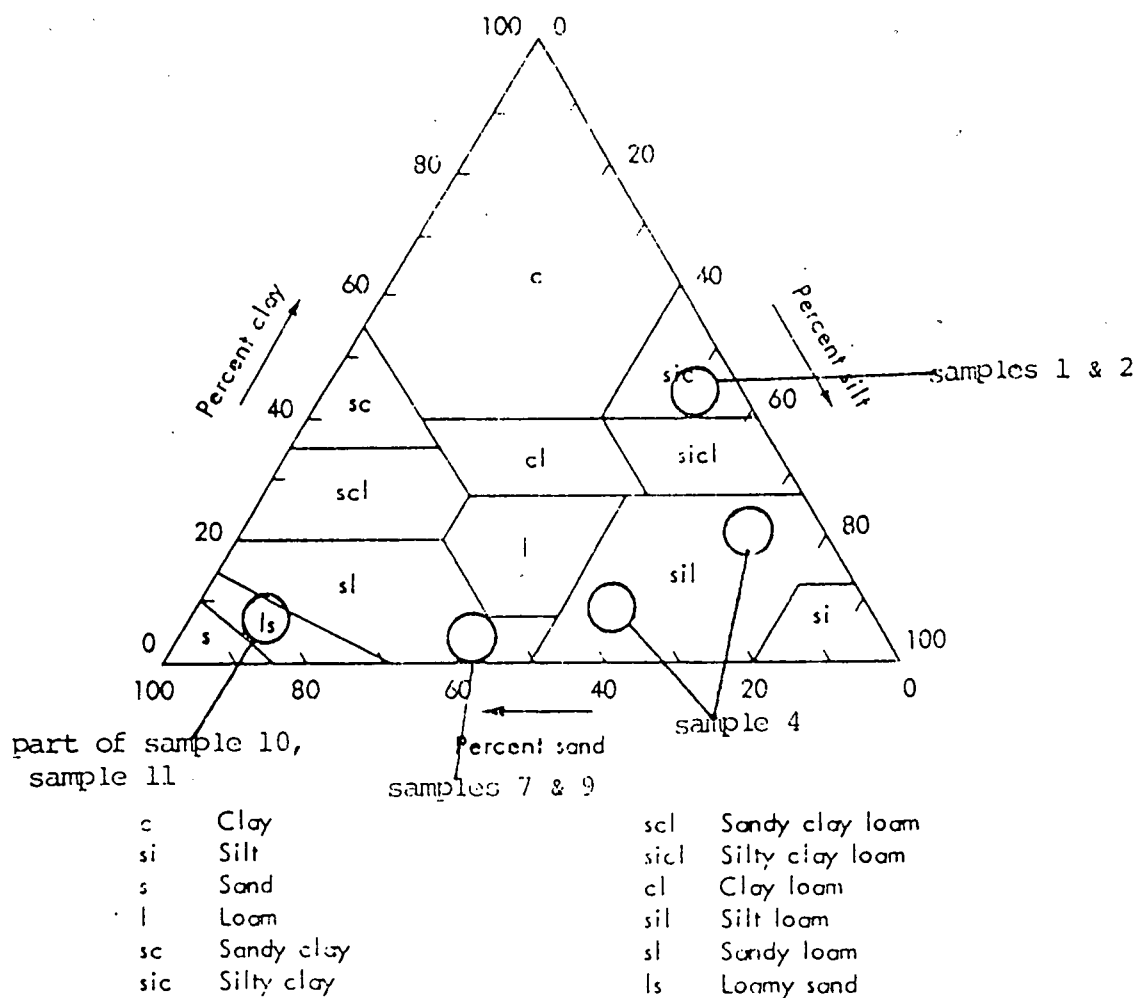
DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER						DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		0 6	6 12	12 18	18 24	24 30	N		
	1	7						Moist faintly mottled reddish brown and grayish brown very gravelly silty clay (CLAYEY-SILT) fill with 25 to 40% gravel and occasional cobble, very stiff	Refusal at 6.0 feet. Offset and reauger to 6.0 feet.
			11				25		
				14					
					16				
	2	9						No recovery to sample 3	Soil fill and industrial fill to 12.0 feet over water sorted and deposited mostly fine sand and little silt to 20.5 feet over water sorted and deposited mostly medium size sand and gravel to end of boring.
			14				39		
				25					
					50/5"				
5	3	50/0"						Extremely moist black silty loam (SANDY-SILT) and silt loam (CLAYEY-SILT) mixed and in layers, fill with 5 to 25% gravel and slag fill and wood fragments, hard and very dense	5.0
	4	8						Grinding wheel fragments, sandpaper, black industrial fill	8.0
			19				58		
				39					
					50/8"				
	5	33						No recovery to sample 6	Water table at 9.0 feet below surface at completion.
			74				93		
				19					
10	6	6							12.0
			2				10		
				8					
					10				
	7	11						Wet dark gray fine sandy loam (SILTY-SAND), compact, thinly bedded	
			16				29		
				13					
					14				
	8	8						No recovery to sample 8	
15			9				7		
				9					
					9				
	9	4							
			7				14		
				7					

Continued on 2.....

N = NUMBER OF BLOWS TO DRIVE 2 " SPOON 12 " WITH 140 LB. WT. FALLING 30 " PER BLOW.

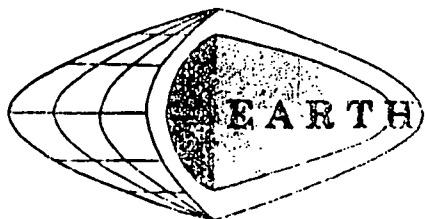
LOGGED BY George Moreau/Natural Resource Specialist

SHEET 1 OF 2



Textural triangle showing the percentages of clay (less than 0.002 mm), silt (0.002-0.05 mm), and sand (0.05-2.0 mm) in the basic soil textural classes (adapted from Soil Survey Staff, 1951).

ESTIMATED FIELD TEXTURES:



EARTH DIMENSIONS, INC.

Test Borings and Logs

East Aurora, New York 11052 • (716) 655-1717

BORE HOLE NO. 8 continued

SURF ELEV. _____

2K83 PROJECT Contaminant Study
River & Williams Rd., Tn. of Mountfield

See location map

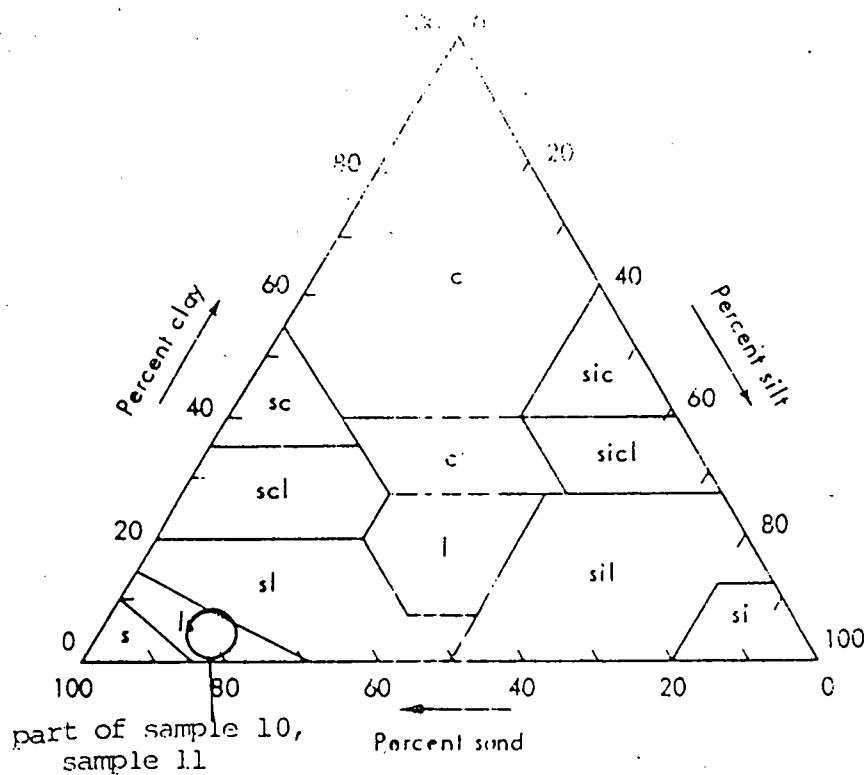
CLIENT First International Realty Corp

DATE STARTED 11/7/83 COMPLETED 11/7/83

DEPTH feet	SAMPLE NO.	BLOWS ON SAMPLER						DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
		0 6	6 12	12 18	18 24	24 30	N		
	9				8			Wet dark gray fine sandy loam (SILTY-SAND), compact, thinly bedded	
20	10	2							
			6				16		
				10			28		
	11	40						----- grades downward to ----- Wet dark gray gravelly loamy sand (SAND) with 15 to 30% mostly sub- rounded to rounded gravel & occas- ional cobble, compact, weakly stratified	20.5
			50/3"						
25								Augered to 24.5 - could not sample due to sand and gravel plug in auger. Boring completed at 24.5 feet.	24.5
30									
35									

N = NUMBER OF BLOWS TO DRIVE 2 WITH 12 " WITH 140 G. WT. FALLING 30 " PER BLOW

LOGGED BY George Monahan (National Board Certified)



c	Clay	scl	Sandy clay loam
si	Silt	sic	Silty clay loam
s	Sand	cl	Clay loam
l	Loam	sil	Silt loam
sc	Sandy clay	sl	Sandy loam
sic	Silty clay	ls	Loamy sand

Ternary triangle showing the percentages of sand, silt, and clay (particles of size 0.075 to 0.002 mm) in the bulk soil material. The soil texture is determined by the relative percentages of sand, silt, and clay.

ESTIMATED FIELD TEXTURES

ANALYTICAL RESULTS

Report Date: 12/20/83

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION		
				B-5
Benzene	ug/g dry			<0.1
Toluene	ug/g dry			<0.1
m-Xylene	ug/g dry			<0.1
o-Xylene	ug/g dry			<0.1
p-Xylene	ug/g dry			<0.1
Volatile Halogenated Organic Scan (Coulson's)	ug/g dry as Chlorine; Carbon Tetrachloride Standard			<1
Total Recoverable Phenolics	ug/g dry			79
Dry Weight (103°C)	%			79

COMMENTS:

Comments pertain to data on one or all pages of this report.

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

Volatile Halogenated Organic Scan (Coulson's) results are used for screening purposes only and are not designed for qualification or quantification of specific organic compounds. The results are calculated based upon the response factor and chlorine content of Carbon Tetrachloride but do not imply either the presence or absence of the compound itself.

FOR RECRA ENVIRONMENTAL LABORATORIES

Heborah J. Prasio

DATE

12/20/83

RECRA ENVIRONMENTAL LABORATORIES
I.D. #83-1281/3W-172

ANALYTICAL RESULTS

QUALITY CONTROL

Report Date: 12/20/83

RECOVERY ANALYSIS OF
SAMPLE B-5

COMPOUND IDENTIFICATION	ng OF SPIKE	ng RECOVERED	% RECOVERY
Carbon Tetrachloride	90	63	70

FOR RECRA ENVIRONMENTAL LABORATORIES

William J. Proctor

DATE

12/20/83

RECRA ENVIRONMENTAL LABORATORIES

I.D. #83-1281/3W-172

ANALYTICAL RESULTS

Report Date: 12/20/83

PARAMETER	UNITS OF MEASURE	SAMPLE IDENTIFICATION		
		B-6	B-7	B-8
Benzene	µg/g dry	<0.1	<0.1	<0.1
Toluene	µg/g dry	<0.1	<0.1	<0.1
m-Xylene	µg/g dry	<0.1	<0.1	<0.1
o-Xylene	µg/g dry	<0.1	<0.1	<0.1
p-Xylene	µg/g dry	<0.1	<0.1	<0.1
Volatile Halogenated Organic Scan (Coulson's)	µg/g dry as Chlorine; Carbon Tetrachloride Standard	<1	<1	<1
Total Recoverable Phenolics	µg/g dry	2.9	6.5	7.6
Dry Weight (103°C)	%	67	78	85

COMMENTS:

Results of the analysis of specific organic compounds are based upon the matching of retention times, between samples and standards, on a single gas chromatographic column.

Results of the analysis of soils are corrected for moisture content and reported on a dry weight basis.

FOR RECRA ENVIRONMENTAL LABORATORIES

Heborah J. Prosser

DATE

12/20/83

RECRA ENVIRONMENTAL LABORATORIES

I.D. #83-1281/3W-172

The Identification of the analyzed samples are as follows:

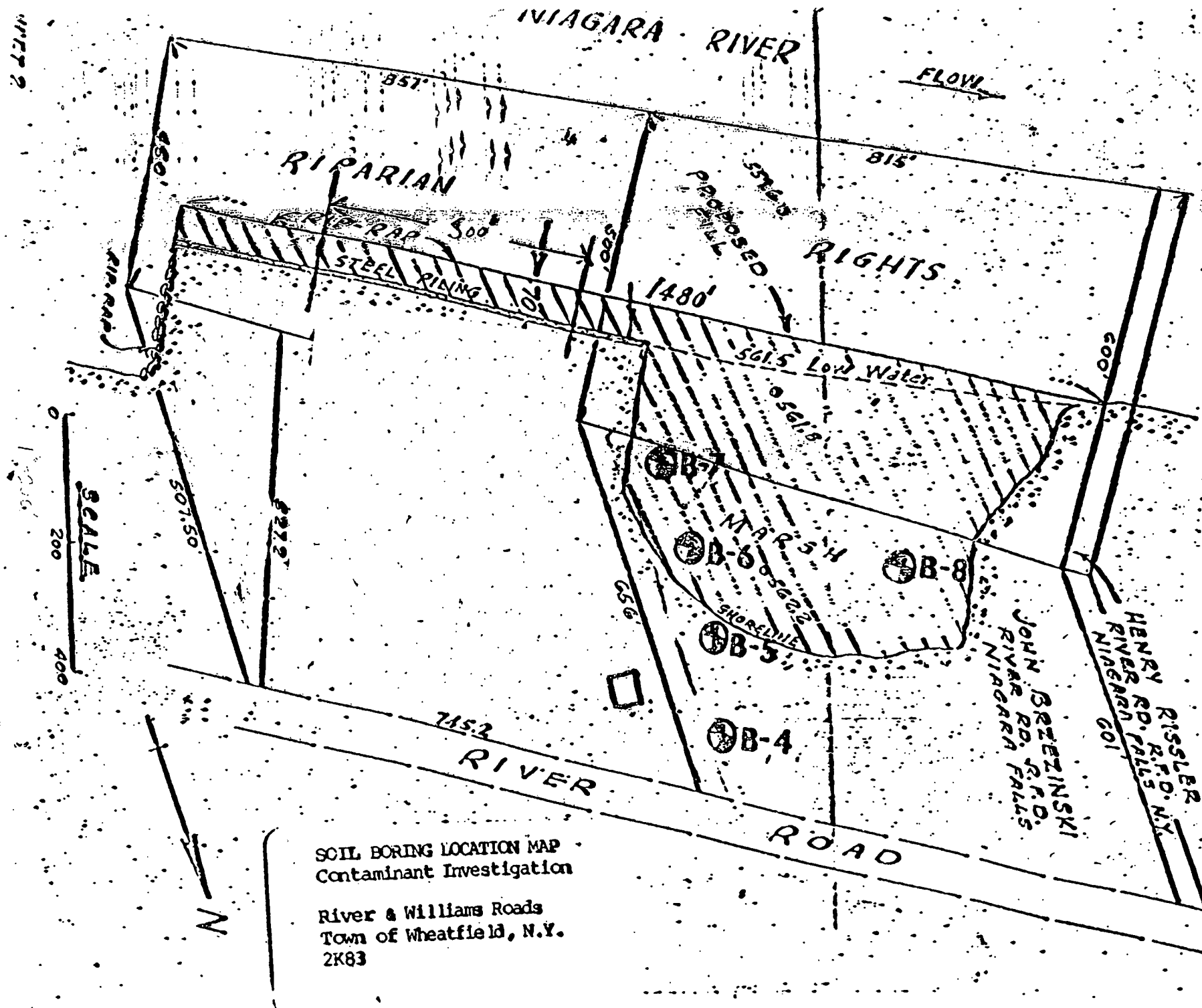
B-5 Composite of Sample 5 and 6

B-6 Sample 5

B-7 Composite of Sample 4 and 5

B-8 Composite, of Sample 4 and 5

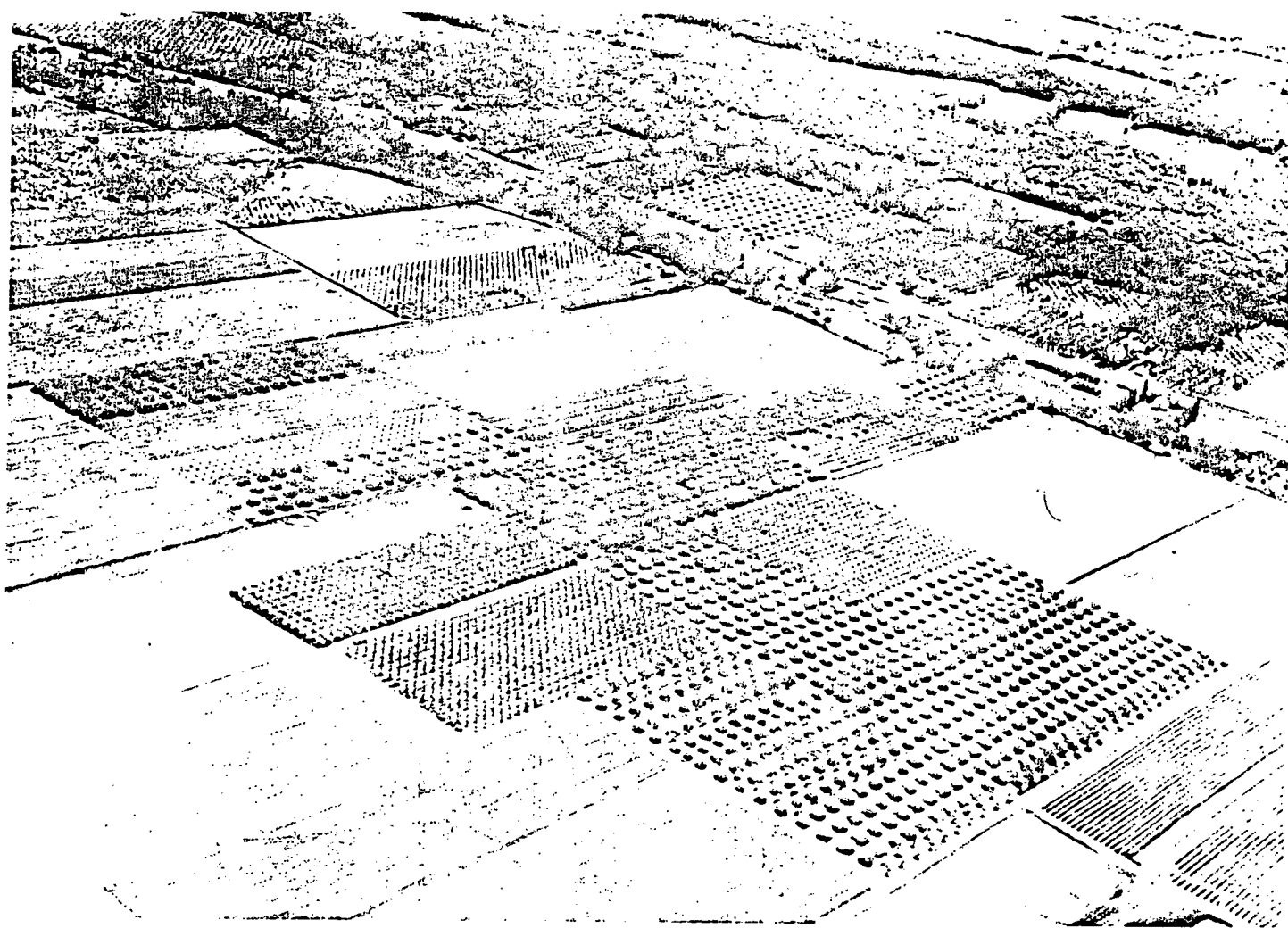




REFERENCE 14

11.

SOIL SURVEY OF Niagara County, New York



NIAGARA COUNTY SOIL & WATER
CONSERVATION DISTRICT
FARM HOME CENTER 4487 LAKE AVE.
LOCKPORT, NEW YORK 14094

Soil Conservation Service
Farm & Home Center
4487 Lake Avenue
Lockport, New York 14094

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Cornell University Agricultural Experiment Station

Issued October 1972

TABLE 7.--ESTIMATED ENGINEERING

[Alluvial land (Ad), Cut and fill land (Cu), Made land (Me), Muck shallow (Ma) Rock land, nearly level (RoA), estimate was not made. The sign > means more than; the sign < means less than. An asterisk in the first soils in such mapping units may have different properties and limitations, and for this reason it is necessary table]

Soil series and map symbols	Depth to bedrock	Depth to seasonal high water table	Depth from surface (typical profile)	Classification	
				Dominant USDA textures	Unified
	<u>Feet</u>	<u>Feet</u>	<u>Inches</u>		
Altmar: Af, Am-----	6+	1½-2	0-10 10-16 16-50	Loamy fine sand and gravelly fine sandy loam. Loamy fine sand----- Stratified loamy fine sand, sand, and gravel.	SM SM GM or SM
Appleton: AnA, ApA-----	3½+	½-1	0-8 8-20 20-50	Gravelly loam and silt loam--- Loam----- Loam till-----	SM or SC, ML or CL ML or CL SM or SC, ML or CL
Arkport: ArB, ArC, AsA, AsB-- Properties are for ArB and ArC. Mapping units AsA and AsB have the same properties as ArB and ArC, except they are underlain by gravelly layers below a depth of 40 inches. Estimates are variable for these layers.	6+	2½-3	0-8 8-48 48-60	Very fine sandy loam or fine sandy loam. Loamy very fine sand and loamy fine sand with bands of very fine sandy loam. Fine sand-----	ML or SM ML or SM SM or ML
Bombay: BoA, BoB-----	5+	1½-2	0-15 15-21 21-29 29-60	Fine sandy loam and very fine sandy loam. Loamy fine sand to very fine sandy loam. Fine sandy loam to silt loam; gravelly or nongravelly. Loam or gravelly loam till----	SM or ML SM or ML ML or SM SM or ML
Brockport: BrA-----	2-3½	½-1	0-10 10-28 28-50	Silt loam----- Silty clay----- Soft shale bedrock.	ML or CL CL
Canandaigua: Ca, Cb-----	6+	0-½	0-35 35-50	Silty clay loam and silt loam. Stratified loamy fine sand, silt, and clay.	ML or CL (1/)

See footnotes at end of table.

PROPERTIES OF SOILS

and Rock land, steep (RoF) are so variable that their properties were not estimated. Absence of data indicates column indicates that at least one mapping unit in the series is made up of two or more kinds of soil. The to follow carefully the instructions for referring to other series that appear in the first column of this

Classifica- tion--Con.	Coarse fraction greater than 3 inches	Percentage passing sieve--				Permeability	Available moisture capacity	Reaction
		No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)			
AASHO	Percent					Inches per hour	Inches per inch of depth	pH
A-2-4 or A-4	<5	70-95	60-90	40-75	15-50	>6.3	0.05-0.13	5.5-7.0
A-2-4	<5	70-95	60-90	40-70	15-30	>6.3	0.02-0.07	5.5-7.0
A-1-6 or A-2	<5	60-90	50-85	30-70	0-30	>6.3	-----	7.0-7.6+
A-2 or A-4	<5	70-90	65-90	45-90	25-80	0.63-2.0	0.09-0.18	6.0-7.0
A-4	<5	80-90	75-90	65-90	50-80	0.63-2.0	0.13-0.18	6.0-7.0
A-2 or A-4	<5	85-90	80-90	55-85	30-70	<0.63	-----	7.6+
A-2 or A-4	----	95-100	95-100	70-95	25-60	2.0-6.3	0.07-0.15	5.0-6.5
A-2 or A-4	----	95-100	95-100	65-95	20-60	2.0-6.3	0.07-0.15	5.6-7.3
A-2 or A-4	----	95-100	95-100	60-100	20-85	2.0-6.3	-----	6.6-7.6+
A-4	<5	90-100	85-100	55-95	35-75	2.0-6.3+	0.09-0.20	5.6-7.3
A-2 or A-4	<5	75-100	70-100	50-95	20-65	2.0-6.3+	0.03-0.15	5.6-7.3
A-2, A-4, or A-6	<5	75-100	70-100	50-95	20-80	0.20-0.63	0.05-0.20	6.1-7.3
A-2, A-4	<5	70-90	65-90	45-85	25-65	<0.63	-----	7.6+
A-4 or A-6	<5	80-100	75-100	65-100	50-95	6.3-2.0	0.13-0.20	6.0-7.0
A-7 or A-6	<5	90-100	85-100	80-100	70-95	<0.20	0.12-0.17	6.5-7.5
A-4 or A-6	<5	95-100	90-100	80-100	65-95	0.63-2.0	0.15-0.20	6.6-7.6+
(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)

Brockport silt loam, 0 to 4 percent slopes
(BrA).--Individual areas of this soil range from as small as 5 acres to more than 100 acres in size. They are roughly oblong or circular, and they follow the bedding planes of the underlying rock.

Included with this soil in mapping are some small areas of better drained soils on slight rises or knolls. Also included are small areas of Brockport soils that have slopes of more than 4 percent. Some areas have a gravelly glacial till smear that is less than 20 inches thick over the weathered shale. Also included, where the underlying shale is at a depth of more than 40 inches, are small areas of Rhinebeck or Madalin soils.

Unless drained, this soil is better suited to hay, small grains, pasture, and trees than to cultivated crops. Where this soil is used for cultivated crops, adequate surface drainage needs to be provided along with good cultural practices that maintain soil tilth. Irrigation or tile drainage generally is not suitable for this soil. (Capability unit IIIw-2; woodland suitability group 3w1)

Canandaigua Series

The Canandaigua series consists of deep, poorly drained and very poorly drained, medium-textured to moderately fine textured soils. These soils formed in lacustrine deposits of silt, very fine sand, and clay. Canandaigua soils are level or depressional and occupy areas where water ponds or runs off very slowly. Also, runoff is received from surrounding areas.

A representative profile of a Canandaigua soil has a dark-gray, neutral silty clay loam surface layer about 7 inches thick. It is underlain by an olive-gray, firm, neutral silty clay loam subsoil that is distinctly mottled. The subsoil extends to a depth of 24 inches. The substratum is calcareous. It is firm, platy, grayish-brown silt loam that is prominently mottled in the upper part. Below a depth of 35 inches, the substratum is fine sand, silt, and very thin lenses of clay.

Canandaigua soils, unless drained artificially, have water standing at the surface throughout spring and after each rainy period. The downward percolation of water is restricted by the high water table, as is the depth of rooting. In spring, roots are confined to a depth of about 6 inches. As the season progresses, the rooting depth extends to about 15 inches below the surface. The available moisture capacity is moderate to low.

Representative profile of Canandaigua silty clay loam (0 to 2 percent slopes), 30 feet south of Tonawanda Creek Road and five-eighths mile west of Riddle Road:

Ap--0 to 7 inches, very dark-gray (10YR 3/1) silty clay loam, very dark grayish-brown (2.5Y 3/2) when rubbed; moderate, fine and very fine, subangular blocky structure; friable; abundant fine roots; neutral; abrupt, smooth boundary. 6 to 9 inches thick.

B2g--7 to 24 inches, olive-gray (5Y 5/2) silty clay loam; gray (5Y 5/1) ped coats and common, medium and coarse, prominent, yellowish-brown (10YR 5/6) mottles in ped interiors; weak, coarse, prismatic structure breaking to moderate, medium and coarse, blocky structure; firm; plentiful roots in upper part and few fine roots in lower part; neutral; clear, wavy boundary. 12 to 21 inches thick.

Clg--24 to 35 inches, grayish-brown (2.5Y 5/2) silt loam; gray (5Y 5/1) ped coats and many (about 30 percent), fine and medium, prominent, yellowish-brown (10YR 5/6) mottles in ped interiors; few, white lime streaks; weak, fine, medium and thick, platy structure; firm; very few roots; calcareous; clear, wavy boundary. 6 to 15 inches thick.

IIC2--35 to 50 inches, light olive-brown (2.5Y 5/4), stratified or varved loamy fine sand, silt, and very thin clay lenses; lime streaks and lime concretions or nodules; many, coarse; distinct, yellowish-brown (10YR 5/6) mottles; very weak, platy structure; friable; calcareous.

The solum ranges from 20 to 30 inches in thickness, and depth to carbonates ranges from 18 to 40 inches. Depth to bedrock is more than 40 inches. To a depth of 30 inches, chroma is 2 or less in 60 percent of the matrix in the B and C horizons. Ped faces in the B and C horizons are 2 or less in chroma.

The Ap horizon ranges from 10YR to 2.5Y in hue, is 2 or 3 in value, and is 1 or 2 in chroma. Thickness of the Ap horizon does not exceed one-third the thickness of the solum. The Ap horizon ranges from silt loam to silty clay loam.

The B horizon ranges from 5YR to 5Y in hue, from 4 to 6 in value, and is 1 or 2 in chroma. It ranges from fine sandy loam to silty clay. The average clay content of the 10- to 40-inch control section is between 18 and 35 percent. The B horizon has moderate or weak, blocky structure that is within weak, coarse, prismatic structure in many places. Common to many, distinct and prominent mottles that have a higher chroma than that described occur in the B and C horizons in some places.

The Canandaigua soils formed in deposits similar to those of the moderately well drained Collamer soils and the somewhat poorly drained Niagara soils. Canandaigua soils are finer textured than Lamson soils and have a coarser textured B horizon than the Lakemont and Madalin soils. Canandaigua soils are wetter and have a finer textured B horizon than the Raynham soils. Canandaigua soils are wetter and have a coarser textured B horizon than Odessa and Rhinebeck soils.

Canandaigua silt loam (0 to 2 percent slopes)
(Ca).--This soil occupies areas that receive runoff from adjacent soils. The surface layer of this soil contains less clay than that of the soil having the profile described as representative for the series. This soil occurs in irregularly shaped

areas that generally are less than 20 acres in size.

Commonly included areas are spots of better drained Raynham and Rhinebeck soils south of the limestone escarpment. Other common inclusions are finer textured Lakemont and Madalin soils that have drainage similar to that of this soil. In many places north of the limestone escarpment, there are included areas of somewhat poorly drained Appleton and poorly drained Sun soils that formed in glacial till. Areas near U.S. Highway No. 104 (Ridge Road) contain numerous sand lenses in the subsoil and substratum. In some depressional areas and potholes, spots of very poorly drained Canandaigua soils occur and have a mucky surface layer. Other spots of Canandaigua soils have a sandy surface layer.

This soil is not intensively used. Most areas are wooded, idle, or used for pasture. But this soil is well suited to crops, pasture, and trees if it is adequately drained and protected from flooding or from ponding caused by runoff from the surrounding uplands. It is particularly well suited to intensive use for some vegetable and row crops. Undrained areas can be used for pasture if management is good, but most areas cannot be used for other crops. (Capability unit IIIw-3; woodland suitability group 4w1)

Canandaigua silty clay loam (0 to 2 percent slopes) (Cb).--This soil has the profile described as representative for the series. The soil occurs in long, narrow drainageways and basinlike areas in the southern part of the county. Areas range from 10 to 50 acres in size.

Included with this soil in mapping are small areas of better drained Rhinebeck and Raynham soils. Also included are small areas of Lamson, Lakemont, and Madalin soils.

This soil is not used intensively. Most areas are wooded, idle, or in pasture. If this soil is adequately drained and fertilized, it is suited to crops. Because of the moderately fine textured surface layer, this soil puddles easily if tilled when wet. It crusts or forms hard clods as it dries. Maintaining good tilth is difficult. (Capability unit IIIw-3; woodland suitability group 4w1)

Cayuga Series

The Cayuga series consists of deep, moderately well drained to well drained, medium-textured soils. These soils developed in lacustrine silt and clay that is 20 to 36 inches thick over loamy calcareous glacial till. They are nearly level to moderately sloping or undulating and occur in areas that are adjacent to or within old glacial lakebeds. Cayuga soils occur throughout the county, mainly south of the Lockport limestone formation.

A representative Cayuga soil has a dark grayish-brown silt loam surface layer 8 inches thick. The next layer is reddish-brown silty clay loam 3 inches thick. The subsoil occurs at a depth of 11 inches and is firm, reddish-brown silty clay 14 inches

thick. It contains a few coarse fragments and is plastic when wet and hard when dry. The reddish-brown gravelly loam substratum is at a depth of about 25 inches and has a few large stones. It is firm and calcareous.

These soils have a seasonal high water table that rises to within 18 inches of the surface. The water table is perched above the slowly permeable subsoil and underlying glacial till. In some places during extended rainy periods, water stays for a few days in small depressions.

Roots are confined mainly to the uppermost 25 inches of the Cayuga soils. The available moisture capacity is high. Because of the clay in the surface layer and subsoil, care must be taken to maintain good tilth. If these soils are plowed when wet, they become compact and cloddy.

Representative profile of a Cayuga silt loam having slopes of 0 to 2 percent, in a hayfield 1,000 feet west of the junction of Packard and Lockport Roads and 125 feet north of Lockport Road:

Ap--0 to 8 inches, dark grayish-brown (10YR 4/2) heavy silt loam; moderate, fine, and medium, subangular blocky structure; friable; abundant roots; neutral; abrupt, smooth boundary. 6 to 10 inches thick.

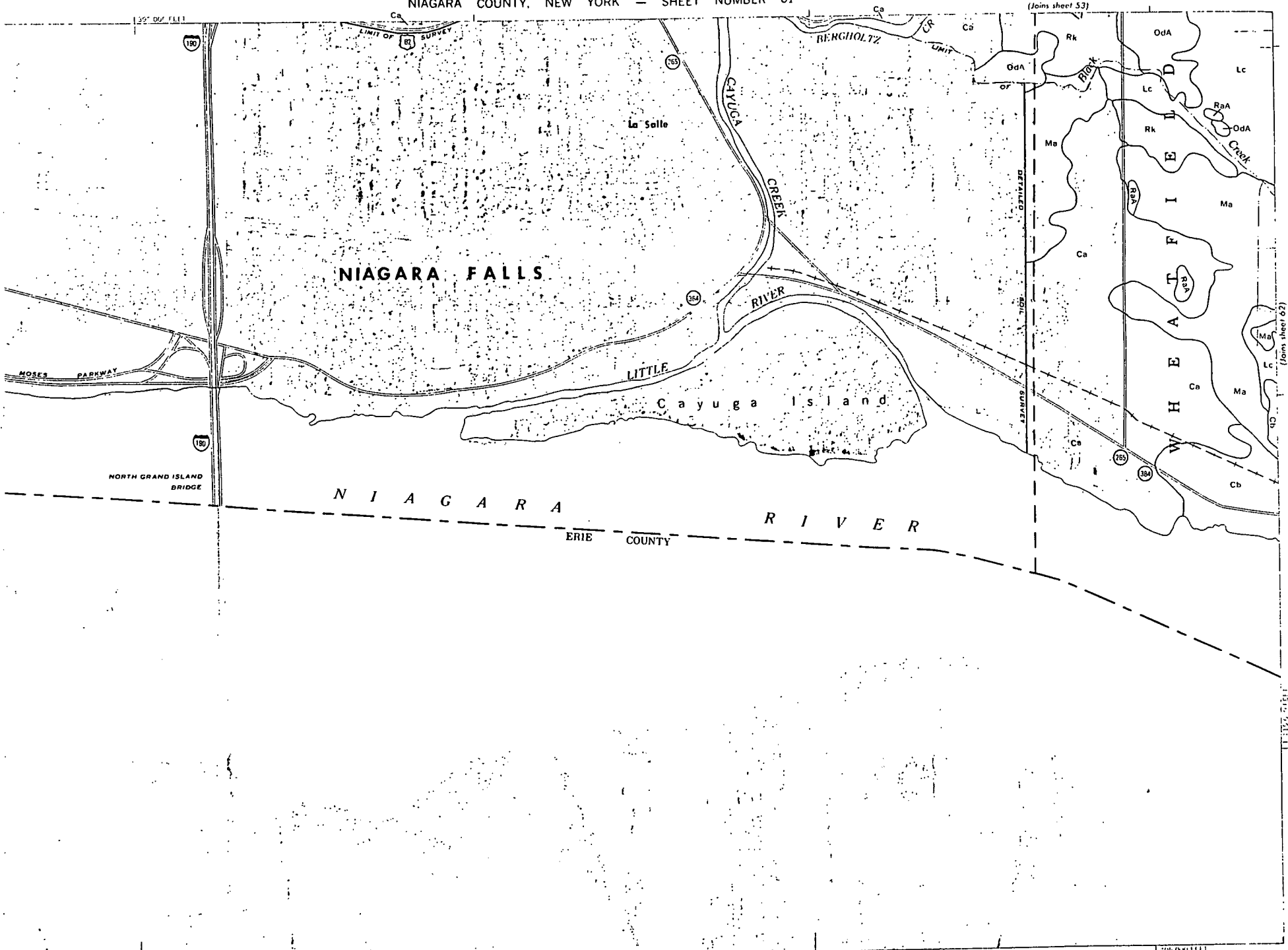
B&A--8 to 11 inches, reddish-brown (5YR 4/3) silty clay loam; moderate, fine to medium, subangular blocky structure within weak, coarse, prismatic structure; firm; plentiful fine roots; common root and worm channels; patchy clay films on ped surfaces; a few fragments larger than 2 millimeters; thin coats of brown (10YR 5/3) loam on blocks and prisms; neutral; clear, wavy boundary. 2 to 6 inches thick.

B2t--11 to 25 inches, reddish-brown (5YR 4/3) silt clay; moderate, fine to medium, subangular blocky structure within weak, coarse, prismatic structure; firm; plentiful fine roots; a few fragments larger than 2 millimeters; thin clay films on most ped surfaces; thick films in the pores; neutral; abrupt, wavy boundary. 8 to 20 inches thick.

IIC--25 to 50 inches, reddish-brown (5YR 4/4) gravelly loam of which about 25 percent is fragments larger than 2 millimeters; weak, thin platy structure; firm; very few fine roots; calcareous.

The solum ranges in thickness from 20 to 36 inches, and this is the same as the depth to cobbles. Content of coarse fragments in the solum ranges from 0 to about 10 percent. The IIC horizon has a content of coarse fragments ranging from 10 to 35 percent. The solum is neutral to medium acid and the IIC horizon is calcareous.

The Ap horizon has a hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 2 or 3. When the Ap horizon is dry, values are more than 5.5. Where the Ap horizon is thin, there is an A2 horizon in some places.



REFERENCE 15

**The Following
Image(s) are
the Best Copy
Available**

BIEL'S

CURVE FORMULAS

$$\begin{array}{l|l|l} T = R \tan \frac{1}{2} I & R = T \cot \frac{1}{2} I & \text{Chord def.} = \frac{\text{chord}^2}{R} \\ T = \frac{50 \tan \frac{1}{2} I}{\sin \frac{1}{2} D} & R = \frac{50}{\sin \frac{1}{2} D} & \text{No. chords} = \frac{I}{D} \\ \sin \frac{1}{2} D = \frac{50}{R} & E = R \text{ ex. sec } \frac{1}{2} I & \text{Tan. def.} = \frac{1}{2} \text{ chord def.} \\ \sin \frac{1}{2} D = \frac{50 \tan \frac{1}{2} I}{T} & E = T \tan \frac{1}{2} I & \end{array}$$

The square of any distance, divided by twice the radius, will equal the distance from tangent to curve, very nearly.

To find angle for a given distance and deflection.

Rule 1. Multiply the given distance by .01745 (def. for 1° for 1 ft.) and divide given deflection by the product.

Rule 2. Multiply given deflection by 57.3, and divide the product by the given distance.

To find deflection for a given angle and distance. Multiply the angle by .01745, and the product by the distance.

GENERAL DATA

RIGHT ANGLE TRIANGLES. Square the altitude, divide by twice the base. Add quotient to base for hypotenuse.

Given Base 100, Alt. 10, $10^2 \div 200 = .5$, $100 + .5 = 100.5$ hyp.

Given Hyp. 100, Alt. $25, 25^2 \div 200 = 3.125$, $100 - 3.125 = 96.875 = \text{Base}$.

Error in last example, .002; in last, .045.

To find Tons of Rail in one mile of track: multiply weight per yard by 11, and divide by 7.

LEVELING. The correction for curvature and refraction, in feet and decimals of feet is equal to $0.574 d^2$, where d is the distance in miles. The correction for curvature alone is closely, $\frac{1}{2} d^2$. The combined correction is negative.

PROBABLE ERROR. If d_1, d_2, d_3 , etc. are the discrepancies of various results from the mean, and if $\sum d^2$ the sum of the squares of these differences and n the number of observations, then the probable error of the mean

$$= 0.6745 \sqrt{\frac{\sum d^2}{n(n-1)}}$$

MINUTES IN DECIMALS OF A DEGREE

1'	.0167	11'	.1833	21'	.3500	31'	.5167	41'	.6833	51'	.8500
2	.0334	12	.2000	22	.3667	32	.5334	42	.7000	52	.8667
3	.0500	13	.2167	23	.3833	33	.5500	43	.7167	53	.8833
4	.0667	14	.2333	24	.4000	34	.5667	44	.7333	54	.9000
5	.0833	15	.2500	25	.4167	35	.5833	45	.7500	55	.9167
6	.1000	16	.2667	26	.4333	36	.6000	46	.7667	56	.9333
7	.1167	17	.2833	27	.4500	37	.6167	47	.7833	57	.9500
8	.1333	18	.3000	28	.4667	38	.6333	48	.8000	58	.9667
9	.1500	19	.3167	29	.4833	39	.6500	49	.8167	59	.9833
10	.1667	20	.3333	30	.5000	40	.6667	50	.8333	60	1.0000

INCHES IN DECIMALS OF A FOOT

1-16	3-32	1-8	3-16	1-4	5-16	3-8	7-16	1-2	9-16	5-8	11-16
.0052	.0078	.0101	.0156	.0208	.0260	.0313	.0417	.0521	.0625	.0729	.0833
1	2	3	4	5	6	7	8	9	10	11	
.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	

Lynch park
River rd. & Williams rd.
Wheat field
Niagara County

932006:

Sample Numbers

SH 932006 0101

SH 932006 0202

SH 932006 0201

SH 932006 0301

Sample analysis for

- Inorganics
- VOA's
- BNA's

• Pesticide / PCB's - solids only

2. Sampling & investigation
on 10/16/86

Arrived @ site 11:35 AM

Prepared bottles on site for
all sample location.

Weather conditions:
Cold ~ high 40's
Very breezy
Overcast

No odors noted on site.

First sample:

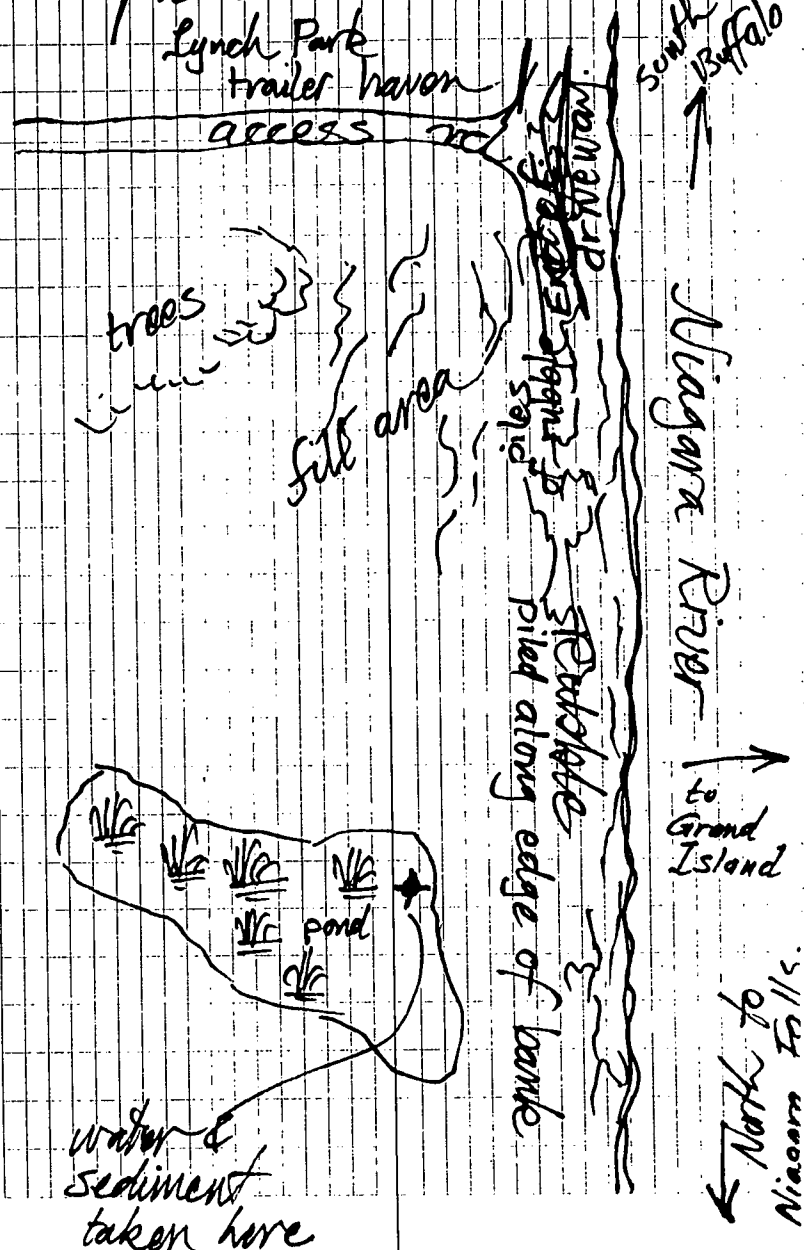
SH9320060101 - water

Taken in a small swampy
area about 80' long by about
20' wide - filled w/ cattails &
swamp grass. Sample taken
@ 11:45 AM. Water looked a
bit cloudy, but this may have
been caused by the recent heavy
rain.

Sediment sample

SH9320060102 - same location
Mud mixed w/ dead vegetation.

Sample location sketch



4. This whole area appears to be about 10 ~~2~~ acres in size. A lot of rubble & construction debris has been dumped here. A lot of vegetation on site.

The swamp-pond where the ~~water & sediments~~ 0101 & 0102 were taken was actually a lagoon.

The section behind the lagoon going toward River rd. was all hummocked w/ piles of C&D rubble & "clay".

Sample 0201

Two shovel fulls of "clay" taken about 1 ft below the surface of 2 different clay piles were mixed on a stainless steel tray & composited. - heavy reddish brown modelling clay.

See map-sketch for location.

Sample 0301

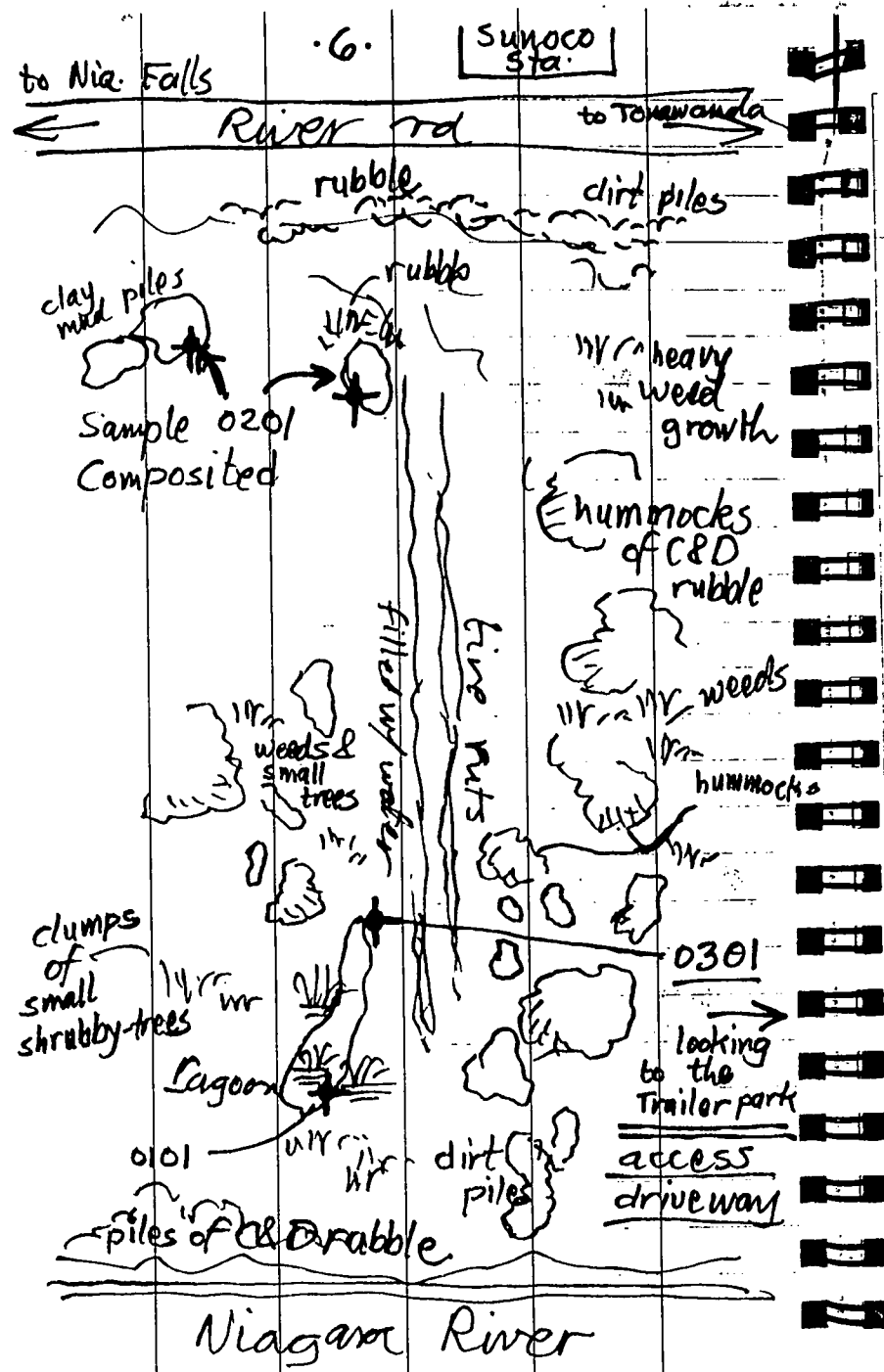
Taken near the lagoon sample 0101 - on the River rd. side. Soil was heavy clay-like modelling clay.

Met w/ Mr. Stan Brzynski. 5. the owner of this property. He informed us that much of the C&D waste brought in here was brought in w/o his approval by midnite dumpers.

General comments:

The area was very wet due to the ~~rains~~ of heavy rainfall of the previous days. Because the soil here appeared to be so rich w/ clay, a lot of water puddled on the surface. Due to all of the C&D waste etc. that was brought in here, the whole area was filthy - w/ hummocks of dirt partially covered w/ weeds. Small ~~tree~~ clusters of tree shrubs were noted between the hummocks.

There was NO odor anywhere on this site, however it was rather breezy during the entire time we were here.



.7.

All samples were taken by Dennis Farrar & Tom Koch. Label prep. & site surveillance was done by Brian Aho.

Sample times: approx.;

0101 } 11:45; 11:50 AM
0102 }

0201 — 12:05 PM

0301 — 12:15 PM.

Sampling was finished @ 12:15. Decom. & clean-up was completed @ about 12:45, at which time we left the site. Sample submittal sheets were prepped & samples were delivered to RECRA labs @ about 2:30 PM.

No photos were taken because we ran out of film.



New York State Department of Environmental Conservation

MEMORANDUM

TO: Walter Demick
FROM: John Rankin, Division of Solid and Hazardous Waste QA/QC Officer *JNR*
SUBJECT: Analysis of Phase II and Onondaga Lake Samples
DATE: August 25, 1987

Martha McEwen and Maureen Hogan, of my staff, have reviewed the data produced by RECRA Research concerning the Phase II investigations and the Onondaga Lake samples.

The Phase II sites included the following:

✓ 1. Ferro Corporation:

SH9150200101 - water
SH9150200102 - sediment
SH9150200201 - sediment
SH9150200301 - sediment
SH9150200401 - sediment
SH9150200501 - sediment

✓ 2. Lehigh Valley R.R.:

SH9150710101 - sediment
SH9150710201 - sediment
SH9150710301 - sediment
SH9150710401 - water

✓ 3. Roblin Steel:

SH9150560101 - water
SH9150560102 - sediment
SH9150560201 - water
SH9150560202 - sediment

✓ 4. Lynch Park:

SH9320060101 - water
SH9320060102 - sediment
SH9320060201 - sediment
SH9320060301 - sediment

✓ 5. McKenna Landfill:

SH8370030101 - leachate
SH8370030201 - leachate
SH8370030301 - leachate
SH8370030401 - sediment

*1 copy to each
site file*

MK - 1 copy

rejected

All samples collected for the Phase II investigation are out of control for the QA/QC aspect under the deliverables package of the CLP. RECRA has been provided with a critique of these data packages.

The Onondaga Lake samples included analysis of 25 sediment and 13 water samples. The sample numbers are:

<u>Sediment</u>		<u>Water</u>
S-50-00-00	S-29-48-54	W-02-04-04
S-49-00-00	S-29-36-42	W-02-13-13
S-48-00-00	S-29-24-30	W-02-16-16
S-47-00-00	S-29-12-18	W-08-01-01
S-46-00-00	S-29-03-06	W-08-04-04
S-45-00-00	S-29-00-03	W-04-00-00
S-44-00-00	S-14-48-50	W-05-00-00
S-38-48-50	S-14-36-42	W-06-00-00
S-38-36-42	S-14-24-30	W-07-00-00
S-38-24-30	S-14-12-18	W-09-00-00
S-38-12-18	S-14-03-06	W-10-00-00
S-38-03-06	S-14-00-03	W-11-00-00
S-38-00-03		W-12-00-00

The data from the sediment samples has been reviewed and summarized. The data has been declared unusable. Holding times and analysis times were exceeded, the laboratory reported all the metals data as being unusable, tuning criteria were not nor had ever been met for the analysis of the VOA and 625 parameters. Considering the review of the sediment samples divulged such disastrous results, the data of the water samples was not reviewed.

Since the initial intention was to produce CLP quality data, I recommend this data not be used and the sites be resampled. Needless to say, RECRA should not be paid for the analysis, in part or whole, for the aforementioned sample numbers.

cc: L. Bailey
C. Goddard
M. Chen
M. Hogan

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HSL Metals Report

Site Name: LYNCH PARK
Site Code: 932006
Date Collected: 15OCT86
Matrix: WATER
Concentration Units: MG/L

Lab. Number: 98626901
Sample I.D.: SH9320060101
Date Reported: 20MAR87
Percent Solids:
Archival File: H0124

Metal	Concentration
Aluminum	ND
Antimony	ND
Arsenic *	3.0
Barium	ND
Beryllium	ND
Cadmium	<0.1
Calcium	ND
Chromium	<0.1
Cobalt	ND
Copper	0.03
Iron	1.2
Lead	<0.2
Magnesium	ND
Manganese	<0.2
Mercury *	<0.5
Nickel	<0.5
Potassium	ND
Selenium *	ND
Silver *	<0.05
Sodium	ND
Thallium	ND
Tin	ND
Vanadium	ND
Zinc	0.1

* Concentration in MG/L or MG/KG

ND = Not Determined

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HSL Metals Report

Site Name: LYNCH PARK	Lab. Number: 95628902
Site Code: 932004	Sample I.D.: 95628902
Date Collected: 10/01/86	Date Reported: 10/01/87
Matrix: SEDIMENT	Percent Solids: 61.90
Concentration Units: mg/kg	Archival File: 95628902

Metals Concentration

Aluminum	ND
Antimony	ND
Arsenic *	18416.8
Barium	ND
Beryllium	ND
Cadmium	4.9
Calcium	ND
Chromium	33.9
Cobalt	ND
Copper	33.3
Iron	52067.9
Lead	5291.9
Magnesium	ND
Manganese	1103.2
Mercury *	161.5
Nickel	31.2
Potassium	ND
Selenium *	ND
Silver *	50.0
Sodium	ND
Strontium	ND
Tin	ND
Zinc	517.0

* Concentration in mg/kg of DRY WEIGHT

ND = Not Determined

NS = Not a Standard Sample

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HSL Metals Report

Site Name: LYNCH PARK
Site Code: 932006
Date Collected: 16OCT66
Matrix: SOIL
Concentration Units: MG/KG

Lab. Number: 98628903
Sample I.D.: SH9320060201
Date Reported: 20MAR67
Percent Solids: 81.71
Archival File: M01e7

Net wt

Concentration

Aluminum	ND
Antimony	ND
Arsenic *	38918.1
Barium	ND
Beryllium	ND
Cadmium	1.2
Calcium	ND
Chromium	53.8
Cobalt	ND
Copper	29.4
Iron	49198.4
Lead	<0.2
Magnesium	ND
Manganese	1395.2
Mercury *	<0.5
Nickel	51.4
Potassium	ND
Selenium *	ND
Silver *	48.9
Sodium	ND
Thallium	ND
Tin	ND
Vanadium	ND
Zinc	146.9

* Concentration in US/L or US/KG

ND = Not Determined

IS = Insufficient Sample

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

HSL Metals Report

Site Name: LYNCH PARK
Site Code: 932006
Date Collected: 16OCT86
Matrix: SOIL
Concentration Units: MG/KG

Lab. Number: 98628904
Sample I.D.: SH9320060301
Date Reported: 20MAR87
Percent Solids: 78.95
Archival File: M0168

Metal	Concentration
Aluminum	ND
Antimony	ND
Arsenic *	42558.6
Barium	ND
Beryllium	ND
Cadmium	1.3
Calcium	ND
Chromium	55.7
Cobalt	ND
Copper	29.1
Iron	50285.0
Lead	10.2
Magnesium	ND
Manganese	1519.9
Mercury *	126.66
Nickel	57.9
Potassium	ND
Selenium *	ND
Silver *	37.9
Sodium	ND
Thallium	ND
Tin	ND
Vanadium	ND
Zinc	177.3

* Concentration in US/L or UG/KG

ND = Not Determined

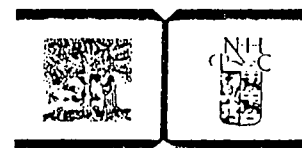
IS = Insufficient Sample

REFERENCE 16

Handbook on the Toxicology of Metals

edited by
LARS FRIBERG, GUNNAR F. NORDBERG
and VELIMIR B. VOUK

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1979

ELSEVIER/NORTH-HOLLAND BIOMEDICAL PRESS
AMSTERDAM · NEW YORK · OXFORD

REFERENCE 17

SOIL CHEMISTRY

HINRICH L. BOHN

University of Arizona

BRIAN L. McNEAL

Washington State University

GEORGE A. O'CONNOR

New Mexico State University

A WILEY-INTERSCIENCE
PUBLICATION

JOHN WILEY & SONS

New York Chichester
Brisbane Toronto

TABLE 1.1

Typical Concentrations of Essential Elements in Soils and Plants, Ratios of Plant Ash to Soil Content, Annual Plant Uptake, and The Ratios of Soil Content (to One Meter Depth) Compared to Annual Plant Uptake

ELEMENT	SOIL CONTENT ^a (WEIGHT %)	PLANT CONTENT ^a (% OF FRESH WEIGHT)	PLANT ASH CONTENT/ SOIL CONTENT	ANNUAL PLANT UPTAKE (KG/HA-YR)	SOIL CONTENT/ ANNUAL PLANT UPTAKE (YEARS)
O	49	70	—	—	—
H	—	8	—	—	—
Si	33	0.2	0.3	20	21,000
Al	7	0.005	0.03	0.5	180,000
Fe	4	0.01	0.1	1	52,000
C	2	18	—	—	—
Ca	1	0.5	25	50	260
K	1	0.3	15	30	430
Na	0.7	0.02	1	2	4,600
Mg	0.6	0.04	3	4	2,000
Ti	0.5	0.0008	0.08	0.08	62,000
N	0.1	0.3	15	30	40
P	0.08	0.07	4	7	150
Mn	0.08	0.001	0.6	1	1,000
S	0.05	0.07	70	2	320
F	0.02	0.0005	1	0.01	26,000
Cl	0.01	0.02	10	0.06	220
Zn	0.005	0.0005	5	0.01	6,500
Cu	0.002	0.0002	5	0.006	4,200
B	0.001	0.001	50	0.03	400
Sn	~0.001	0.00005	~2	0.001	~10,000
I	0.0005	0.000001	0.1	0.00003	22,000
Mo	0.0003	0.00001	2	0.0003	13,000
Co	0.0008	0.00002	1	0.0006	17,000
Se	0.000001	0.00001	~500	0.0003	~40

^aVinogradov's data in N. F. Ermolenko's *Trace Elements and Colloids in Soils*. Israel Program for Scientific Translations, Jerusalem, 1972.

reserves of N, Cl, and S are low but are continually replenished by gas absorption and rain. Despite the replenishment, N and S concentrations are often less than optimal for plant growth. Nitrogen is the mineral nutrient that most commonly limits crop productivity. The low Se ratio is a questionable number. The soil's supplies of K and Ca are also relatively low but are not cause for alarm. Only a small fraction of plant matter is

REFERENCE 18

(b) *Methods for Chemical Analysis of Water and Wastes* (see section 705.2 of this Title);

(c) *Water Standards of the American Society for Testing and Materials* (see section 705.2 of this Title); or

(d) by other methods approved by the commissioner as giving results equal to or superior to methods listed above.

Historical Note

Sec. filed March 20, 1987; repealed, new filed: April 28, 1972; Aug. 2, 1978; amd. filed Nov. 5 1984 eff. Nov. 5, 1984.

703.5 Classes and quality standards for ground waters. (a) Class GA.

(1) The best usage of class GA waters is as a source of potable water supply. Class GA waters are fresh ground waters found in the saturated zone of unconsolidated deposits and consolidated rock or bed rock.

(2) Quality standards for class GA waters shall be the most stringent of:

(i) the items and specifications applicable to such waters found in this section;

(ii) the maximum contaminant levels for drinking water promulgated by the Commissioner of Health as found in 10 NYCRR Subpart 5-1, Public Water Supplies or any subsequent revision thereto or replacement thereof;

(iii) the maximum contaminant levels for drinking water promulgated by the administrator under the Safe Drinking Water Act (see section 705.1 of this Title) and 40 CFR Part 141, effective July 1, 1978 (see section 705.1); and

(iv) the standards for raw water quality promulgated by the Commissioner of Health as found in 10 NYCRR Part 170, Sources of Water Supply or any subsequent revision thereto or replacement thereof.

(3) The following quality standards shall be applicable to class GA waters:

Items	Specifications
(a) Sewage, industrial waste or other wastes, taste or odor producing substances, toxic pollutants, thermal discharges, radioactive substances or other deleterious matter.	None which may impair the quality of the ground waters to render them unsafe or unsuitable for a potable water supply or which may cause or contribute to a condition in contravention of standards for other classified waters of the State.
(b) The concentration of the following substances or chemicals:	Shall not be greater than the limit specified, except where exceeded due to natural conditions:
(1) Arsenic (As)	0.025 mg/l
(2) Barium (Ba)	1.0 mg/l
(3) Cadmium (Cd)	0.01 mg/l
(4) Chloride (Cl)	250 mg/l
(5) Chromium (Cr) Hexavalent	0.05 mg/l
(6) Copper (Cu)	1.0 mg/l
(7) Cyanide (Cn)	0.2mg/l
(8) Fluoride (F)	1.5 mg/l
(9) Foaming Agents ¹	0.5 mg/l
(10) Iron (Fe) ²	0.3 mg/l

Items	Specifications
(11) Lead (Pb)	0.025 mg/l
(12) Manganese (Mn) ²	0.3 mg/l
(13) Mercury (Hg)	0.002 mg/l
(14) Nitrate (as N)	10.0 mg/l
(15) Phenols	0.001 mg/l
(16) Selenium (Se)	0.02 mg/l
(17) Silver (Ag)	0.05 mg/l
(18) Sulfate (SO ₄)	250 mg/l
(19) Zinc (Zn)	5 mg/l
(20) pH Range	6.5-8.5
(21) Aldrin, or 1, 2, 3, 4, 10, 10-hexachloro-1, 4, 4a, 5, 8, 8a-hexahydro-endo-1, 4-exo-5, 8-dimethanonaphthalene.	not detectables
(22) Chlordane, or 1, 2, 4, 5, 6, 7, 8, 8-octachloro-2, 3, 3a, 4, 7, 7a-hexahydro-4, 7-methanoindene.	0.1 ug/l
(23) DDT, or 2, 2-bis- (p-chlorophenyl)-1, 1, 1-trichloroethane and metabolites.	not detectables
(24) Dieldrin, or 8, 7-epoxy aldrin.	not detectables
(25) Endrin, or 1, 2, 3, 4, 10, 10-hexachloro-8, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-endo-1, 4-endo-5, 8-dimethanonaphthalene.	not detectables
(26) Heptachlor, or 1, 4, 5, 6, 7, 8, 8-heptachloro-3a, 4, 7, 7a-tetrahydro-4, 7-methanoindene and metabolites.	not detectables
(27) Lindane and other Hexachlorocyclohexanes or mixed isomers of 1, 2, 3, 4, 5, 6-hexachlorocyclohexane.	not detectables
(28) Methoxychlor, or 2, 2-bis-(p-methoxyphenyl)-1, 1, 1-trichloroethane.	35.0 ug/l
(29) Toxaphene (a mixture of at least 175 chlorinated camphene derivatives).	not detectables
(30) 2, 4-Dichlorophenoxyacetic acid (2, 4-D)	4.4 ug/l
(31) 2, 4, 5-Trichlorophenoxypropionic acid (2, 4, 5-TP) (Silvex)	0.28 ug/l
(32) Vinyl chloride (chloroethene)	5.0 ug/l
(33) Benzene	not detectables
(34) Benzo (a) pyrene	not detectables
(35) Kepone or decachlorooctahydro-1, 3, 4-metheno-2H-cyclobuta (cd) pentalen-2-one (chlordeone).	not detectables



cc: DWG - we must discuss revisions to pump test quality analyses JPL, June 1988 T&P from NYS

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Corning Tower The Governor Nelson A. Rockefeller Empire State Plaza Albany, New York 12237

David Axelrod, M.D.
Commissioner

OFFICE OF PUBLIC HEALTH

Linda A. Randolph, M.D., M.P.H.
Director

William F. Leavy
Executive Deputy Director

November 18, 1988

*NYS DOH new
standard for
drinking water
effective Jan 1989*

RE: Organic Chemical Standards

Dear Consultant:

The Department of Health recently adopted a code revision limiting organic chemical contamination of drinking water and requiring monitoring for certain organic chemicals. The new maximum contaminant levels, the first to added to the code in almost ten years, become effective on January 9, 1989.

The code revision may affect public water systems for which your firm provides services. We estimate that four percent of all public water systems will have sources that will exceed the maximum contaminant levels. Please keep these new standards in mind when planning or designing a water supply project. *acc*

A summary of the code revision is enclosed for your reference. The actual text of the revision will be forwarded to you as soon as the most recent version of the code is printed. Code revisions dealing with water quality treatment districts, emergency planning, bottled water and other topics will be published concurrently with the organic chemical standards.

If you have any question, please contact Ron Entringer of my staff at (518) 458-6731.

Sincerely,

Michael E. Burke, P.E.
Director
Bureau of Public Water Supply Protection

Enclosure

cc: Section Chiefs
Mr. Entringer

RECEIVED

DEC 1 1988

LAWLER MATUSKY SKELLY
ENGINEERS

SUMMARY OF CODE REVISION

STANDARDS

General MCLs

The New York State Department of Health has adopted standards to limit organic chemical contamination of public drinking water supplies. The code revision (to Part 5 of the State Sanitary Code) establishes maximum contaminant levels (MCLs) or standards for:

5-1.172
5-1.62
1-1.52
10 NY S.A.S. 7

Principal Organic Contaminant (POC) - 0.005 mg/l (5 ug/l)
Unspecified Organic Contaminant (UOC) - 0.050 mg/l (50 ug/l)
Total of POCs and UOCs - 0.10 mg/l (100 ug/l)

POCs would be defined as any organic chemical belonging to any of six general chemicals classes:

Halogenated Alkanes
Halogenated Ethers
Halobenzenes and Substituted Halobenzenes
Benzene and Alkyl- or Nitrogen-Substituted Benzenes
Substituted, Unsaturated Aliphatic Hydrocarbons
Halogenated Non-aromatic Cyclic Hydrocarbons

POCs, by definition, exclude trihalomethanes and other organic chemicals with a specific MCL of their own.

UOCs would be defined as any organic chemical not covered by another MCL.

The Department recognizes the possible need for exceptions from the proposed MCLs for POCs and UOCs if the presence of a specific organic chemical does not represent contamination and sufficient, valid scientific information demonstrates that they do not pose an unreasonable risk to human health. When justified, the regulation contains provisions to allow for the establishment of a more lenient (higher) MCL.

The regulation also allows a water supplier to submit justification for a higher MCL for up to 60 days following application of a paint or lining to a potable water appurtenance. The Commissioner may allow the higher MCL if he determines that no unreasonable risk to human health would result.

The Department recognizes the need to use a stricter (lower) interim guideline value for a contaminant which lacks a chemical-specific MCL but for which the available toxicological data are judged sufficient to warrant more stringent control. The regulation allows for consideration of lower interim guidelines when justified. The Department believes that, from a public health perspective, the benefits associated with the broad nature of the general MCLs outweigh the fact that interim guidelines may have to be used in some cases. For example, the existing guidelines for PCBs - 1 ug/l; aldicarb - 7 ug/l; carbofuran - 15 ug/l; atrazine - 25 ug/l will be retained until a specific MCL for each chemical is developed.)

PART 837

LAKE ERIE (EAST END)—NIAGARA RIVER DRAINAGE BASIN

(Statutory authority: Public Health Law, art. 12)

Sec.	Sec.
837.1 Adopting order	837.4 Table I
837.2 Definitions and conditions	837.5 Map A
837.3 Assigned classifications and standards of quality and purity	837.6 Map B
	837.7 Quadrangle maps

Section 837.1 Adopting order. Pursuant to the authority contained in article 12 of the Public Health Law, the Water Pollution Control Board having made proper studies and having held public hearings on due notice with reference thereto, hereby adopts and assigns the following classifications and standards of quality and purity to the various waters as specifically designated and described below and subject to the definitions and conditions as stated.

837.2 Definitions and conditions. The several terms, words or phrases herein-after mentioned shall be construed as follows:

(a) *Class* as appearing in table I, as the letters A, A-special (International boundary waters), B, C, D or E opposite each specifically designated waters means Class A, A-special (International boundary waters), B, C, D or E, as the case may be, as set forth in Part 701 and 702, *supra*.

(b) *Standards* as appearing in table I, as the letters A, A-special (International boundary waters), B, C, D or E opposite each specifically designated waters shall mean the standards of quality and purity established for class A, A-special (International boundary waters), B, C, D or E, as the case may be, as set forth in Part 701 and 702, *supra*. The symbol (T) after any class designation shall mean that the designated waters are trout waters and that the dissolved oxygen specification for trout waters shall apply thereto.

(c) *Waters index number* as appearing in table I shall mean that number which has been applied to any specifically designated waters as appearing on the maps set forth in section 837.7, *infra*.

(d) *Name* as appearing in table I shall mean the name, if any, by which the specifically designated waters are generally known and which name, if any, appears on the reference maps. In cases of specifically designated waters which have no name, the named tributary to which the unnamed waters are tributary is indicated so far as possible. In the table, an item number is assigned consecutively to each specifically designated waters.

(e) *Description* as appearing in table I shall mean a brief indication as to the location of the specifically designated waters so that by reference to reference maps such waters may be located without reference to their waters index numbers. Entries under column headed "Description" also include designations of sections of a stream to which a particular assignment of a class and standards shall apply.

(f) *Map ref. no.* The numbers appearing in the table under the heading designate the following maps which have been partially reproduced as maps 1 to 13, inclusive, with superimposed tracing in black of streams and other waters and waters index numbers in section 837.7, *infra*.

837.4 Table I.

TABLE I

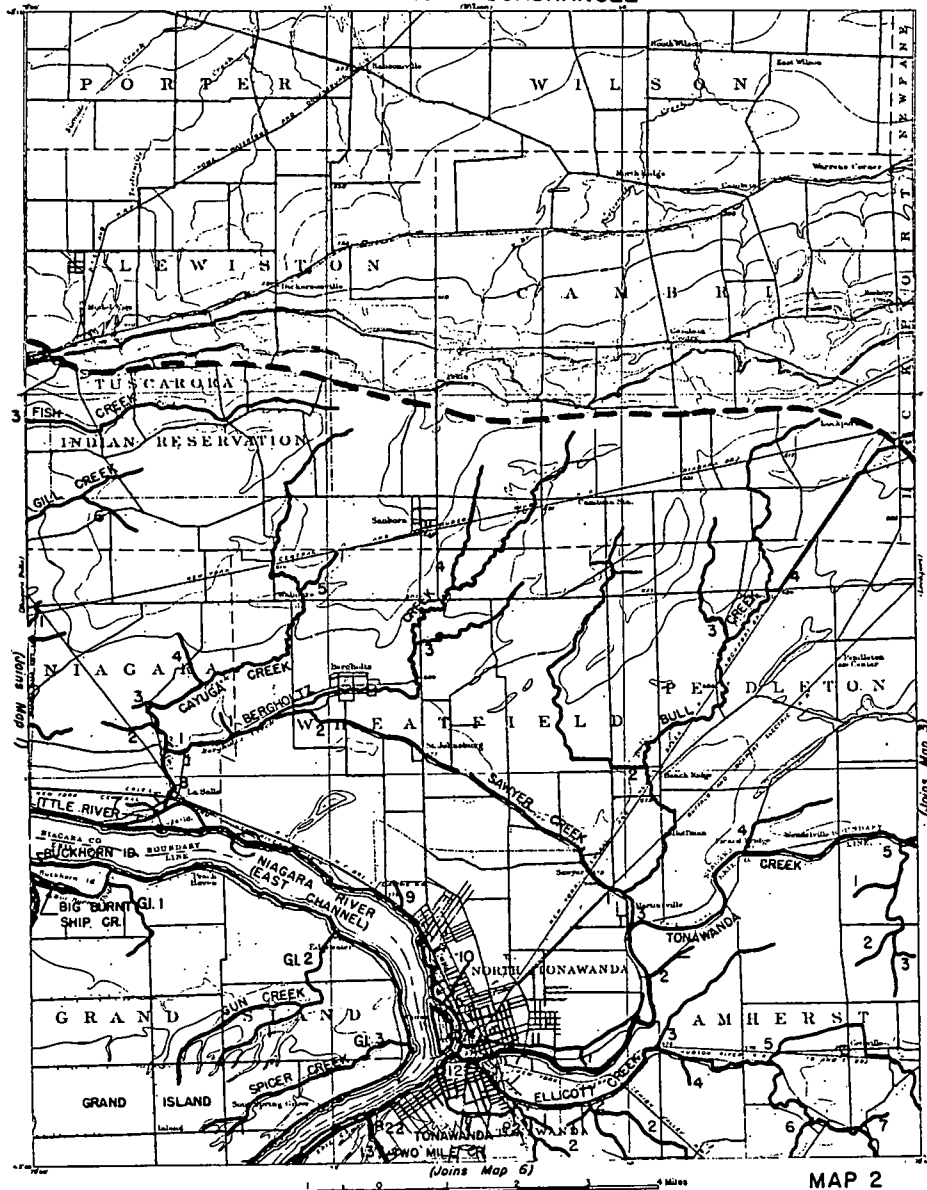
Classifications and Standards of Quality and Purity Which Are Assigned to All Surface Waters within the Lake Erie (East End) - Niagara River Drainage Basin; Erie, Niagara, Genesee, Orleans and Wyoming Counties, New York

Item No.	Waters Index Number	Name	Description	Map Ref. No.	Class	Standards
→ 1	0-158	Niagara River American side	Waters from international boundary to American shore between confluence with Lake Ontario and Lake Erie. Latter point is defined as a line running due west from south end of Bird Island pier to international boundary. These waters include all bays, arms, and inlets thereof, but not trib. streams or Black Rock Canal.	1,2,6	A-Special (international boundary waters)	A-Special (international boundary waters)
2	Black Rock Canal	Black Rock Canal	Waters east of Sqaw Island and Bird Island pier between canal locks and a line from south end of Bird Island pier to Buffalo harbor light #6.	6	C	C
3	0-158-1 and 2	Tributaries of Niagara River	Enter Niagara River from east in Town of Lewiston approximately 4.5 and 7.0 miles respectively from mouth.	1	C	C
4	0-158-3	Fish Creek	Enters Niagara River from east approximately 2.0 miles north of Niagara-Lewiston town line.	1,2	D	D
5	0-158-4 and P 1	Tributary of Niagara River	Enters Niagara River from east approximately 0.7 mile north of Niagara-Lewiston town line.	1	D	D

CHAPTER X DIVISION OF WATER RESOURCES

§ 837.4

TONAWANDA QUADRANGLE



MAP 2

701.19 Classes and standards for fresh surface waters. The following items and specifications shall be the standards applicable to all New York fresh waters which are assigned the classification of AA, A, B, C or D, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Fresh Surface Waters

Items	Specifications
1. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
2. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
3. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
4. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.
5. Taste and odor-producing substances, toxic wastes and deleterious substances.	None in amounts that will be injurious to fishlife or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the waters for any best usage as determined for the specific water which are assigned to each class.
6. Thermal discharges.	(See Part 704 of this Title.)

CLASS "AA"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "AA" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 50 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 240 for 100 ml of sample.
2. pH	Shall be between 8.5 and 8.5.

3. Total dissolved solids.

Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.

4. Dissolved oxygen.

For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "A"

Best usage of waters. Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters. The waters, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "A" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.
2. pH	Shall be between 8.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

REFERENCE 19

HANDBOOK OF ENVIRONMENTAL DATA ON ORGANIC CHEMICALS

SECOND EDITION

Karel Verschueren

Environmental Advisor

Heidemij/Adviesbureau

and

Department of Public Health and Tropical Hygiene

Agricultural University of Wageningen

Netherlands



VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

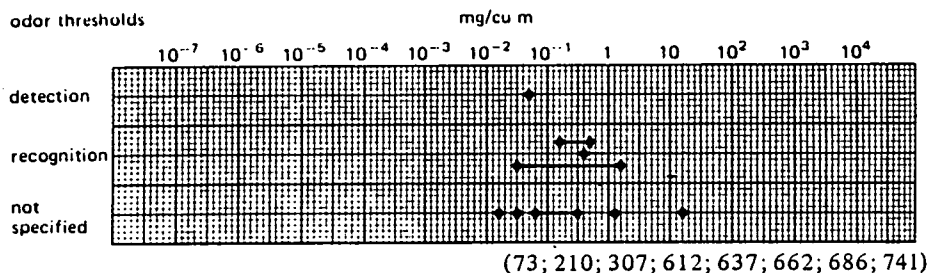
carbendisulfide (carbonbisulfide)**CS₂**

Users and formulation mfg. rayon, cellophane, carbon tetrachloride, rubber chemicals and flotation chemicals, soil disinfectants, electronic vacuum tubes; solvent (phosphorus, sulfur, bromine, iodine, selenium, fats, resins, rubbers); mfg. grain fumigants, soil conditioners, herbicides; paper mfg.; pharmaceutical mfg. (347)

A. PROPERTIES: colorless liquid; m.w. 76.14; m.p. -108.6°C/-116.6°C; b.p. 46.3°C; v.p. 260 mm at 20°C, 430 mm at 30°C; 200 mm at 10°C; v.d. 2.64; sp.gr. 1.263 at 20/4°C; solub. 2,300 mg/l at 22°C; log *P*_{oct} 1.84/2.16 (calculated)

B. AIR POLLUTION FACTORS: 1 mg/cu m = 0.315 ppm, 1 ppm = 3.17 mg/cu m

—Odor: characteristic: quality: vegetable sulfide, aromatic
hedonic tone: slightly pungent



O.I. 100% recognition: 1,600,000

USSR: human odor perception: non perception: 0.04 mg/cu m (2)

perception: 0.05 mg/cu m = 16 ppb

human reflex response: no response: 0.03 mg/cu m

adverse response: 0.04 mg/cu m (170)

—Natural sources:

biogenic carbon disulfide emissions from soils in U.S.A.:

sampling sites	soil orders		avg. sulfur flux g S/m ² /yr
Wadesville, IN	alfisol	Sept.-oct. 1977	0.002
Philo, OH	inceptisol	Oct. 1977	0.0012
Dismal Swamp, NC	histosol	Oct. 1977	0.0001
Ceder Island, NC	freshly clipped marsh		1.131
Cox's Landing, NC	freshly clipped marsh		0.0215 (1385)

—Control methods:

catalytic combustion: platinized ceramic honeycomb catalyst; ignition temp.: 350°C, inlet temp. for 90% conversion: 375-400°C (91)

—Sampling and analysis:

non dispersive I.R.: min. full scale: 37 ppm (55)

photometry: min. full scale: 2000 ppm (53)

detector tubes: UNICO: 10 ppm = det. limit (59)

DRAGER: 13 ppm = det. limit

4 f.abs.app., 60 l air/30 min: VLS: det.lim.: 50 µg/cu m/30 min, reagent: solution of diethylamine and coppersulfate (208)

C. WATER POLLU

—Impact on b

75% reducti

—Reduction c

D. BIOLOGICAL

—Fish: mosqu

—Man: severe

sympt

unsatis

carbonhexachlori

carbonoxysulfide

carbontetrachlori

CCl₄

Users and fo

refrigerants, a

solvent; veter

compounds

A. PROPERTIES:

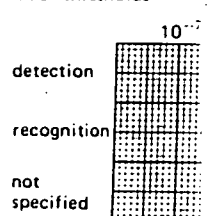
at 20°C, 56

1.59 at 20°

m at 20°C, 1

B. AIR POLLUTIO

odor thresholds



detection

recognition

not

specified

—Control metho

—Sampling and

I.R.: det. lim.:

photometry: r

test tubes: UN

DR

C. WATER POLLUT.

—BOD₅: 0 stc

—KMnO₄: 0.00

—ThOD: 0.21

—Reduction of a

D. BIOLOGICAL EFFECTS:

—Toxicity threshold (cell multiplication inhibition test):

bacteria (<i>Pseudomonas putida</i>):	140 mg/l	(1900)
algae (<i>Microcystis aeruginosa</i>):	700 mg/l	(329)
green algae (<i>Scenedesmus quadricauda</i>):	47 mg/l	(1900)
protozoa (<i>Entosiphon sulcatum</i>):	236 mg/l	(1900)
protozoa (<i>Uronema parduczi</i> Chatton-Lwoff):	916 mg/l	(1901)

ethylchloride (monochloroethane; hydrochloric ether; muriatic ether)

C_2H_5Cl

Uses: manufacture of TEL and ethylcellulose; anesthetic; organic synthesis; alkylating agent; refrigeration; analytical reagent; solvent

A. PROPERTIES: colorless liquid or gas; m.w. 64.5; m.p. $-138.3^\circ C$; b.p. $12.4^\circ C$; v.p. 457 mm at $0^\circ C$, 700 mm at $10^\circ C$, 1,000 mm at $20^\circ C$, 1.9 atm at $30^\circ C$; v.d. 2.23; sp.gr. 0.92 at $0/4^\circ C$; solub. 3,330 mg/l at $0^\circ C$, 5,740 mg/l at $20^\circ C$; log P_{oct} 1.54 (calculated)

B. AIR POLLUTION FACTORS: 1 mg/cu m = 0.37 ppm, 1 ppm = 2.69 mg/cu m

—Odor: characteristic; quality: etheric

threshold: recognition: 10–12 mg/cu m (610)

—Manmade sources:

glc's in rural Washington Dec. 74–Feb. 75: <5 ppt (315)

C. WATER POLLUTION FACTORS:

—Waste water treatment:

evaporation from water at $25^\circ C$ of 1 ppm solution (still air, avg. depth 6.5 cm)

50% after 21 min

90% after 79 min

(369)

D. BIOLOGICAL EFFECTS:

—Mammalia:

guinea pig: inhalation: histopathological changes in liver and kidney at 2,000 ppm, 540 min

normal: 1,000 ppm, 810 min

(211)

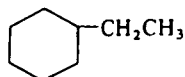
—Man: after 30 sec quickly increased toxic effect: 33,600 ppm

weak analgesia after 12 min: 19,000 ppm

slight symptoms of poisoning: 13,000 ppm

(211)

ethylcyclohexane



Uses: organic synthesis

A. PROPERTIES: colorless liquid; m.w. 112.22; m.p. $-111^\circ C$; b.p. $131.8^\circ C$; sp.gr. 0.787

C. WATER POLLUTION FACTORS:

—Biodegradation:

incubation with natural flora in the groundwater—in presence of the other components of high-octane gasoline (100 μ l/l): biodegradation: 95% after 192 hr at $13^\circ C$ (initial conc.: 0.06 μ l/l) (956)

REFERENCE 20

BATH TOXICOLOGY GROUP, INC.

CONSULTIVE TOXICOLOGICAL SERVICES

20

ANALYTICAL
CLINICAL
ENVIRONMENTAL
FORENSIC
INDUSTRIAL

ELEMENT	MAXIMUM CONCENTRATION REPORTED AT SITE mg/kg	MEDIAN ELEMENTAL COMPOSITION OF SOILS		SOURCE
		RANGE CONCENTRATION IN SOILS mg/kg (ppm)	TYPICAL MEDIUM	
aluminum	Al	10,000 - 300,000	71,000	1
antimony	Sb	0.2 - 150	6	1, 2, 3 & 4
arsenic	As	0.1 - 174	11	5
barium	Ba	100 - 3,000	500	1
beryllium	Be	0.01 - 40	0.3	1
boron	B	2 - 270	20	1
bromine	Br	1 - 110	10	1
cadmium	Cd	0.01 - 7	0.5	6
calcium	Ca	LT 150 - 500,000	24,000	1 and 7
chlorine	Cl	8 - 1,800	100	1
chromium	Cr	5 - 3,000	100	6
cobalt	Co	0.05 - 65	8	1
copper	Cu	2 - 250	30	1
fluorine	F	6 - 7070	270	5
gallium	Ga	2 - 100	20	1
germanium	Ge	0.1 - 50	1	1
iron	Fe	100 - 550,000	10,000	1 and 5
lanthanum	La	2 - 180	40	1
lead	Pb	LT 1 - 888	29	5
magnesium	Mg	400 - 9,000	5,000	1
manganese	Mn	20 - 18,300	1,000	1, 5 & 6
mercury	Hg	0.01 - 4.6	0.090	5
molybdenum	Mo	0.1 - 40	2	1 and 6
nickel	Ni	0.1 - 1,530	50	1 and 5
phosphorus	P	35 - 5,300	800	1
potassium	K	80 - 37,000	14,000	1
rubidium	Rb	20 - 1,000	150	1
scandium	Sc	5 - 55	7	1
selenium	Se	0.1 - 38	0.4	1 and 6
silicon	Si	250,000 - 410,000	330,000	1
silver	Ag	0.01 - 8	0.4	5
sodium	Na	150 - 25,000	5,000	1
strontium	Sr	LT 3 - 3,500	278	5
sulfur	S	30 - 1,600	700	1
thallium	Tl	0.1 - 0.8	0.2	1
thorium	Th	2 - 13	9	8
tin	Sn	1 - 200	10	1 and 6
titanium	Ti	150 - 25,000	5,000	1
tungsten	W	0.5 - 83	1.5	1
vanadium	V	3 - 500	100	1, 6 & 7
yttrium	Y	LT 10 - 200	40	1 and 7
zinc	Zn	1 - 2,000	70	1 and 5
zirconium	Zr	60 - 2,000	400	1

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4. "GEOCHEMISTRY OF SOME ROCKS, SOIL, PLANT AND VEGETABLES IN THE CONTINUOUS UNITED STATES", GEOLOGICAL SURVEY PROFESSIONAL PAPER 574 F 1975
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7. SHAKLETTE, H. T., ET. AL., ELEMENTAL COMPOSITION OF SURFICIAL MATERIAL IN THE CONTINUOUS UNITED STATES, USGS PROFESSIONAL PAPER 574-D 1971.
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17 STONE LANE
MARLBORO, NEW JERSEY 07746
201-972-8488

REFERENCE 21

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 4

REGION: 9

SITE CODE: 932007
EPA ID: NYD980507883

NAME OF SITE : Carborundum-Abrasive Division

STREET ADDRESS: Walmore Road

TOWN/CITY:

Wheatfield

COUNTY:

Niagara

ZIP:

SITE TYPE: Open Dump-X Structure- Lagoon- Landfill- Treatment Pond-
ESTIMATED SIZE: 1 Acres

SITE OWNER/OPERATOR INFORMATION:

CURRENT OWNER NAME....: Carborundum Abrasive Co.

CURRENT OWNER ADDRESS.: PO Box 350, Niagara Falls, NY

OWNER(S) DURING USE....: Carborundum Company

OPERATOR DURING USE....: Carborundum Corp.

OPERATOR ADDRESS.....: The Carborundum Ctr., Niagara Falls, NY

PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1968 To 1976

SITE DESCRIPTION:

Solidified resins, floor sweepings, waste fillers including calcium carbonate, clays and animal glue with free phenols. A hydrogeological investigation of the site was conducted in 1981. Monitoring wells confirmed the presence of phenols in the groundwater. During the late summer of 1982, a remedial program was implemented at the site.

This program consisted of the installation of an improved clay cap that was keyed into the soft clay around the site. Quarterly sampling completed for one full year for the following parameters: pH, TOC, and Phenol. Future sampling will include water level measurements and analysis for pH and phenols (total) only. Periodic sampling of the existing monitoring wells over a year's time consistently shows low phenol levels. Based on the inspection done in October 1984, periodic maintenance of the site was recommended.

HAZARDOUS WASTE DISPOSED: Confirmed-X
TYPE

Suspected-
QUANTITY (units)

Phenols
Solidified resins, calcium
carbonate clays, animal glue
floor sweepings

800-1600 lbs.

400 tons total

REFERENCE 22

United States
Environmental Protection
Agency

Office of Solid Waste
and Emergency Response
Washington, DC 20460

EPA 530-SW-87-028A
October 1987



Solid Waste

PB88-127949

Characterization of MWC Ashes and Leachates from MSW Landfills, Monofills, and Co-Disposal Sites

Summary—Volume I of VII

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA. 22161

R-33-6-7-1

FINAL

CHARACTERIZATION OF MUNICIPAL WASTE COMBUSTOR ASHES
AND LEACHATES FROM
MUNICIPAL SOLID WASTE LANDFILLS, MONOFILLS, AND
CODISPOSAL SITES

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF SOLID WASTE
WASHINGTON, D.C.

CONTRACT NO. 68-01-7310
WORK ASSIGNMENT NO. 04

Contract Officer
R. Perry

EPA Project Officer
Gerry Dorian

Prepared by

NUS CORPORATION

OCTOBER 1987

TABLE 2-1

MATERIALS DISPOSED INTO THE MUNICIPAL WASTE STREAM
(In Millions of Tons and Percent)

Materials	1970		1984		2000	
	Tons	%	Tons	%	Tons	%
Paper and Paperboard	36.5	33.1	49.4	37.1	65.1	41.0
Glass	12.5	11.3	12.9	9.7	12.1	7.6
Metals	13.5	12.2	12.8	9.6	14.3	9.0
Plastics	3.0	2.7	9.6	7.2	15.5	9.8
Rubber and Leather	3.0	2.7	3.3	2.5	3.8	2.4
Textiles	2.2	2.0	2.8	2.1	3.5	2.2
Wood	4.0	3.6	5.1	3.8	6.1	3.8
Other	-	0.1	0.1	0.1	0.1	0.1
Food Wastes	12.7	11.5	10.8	8.1	10.8	6.8
Yard Wastes	21.0	19.0	23.8	17.9	24.4	15.3
Miscellaneous Inorganic Wastes	1.8	1.6	2.4	1.8	3.1	2.0
TOTAL	110.3	100.0	133.0	100.0	158.8	100.0

Source: PCR Engineering, 1986

TABLE 2-2

**RANGES OF CONCENTRATIONS OF INORGANIC CONSTITUENTS
IN FLY ASH, COMBINED ASH, AND BOTTOM ASH
FROM MUNICIPAL WASTE INCINERATORS IN $\mu\text{g/g}$ (ppm)**

Parameter	Fly Ash	Combined Bottom and Fly Ash	Bottom Ash
Arsenic	15-750	2.9-50	1.3-24.6
Barium	88-9,000	79-2,700	47-2,000
Cadmium	<5-2,210	0.18-100	1.1-46
Chromium	21-1,900	12-1,500	13-520
Lead	200-26,600	31-36,600	110-5,000
Mercury	0.9-35	0.05-17.5	ND-1.9
Selenium	0.48-15.6	0.10-50	ND-2.5
Silver	ND-700	0.05-93.4	ND-38
Aluminum	5,300-176,000	5,000-60,000	5,400-53,400
Antimony	139-760	<120-<260	
Beryllium	ND-<4	ND.1-2.4	ND-<0.44
Bismuth	36-<100		ND
Boron	35-5,654	24-174	85
Bromine	21-250		
Calcium	13,960-270,000	4,100-85,000	5,900-69,500
Cesium	2,100-12,000		
Cobalt	2.3-1,670	1.7-91	3-62
Copper	187-2,380	40-5,900	80-10,700
Iron	900-87,000	690-133,500	1,000-133,500
Lithium	7.9-34	6.9-37	7-19
Magnesium	2,150-21,000	700-16,000	880-10,100
Manganese	171-8,500	14-3,130	50-3,100
Molybdenum	9.2-700	2.4-290	29
Nickel	9.9-1,966	13-12,910	9-226

TABLE 2-2
RANGES OF CONCENTRATIONS OF INORGANIC CONSTITUENTS
IN FLY ASH, COMBINED ASH, AND BOTTOM ASH
FROM MUNICIPAL WASTE INCINERATORS IN $\mu\text{g/g}$ (ppm)

PAGE TWO

Parameter	Fly Ash	Combined Bottom and Fly Ash	Bottom Ash
Phosphorus	2,900-9,300	290-5,000	3,400-17,800
Potassium	11,000-65,800	290-12,000	920-13,133
Silicon	1,783-266,000		1,333-188,300
Sodium	9,780-49,500	1,100-33,300	1,800-33,300
Strontium	98-1,100	12-640	81-240
Tin	300-12,500	13-380	40-800
Titanium	< 50-42,000	1,000-28,000	3,067-11,400
Vanadium	22-166	13-150	53
Yttrium	2-380	0.55-8.3	
Zinc	2,800-152,000	92-46,000	200-12,400
Gold	0.16-100		
Chloride	1,160-11,200		
Country	USA, Canada	USA	USA, Canada

ND - Not detected at the detection limit

Blank - Not reported, not analyzed for

Source: Literature (Volume IV) and Versar Study (Volume V)

TABLE 2-6
RANGES OF CONCENTRATIONS OF ORGANICS IN FLY AND BOTTOM ASH
FROM MUNICIPAL WASTE INCINERATORS in ng/g (ppb)

Constituent	Range, Fly Ash	Range, Bottom Ash
Naphthalene	270-9,300	570-580
Biphenyl	2-1,300	
Acenaphthylene	ND-3,500	37-390
Anthracene	1-500	53
Fluorene	0-100	ND-150
Phenanthrene	21-7,600	500-540
Di-n-butyl phthalate	ND	360
Fluoranthene	0-6,500	110-230
Pyrene	0-5,400	150-220
Butyl benzyl phthalate	ND	180
Chrysene	0-690	ND-37
Bis(2-ethylhexyl)phthalate	85	2,100
Benzanthrene	0-300	
Benzo(k)fluoranthene	ND-470	ND-51
Benzo(a)pyrene	ND-400	ND-5
Benzo(g,h,i)perylene	0-190	ND
Diethyl phthalate	6,300	
Acenaphthene		28
Normal alkanes	50,000	
Chlorobenzenes	80-4,220	17
Chlorophenols	50.1-9,630	0
Country	USA, Canada, Japan and The Netherlands	USA and Canada

ND = Below detection limit

Blank = Not reported

Source: Literature (Volume IV) and Versar Study (Volume V)

TABLE 2-7

**RANGES OF CONCENTRATIONS OF PCDDs, PCDFs, AND PCBs
IN FLY ASH FROM MUNICIPAL WASTE INCINERATORS in ng/g (ppb)**

Constituent	Range Fly Ash	Range Combined Ash	Range Bottom Ash
MCDD	2.0		ND
DCDD	0.4-200		ND
T ₃ CDD	1.1-82		ND
T ₄ CDD	ND-250	0.14-14	<0.04-0.65
PCDD	ND-722	1.9-50	ND-3
HCDD	ND-5,565	1.4-78	ND-2.3
H ₇ CDD	ND-3,030	1.4-120	ND-6.3
OCDD	ND-3,152	0.84-89	ND-29
2,3,7,8-TCDD	0.1-42	0.02-0.78	<0.04-0.7
Total PCDD	5.23-10,883	6.2-350	ND-110
MCDF	41		1.1
DCDF	ND-90		0.63
T ₃ CDF	0.7-550		ND
T ₄ CDF	ND-410	2.3-91	0.15-1.4
PCDF	ND-1,800	1.6-37	0.07-6.2
HCDF	Tr-2,353	1.2-35	ND-2.5
H ₇ CDF	Tr-666	0.62-36	ND-6.9
OCDF	ND-362	0.18-8.4	ND-3.7
2,3,7,8-TCDF	0.1-5.4	0.41-12	ND-10
Total PCDF	3.73-3,187	6.14-153.9	ND-65
Mono CB	0.29-9.5	ND	ND-1.3
Di CB	0.13-9.9	0.126-1.35	ND-5.5
Tri CB	ND-25	0.35-14.3	ND-80
Tetra CB	0.5-42	16.5-16.5	ND-47
Penta CB	0.87-225	ND	ND-48
Hexa CB	0.45-65		ND-39
Hepta CB	ND-0.1		ND
Octa CB	ND-1.2		ND
Nona CB	ND		ND
Deca CB	ND		ND
Total PCB	ND-250	ND-32.15	ND-180
Country	USA, Canada, West Germany The Netherlands, Japan	USA	USA, Canada, Japan

ND = Below Detection Limit

Blank = Not reported

Tr = 0.01 < Tr < 0.1 ng/g

Source: Literature (Vol IV) and Versar Study (Vol. V)

APPENDIX B
SITE INSPECTION/AIR MONITORING DATA

BY EW, RC DATE 8/9/88

LAWLER, MATUSKY & SKELLY ENGINEERS

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. 1 OF 5

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

Site ConditionI AIR MONITORING:1. READINGS IN BREATHING ZONE:2. PERIMETER + W/IN SITE3. PREVAILING WIND DIRECTIONS.II SAMPLING / WELL LOCATIONS.1. Accessibility: (consider ^{culverts:} overhead power / telephone lines, underground gas, sewer, electric lines, U.S.T., etc.)2. Geophysical:

LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. 11 OF 15

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

III. EXISTING WELLS:

1. Appear on Site maps? / Locked or unlocked?

2. SWL? / Contaminants?

3. Condition of well?

IV. Drum Storage:

1. What needs to be drummed? (cuttings, development H₂O?)Decon H₂O.Chemical Criteria
Visibility

2. Location of drum storage area:

V. Waste

1. Containment? / Disposal?

Decon H₂O:

Decon Acetone:

Disposable clothing:

Drill cuttings:

LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. 2 OF

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

VI ZONE Boundaries:

Exclusion

Contamination Reduction.

Support

VII Decontamination:

Equipment PAD:

Accessability -

Availability of H₂O - Permits/connections

Availability of electric.-

VIII STORAGE OF EQUIPMENT/MATERIALS. (OVERNIGHT)

Parking:

Security:

IX BATHROOM/Wash Room:

Location

* Porto-John !!!

X POTABLE H₂O LOCATION.

LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

SHEET NO. _____ OF _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

<u>XI</u> Security of Site.	
Fences:	
Sign in/Sign out:	
Guard House:	
Working Hours: (Weekends?/weekdays?)	
<u>XII</u> Contacts:	
CLIENT/OWNER:	
DEC:	
TOWN/COUNTY:	
UTILITIES:	
RAILROAD:	
OTHER:	

LAWLER, MATUSKY & SKELLY ENGINEERS

BY _____ DATE _____

ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____

ONE BLUE HILL PLAZA
POST OFFICE BOX 1509
PEARL RIVER, NEW YORK 10965

JOB NO. _____

SUBJECT _____

XIII HASP EMERGENCY: (#5, directions)

FIRE:

POLICE

HOSPITAL / AMBULANCE

XIV COMMENTS:

Brezinski
DAILY HEALTH AND SAFETY REPORT

Date: 8/9/88

Background HNU Reading (Measured at Emergency Staging Area):

2 HNU units

Background OVA Reading (Measured at Emergency Staging Area):

-

Background EXP Reading (Measured at Emergency Staging Area):

-

Background OXY Reading (Measured at Emergency Staging Area):

-

Work Area and Task:

Site Recon

Level of Protection Required:

Level D

Work Area and Task:

Level of Protection Required:

Comments: Wind A/NW 0-5 knots, 40% Humidity,
80°F - 90°F

On-Site Health and Safety Officer: Edward M. [Signature]

576-017

Note: Readings at work site are recorded on separate table.

LAWLER, MATUSKY & SKELLY ENGINEERS
H.NU METER FIELD CALIBRATION
DATA SHEET

Job No: 576-017
Site: Brezinski
Crew: EMH, RC
Oper: RECAN

[illegible]

On-Site Health & Safety Officer and/or Crew Chief:

(Signature): Edward M. Kelly

(Date): 8/9/88

H.Nu Meter: NYSDEC #801439
OVA Meter: -
Explosimeter: -
Date: 8/9/88

(Date) 8/4/88

APPENDIX C
HEALTH AND SAFETY PLAN

LAWLER, MATUSKY & SKELLY ENGINEERS

SITE-SPECIFIC

HEALTH AND SAFETY PLAN FORM

Site Name: Brzezinski Landfill Location: Town of Wheatfield New York

HASP Preparer: Karen A Wright

APPROVALS

Project Manager: _____

Safety Officer: Karen A Wright

PROJECT PERSONNEL:

On-Site Coordinator: _____

On-Site Health and Safety Officer: _____

Phone: (914) 735-8300

DATE OF PLAN PREPARATION: 10/21/88

HAZARDOUS/SUBSTANCES (known or suspected, contaminated media or in storage container, etc.):

Received wastes from Carborundum Co.
consisting of - fly ash, sand, fire bricks, dust
collected fines, kiln furniture, Carborundum
wheels, snap globes, solid abrasive
grains and plastic molds. Also received
wastes from Bell Aerospace Corp. Also
25 loads of ash from City of Niagara Falls
Incinerator deposited here. Soil samples

from site contained 61,000 ppb copper, 50,000 ppb
iron 161 ppb mercury, 47, 558 ppb arsenic, 51,200 ppb
zinc and other metals. Volat. analyzed: 2 ppb Pb,
0.30 ppb copper, 1200 ppb iron, and 100 ppb zinc.

Organic compounds found in soil include:

3,1-dimethyl-2-pyridoxine - 1-carboxamide at 15,200 ppb
and 4,5-dimethyl-2-hexene at 512 ppb.

HAZARD ASSESSMENT (toxic effects, including TLVs, IDLHs, reactivity, stability, flammability, and operational hazards with sampling, decontaminating, etc):

Low - mostly inert materials - some
metals found in soil and water.

SITE WORK ZONES: (designate exclusion zone, contamination reduction zone and support zone)

See attached Figure 1

SITE ACCESS: (describe procedures to control site access)

Keep log book on site - Record
all personnel working on site

MONITORING PROCEDURES (If required by the Safety Officer)

Monitoring the site for identity and concentration of contamination in all media:

Monitor daily at Support zone for background
concentrations. Monitor all field
activities with HPLC

Medical monitoring procedures for evidence of personnel exposure i.e. analyses specific to site not covered in general LMS physical:

N/A

Personnel monitoring procedures:

N/A

DECONTAMINATION AND DISPOSAL

Decontamination Procedures (contaminated personnel, surfaces, materials, instruments, equipment, etc.):

Must call Town of Wheatfield Water
Dept for permission to use hydrant - (716)

693-4202 - ask for Woody. Bellville, Angelo
(over)

Disposal Procedures (contaminated equipment, supplies, disposables, washwater):

Brush cuttings, development water and
sludge water to be spilled on ground
unless HNU reading > 5 ppm.

If > 5 ppm must drum. Separate water and
solids. Bag all disposables.

EMERGENCY PROCEDURES

In event of personnel exposure (skin contact, inhalation, ingestion, specific procedures for specific chemicals):

Immediately wash if in contact.
Remove to fresh air if inhalation
problem. Monitor breathing and
pulse.

In event of personnel injury:

Do first aid. Call ambulance
if deemed necessary. Monitor
ABCs - Airway, breathing and
circulation.

split spores to be stem cleaned before
wash begins. Split spores to be detergent
washed, portable water, rinsed between
washes. Split spores to be stem cleaned
a hot washed between washes. If
chemical analysis to be done, use
clean procedure described in work
scope. Stainless steel spores and
trowels used to collect soil samples
and barrels used to collect water
samples are to be cleaned in laboratory
as described in LMS SOP. Use water
from hydrant. If acetone is used in
field separate from other water and
contain

In event of potential or actual fire or explosion:

Evacuate to Safe zone. Have
also keep track of our
individuals on site

In event of potential or actual ionizing radiation exposure:

N/A

In event of environmental accident (spread of contamination outside sites):

Prevent spread as best as
possible. Call LMS

EMERGENCY SERVICES (complete here or have separate list available on-site)

<u>Location</u>	<u>Telephone</u>
Emergency Medical Facility	
<u>Niagara Falls Hospital</u>	
<u>621 16th St Niagara Falls</u>	
<u>NY</u>	<u>(716) 278-4000</u>
Ambulance Service	
<u>Edmore Volunteer Fire</u>	
<u>See hospital</u>	<u>(716) 278-4000</u>

Location

Telephone

Fire Department

Frontier Volunteer Fire Co. Inc.
Barab

Police Department

Niagara County Sheriff's Dept
(716) 439-4343

Poison Control Center

PERSONNEL POTENTIALLY EXPOSED TO HAZARDOUS SUBSTANCES (As Applicable)

Personnel Authorized to Enter Site (specific conditions of site would preclude most LMS trained persons from entering site and would allow only certain personnel, list here)

1. N/A
2. _____
3. _____
4. _____
5. _____

ALTERNATIVE WORK PRACTICES

(Describe alternative work practices or instruments not specified in this form. Indicate work practices specified in the chapter for which proposed alternative work practices will serve as substitute.)

N/A

TASK-SPECIFIC LEVEL OF PROTECTION (attach table including specific description of protective gear)

See attached Table 2-1

SITE MAP

(Attach a site map. Map should be properly scaled and keyed to local landmarks.)

See attached Figure 1

TRAINING

(Provide description of minimum training, reference OSHA Sections).

One from 29 CFR 1910.120 e(2)

AFFIDAVIT

All personnel who enter site must sign attached affidavit. LMS personnel must also read and comply with LMS' generic HASP.

AFFIDAVIT

I, _____, (name) of _____
(company name) have read the Health and Safety Plan (HASP) for the
_____ (site description and project description).

I have also read the LMS generic HASP. I agree to conduct all on-site work in conformity with the requirements of both HASPs. In addition, I acknowledge that failure to comply with the designated procedures in the Health and Safety Plans may lead to my removal from the site.

Signed _____

Date _____

Table 1
Task Specific Safety Protection

<u>Task</u>	<u>Level</u>	<u>Description</u>
mining, well drilling and installation	D-C	hard hat, safety glasses, safety shoes, dust mask (optimal in case of splash), water gloves.
groundwater sampling	D-C	same as above
surface water sampling	D-C	same as above
soil sampling	D-C	same as above

Action levels: If there reads 0.5 ppm or more
 above background appropriate in breathing
 zone, upgrade to level C. If it reads
 > 5 ppm above background in breathing
 zone stop work and call EMS.

Avoid contact with soil or water where
 it may contain high concentrations of metals.
 Stand downwind and avoid breathing dust
 or fumes. Use respirator with high efficiency
 type filter if large amounts of dust are encountered.



APPROX.
PROPERTY
BOUNDARY

RIVER ROAD

GW-4

SHEDS

OFFICE

PILES OF DEBRIS

SS-1

W-2

PILES OF FILL

FILL

W-3

SS-2

GW-2

BH-1

SMALL TREES

W-1

SS-3

GW-3

DRY ROAD

DEBRIS

INDUSTRIAL

TRAILER PARK

Support Zone
(Contamination
Reduction Zone)
(Remanded ch.
Site exclusion
Zone)

LEGEND

- PROPOSED INITIAL TEST BORING LOCATION
- TENTATIVE TEST BORING/MONITORING WELL LOCATION
- ▽ SURFACE WATER SAMPLE LOCATION
- SOIL SAMPLE LOCATION



Scale: NTS

By	Date
Dwn. SSN	10/86
Ckd.	
Ap'vd.	
Rev.	

LYNCH PARK
NYS SUPERFUND
PHASE II

SITE NO. 932008

Project No. 5C280504

PROPOSED SAMPLE
LOCATION MAP

A

FIGURE 1

61160-1

BRUNING



APPENDIX D
GEOPHYSICAL RESULTS

DUNN GEOSCIENCE CORPORATION

495 Commerce Drive
AMHERST, NEW YORK 14150

LETTER OF TRANSMITTAL

DATE <u>August 29, 1988</u>	JOB NO. <u>4.5-4010-01-0000</u>
ATTENTION <u>Mr. Roger A. Clark, Ph.D.</u>	
RE: <u>Lynch Park Geophysical Investigation Report</u>	

TO RECRA ENVIRONMENTAL, Inc
10 Hazelwood Drive, Suite # 106
Amherst, NY 14150

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

- ☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ REPORT

COPIES	DATE	NO.	DESCRIPTION
<u>1</u>	<u>8/29</u>		<u>Lynch Park Geophysical Investigation</u>

THESE ARE TRANSMITTED as checked below:

- ☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS If there are any questions or comments
please feel free to contact me.

COPY TO File

SIGNED: Thomas C. Jordan

8/25/88

LYNCH PARK
TOWN OF WHEATFIELD, NEW YORK

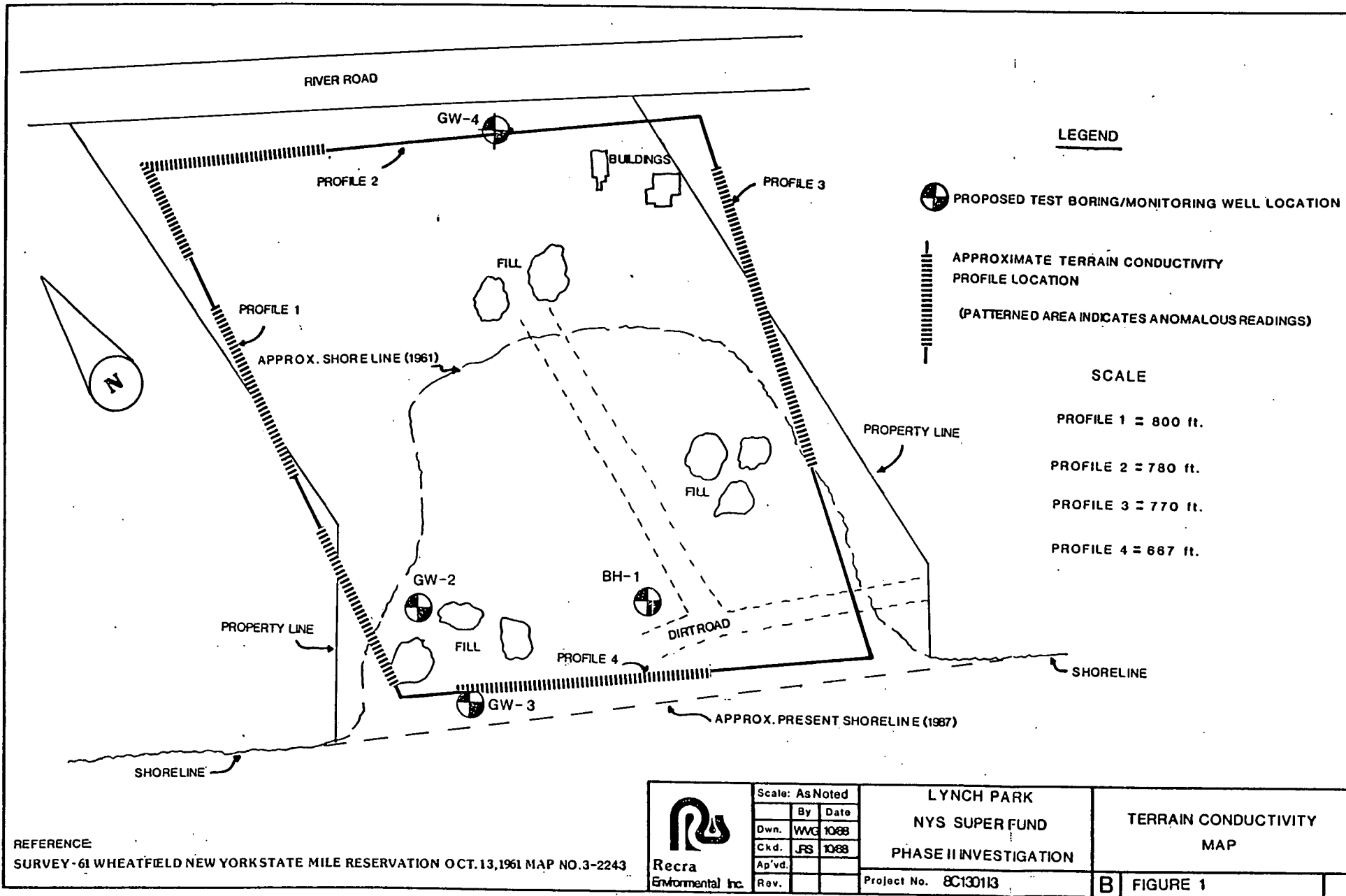
1.0 INTRODUCTION

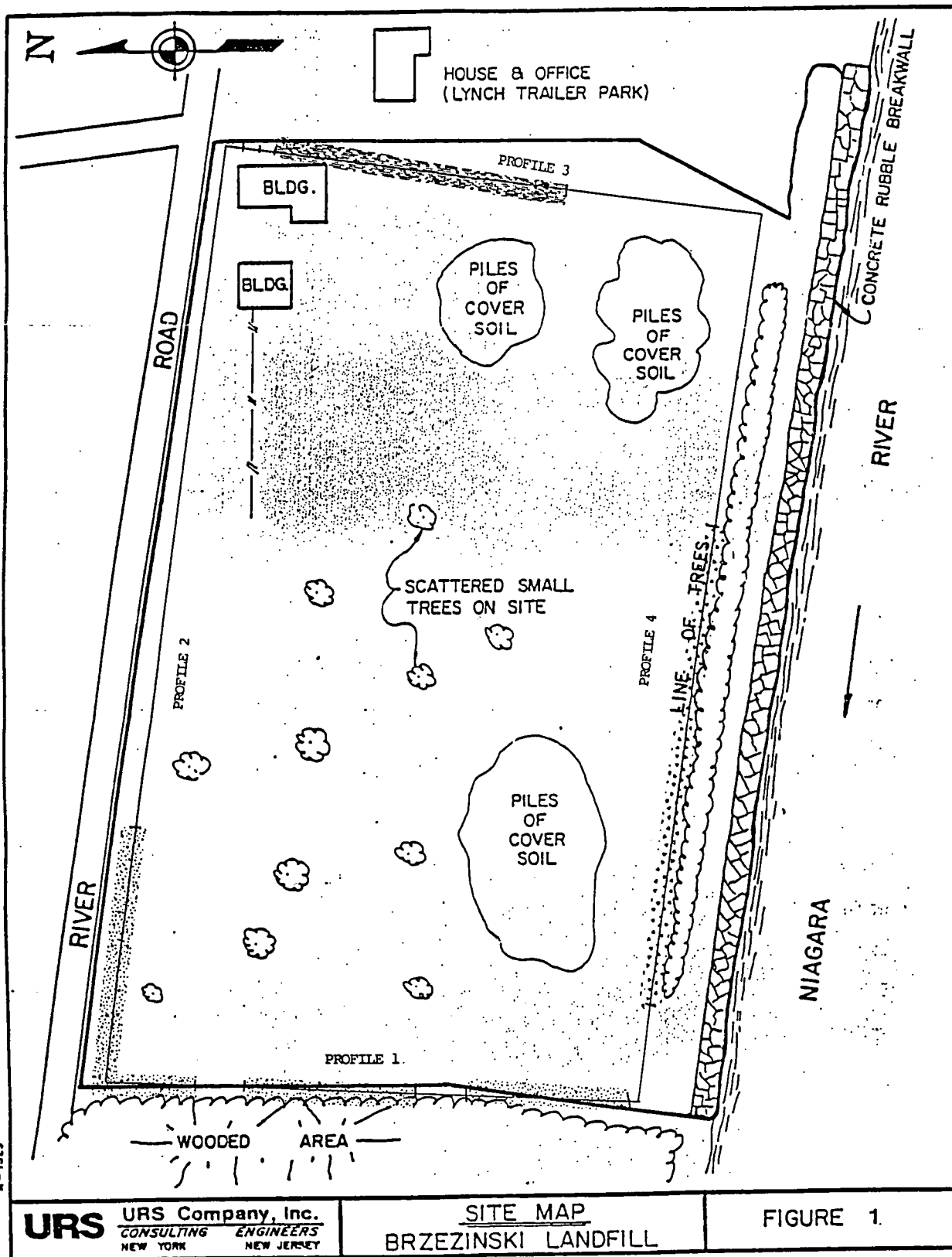
A terrain conductivity survey was completed around the perimeter of the Lynch Park Site in the Town of Wheatfield, New York on August 17, 1988. The method of investigation utilized a Geonics Model EM-31 DL terrain conductivity meter (TC) to measure the subsurface conductivity characteristics. A terrain conductivity survey is a fast, environmentally non-invasive technique for determining subsurface conditions. This method is indirect and interpretive and should be verified by more direct methods of investigation.

A total of four terrain conductivity profiles were completed for a total of approximately 2920 lineal feet (Figure 1).

2.0 PURPOSE

The purpose of this investigation was to help define limits of fill material to better characterize the site and to help assess the presence of contaminants.





URS URS Company, Inc.
CONSULTING ENGINEERS
NEW YORK NEW JERSEY

SITE MAP
BRZEZINSKI LANDFILL

FIGURE 1.

-  Possible contaminants present*
-  Possible construction/demolition material present*
-  Possible buried debris containing metal present*

* See text for alternative interpretations

3.0 METHODS

3.1 Survey Control

Prior to the data collection, base stations were established with a 300 foot tape measure. Base stations and turning points were staked, flagged and the coordinates recorded on them. Traverses through thick vegetation were marked by attaching red surveyors tape to reeds and brush at approximately 100 foot intervals. Turning points were staked, flagged and marked prior to the terrain conductivity survey.

3.2 Terrain Conductivity Survey

Prior to data collection with the EM-31 DL TC meter, the instrument was calibrated. After calibration processes were completed, a 300 foot tape measure was extended along the path of the traverse to establish accurate station location with the instrument. Readings were taken with the EM-31 DL TC at 20 foot centers unless otherwise noted. All readings were taken with the instrument in the routine "operational" mode which measures the quadrature-phase component of the induced magnetic field. This component is linearly related to actual ground conductivity. Readings were taken with the instrument both parallel and perpendicular to the direction of travel unless otherwise noted. This method was incorporated to test the lateral variation in conductivity at each station. Parallel and perpendicular values were plotted on each profile.

The EM-31 DL TC meter is equipped with a transmitter coil and a receiver coil spaced 12 feet apart. The theory of operation is as follows: the transmitter coil is energized with an alternating current at an audio frequency producing a time varying primary magnetic field (McNeill, 1980). The magnetic field induces small currents in the ground which produces a secondary magnetic field. The ratio of the primary field to the secondary field is linearly proportional to the ground conductivity. The effective depth of investigation of the instrument is 20 feet.

Ground water contamination can be detected by the EM-31 provided that the contaminants produce a measurable anomaly. Typically, this can occur if sufficient amounts of electrolytic contaminants are present in the ground water. Generally the electrolytes that cause the instrument to respond are not of primary concern. Electrolytes are generally common travelers with contaminants that are of concern such as organic chemicals, of which few are conductive. If relatively non-electrolytic contaminants are present in the soil and ground water of the Lynch Park site such contaminants may go undetected by terrain conductivity surveying.

4.0 RESULTS

4.1 Background conductivity values were approximately 30-40 millimhos/meter. Terrain conductivity profiles and the raw data is included in Appendix I and II respectively.

4.1.1 Profile 1

Profile 1 was located along the western boundary of the site along the OE line. Base line values observed were approximately 30-35 millimhos/meter.

A "zero" value was observed at location 100N and probably represents the presence of buried metallic debris within the vicinity of the station. An anomaly was observed between location 20N and 260N and may represent buried debris that contains metal. Metallic debris was observed on the surface at location 60N and may be present within the subsurface.

An anomaly was observed between location 340N and 600N. Differences in parallel and perpendicular readings may reflect the presence of a soil boundary condition or buried metallic debris within the vicinity of the traverse. An anomaly was observed between location 680N and 800N. This anomaly may represent a soil boundary condition and/or the presence of buried metallic debris within the vicinity of the anomaly.

4.1.2 Profile 2

Profile 2 was located approximately 60 feet south of River Road and parallel to River Road. Background values observed were approximately 40-45 millimhos/meter. These values may reflect the presence of fill or silty clay.

An anomaly was observed between locations 0E to 210E and may reflect the presence of buried debris containing metal. Buried metallic debris or buried utilities are probably present at locations 20E, 110E, 200E, 380E, 400E and 700E.

4.1.3 Profile 3

Profile 3 was located along the eastern boundary of the property. Background readings observed were approximately 40-45 millimhos and may reflect the presence of fill material or the presence of a silty clay. Differences in parallel and perpendicular values observed at location 755N - 735N may reflect the presence of a small building within the immediate vicinity of the two stations.

An anomaly was observed between location 715N - 355N and may be due to the presence of fill material and possibly the presence of contaminants. This anomaly may also represent increased clay content in the soil and/or a near surface water table. It is recommended that a well be installed within the vicinity of the anomaly to investigate subsurface conditions.

4.1.4 Profile 4

Profile 4 was located along the southern boundary of the site, 40 feet north of the Niagara River shore. Background values observed were approximately 30-40 millimhos/meter and may represent silt and clay subsurface conditions.

Numerous piles of construction and demolition material were located along the surface of the southern half of the property. Concrete was observed on the surface and frequently contained reinforcement bar. It is believed that this material may also be present within the subsurface and partially responsible for the anomaly between location 600E to 300E. If contaminants are present at this location they may be masked by the presence of the reinforced concrete. It is recommended that a well be installed within the vicinity of this anomaly to confirm the presence of the subsurface conditions and to test for contamination.

5.0 CONCLUSIONS

- Suspected buried metallic debris and debris containing metal may be present along Profiles 1,2 and 4.
- Construction and demolition material is present on the surface along Profile 4 and may also be within the subsurface. If contaminants are present within the ground water along this anomaly they may be masked by the presence of this debris.
- Contaminants may be present along Profile 3 between location 715N to 355N. This anomaly may also represent increased clay content of the soil or a near surface water table.
- Suspected fill areas were encountered along areas traversed of each profile.

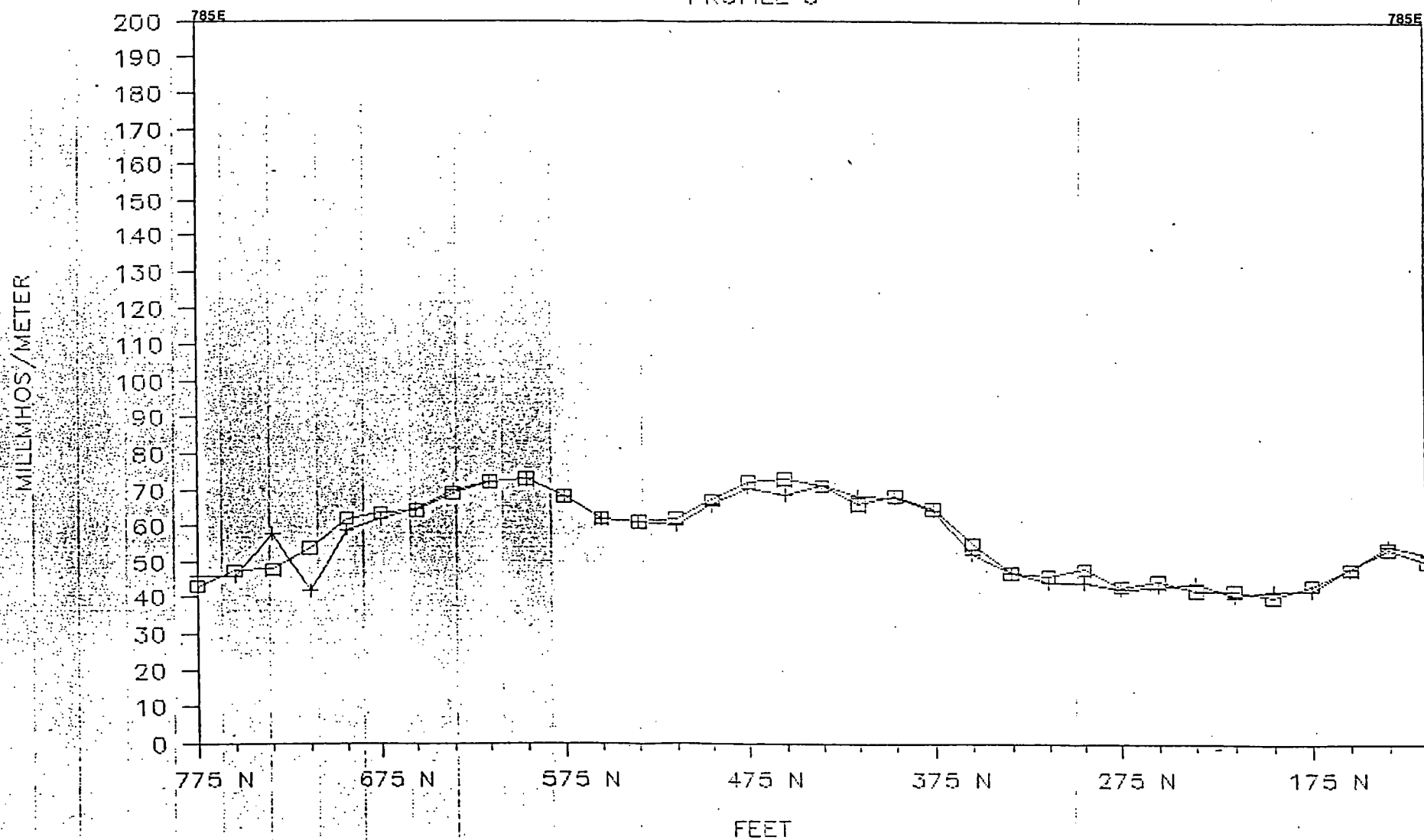
6.0 LIMITATIONS

Geophysical exploration is an established method for nondestructively investigating the subsurface. However, because it is an indirect method of subsurface investigation it is subject to inherent limitations and ambiguities. Search targets such as stratigraphy, the water table, disturbed areas, soil or ground water contamination, buried tanks, drums, transformers, and conduits are detectable only if they produce recognizable anomalies or patterns against the background geophysical data. Natural and cultural features such as major soil changes, topography, site boundaries, pavement, fences, buildings, surface and buried extraneous debris, vehicles, and heterogeneous fill, may exhibit significant anomalies depending upon the geophysical technique being used.

APPENDIX I

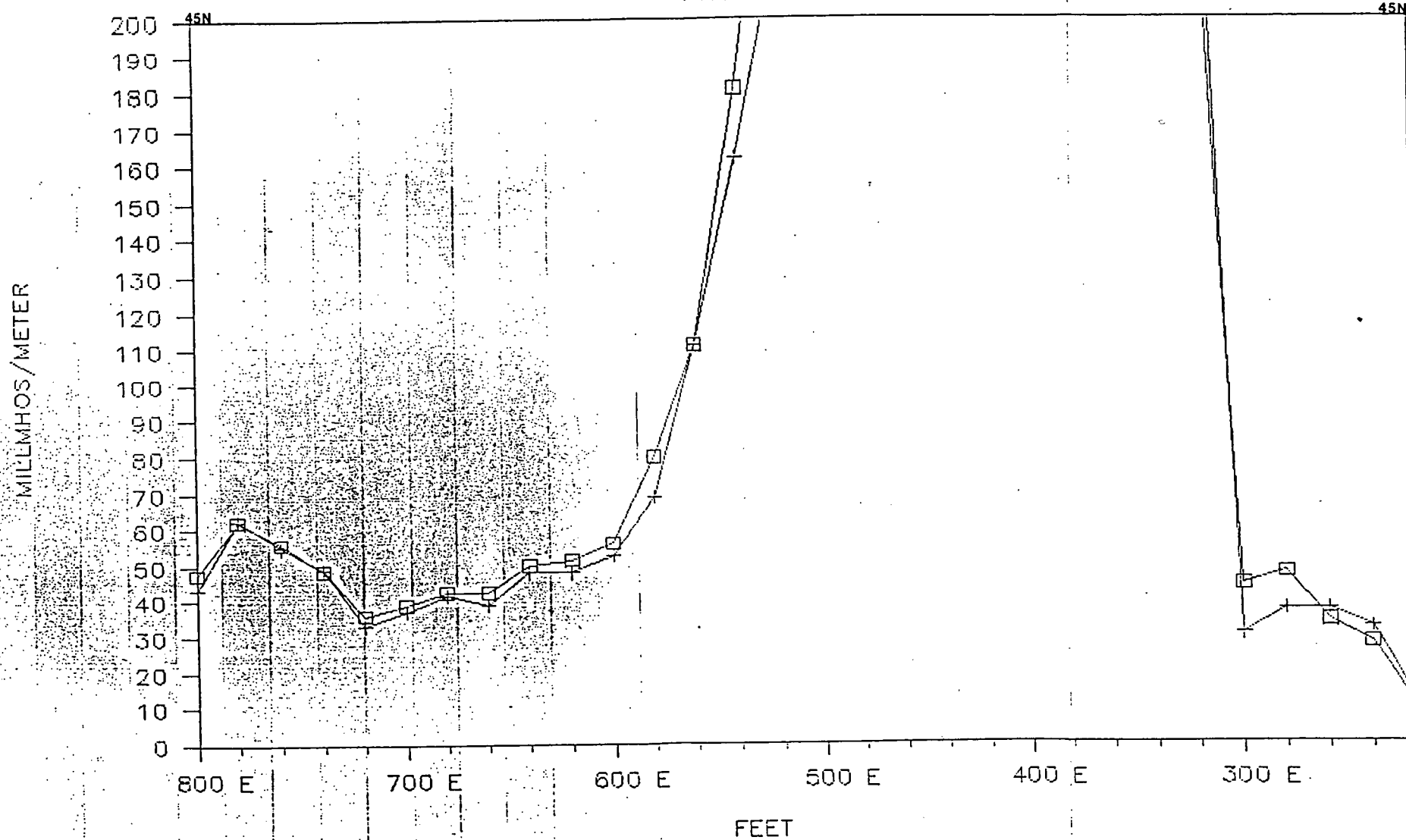
LYNCH PARK

PROFILE 3



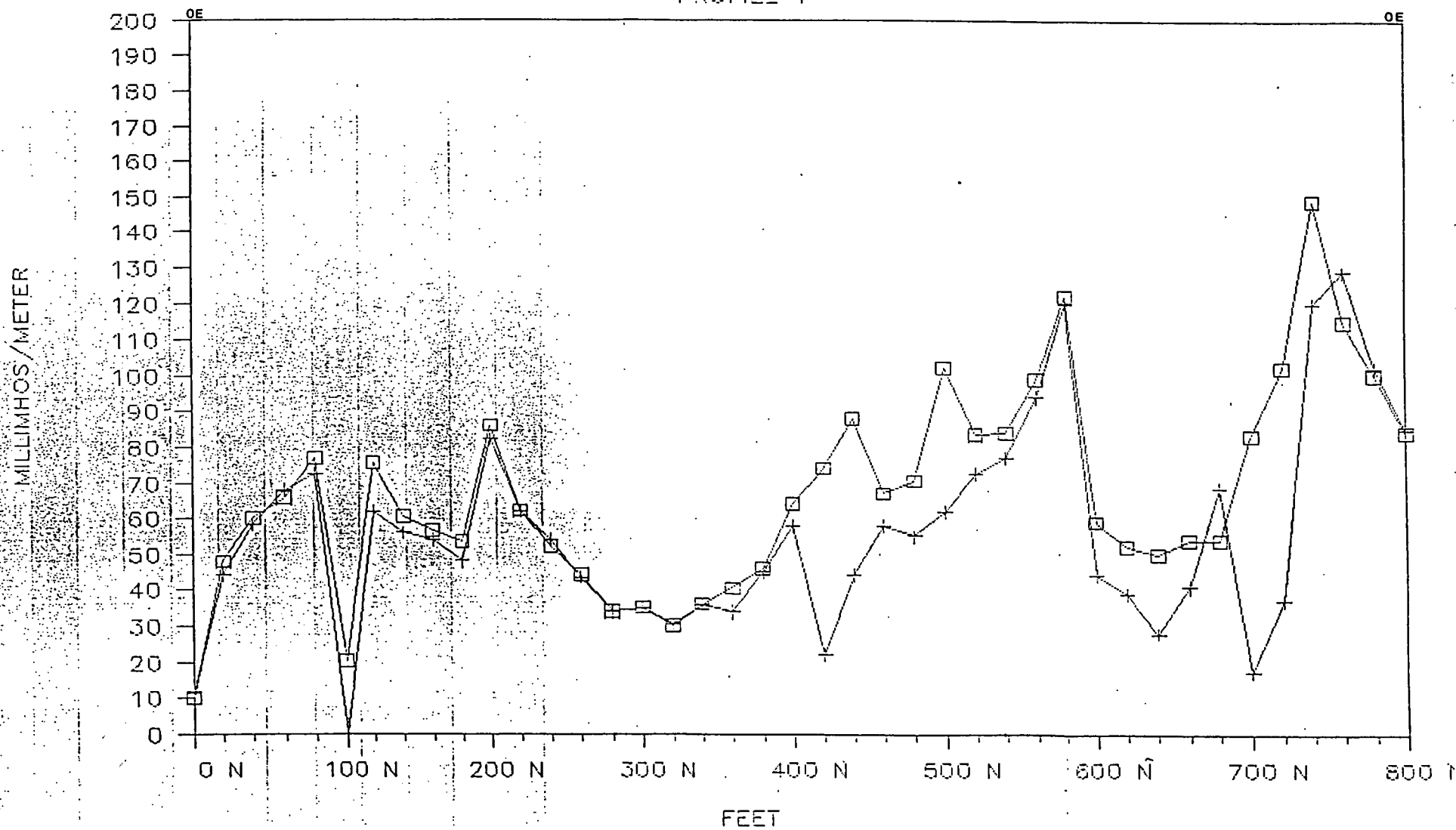
LYNCH PARK

PROFILE 4



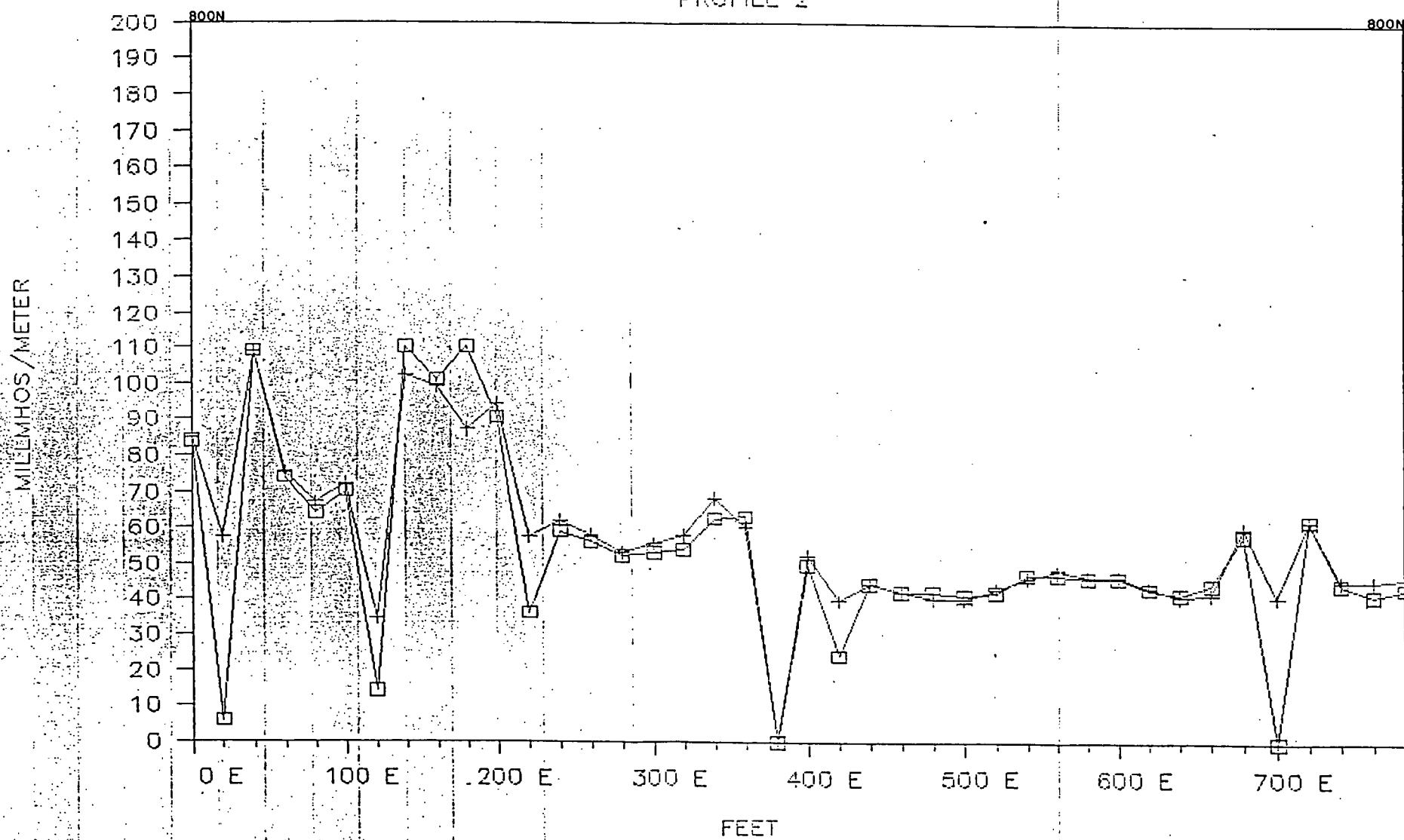
LYNCH PARK SITE

PROFILE 1



LYNCH PARK

PROFILE 2



APPENDIX II

LYNCH PARK SITE
TOWN OF WHEATFIELD, NY

PROFILE 1

LOCATION		PARALLEL	PERPENDICULAR	AVERAGE
0 N	0 E	10.2	11.4	10.8
20 N	0 E	43	44	43
40 N	0 E	60	58.5	59.25
60 N	0 E	66	68	67
80 N	0 E	77	72.5	74.75
100 N	0 E	20.2	0	10.1
120 N	0 E	78.5	62	68.75
140 N	0 E	60.5	55	58.25
160 N	0 E	55.5	54	55.25
180 N	0 E	53.5	48	50.75
200 N	0 E	86	82	84
220 N	0 E	62	62	62
240 N	0 E	32	54	43
260 N	0 E	44	43.5	42.75
280 N	0 E	34	34	34
300 N	0 E	35	35	35
320 N	0 E	30	30.5	30.25
340 N	0 E	36	36	36
360 N	0 E	40.5	34	37.25
380 N	0 E	46	45	45.5
400 N	0 E	64	58	61
420 N	0 E	74	22	48
440 N	0 E	88	44	66
460 N	0 E	67	58	62.5
480 N	0 E	70.5	55	62.75
500 N	0 E	102	62	82
520 N	0 E	83.5	72.5	78
540 N	0 E	84	77	80.5
560 N	0 E	99	94	96.5
580 N	0 E	122	120	121
600 N	0 E	59	44	51.5
620 N	0 E	52	39	45.5
640 N	0 E	50	28	39
660 N	0 E	54	41	47.5
680 N	0 E	54	68.5	61.25
700 N	0 E	83	17	50
720 N	0 E	102	37	69.5
740 N	0 E	149	120	134.5
760 N	0 E	115	129	122
780 N	0 E	100	102	101
800 N	0 E	84	85	84.5

PROFILE 2

LOCATION		PARALLEL	PERPENDICULAR	AVERAGE
800 N	0 E	84	85	84.5
800 N	20 E	5.8	57.5	31.65
800 N	40 E	109	109	109

800 N	80	E	74	75	74.5
800 N	80	E	61	67	65.5
800 N	100	E	70	72	71
800 N	120	E	14	34.5	24.25
800 N	140	E	110	102	105
800 N	160	E	101	99	100
800 N	180	E	110	87	98.5
800 N	200	E	90.5	94	92.25
800 N	220	E	36	57.5	46.75
800 N	240	E	56	62	60.5
800 N	260	E	56	53	57
800 N	280	E	52	53	52.5
800 N	300	E	53	55.5	54.25
800 N	320	E	54	58	56
800 N	340	E	62.5	68	65.25
800 N	360	E	63	60	61.5
800 N	380	E	0	0	0
800 N	400	E	49.5	52	50.75
800 N	420	E	24	39.5	31.75
800 N	440	E	44	44	44
800 N	460	E	42	42	42
800 N	480	E	42	40	41
800 N	500	E	41	40	40.5
800 N	520	E	42	43	42.5
800 N	540	E	47	46	46.5
800 N	560	E	47	48	47.5
800 N	580	E	46	46.5	46.25
800 N	600	E	46	46.5	46.25
800 N	620	E	43	43.5	43.25
800 N	640	E	41.5	41	41.25
800 N	660	E	44	41.5	42.75
800 N	680	E	58	60	59
800 N	700	E	0	40.5	20.25
800 N	720	E	62	62	62
800 N	740	E	44	45	44.5
800 N	760	E	41	45	43
800 N	780	E	43	46	44.5

PROFILE 3

LOCATION		PARALLEL	PERPENDICULAR	AVERAGE
775 N	785 E	43	46	44.5
755 N	785 E	47.5	46	46.75
735 N	785 E	43	53	53
715 N	785 E	54	42	48
695 N	785 E	52	59	60.5
675 N	785 E	63.5	52	62.75
655 N	785 E	64	64.5	64.25
635 N	785 E	69	70	69.5
615 N	785 E	72	72	72
595 N	785 E	73	73	73
575 N	785 E	68	68	68
555 N	785 E	62	62	62
535 N	785 E	61	61	61
515 N	785 E	62	60	61
495 N	785 E	67	66	66.5

475 N	725 E	72	70.5	71.25
455 N	785 E	72	63.5	70.75
435 N	785 E	71	71	71
415 N	785 E	65	53	57
395 N	785 E	63	67.5	67.75
375 N	785 E	64.5	64	64.25
355 N	785 E	55	51	53.5
335 N	785 E	47	47	47
315 N	785 E	46	44	45
295 N	785 E	48	44	46
275 N	785 E	43	40.5	42.75
255 N	785 E	44.5	43	43.75
235 N	785 E	42	44	43
215 N	785 E	42	40.5	41.25
195 N	785 E	40	42	41
175 N	785 E	43.5	42	42.75
155 N	785 E	48	43	48
135 N	785 E	53.5	54.5	54
115 N	785 E	50	52	51

PROFILE 4

LOCATION		PARALLEL	PERPENDICULAR	AVERAGE
45 N	800 E	47.5	43.5	45.5
45 N	780 E	62	62.5	62.25
45 N	760 E	56	53	55.5
45 N	740 E	48.5	49	48.75
45 N	720 E	36	33	34.5
45 N	700 E	39	37	38
45 N	680 E	42.5	41.5	42
45 N	660 E	42.5	39	40.75
45 N	640 E	50	48	49
45 N	620 E	51.5	48	49.75
45 N	600 E	56	52.5	54.25
45 N	580 E	79.5	68.5	74
45 N	560 E	111	111	111
45 N	540 E	181	162	171.5
45 N	520 E	285	220	252.5
45 N	500 E	320	260	290
45 N	480 E	320	280	300
45 N	460 E	460	460	460
45 N	440 E	540	530	560
45 N	420 E	700	620	660
45 N	400 E	625	570	597.5
45 N	380 E	505	500	502.5
45 N	360 E	355	340	347.5
45 N	340 E	263	238	253
45 N	320 E	260	290	275
45 N	300 E	44	30.5	37.25
45 N	280 E	47.5	37	42.25
45 N	260 E	34	37	35.5
45 N	240 E	27.8	32	29.9
45 N	220 E	10.2	11.9	11.05

APPENDIX E
BORING LOGS

Data by KEVIN MCCARTYSheet 1 of

SUBSURFACE EXPLORATION - TEST BORING LOG

Boring No. GW-1
Project No. 576-017Project Name BRZEZINSKIDate 10.31.88
start finishClient NYS DECBoring Location SOUTHERN BORDER - MID SITEDriller AMERICAN AUGER & DITCHINGTotal Depth 34.2'Monitoring Instrument(s) HNU. CGI. MSADepth to Water +20

SAMPLE HAMMER

Hole Diameter .67'Weight 140 lbGround Surface Elevation Fall 30 in.

Depth	BLOWS ON SAMPLER				Retained Sample	Recovery (feet)	Sample No.	Instrument Reading	Moisture Content	Stratigraphic Column	CLASSIFICATION OF MATERIAL		Remarks
	0' to 6"	6' to 12"	12' to 18"	18' to 24"							f - fine m - medium c - coarse	and - 35-50% some - 20-35% little - 10-20% trace - 0-10%	
0-2	3	2	2	2	Yes	1.5	1		LOOSE MOIST AT BOTTOM		DARK BROWN FINE SANDY LOAM W/ SOME ORGANIC ROOT MATERIAL TAN-RED BROWN CLAY - SOME FINE SAND. LITTLE FINE-MEDIUM ROUNDED GRAVEL		
										3			
										.6	DARK BROWN FINE-MEDIUM SAND. MIXED GRAVEL, SILT. SOME ASH; GLASS (FILL) GRADING TO DARK BROWN-GREY FINE-MEDIUM SAND, SILT. SOME CLAY; LITTLE MIXED GRAVEL		NO HNU DEFLEC- TION
5-7	3	4	4	13	Yes	.2	2		M. DENSE - LOOSE		BROKEN ROCK (POSSIBLE CEMENT) TAN-BROWN FINE SILTY SAND THIN PLASTIC LAYER IN CUTTINGS BETWEEN 1 st & SECOND SAMPLE		
9-11	13	9	7	72	Yes	.2	3		M. DENSE - V. DENSE		GREY CEMENT TYPE CLUMPS W/ YELLOW SPECS - STRONG SULPHUR ODOR - NO HNU OR INSTRUMENT READINGS FROM SPONGE OPEN AUGER WAS NOTED TO EMIT A VAPOR. READINGS ARE RECORDED IN ADJACENT COLUMN		HNU = 240 rpm H.S. = 44 ppm LEL = 100% O ₂ = .32
11-13	7	5	5	9	Yes	.3	4		M. DENSE - DRY		LIGHT TAN WOOD - CUTTINGS NOTED TO BE CLAY		HNU = .6 LEL = 100%

Boring No. GW-1
 Project No. 576-017

Depth	BLOWS ON SAMPLER				Retained Sample	Recovery (feet)	Sample No.	Instrument Reading	Moisture Content	Stratigraphic Column	CLASSIFICATION OF MATERIAL		Remarks
	0' to 6"	6' to 12"	12' to 18"	18' to 24"							f - fine m - medium c - coarse	and - 35-50% some - 20-35% little - 10-20% trace - 0-10%	
14-16	3	3	5	7	Yes	0	5				No RECOVERY - DROVE 3" SPOON		
14-16	7	30	6	6	Yes	.5	6		M. DENSE		RED BROWN CLAY. TRACE ORGANIC MATERIAL		No DEFLECTION
18-20	2	1	1	2	Yes	.4	7		LOOSE MOIST		WOOD. FINE SAND. SILT. TRACE FINE GRAVEL		
20-22	3	1	2	2	Yes	1.0	8		LOOSE WET		RED BROWN-BROWN CLAY. LITTLE PULPY WOOD. TRACE COARSE SAND GRAINS IN TOP of SAMPLE		No DEFLECTION
22-24	1	1	1	1	Yes	2.0	9		LOOSE WET		GRADING TO ALL BROWN CLAY RED BROWN CLAY. OCCASIONAL TRACE WOOD PULP. COARSE GRAVEL		No DEFLECTION
24-26	2	1	1	2	Yes	.9	10		LOOSE WET		RED BROWN CLAY. TRACE MEDIUM - COARSE SAND; WOOD PULP & COARSE GRAVEL		No DEFLECTION
26-28	1	1	1	1	Yes	2.0	11		LOOSE WET		RED BROWN CLAY. TRACE WOOD PULP. TRACE COARSE GRAVEL FINE-MEDIUM SAND		
28-30	2	1	1	2	Yes	2.0	12		LOOSE WET		RED BROWN CLAY. TRACE FINE-MEDIUM SAND. MEDIUM-COARSE GRAVEL. WOOD PULP		No DEFLECTION
30-32	2	1	10	20	Yes	1.6	13		MODERATE DENSE		REDDISH BROWN CLAY W/LITTLE - SOME WOOD PULP & MIXED GRAVEL		
										31.4	SOLID WOOD LAYER W/SOME FINE SAND. SILT; MIXED GRAVEL. BROKEN ROCK - GRADING TO RED BROWN (TILL) FINE SAND. SILT & MIXED ROUNDED; ANGULAR GRAVEL		
32-34	9	12	7	10	Yes	.7	14		M. DENSE		RED BROWN CLAY. TRACE FINE SAND		
										32.2	WOOD		
									DRY	32.4	RED BROWN FINE SAND. SILT. SOME MIXED ANGULAR; ROUNDED GRAVEL		
											B.O.B. 34.2'		
											NO REFUSAL		

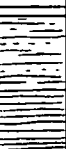
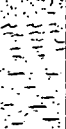
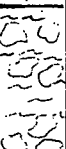
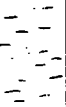
SUBSURFACE EXPLORATION - TEST BORING LOGBoring No. GW-2
Project No. 575-017Project Name BRZEZINSKI LANDFILLDate 10/26/88 10/26/88
start finishClient NYSDECBoring Location GW-2Driller AMERICAN AUGER + DITCHING CO., INC.Total Depth 23 FT.Monitoring Instrument(s) HNU MODEL: NYSDEC
#801439Depth to Water 13 FT

SAMPLE HAMMER

Hole Diameter 8"Weight 140 lb

Ground Surface Elevation _____

Fall 30 in.

Depth	BLOWS ON SAMPLER				Retained Sample	Recovery (feet)	Sample No.	Instrument Reading	Moisture Content	Stratigraphic Column	CLASSIFICATION OF MATERIAL f - fine m - medium c - coarse and - 35-50% some - 20-35% little - 10-20% trace - 0-10%	Remarks
	0' to 6"	6" to 12"	12" to 18"	18" to 24"								
0	1								DRY		0-0.8 - REDDISH-BROWN f silty CLAY with LENSES OF BROWN-ORANGE f SILT 0.3-1.52 - REDDISH-BROWN TIGHT, COMPACT CLAY	
		2										
			2									
2				4	X	1.52'	1	0	DRY		0-0.25 - REDDISH-BROWN TIGHT, COMPACT CLAY 0.25-0.8 - ALTERNATING Bk. silty SAND, AND WHITE C SAND w/LAVENDER TINT. 0.8 - SIX-SEVEN LAYERS OF PLASTIC SHEETING 0.8-1.2 BLACK silty SAND (ASH) 1.2-1.3 - PAPER + WOOD	- FILL
6	3											
		6										
			4						DAMP		0.4-0.6 - BLACK silty SAND 0.4-0.6 - BLACK DAMP WOOD 0.6-1.0 - BLACK-BROWN sandy SILT 1.0-1.45 - BLACK silty SAND - SLIGHTLY SHINY	- FILL
8				4	X	1.30	2	0				
8	12											
		5							WET DAMP		0-0.45 - BLACK SATURATED silty SAND - PETROLEUM OIL 0.45-0.72 - BROWN-OLIVE GREEN f sandy SILT VERY DAMP - ANOTHER PLASTIC SHEET	- FILL
			5									
10				11	X	1.45	3	0.2-2.4				
10	6							0.4	WET DAMP		0-0.75 - BLACK ROCK FRAGMENTS - SOME WOOD - ROCK FRAGMENTS LOOK LIKE CHUNKS FROM A GRINDING WHEEL.	- FILL
		4						0.6				
			3					0.8				
12				4	X	0.72	4	0.2-3.1	WET		0-1.25 - GRAY-BLACK f sandy SILT	- FILL
12	10											
		5										
			7						WET		0-1.4 - GRAY-BLACK f sandy SILT	
14	2			7	X	0.75	5	0				
		2										
			2									
16				4	X	1.25	6	0				
16	4											
		1										
			2									
18				2	X	1.4	7					

Data by KEVIN MCGUINNESSSheet 1 of 2**SUBSURFACE EXPLORATION - TEST BORING LOG**Boring No. SW-4A
Project No. 572-17Project Name BRZEZINSKI LANDFILLDate 10/23/88 10/23/88
start finishClient NYSDECBoring Location GW-4Driller AMERICAN AUGER & DITCHING CO., INC.Total Depth 24 FTMonitoring Instrument(s) HNU MODEL # NYSDEC
801439Depth to Water 17.5

SAMPLE HAMMER

Hole Diameter 8 INCHESWeight 140 lb

Ground Surface Elevation _____

Fall 30 in.

Depth	BLOWS ON SAMPLER				Retained Sample	Recovery (feet)	Sample No.	Instrument Reading	Moisture Content	Stratigraphic Column	CLASSIFICATION OF MATERIAL f - fine m - medium c - coarse and - 35-50% some - 20-35% little - 10-20% trace - 0-10%	Remarks
	0' to 6"	6' to 12"	12' to 18"	18' to 24"								
0	1										0-0.4 - BROWN f SILT, SOME CLAY - LOOSE	NO FILL
		2									0.4-1.3 - ALTERNATING LAYERS OF BR SILT AND REDDISH BR. CLAY - CLEAN VERY HARD & COMPACT	NO FILL
			3								1.3-1.7 - TAN-BROWN f SAND, SOME SILT, TR. CLAY	NO FILL
2				5	X	1.70	1	0				
4	2								DRY		0-0.35 - REDDISH-BROWN COMPACT CLAY	NO FILL
		2									0.35-1.7 - TAN-GRAY f SAND AND SILT, SOME CLAY, MOTTLED W/FEW STAINS	
			3									
6				5	X	1.70	2	0				
9	3								DRY		0-0.4 - TAN-GRAY f SAND AND SILT, SOME CLAY, MOTTLED W/FEW STAINS	
		5										
			7								0.4-2.21 - REDDISH-BROWN VARVED CLAY, CLEAN, COMPACT - VERY DENSE	
11				7	X	2.21	3	0				
14	1								MOIST		0-0.3 - TAN-BROWN MOTTLED f SAND	
		1									0.3-0.5 - REDDISH-BROWN CLAY	
			1								0.5-2.2 - MOIST CLEAN GRAY CLAY LESS DENSE	
16				1	X	2.2	4	0				
16	1								VERY MOIST		0-2.0 - CLEAN GRAY CLAY	
		1										
			1									
18				1	X	2.0	5	0				
18	1										0-2.0 - GRAY AND RED VARVED CLAY, CLEAN, PLASTIC TEXTURE	
		1										
			1									
20				1	X	2.0	6	0				
20	1										0-2.0 - GRAY AND RED VARVED CLAY, CLEAN, PLASTIC TEXTURE	
		-										
			1									
22				-	X	2.0	7	0				

Boring No. GW-4:
Project No. 576-017

[illegible]

Sheet 1 of 1

Boring No. _____
Project No. _____

Date 10/29/88 10/29/93
start finish

Boring Location GW-4B

Total Depth 16 FT.

Depth to Water 12 FT.

Hole Diameter 8 inch

Ground Surface Elevation _____

Fall 30 in.

LAWLER, MATUSKY & SKELLY ENGINEERS





APPENDIX F
MONITORING WELL COMPLETION LOGS

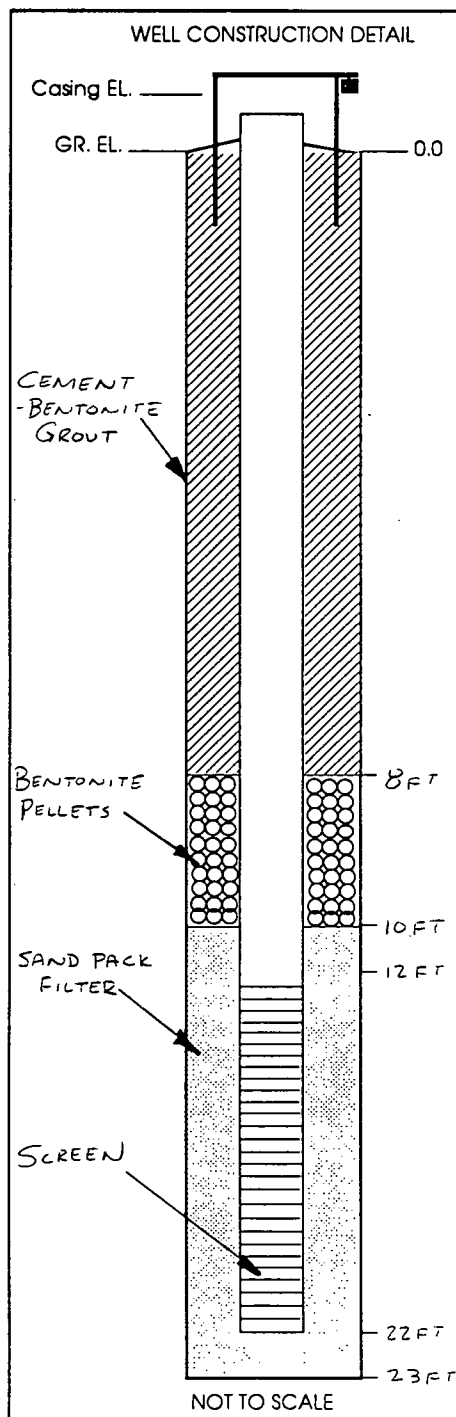
Well No. GW-2Project No. 576-017Project Name BREZINSKI LANDELLClient NYSDEC

MONITORING WELL COMPLETION LOG

Location GW-2Date Drilled 10/26/88

Date Developed _____

Developing Method _____

Well Construction Completed 10/27/88Inspector KEVIN MCGUINNESS + ANTHONY MAGLIACCHIA
Drilling Contractor AMERICAN AUGER + DRILLING CO., INC.Type of Well OVERBURDEN MONITORING WELL
Static Water Level 12.16 Date 11/3/88
Measuring Point (M.P.) TOP OF PVC CASING
Total Depth of Well 22 FT
Total Depth of boring 23 FTDrilling Method
Type HOLLOW STEM AUGER Diameter 8" O.D.
Casing HOLLOW STEM AUGERSampling Method
Type SPLIT SPOON Diameter 2" O.D.
Weight 140 POUNDS Fall 30"
Interval VARIABLERiser Pipe Left in Place
Material SCH. 40 PVC Diameter 2" I.D.
Length _____ Joint Type THREADED - FLSHScreen
Material SCH. 40 PVC Diameter 2" I.D.
Slot Size .010" Length 10 FT
Stratigraphic Unit Screened UNCONSOLIDATED SAND - SILTFilter Pack
Sand X Gravel _____ Natural _____
Grade _____
Amount 3 BAGS Interval 10 FT - 23 FTSeal(s)
Type CEMENT-BENTONITE Interval 0 - 8 FT B.G.
Type BENTONITE PELLETS Interval 8 - 10 FT
Type _____ Interval _____Locking Casing ☒ Yes ☐ No
Notes:

Well No. GW-3
Project No. 576-017

Project Name BREZINSKI LANDFILL

Client NYSDEC

MONITORING WELL COMPLETION LOG

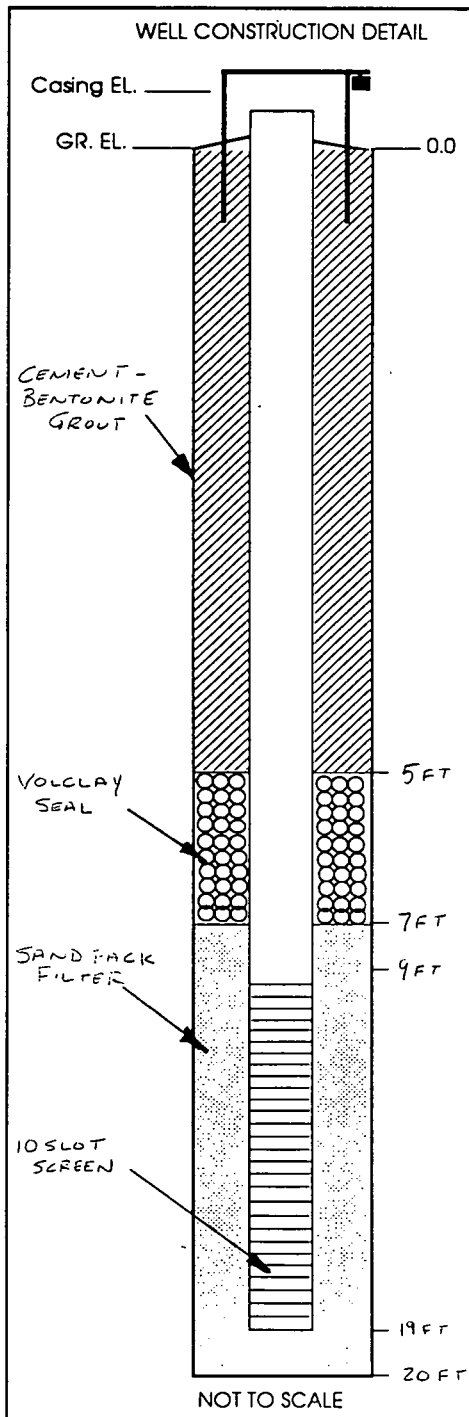
Location GW-3

Date Drilled 10/27/38

Date Developed _____

Developing Method _____

Well Construction Completed 10/27/38



Inspector KEVIN MCGUINNESS + ANTHONY MAJUSCHAK
Drilling Contractor AMERICAN AUGER & DITCHING CO., INC.

Type of Well OVERBULDED MONITORING WELL
Static Water Level 11.51 FT Date 11/3/38
Measuring Point (M.P.) TOP OF PVC CASING
Total Depth of Well 19 FT
Total Depth of boring 20 FT

Drilling Method
Type HOLLOW STEM AUGER Diameter 8 INCHES
Casing HOLLOW STEM AUGER

Sampling Method
Type SPLIT SPOON Diameter 2" O.D.
Weight 140 POUNDS Fall 30"
Interval VARIABLE

Riser Pipe Left in Place
Material SCHED. 40 PVC Diameter 2" I.D.
Length _____ Joint Type THREADED-FLUSH

Screen
Material SCHED 40 PVC Diameter 2" I.D.
Slot Size .010" Length 10 FT
Stratigraphic Unit Screened UNCONSOLIDATED SAND & S.F.

Filter Pack
Sand X Gravel _____ Natural _____
Grade _____
Amount 6 BAGS Interval 7-20 FT

Seal(s)
Type CEMENT-BENTONITE Interval 0-5 FT
Type VOLCLAY Interval 5-7 FT
Type _____ Interval _____

Locking Casing ☒ Yes ☐ No
Notes:

APPENDIX G
WELL DEVELOPMENT DATA

**The Following
Image(s) are
the Best Copy
Available**

BIEL'S

Date: 11.5.88
Crew: CS/KPM/JM+
Job No: 090-017

Turb. Meter: LIMS
PH Meter: Orion
Therm. No: 5.5
Cond. No: 5

Borehole
WELL SAMPLING LOG

WELL No: 020-2
LOCATION: INDUSTRIAL
WELL TYPE: OPEN
WELL DIAMETER: 2" I.D.
WELL DEPTH: 24.25'
SCREENED INTERVAL: 10' to 24'
CASING HT.: 2.00'
DEPTH TO WATER: (Static Water Level) 12.16'
REFERENCE POINT: Top of Casing
DATE/TIME PURGED: 11.3.88 / 0955-1350
PURGING METHOD: Surge
PURGING DEPTH(s): Bottom
PURGE RATES (gpm): 0.5 gpm
PURGED VOLUME: 12.00 cu ft
DTW AFTER PURGING: 13.09'
EST. YIELD RATE: 1.5 GPM
SEAL No:
CHAIN OF CUSTODY No:
4 Bore Volumes: 4

TYPE OF SCREENING CASING: PVC
WATER BEARING FORMATION(s):
SAMPLE DATE/TIME: 11.3.88 / 1430
SAMPLING METHOD:
DTW BEFORE SAMPLING: 12.30'
SAMPLING DEPTH(s): Top of Screen
WELL CONDITION: Good
SAMPLE OBSERVATIONS:
No noticeable turbidity

WET CHEMISTRIES

SAMPLE TEMPERATURE: 17.2°C
SAMPLE pH: 6.7
SAMPLE SP. COND: 1717
130 130

PURGE CHEMISTRIES					SAMPLE ANALYSIS (List Sample Jar Parameters)	INVENT. #
TIME/VOLUME	TEMP.	pH	SP. CONDUCTIVITY	Notes		
15 min	17.2	6.7	1450	125	2 VOCs ALC 2.1 Ammonia ALC 1.1 Ammonia test PSE 2.1 Nitrate test PSE 2.1 Phosphate test PSE 2.1 Fluoride test PSE	
25 min	17.2	6.7	1450	125		
35 min	17.2	6.7	1450	125		
45 min	17.2	6.7	1450	125		
120 min	20.1	6.9	1982	37		

COMMENTS:

Crew Chief Signature: _____

Date: _____

Lawler, Matusky & Skelly Engineers

Turb. meter : _____
pH Meter : _____
Therm. No: _____
Cond. No: _____

WELL SAMPLING LOG

WELL No: 541 / GW-3-M3 / GW-3-M5L
LOCATION:
WELL TYPE:
WELL DIAMETER:
WELL DEPTH:
SCREENED INTERVAL:
CASING HT.: 2.20 1.97
DEPTH TO WATER: (Static Water Level)
REFERENCE POINT:
DATE/TIME PURGED: 10/28-1253
PURGING METHOD:
PURGING DEPTH(s): Bth. → Surf
PURGE RATES (gpm): 5 gpm
PURGED VOLUME:
DTW AFTER PURGING: 11.58
EST. YIELD RATE:
SEAL No:
CHAIN OF CUSTODY No:
4 Bore Volumes:

TYPE OF SCREENING CASING: *1 1/2" x 10' x 10'*
WATER BEARING FORMATION(S): *10' to 12' x 10'*
SAMPLE DATE/TIME: *11-3-98 1300-1400*
SAMPLING METHOD: *Top of water*
DTW BEFORE SAMPLING: *10' to 12' x 10'*
SAMPLING DEPTH(S): *Top of water*
WELL CONDITION: *10' to 12' x 10'*
SAMPLE OBSERVATIONS: *10' to 12' x 10'*

WET CHEMISTRIES

SAMPLE TEMPERATURE: 15.2
SAMPLE PH: 6.9
SAMPLE SP. COND: 1640

PURGE CHEMISTRIES				SAMPLE ANALYSIS (List Sample Jar Parameters)	
TIME/VOLUME	TEMP.	pH	SP. CONDUCTIVITY	INVENT.	
0:00	15.2	7.1	15.1	15.1	6000
0:05	15.2	7.1	15.1	15.1	6000
0:10	15.2	7.1	15.1	15.1	6000
0:15	15.1	6.9	16.2	16.2	3
0:20	15.1	6.9	16.2	16.2	3
0:25	15.1	6.9	16.2	16.2	3
0:30	15.1	6.9	16.2	16.2	3
0:35	15.1	6.9	16.2	16.2	3
0:40	15.1	6.9	16.2	16.2	3
0:45	15.1	6.9	16.2	16.2	3
0:50	15.1	6.9	16.2	16.2	3
0:55	15.1	6.9	16.2	16.2	3
1:00	15.1	6.9	16.2	16.2	3
1:05	15.1	6.9	16.2	16.2	3
1:10	15.1	6.9	16.2	16.2	3
1:15	15.1	6.9	16.2	16.2	3
1:20	15.1	6.9	16.2	16.2	3
1:25	15.1	6.9	16.2	16.2	3
1:30	15.1	6.9	16.2	16.2	3
1:35	15.1	6.9	16.2	16.2	3
1:40	15.1	6.9	16.2	16.2	3
1:45	15.1	6.9	16.2	16.2	3
1:50	15.1	6.9	16.2	16.2	3
1:55	15.1	6.9	16.2	16.2	3
2:00	15.1	6.9	16.2	16.2	3
2:05	15.1	6.9	16.2	16.2	3
2:10	15.1	6.9	16.2	16.2	3
2:15	15.1	6.9	16.2	16.2	3
2:20	15.1	6.9	16.2	16.2	3
2:25	15.1	6.9	16.2	16.2	3
2:30	15.1	6.9	16.2	16.2	3
2:35	15.1	6.9	16.2	16.2	3
2:40	15.1	6.9	16.2	16.2	3
2:45	15.1	6.9	16.2	16.2	3
2:50	15.1	6.9	16.2	16.2	3
2:55	15.1	6.9	16.2	16.2	3
3:00	15.1	6.9	16.2	16.2	3
3:05	15.1	6.9	16.2	16.2	3
3:10	15.1	6.9	16.2	16.2	3
3:15	15.1	6.9	16.2	16.2	3
3:20	15.1	6.9	16.2	16.2	3
3:25	15.1	6.9	16.2	16.2	3
3:30	15.1	6.9	16.2	16.2	3
3:35	15.1	6.9	16.2	16.2	3
3:40	15.1	6.9	16.2	16.2	3
3:45	15.1	6.9	16.2	16.2	3
3:50	15.1	6.9	16.2	16.2	3
3:55	15.1	6.9	16.2	16.2	3
4:00	15.1	6.9	16.2	16.2	3
4:05	15.1	6.9	16.2	16.2	3
4:10	15.1	6.9	16.2	16.2	3
4:15	15.1	6.9	16.2	16.2	3
4:20	15.1	6.9	16.2	16.2	3
4:25	15.1	6.9	16.2	16.2	3
4:30	15.1	6.9	16.2	16.2	3
4:35	15.1	6.9	16.2	16.2	3
4:40	15.1	6.9	16.2	16.2	3
4:45	15.1	6.9	16.2	16.2	3
4:50	15.1	6.9	16.2	16.2	3
4:55	15.1	6.9	16.2	16.2	3
5:00	15.1	6.9	16.2	16.2	3
5:05	15.1	6.9	16.2	16.2	3
5:10	15.1	6.9	16.2	16.2	3
5:15	15.1	6.9	16.2	16.2	3
5:20	15.1	6.9	16.2	16.2	3
5:25	15.1	6.9	16.2	16.2	3
5:30	15.1	6.9	16.2	16.2	3
5:35	15.1	6.9	16.2	16.2	3
5:40	15.1	6.9	16.2	16.2	3
5:45	15.1	6.9	16.2	16.2	3
5:50	15.1	6.9	16.2	16.2	3
5:55	15.1	6.9	16.2	16.2	3
6:00	15.1	6.9	16.2	16.2	3
6:05	15.1	6.9	16.2	16.2	3
6:10	15.1	6.9	16.2	16.2	3
6:15	15.1	6.9	16.2	16.2	3
6:20	15.1	6.9	16.2	16.2	3
6:25	15.1	6.9	16.2	16.2	3
6:30	15.1	6.9	16.2	16.2	3
6:35	15.1	6.9	16.2	16.2	3
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6:45	15.1	6.9	16.2	16.2	3
6:50	15.1	6.9	16.2	16.2	3
6:55	15.1	6.9	16.2	16.2	3
7:00	15.1	6.9	16.2	16.2	3
7:05	15.1	6.9	16.2	16.2	3
7:10	15.1	6.9	16.2	16.2	3
7:15	15.1	6.9	16.2	16.2	3
7:20	15.1	6.9	16.2	16.2	3
7:25	15.1	6.9	16.2	16.2	3
7:30	15.1	6.9	16.2	16.2	3
7:35	15.1	6.9	16.2	16.2	3
7:40	15.1	6.9	16.2	16.2	3
7:45	15.1	6.9	16.2	16.2	3
7:50	15.1	6.9	16.2	16.2	3
7:55	15.1	6.9	16.2	16.2	3
8:00	15.1	6.9	16.2	16.2	3
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8:55	15.1	6.9	16.2	16.2	3
9:00	15.1	6.9	16.2	16.2	3
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10:00	15.1	6.9	16.2	16.2	3
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10:50	15.1	6.9	16.2	16.2	3
10:55	15.1	6.9	16.2	16.2	3
11:00	15.1	6.9	16.2	16.2	3
11:05	15.1	6.9	16.2	16.2	3
11:10	15.1	6.9	16.2	16.2	3
11:15	15.1	6.9	16.2	16.2	3
11:20	15.1	6.9	16.2	16.2	3
11:25	15.1	6.9	16.2	16.2	3
11:30	15.1	6.9	16.2	16.2	3
11:35	15.1	6.9	16.2	16.2	3
11:40	15.1	6.9	16.2	16.2	3
11:45	15.1	6.9	16.2	16.2	3
11:50	15.1	6.9	16.2	16.2	3
11:55	15.1	6.9	16.2	16.2	3
12:00	15.1	6.9	16.2	16.2	3
12:05	15.1	6.9	16.2	16.2	3
12:10	15.1	6.9	16.2	16.2	3
12:15	15.1	6.9	16.2	16.2	3
12:20	15.1	6.9	16.2	16.2	3
12:25	15.1	6.9	16.2	16.2	3
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14:00	15.1	6.9	16.2	16.2	3
14:05	15.1	6.9	16.2	16.2	3
14:10	15.1	6.9	16.2	16.2	3
14:15	15.1	6.9	16.2	16.2	3
14:20	15.1	6.9	16.2	16.2	3
14:25	15.1	6.9	16.2	16.2	3
14:30	15.1	6.9	16.2	16.2	3
14:35	15.1	6.9	16.2	16.2	3
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14:50	15.1	6.9	16.2	16.2	3
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15:00	15.1	6.9	16.2	16.2	3
15:05	15.1	6.9	16.2	16.2	3
15:10	15.1	6.9	16.2	16.2	3
15:15	15.1	6.9	16.2	16.2	3
15:20	15.1	6.9	16.2	16.2	3
15:25	15.1	6.9	16.2	16.2	3
15:30	15.1	6.9	16.2	16.2	3
15:35	15.1	6.9	16.2	16.2	3
15:40	15.1	6.9	16.2	16.2	3
15:45	15.1	6.9	16.2	16.2	3
15:50	15.1	6.9	16.2	16.2	3
15:55	15.1	6.9	16.2	16.2	3
16:00	15.1	6.9	16.2	16.2	3
16:05	15.1	6.9	16.2	16.2	3
16:10	15.1	6.9	16.2	16.2	3
16:15	15.1	6.9	16.2	16.2	3
16:20	15.1	6.9	16.2	16.2	3
16:25	15.1	6.9	16.2	16.2	3
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16:50	15.1	6.9	16.2	16.2	3
16:55	15.1	6.9	16.2	16.2	3
17:00	15.1	6.9	16.2	16.2	3
17:05	15.1	6.9	16.2	16.2	3
17:10	15.1	6.9	16.2	16.2	3
17:15	15.1	6.9	16.2	16.2	3
17:20	15.1	6.9	16.2	16.2	3
17:25	15.1	6.9	16.2	16.2	3
17:30	15.1	6.9	16.2	16.2	3
17:35	15.1	6.9	16.2	16.2	3
17:40	15.1	6.9	16.2	16.2	3
17:45	15.1	6.9	16.2	16.2	3
17:50	15.1	6.9	16.2	16.2	3
17:55	15.1	6.9	16.2	16.2	3
18:00	15.1	6.9	16.2	16.2	3
18:05	15.1	6.9	16.2	16.2	3
18:10	15.1	6.9	16.2	16.2	3
18:15	15.1	6.9	16.2	16.2	3
18:20	15.1	6.9	16.2	16.2	3
18:25	15.1	6.9	16.2	16.2	3
18:30	15.1	6.9	16.2	16.2	3
18:35	15.1	6.9	16.2	16.2	3
18:40	15.1	6.9	16.2	16.2	3
18:45	15.1	6.9	16.2		

COMMENTS:

Crew Chief Signature: _____

Date: _____

Lawler, Matusky & Skelly Engineers

APPENDIX H

APPENDIX H
WELL SAMPLING LOGS

**The Following
Image(s) are
the Best Copy
Available**

BIEL'S

Date: 11-3-88
Crew: CS/KPM/JME
Job No: 596-017

Turb. Meter: LMS
PH Meter: Dec 4776
Therm. No: 568
Cond. No: 500

BREEZEMOOR
WELL SAMPLING LOG

WELL No: GW-2
LOCATION: WESTERN MOST - ^{NEAREST} ~~FOOT~~ RIVER
WELL TYPE: OVER BURDEN
WELL DIAMETER: 2" I.D.
WELL DEPTH: 24.23'
SCREENED INTERVAL: 10' AT FLOWLINE
CASING HT.: 2.08' ^{ST. SLEEVE} ^{PVC} ^{2.01' from Ground (10' from)}
DEPTH TO WATER: (Static Water Level) 12.16'
REFERENCE POINT: Flowline of PLC
DATE/TIME PURGED: 11-3-88 / 0955-1350
PURGING METHOD: CENTRIFUGAL PUMP
PURGING DEPTH(S): Bottom → Surf.
PURGE RATES (gpm): 0.5 gpm
PURGED VOLUME: 120 GALS
DTW AFTER PURGING: 13.09'
EST. YIELD RATE: .5 GPM
SEAL No:
CHAIN OF CUSTODY No:
4 Bore Volumes: 4" open 8" 123.6 GALS

TYPE OF SCREENING CASING: PVC
WATER BEARING FORMATION(S): over burden
SAMPLE DATE/TIME: 11-3-88/1415-1430
SAMPLING METHOD: Teflon Borehole
DTW BEFORE SAMPLING: 12.30'
SAMPLING DEPTH(S): Top of Water Column
WELL CONDITION: Good
SAMPLE OBSERVATIONS:
No noticeable odor
turbid

WET CHEMISTRIES

SAMPLE TEMPERATURE: 12.2°C
SAMPLE PH: 6.7
SAMPLE SP. COND: 1817
130' 130'
130' 130'

PURGE CHEMISTRIES					SAMPLE ANALYSIS (List Sample Jar Parameters)	INVENT. #
TIME/VOLUME	TEMP.	PH	SP. CONDUCTIVITY	TOT. SOLIDS		
7 gal	19.8°C	6.9	1803	160	2 VOCs HSC ¹⁰ 2 1/2 Amber A,B/Ns HSC ²⁰ 1 1/2 Amber Part/REs HSC 1/2 Plastic Total Metals HSC 1/2 Plastic Cyanides HSC	
15 gal	22.3	7.0	1468	125		
25 gal	24.2	7.0	1615	127		
50 gal	25.9	7.0	1812	130		
60 gal		6.9	1982	37		
120 Gals	20.1					

COMMENTS: 30.9 GALS in 8" open Borehole
133.5 GALS in 4 Boreholes
Purged 3.5 GALS/Water Column
WATER BOREHOLE V. CILTY
Pur Water temps elevated due to heat from pump

Crew Chief Signature: _____

Date: _____

AMBIENT TEMP 51.2

Lawler, Matusky & Skelly Engineers

Date: 11-3-88
Crew: KPM/JMG/CS
Job No: 576-017

Turb. Meter: LMS
pH Meter: EC 4771a
Therm. No: 568
Cond. No: 567

BRZEZNICKI
WELL SAMPLING LOG

WELL No: GW-3 / GW-3-M3 / GW-3-M5D

LOCATION: Clarendon Ave

WELL TYPE: Overburden

WELL DIAMETER: 2" I.D.

WELL DEPTH: 21.06'

SCREENED INTERVAL: 10' at bottom

CASING HT.: 2.20' (St. Sleeve) 1.97' (PVC)

DEPTH TO WATER: (Static Water Level) 11.51'

REFERENCE POINT: From top of PVC casing

DATE/TIME PURGED: 11-3-88 / 1028-1253

PURGING METHOD: Centrifugal pump with down hole polypropylene tubes

PURGING DEPTH(s): Bottom -> Surf

PURGE RATES (gpm): 2.5 gpm

PURGED VOLUME:

DTW AFTER PURGING: 11.58

EST. YIELD RATE:

SEAL No:

CHAIN OF CUSTODY No:

4 Bore Volumes:

TYPE OF SCREENING CASING: PVC SCHED 40

WATER BEARING FORMATION(s): Overburden

SAMPLE DATE/TIME: 11-3-88 / 1350-1420

SAMPLING METHOD: Teflon bailer

DTW BEFORE SAMPLING: 11.51'

SAMPLING DEPTH(s): Top of Water Column

WELL CONDITION: Good

SAMPLE OBSERVATIONS: Lightly cloudy / NOT TURBID, Sulfur odor

WET CHEMISTRIES

SAMPLE TEMPERATURE: 13.2 °C

SAMPLE pH: 6.9

SAMPLE SP. COND: 1646

Before After
15 95

PURGE CHEMISTRIES

TIME/VOLUME	TEMP.	pH	SP. CONDUCTIVITY	Turb.
10 gal	14.52	6.7	1611	155
35 gal	14.4	6.7	1575	29
60 gal	14.7	6.8	1593	20
80 gal	15.1	6.8	1620	
95 gal	15.0	6.9	1656	
125 gal	15.6	6.9	1631	
275 gal	15.7	6.9	1670	10

SAMPLE ANALYSIS (List

Sample Jar Parameters) INVENT. #

600cc HSC¹⁰
6 Amber A,B,Ns HSC²⁰
3 Amber Fract/PCBs
3 1/2 Plastic Total Metals HSC
3 1/2 Plastic Cyanides HSC
Samples Taken for Matrix Spike + Matrix Spike Dup also

COMMENTS: 24.4 gal in 8" open borehole

97.7 gal in .4 boreholes
Water is foamy + has a sulfur odor

Field Blank was done on
this bailer before sampling the
well. (11-3-88/1335)

Crew Chief Signature: _____

Date: _____

Lawler, Matusky & Skelly Engineers

APPENDIX I
ANALYTICAL DATA SUMMARY SHEETS

CHAIN OF CUSTODY RECORD

003

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

[illegible]

CHAIN OF CUSTODY RECORD

PROJECT NO		SITE NAME															
SAMPLERS (SIGNATURE)						NO. OF CONTAINERS		REMARKS									
STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION												
	10-28-88	1400		14-16'	GW-46	3											
							HSL organics, volatiles and semi-volatiles (PCBs + pesticides - HSL metals - Cyanide (three jars to be composed for one analysis)										
RELINQUISHED BY (SIGNATURE)						DATE / TIME		RECEIVED BY (SIGNATURE)						DATE / TIME		RECEIVED BY (SIGNATURE)	
RELINQUISHED BY (SIGNATURE)						DATE / TIME		RECEIVED BY (SIGNATURE)						DATE / TIME		RECEIVED BY (SIGNATURE)	
RELINQUISHED BY (SIGNATURE)						DATE / TIME		RECEIVED FOR LABORATORY BY (SIGNATURE)						DATE / TIME		REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files.

CHAIN OF CUSTODY RECORD

118

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-4

Lab Name: RECRA ENVIRONContract: 001918Lab Code: RECNYCase No.: 1675

SAS No.: _____

SDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: JGW-4Sample wt/vol: 4.2 (g/mL) GLab File ID: 27821HPLevel: (low/med) MEDDate Received: 10/28/88% Moisture: not dec. 24Date Analyzed: 11/03/88Column: (pack/cap) PACKDilution Factor: 10.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3-----	Chloromethane	16000	U
74-83-9-----	Bromomethane	16000	U
75-01-4-----	Vinyl Chloride	16000	U
75-00-3-----	Chloroethane	16000	U
75-09-2-----	Methylene Chloride	6300	BJ
67-64-1-----	Acetone	49000	B
75-15-0-----	Carbon Disulfide	7800	U
75-35-4-----	1,1-Dichloroethene	7800	U
75-34-3-----	1,1-Dichloroethane	7800	U
540-59-0-----	1,2-Dichloroethene (total)	1900	J
67-66-3-----	Chloroform	7800	U
107-06-2-----	1,2-Dichloroethane	7800	U
78-93-3-----	2-Butanone	16000	U
71-55-6-----	1,1,1-Trichloroethane	4700	J
56-23-5-----	Carbon Tetrachloride	7800	U
108-05-4-----	Vinyl Acetate	16000	U
75-27-4-----	Bromodichloromethane	7800	U
78-87-5-----	1,2-Dichloropropane	7800	U
10061-01-5-----	cis-1,3-dichloropropene	7800	U
79-01-6-----	Trichloroethene	1100000	E
124-48-1-----	Dibromochloromethane	7800	U
79-00-5-----	1,1,2-Trichloroethane	7800	U
71-43-2-----	Benzene	7800	U
10061-02-6-----	trans-1,3-dichloropropene	7800	U
75-25-2-----	Bromoform	7800	U
591-78-6-----	2-Hexanone	16000	U
108-10-1-----	4-Methyl-2-Pentanone	16000	U
127-18-4-----	Tetrachloroethene	7800	U
79-34-5-----	1,1,2,2-Tetrachloroethane	7800	U
108-88-3-----	Toluene	620	BJ
108-90-7-----	Chlorobenzene	7800	U
100-41-4-----	Ethylbenzene	680	J
100-42-5-----	Styrene	7800	U
1330-20-7-----	Total Xylenes	6700	BJ

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

030

JGW-4

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

CASE NO.: 1675

SAS No.: -

SDG No.: LS02

Matrix: (soil/water) SOIL

Lab Sample ID: JGW-4

Sample wt/vol: 4.2 (g/mL) G

Lab File ID: 27821HP

Level: (low/med) MED

Date Received: 10/28/88

% Moisture: not dec. 24

Date Analyzed: 11/03/88

Column: (pack/cap) PACK

Dilution Factor: 10.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN ESTER	27:25	88,000	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-4DL

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1675 SAS No.: _____ SDG No.: LS02

Matrix: (soil/water) SOIL Lab Sample ID: JGW-4DL

Sample wt/vol: 4.2 (g/mL) G Lab File ID: 27822HP

Level: (low/med) MED Date Received: 10/28/88

% Moisture: not dec. 24 Date Analyzed: 11/03/88

Column: (pack/cap) PACK Dilution Factor: 50.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3-----	Chloromethane	78000	U
74-83-9-----	Bromomethane	78000	U
75-01-4-----	Vinyl Chloride	78000	U
75-00-3-----	Chloroethane	78000	U
75-09-2-----	Methylene Chloride	7800	BDJ
67-64-1-----	Acetone	78000	U
75-15-0-----	Carbon Disulfide	39000	U
75-35-4-----	1,1-Dichloroethene	39000	U
75-34-3-----	1,1-Dichloroethane	39000	U
540-59-0-----	1,2-Dichloroethene (total)	39000	U
67-66-3-----	Chloroform	39000	U
107-06-2-----	1,2-Dichloroethane	39000	U
78-93-3-----	2-Butanone	78000	U
71-55-6-----	1,1,1-Trichloroethane	39000	U
56-23-5-----	Carbon Tetrachloride	39000	U
108-05-4-----	Vinyl Acetate	78000	U
75-27-4-----	Bromodichloromethane	39000	U
78-87-5-----	1,2-Dichloropropane	39000	U
10061-01-5-----	cis-1,3-dichloropropene	39000	U
79-01-6-----	Trichloroethene	1200000	D
124-48-1-----	Dibromochloromethane	39000	U
79-00-5-----	1,1,2-Trichloroethane	39000	U
71-43-2-----	Benzene	39000	U
10061-02-6-----	trans-1,3-dichloropropene	39000	U
75-25-2-----	Bromoform	39000	U
591-78-6-----	2-Hexanone	78000	U
108-10-1-----	4-Methyl-2-Pentanone	78000	U
127-18-4-----	Tetrachloroethene	39000	U
79-34-5-----	1,1,2,2-Tetrachloroethane	39000	U
108-88-3-----	Toluene	3400	BDJ
108-90-7-----	Chlorobenzene	39000	U
100-41-4-----	Ethylbenzene	39000	U
100-42-5-----	Styrene	39000	U
1330-20-7-----	Total Xylenes	39000	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO. 032

JGW-4 DL

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

CASE NO.: 1675

SAS No.: -

SDG No.: LS02

Matrix: (soil/water) SOIL

Lab Sample ID: JGW-4 DL

Sample wt/vol: 4.2 (g/mL) G

Lab File ID: 27822HP

Level: (low/med) MED

Date Received: 10/28/88

% Moisture: not dec. -

Date Analyzed: 11/03/88

Column: (pack/cap) PACK

Dilution Factor: 50.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN ESTER	27:09	250,000	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-4DLRE

Lab Name: RECRA ENVIRON Contract: 001918
Lab Code: RECNY Case No.: 1675 SAS No.: _____ SDG No.: LS02
Matrix: (soil/water) SOIL Lab Sample ID: JGW-4DLRE
Sample wt/vol: 4.2 (g/mL) G Lab File ID: 27823HP
Level: (low/med) MED Date Received: 10/28/88
% Moisture: not dec. 24 Date Analyzed: 11/03/88
Column: (pack/cap) PACK Dilution Factor: 50.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) <u>UG/KG</u>	<u>Q</u>
74-87-3-----	Chloromethane	78000	U
74-83-9-----	Bromomethane	78000	U
75-01-4-----	Vinyl Chloride	78000	U
75-00-3-----	Chloroethane	78000	U
75-09-2-----	Methylene Chloride	11000	BDJ
67-64-1-----	Acetone	78000	U
75-15-0-----	Carbon Disulfide	39000	U
75-35-4-----	1,1-Dichloroethene	39000	U
75-34-3-----	1,1-Dichloroethane	39000	U
540-59-0-----	1,2-Dichloroethene (total)	39000	U
67-66-3-----	Chloroform	39000	U
107-06-2-----	1,2-Dichloroethane	39000	U
78-93-3-----	2-Butanone	78000	U
71-55-6-----	1,1,1-Trichloroethane	39000	U
56-23-5-----	Carbon Tetrachloride	39000	U
108-05-4-----	Vinyl Acetate	78000	U
75-27-4-----	Bromodichloromethane	39000	U
78-87-5-----	1,2-Dichloropropane	39000	U
10061-01-5-----	cis-1,3-dichloropropene	39000	U
79-01-6-----	Trichloroethene	1200000	D
124-48-1-----	Dibromochloromethane	39000	U
79-00-5-----	1,1,2-Trichloroethane	39000	U
71-43-2-----	Benzene	39000	U
10061-02-6-----	trans-1,3-dichloropropene	39000	U
75-25-2-----	Bromoform	39000	U
591-78-6-----	2-Hexanone	78000	U
108-10-1-----	4-Methyl-2-Pentanone	78000	U
127-18-4-----	Tetrachloroethene	39000	U
79-34-5-----	1,1,2,2-Tetrachloroethane	39000	U
108-88-3-----	Toluene	5300	BDJ
108-90-7-----	Chlorobenzene	39000	U
100-41-4-----	Ethylbenzene	39000	U
100-42-5-----	Styrene	39000	U
1330-20-7-----	Total Xylenes	39000	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JGW-4 DLRE

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918Lab Code: RECNYCASE NO.: 1675SAS No.: -SDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: JGW-4 DLRESample wt/vol: 4.2 (g/mL) GLab File ID: 27823HPLevel: (low/med) MEDDate Received: 10/28/88% Moisture: not dec. -Date Analyzed: 11/03/88Column: (pack/cap) PACKDilution Factor: 50.0Number TICs found: 1CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN ESTER	27:13	340,000	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JSS-2

Lab Name: RECRA ENVIRONContract: 001918Lab Code: RECNYCase No.: 1675

SAS No.: _____

SDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: JSS-2Sample wt/vol: 5.0 (g/mL) GLab File ID: 27907HPLevel: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. 20Date Analyzed: 11/09/88Column: (pack/cap) PACKDilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

74-87-3-----	Chloromethane	13	U
74-83-9-----	Bromomethane	13	U
75-01-4-----	Vinyl Chloride	13	U
75-00-3-----	Chloroethane	13	U
75-09-2-----	Methylene Chloride	6	U
67-64-1-----	Acetone	13	U
75-15-0-----	Carbon Disulfide	6	U
75-35-4-----	1,1-Dichloroethene	6	U
75-34-3-----	1,1-Dichloroethane	6	U
540-59-0-----	1,2-Dichloroethene (total)	6	U
67-66-3-----	Chloroform	6	U
107-06-2-----	1,2-Dichloroethane	6	U
78-93-3-----	2-Butanone	13	U
71-55-6-----	1,1,1-Trichloroethane	6	U
56-23-5-----	Carbon Tetrachloride	6	U
108-05-4-----	Vinyl Acetate	13	U
75-27-4-----	Bromodichloromethane	6	U
78-87-5-----	1,2-Dichloropropane	6	U
10061-01-5-----	Trans-1,3-Dichloropropene	6	U
79-01-6-----	Trichloroethene	6	U
124-48-1-----	Dibromochloromethane	6	U
79-00-5-----	1,1,2-Trichloroethane	6	U
71-43-2-----	Benzene	6	U
10061-02-6-----	cis-1,3-Dichloropropene	6	U
75-25-2-----	Bromoform	6	U
591-78-6-----	2-Hexanone	13	U
108-10-1-----	4-Methyl-2-Pentanone	13	U
127-18-4-----	Tetrachloroethene	1	J
79-34-5-----	1,1,2,2-Tetrachloroethane	6	U
108-88-3-----	Toluene	6	U
108-90-7-----	Chlorobenzene	6	U
100-41-4-----	Ethylbenzene	6	U
100-42-5-----	Styrene	6	U
1330-20-7-----	Total Xylenes	6	U

036

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JSS-2

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918Lab Code: RECNYCASE NO.: 1675SAS No.: -SDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: JSS-2Sample wt/vol: 5.0 (g/mL) GLab File ID: 27907HPLevel: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. 20Date Analyzed: 11/09/88Column: (pack/cap) PACKDilution Factor: 1.00Number TICs found: 0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	NO TIC'S DETECTED			
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FORM I VOA-TIC

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-4

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNV Case No.: 1675 SAS No.: _____ SDG No.: LS02

Matrix: (soil/water) SOIL Lab Sample ID: JGW-4

Sample wt/vol: 32.3 (g/mL) G Lab File ID: 518Z

Level: (low/med) LOW Date Received: 10/28/88

% Moisture: not dec. 24 dec. _____ Date Extracted: 11/04/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/08/88

GPC Cleanup: (Y/N) Y pH: 7.8 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2-----	Phenol	810	U
111-44-4-----	bis(2-Chloroethyl) Ether	810	U
95-57-8-----	2-Chlorophenol	810	U
541-73-1-----	1,3-Dichlorobenzene	810	U
106-46-7-----	1,4-Dichlorobenzene	810	U
100-51-6-----	Benzyl Alcohol	810	U
95-50-1-----	1,2-Dichlorobenzene	810	U
95-48-7-----	2-Methylphenol	810	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	810	U
106-44-5-----	4-Methylphenol	810	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	810	U
67-72-1-----	Hexachloroethane	810	U
98-95-3-----	Nitrobenzene	810	U
78-59-1-----	Isophorone	810	U
88-75-5-----	2-Nitrophenol	810	U
105-67-9-----	2,4-Dimethylphenol	810	U
65-85-0-----	Benzoic Acid	3900	U
111-91-1-----	bis(2-Chloroethoxy) Methane	810	U
120-83-2-----	2,4-Dichlorophenol	810	U
120-82-1-----	1,2,4-Trichlorobenzene	810	U
91-20-3-----	Naphthalene	810	U
106-47-8-----	4-Chloroaniline	810	U
87-68-3-----	Hexachlorobutadiene	810	U
59-50-7-----	4-Chloro-3-Methylphenol	810	U
91-57-6-----	2-Methylnaphthalene	810	U
77-47-4-----	Hexachlorocyclopentadiene	810	U
88-06-2-----	2,4,6-Trichlorophenol	810	U
95-95-4-----	2,4,5-Trichlorophenol	3900	U
91-58-7-----	2-Chloronaphthalene	810	U
88-74-4-----	2-Nitroaniline	3900	U
131-11-3-----	Dimethyl Phthalate	810	U
208-96-8-----	Acenaphthylene	810	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: RECRA ENVIRON Contract: 001918 JGW-4

Lab Code: RECNY Case No.: 1675 SAS No.: _____ SDG No.: LS02

Matrix: (soil/water) SOIL Lab Sample ID: JGW-4

Sample wt/vol: 32.3 (g/mL) G Lab File ID: 518Z

Level: (low/med) LOW Date Received: 10/28/88

% Moisture: not dec. 24 dec. _____ Date Extracted: 11/04/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/08/88

GPC Cleanup: (Y/N) Y pH: 7.8 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
99-09-2-----	3-Nitroaniline	3900	U
83-32-9-----	Acenaphthene	810	U
51-28-5-----	2,4-Dinitrophenol	3900	U
100-02-7-----	4-Nitrophenol	3900	U
132-64-9-----	Dibenzofuran	810	U
121-14-2-----	2,4-Dinitrotoluene	810	U
606-20-2-----	2,6-Dinitrotoluene	810	U
84-66-2-----	Diethylphthalate	810	U
7005-72-3-----	4-Chlorophenyl-phenylether	810	U
86-73-7-----	Fluorene	810	U
100-01-6-----	4-Nitroaniline	3900	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	3900	U
86-30-6-----	N-Nitrosodiphenylamine (1)	810	U
101-55-3-----	4-Bromophenyl-phenylether	810	U
118-74-1-----	Hexachlorobenzene	810	U
87-86-5-----	Pentachlorophenol	3900	U
85-01-8-----	Phenanthrene	810	U
120-12-7-----	Anthracene	810	U
84-74-2-----	Di-n-Butylphthalate	810	U
206-44-0-----	Fluoranthene	810	U
129-00-0-----	Pyrene	810	U
85-68-7-----	Butylbenzylphthalate	810	U
91-94-1-----	3,3'-Dichlorobenzidine	1600	U
56-55-3-----	Benzo(a)Anthracene	810	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	3300	B
218-01-9-----	Chrysene	810	U
117-84-0-----	Di-n-Octyl Phthalate	810	U
205-99-2-----	Benzo(b) Fluoranthene	810	U
207-08-9-----	Benzo(k) Fluoranthene	810	U
50-32-8-----	Benzo(a) Pyrene	810	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	810	U
53-70-3-----	Dibenz(a,h) Anthracene	810	U
191-24-2-----	Benzo(g,h,i) Perylene	810	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

069

JGW-4

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

Case No.: 1675

SAS No.:

SDG No.: LS02

Matrix: (soil/water) SOIL

Lab Sample ID: JGW-4

Sample wt/vol: 32.3 (g/mL) G

Lab File ID: 518Z

Level: (low/med) LOW

Date Received: 10/28/88

% Moisture: not dec. 24 dec. -

Date Extracted: 11/04/88

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/08/88

GPC Cleanup: (Y/N) Y pH: 7.8

Dilution Factor: 1.0

Number TIC's found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	ALKYL HYDROCARBON	20:37	450	J
2. -	ALKYL HYDROCARBON	22:06	370	J
3. -	ALKYL HYDROCARBON	24:51	360	J
4. -	UNKNOWN	30:27	2,500	J
5. -	UNKNOWN	34:38	2,600	BJ
6. -	ALKYL SUBSTITUTED COMPOUND	35:38	330	J
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JSS-2

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1675 SAS No.: _____ SDG No.: LS02

Matrix: (soil/water) SOIL Lab Sample ID: JSS-2

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 504Z

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. 20 dec. _____ Date Extracted: 11/11/88

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/06/88

GPC Cleanup: (Y/N) Y pH: 8.1 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
108-95-2-----	Phenol	820	U
111-44-4-----	bis(2-Chloroethyl) Ether	820	U
95-57-8-----	2-Chlorophenol	820	U
541-73-1-----	1,3-Dichlorobenzene	820	U
106-46-7-----	1,4-Dichlorobenzene	820	U
100-51-6-----	Benzyl Alcohol	820	U
95-50-1-----	1,2-Dichlorobenzene	820	U
95-48-7-----	2-Methylphenol	820	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	820	U
106-44-5-----	4-Methylphenol	820	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	820	U
67-72-1-----	Hexachloroethane	820	U
98-95-3-----	Nitrobenzene	820	U
78-59-1-----	Isophorone	820	U
88-75-5-----	2-Nitrophenol	820	U
105-67-9-----	2,4-Dimethylphenol	820	U
65-85-0-----	Benzoic Acid	4000	U
111-91-1-----	bis(2-Chloroethoxy) Methane	820	U
120-83-2-----	2,4-Dichlorophenol	820	U
120-82-1-----	1,2,4-Trichlorobenzene	820	U
91-20-3-----	Naphthalene	78	J
106-47-8-----	4-Chloroaniline	820	U
87-68-3-----	Hexachlorobutadiene	820	U
59-50-7-----	4-Chloro-3-Methylphenol	820	U
91-57-6-----	2-Methylnaphthalene	140	J
77-47-4-----	Hexachlorocyclopentadiene	820	U
88-06-2-----	2,4,6-Trichlorophenol	820	U
95-95-4-----	2,4,5-Trichlorophenol	4000	U
91-58-7-----	2-Chloronaphthalene	820	U
88-74-4-----	2-Nitroaniline	4000	U
131-11-3-----	Dimethyl Phthalate	820	U
208-96-8-----	Acenaphthylene	820	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JSS-2

Lab Name: RECRA ENVIRONContract: 001918Lab Code: RECNYCase No.: 1675

SAS No.: _____

SDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: JSS-2Sample wt/vol: 30.2 (g/mL) GLab File ID: 504ZLevel: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. 20 dec. _____Date Extracted: 11/11/88Extraction: (SepF/Cont/Sonc) SONCDate Analyzed: 12/06/88GPC Cleanup: (Y/N) Y pH: 8.1Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
99-09-2-----	3-Nitroaniline	4000	U
83-32-9-----	Acenaphthene	130	J
51-28-5-----	2,4-Dinitrophenol	4000	U
100-02-7-----	4-Nitrophenol	4000	U
132-64-9-----	Dibenzofuran	84	J
121-14-2-----	2,4-Dinitrotoluene	820	U
606-20-2-----	2,6-Dinitrotoluene	820	U
84-66-2-----	Diethylphthalate	820	U
7005-72-3-----	4-Chlorophenyl-phenylether	820	U
86-73-7-----	Fluorene	150	J
100-01-6-----	4-Nitroaniline	4000	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	4000	U
86-30-6-----	N-Nitrosodiphenylamine (1)	820	U
101-55-3-----	4-Bromophenyl-phenylether	820	U
118-74-1-----	Hexachlorobenzene	820	U
87-86-5-----	Pentachlorophenol	4000	U
85-01-8-----	Phenanthrene	1200	
120-12-7-----	Anthracene	230	J
84-74-2-----	Di-n-Butylphthalate	23	J
206-44-0-----	Fluoranthene	1500	
129-00-0-----	Pyrene	1400	
85-68-7-----	Butylbenzylphthalate	39	J
91-94-1-----	3,3'-Dichlorobenzidine	1600	U
56-55-3-----	Benzo(a)Anthracene	690	J
117-81-7-----	bis(2-Ethylhexyl) Phthalate	5800	
218-01-9-----	Chrysene	780	J
117-84-0-----	Di-n-Octyl Phthalate	8	J
205-99-2-----	Benzo(b)Fluoranthene	700	J
207-08-9-----	Benzo(k)Fluoranthene	620	J
50-32-8-----	Benzo(a)Pyrene	520	J
193-39-5-----	Indeno(1,2,3-cd)Pyrene	260	J
53-70-3-----	Dibenz(a,h)Anthracene	75	J
191-24-2-----	Benzo(g,h,i)Perylene	220	J

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JSS-2

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918Lab Code: RECNYCase No.: 1675SAS No.: SDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: JSS-2Sample wt/vol: 30.2 (g/mL) GLab File ID: 504ZLevel: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. 20 dec. -Date Extracted: 11/11/88Extraction: (SepF/Cont/Sonc) SONCDate Analyzed: 12/06/88GPC Cleanup: (Y/N) Y pH: 8.1Dilution Factor: 1.00Number TIC's found: 4CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	ALKYL SUBSTITUTED COMPOUND	07:34	2,200	BJ
2. -	UNKNOWN ESTER	20:41	610	J
3. -	UNKNOWN	30:28	1,700	BJ
4. -	UNKNOWN	34:38	890	BJ
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1D
 PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: 001918
 Lab Code: RECNY Case No.: 1675 SAS No.: NA SDG No.: LS02
 Matrix: (soil/water) SOIL Lab Sample ID: SS1374
 Sample wt/vol: 32.28(g/mL) G Lab File ID: -
 Level: (low/med) LOW Date Received: 10/28/88
 % Moisture: not dec. 24 dec. - Date Extracted: 11/04/88
 Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/03/88
 GPC Cleanup: (Y/N) Y pH: 7.8 Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
319-84-6	alpha-BHC	20	U
319-85-7	beta-BHC	20	U
319-86-8	delta-BHC	20	U
58-89-9	gamma-BHC (Lindane)	20	U
76-44-8	Heptachlor	20	U
309-00-2	Aldrin	20	U
1024-57-3	Heptachlor epoxide	20	U
959-98-8	Endosulfan I	20	U
60-57-1	Dieldrin	21	J
72-55-9	4,4'-DDE	40	U
72-20-8	Endrin	40	U
33213-65-9	Endosulfan II	40	U
72-54-8	4,4'-DDD	40	U
1031-07-8	Endosulfan sulfate	40	U
50-29-3	4,4'-DDT	40	U
72-43-5	Methoxychlor	200	U
53494-70-5	Endrin ketone	40	U
5103-71-9	alpha-Chlordane	200	U
5103-74-2	gamma-Chlordane	200	U
8001-35-2	Toxaphene	400	U
12674-11-2	Aroclor-1016	200	U
11104-28-2	Aroclor-1221	200	U
11141-16-5	Aroclor-1232	200	U
53469-21-9	Aroclor-1242	200	U
12672-29-6	Aroclor-1248	200	U
11097-69-1	Aroclor-1254	400	U
11096-82-5	Aroclor-1260	400	U

FORM I PEST

1D
 PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

JSS-2

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918Lab Code: RECNYCase No.: 1675SAS No.: NASDG No.: LS02Matrix: (soil/water) SOILLab Sample ID: SS1413Sample wt/vol: 30.17(g/mL) GLab File ID: -Level: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. 20 dec. -Date Extracted: 11/11/88Extraction: (SepF/Cont/Sonc) SONCDate Analyzed: 12/03/88GPC Cleanup: (Y/N) Y pH: 8.1Dilution Factor: 1

CAS NO.

COMPOUND

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

319-84-6-----	alpha-BHC	20	U
319-85-7-----	beta-BHC	20	U
319-86-8-----	delta-BHC	20	U
58-89-9-----	gamma-BHC (Lindane)	20	U
76-44-8-----	Heptachlor	20	U
309-00-2-----	Aldrin	20	U
1024-57-3-----	Heptachlor epoxide	20	U
959-98-8-----	Endosulfan I	20	U
60-57-1-----	Dieldrin	40	U
72-55-9-----	4,4'-DDE	40	U
72-20-8-----	Endrin	40	U
33213-65-9-----	Endosulfan II	40	U
72-54-8-----	4,4'-DDD	40	U
1031-07-8-----	Endosulfan sulfate	40	U
50-29-3-----	4,4'-DDT	39	J
72-43-5-----	Methoxychlor	200	U
53494-70-5-----	Endrin ketone	40	U
5103-71-9-----	alpha-Chlordane	200	U
5103-74-2-----	gamma-Chlordane	200	U
8001-35-2-----	Toxaphene	400	U
12674-11-2-----	Aroclor-1016	200	U
11104-28-2-----	Aroclor-1221	200	U
11141-16-5-----	Aroclor-1232	200	U
53469-21-9-----	Aroclor-1242	200	U
12672-29-6-----	Aroclor-1248	200	U
11097-69-1-----	Aroclor-1254	400	U
11096-82-5-----	Aroclor-1260	400	U

FORM I PEST

Sample No.

JGW-2

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1606BCONTRACT NO. 001918LAB RECEIPT DATE 10/26/88LAB SAMPLE ID. NO. 5249QC REPORT NO. 88-1606QCElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	2,702	A	13. Magnesium	8,840	P
2. Antimony	6.6 N	F	14. Manganese	817	A
3. Arsenic	6.9	F	15. Mercury	0.19	CV
4. Barium	109	P	16. Nickel	151	A
5. Beryllium	0.64U	A	17. Potassium	75.5	P
6. Cadmium	0.77	A	18. Selenium	1.3U N	F
7. Calcium	25,050	P	19. Silver	1.3 N	A
8. Chromium	101 N	A	20. Sodium	2,030	P
9. Cobalt	9.0	A	21. Thallium	1.3U N	F
10. Copper	36.5 N	P	22. Vanadium	13.1	P
11. Iron	15,400	P	23. Zinc	1,250	P
12. Lead	236	A	Percent Solids (%)	77.3	
Cyanide	5.4				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

Sample No.

JGW-4

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1675CONTRACT NO. 001918LAB RECEIPT DATE 10/28/88LAB SAMPLE ID. NO. 5256QC REPORT NO. 88-1675AElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	21,600	P	13. Magnesium	18,000	*A
2. Antimony	1.3U	F	14. Manganese	634	* P
3. Arsenic	24.1	**F	15. Mercury	0.13	CV
4. Barium	110	*P	16. Nickel	27.9	*N P
5. Beryllium	1.5	A	17. Potassium	3,043	P
6. Cadmium	0.66U	A	18. Selenium	0.66U	N F
7. Calcium	69,700	* P	19. Silver	1.3U	*N P
8. Chromium	25	A	20. Sodium	1,170	P
9. Cobalt	15.3	* P	21. Thallium	0.66U	F
10. Copper	29.9	* P	22. Vanadium	30.2	P
11. Iron	35,800	P	23. Zinc	86.2	* P
12. Lead	13.3	*F	Percent Solids (%)	75.9	
Cyanide	0.66U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

Sample No.

JSS-2

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1675CCONTRACT NO. 001918LAB RECEIPT DATE 11/3/88LAB SAMPLE ID. NO. 5479QC REPORT NO. 88-1675CElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water _____ Soil X Sludge _____ Other _____ug/L or mg/kg dry weight (Circle One)

1. Aluminum	7,510	P	13. Magnesium	35,600	* A
2. Antimony	1.2U	F	14. Manganese	289	* P
3. Arsenic	8.7	* F	15. Mercury	0.61	CV
4. Barium	92.5	* A	16. Nickel	97.3	* N P
5. Beryllium	0.73	A	17. Potassium	1,020	A
6. Cadmium	1.7	A	18. Selenium	0.61U	N F
7. Calcium	601	*P	19. Silver	1.2 U	*N P
8. Chromium	31.0	A	20. Sodium	911	P
9. Cobalt	8.4	*P	21. Thallium	0.61U	F
10. Copper	30.9	*P	22. Vanadium	68.6	P
11. Iron	19,200	P	23. Zinc	372	*P
12. Lead	32.8	*A	Percent Solids (%)	80.3	
Cyanide	0.62U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

BALEZ
EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION
			JGW-2
Total Arsenic	11/30/88	5.0	<0.005
Total Barium	11/15/88	100.0	2.0
Total Cadmium	11/15/88	1.0	<0.006
Total Chromium	11/15/88	5.0	0.012
Total Lead	11/28/88	5.0	<0.05
Total Mercury	11/18/88	0.2	<0.0003
Total Selenium	11/30/88	1.0	<0.005
Total Silver	11/15/88	5.0	<0.01

Standard Addition

☒ Non-Standard Addition

I.D. #88-1606

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION
			JSS-2
Total Arsenic	11/30/88	5.0	<0.005
Total Barium	11/15/88	100.0	0.49
Total Cadmium	11/15/88	1.0	<0.006
Total Chromium	11/15/88	5.0	<0.010
Total Lead	11/28/88	5.0	<0.05
Total Mercury	11/22/88	0.2	0.0008
Total Selenium	11/30/88	1.0	<0.005
Total Silver	11/15/88	5.0	<0.010

☐ Standard Addition
☒ Non-Standard Addition

BR 2E2

025

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-2

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-2

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6911

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	Q
74-87-3	Chloromethane	10 U
74-83-9	Bromomethane	10 U
75-01-4	Vinyl Chloride	10 U
75-00-3	Chloroethane	55
75-09-2	Methylene Chloride	2 J
67-64-1	Acetone	10 U
75-15-0	Carbon Disulfide	15
75-35-4	1,1-Dichloroethene	5 U
75-34-3	1,1-Dichloroethane	5 U
540-59-0	1,2-Dichloroethene (total)	5 U
67-66-3	Chloroform	5 U
107-06-2	1,2-Dichloroethane	5 U
78-93-3	2-Butanone	10 U
71-55-6	1,1,1-Trichloroethane	5 U
56-23-5	Carbon Tetrachloride	5 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	5 U
78-87-5	1,2-Dichloropropane	5 U
10061-01-5	cis-1,3-dichloropropene	5 U
79-01-6	Trichloroethene	0.9 J
124-48-1	Dibromochloromethane	5 U
79-00-5	1,1,2-Trichloroethane	5 U
71-43-2	Benzene	5 U
10061-02-6	trans-1,3-dichloropropene	5 U
75-25-2	Bromoform	5 U
591-78-6	2-Hexanone	10 U
108-10-1	4-Methyl-2-Pentanone	10 U
127-18-4	Tetrachloroethene	5 U
79-34-5	1,1,2,2-Tetrachloroethane	5 U
108-88-3	Toluene	2 BJ
108-90-7	Chlorobenzene	5 U
100-41-4	Ethylbenzene	4 J
100-42-5	Styrene	5 U
1330-20-7	Total Xylenes	12

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JGW-2

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918Lab Code: RECNYCASE NO.: 1709SAS No.: -SDG No.: LW02Matrix: (soil/water) WATERLab Sample ID: JGW-2Sample wt/vol: 5.0 (g/mL) MLLab File ID: 6911Level: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. Date Analyzed: 11/08/88Column: (pack/cap) PACKDilution Factor: 1.0Number TICs found: 3CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN	02:06	15	BJ
2. -	ALKYL BENZENE DERIVATIVE	36:50	33	J
3. -	ETHYL METHYL BENZENE ISOMER	38:16	47	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6912

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

CAS NO.

COMPOUND

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	32	
75-09-2-----	Methylene Chloride	1	J
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	42	
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	2	J
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
591-78-6-----	2-Hexanone	10	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	0.3	BJ
108-90-7-----	Chlorobenzene	3	J
100-41-4-----	Ethylbenzene	1	J
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	31	

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JGW-3

028

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

CASE NO.: 1709

SAS No.: -

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: JGW-3

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 6912

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec.

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN	02:12	19	BJ
2. -	ALKYL BENZENE DERIVATIVE	32:58	29	J
3. -	AROMATIC COMPOUND	34:18	21	J
4. -	ALKYL BENZENE DERIVATIVE	36:46	39	J
5. -	ALKYL BENZENE DERIVATIVE	38:06	19	J
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FORM I VOA-TIC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3MS

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3MS

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6913

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	31	
75-09-2-----	Methylene Chloride	2	J
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	46	
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
591-78-6-----	2-Hexanone	10	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	1	J
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	37	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3MSD

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3MSD

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6914

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	34	
75-09-2-----	Methylene Chloride	2	J
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	48	
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
591-78-6-----	2-Hexanone	10	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	1	J
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	36	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JFIELDBLANK

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JFIELDBLANK

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6906

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) <u>UG/L</u>	<u>Q</u>
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-dichloropropene	5	U
75-25-2	Bromoform	5	U
591-78-6	2-Hexanone	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

034

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JFIELD BLANK

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918Lab Code: RECNYCASE NO.: 1709SAS No.: -SDG No.: LW02Matrix: (soil/water) WATERLab Sample ID: JFIELD BLANKSample wt/vol: 5.0 (g/mL) MLLab File ID: 6906Level: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. Date Analyzed: 11/08/88Column: (pack/cap) PACKDilution Factor: 1.0Number TICs found: 1CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN	02:10	13	BJ
2.				
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FORM I VOA-TIC

037

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIPBLANK

Lab Name: RECRA ENVIRON Contract: 001918
 Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02
 Matrix: (soil/water) WATER Lab Sample ID: TRIPBLANK
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6905
 Level: (low/med) LOW Date Received: 11/03/88
 % Moisture: not dec. _____ Date Analyzed: 11/08/88
 Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	3	J
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	10	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	10	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-dichloropropene	5	U
75-25-2-----	Bromoform	5	U
591-78-6-----	2-Hexanone	10	U
108-10-1-----	4-Methyl-2-Pentanone	10	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

038

TRIP BLANK

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

CASE NO.: 1709

SAS No.: -

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: TRIP BLANK

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 6905

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec.

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN	02:12	13	BJ
2.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-2

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-2

Sample wt/vol: 750 (g/mL) ML Lab File ID: 371Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2-----	Phenol	13	U
111-44-4-----	bis(2-Chloroethyl) Ether	13	U
95-57-8-----	2-Chlorophenol	13	U
541-73-1-----	1,3-Dichlorobenzene	13	U
106-46-7-----	1,4-Dichlorobenzene	13	U
100-51-6-----	Benzyl Alcohol	13	U
95-50-1-----	1,2-Dichlorobenzene	13	U
95-48-7-----	2-Methylphenol	13	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	13	U
106-44-5-----	4-Methylphenol	13	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	13	U
67-72-1-----	Hexachloroethane	13	U
98-95-3-----	Nitrobenzene	13	U
78-59-1-----	Isophorone	13	U
88-75-5-----	2-Nitrophenol	13	U
105-67-9-----	2,4-Dimethylphenol	13	U
65-85-0-----	Benzoic Acid	67	U
111-91-1-----	bis(2-Chloroethoxy) Methane	13	U
120-83-2-----	2,4-Dichlorophenol	13	U
120-82-1-----	1,2,4-Trichlorobenzene	13	U
91-20-3-----	Naphthalene	13	U
106-47-8-----	4-Chloroaniline	13	U
87-68-3-----	Hexachlorobutadiene	13	U
59-50-7-----	4-Chloro-3-Methylphenol	13	U
91-57-6-----	2-Methylnaphthalene	13	U
77-47-4-----	Hexachlorocyclopentadiene	13	U
88-06-2-----	2,4,6-Trichlorophenol	13	U
95-95-4-----	2,4,5-Trichlorophenol	67	U
91-58-7-----	2-Chloronaphthalene	13	U
88-74-4-----	2-Nitroaniline	67	U
131-11-3-----	Dimethyl Phthalate	13	U
208-96-8-----	Acenaphthylene	13	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-2

Lab Name: RECRA ENVIRONContract: 001918Lab Code: RECNYCase No.: 1709

SAS No.: _____

SDG No.: LW02Matrix: (soil/water) WATERLab Sample ID: JGW-2Sample wt/vol: 750 (g/mL) MLLab File ID: 371YLevel: (low/med) LOWDate Received: 11/03/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/08/88Extraction: (SepF/Cont/Sonc) SEPFDate Analyzed: 12/09/88GPC Cleanup: (Y/N) N pH: 7.0Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
99-09-2-----	3-Nitroaniline	67	U
83-32-9-----	Acenaphthene	13	U
51-28-5-----	2,4-Dinitrophenol	67	U
100-02-7-----	4-Nitrophenol	67	U
132-64-9-----	Dibenzofuran	13	U
121-14-2-----	2,4-Dinitrotoluene	13	U
606-20-2-----	2,6-Dinitrotoluene	13	U
84-66-2-----	Diethylphthalate	13	U
7005-72-3-----	4-Chlorophenyl-phenylether	13	U
86-73-7-----	Fluorene	13	U
100-01-6-----	4-Nitroaniline	67	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	67	U
86-30-6-----	N-Nitrosodiphenylamine (1)	13	U
101-55-3-----	4-Bromophenyl-phenylether	13	U
118-74-1-----	Hexachlorobenzene	13	U
87-86-5-----	Pentachlorophenol	67	U
85-01-8-----	Phenanthrene	13	U
120-12-7-----	Anthracene	13	U
84-74-2-----	Di-n-Butylphthalate	13	U
206-44-0-----	Fluoranthene	13	U
129-00-0-----	Pyrene	13	U
85-68-7-----	Butylbenzylphthalate	13	U
91-94-1-----	3,3'-Dichlorobenzidine	27	U
56-55-3-----	Benzo(a)Anthracene	13	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	11	BJ
218-01-9-----	Chrysene	13	U
117-84-0-----	Di-n-Octyl Phthalate	13	U
205-99-2-----	Benzo(b) Fluoranthene	13	U
207-08-9-----	Benzo(k) Fluoranthene	13	U
50-32-8-----	Benzo(a) Pyrene	13	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	13	U
53-70-3-----	Dibenz(a,h) Anthracene	13	U
191-24-2-----	Benzo(g,h,i) Perylene	13	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

065

JGW-2

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

Case No.: 1709

SAS No.: -

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: JGW-2

Sample wt/vol: 750 (g/mL) ML

Lab File ID: 371Y

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec. - dec. -

Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.0

Number TIC's found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	TRIMETHYL BENZENE ISOMER	08:43	36	J
2.	UNKNOWN	12:05	21	J
3.	UNKNOWN	20:50	50	J
4.	AROMATIC COMPOUND	21:42	37	J
5.	UNKNOWN	26:12	70	BJ
6.	PHENOL DERIVATIVE	33:01	21	J
7.	UNKNOWN	33:47	120	BJ
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3

Sample wt/vol: 900 (g/mL) ML Lab File ID: 372Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2-----	Phenol	11	U
111-44-4-----	bis(2-Chloroethyl) Ether	11	U
95-57-8-----	2-Chlorophenol	11	U
541-73-1-----	1,3-Dichlorobenzene	11	U
106-46-7-----	1,4-Dichlorobenzene	11	U
100-51-6-----	Benzyl Alcohol	11	U
95-50-1-----	1,2-Dichlorobenzene	11	U
95-48-7-----	2-Methylphenol	11	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	11	U
106-44-5-----	4-Methylphenol	11	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	11	U
67-72-1-----	Hexachloroethane	11	U
98-95-3-----	Nitrobenzene	11	U
78-59-1-----	Isophorone	11	U
88-75-5-----	2-Nitrophenol	11	U
105-67-9-----	2,4-Dimethylphenol	11	U
65-85-0-----	Benzoic Acid	56	U
111-91-1-----	bis(2-Chloroethoxy) Methane	11	U
120-83-2-----	2,4-Dichlorophenol	11	U
120-82-1-----	1,2,4-Trichlorobenzene	11	U
91-20-3-----	Naphthalene	5	J
106-47-8-----	4-Chloroaniline	11	U
87-68-3-----	Hexachlorobutadiene	11	U
59-50-7-----	4-Chloro-3-Methylphenol	11	U
91-57-6-----	2-Methylnaphthalene	11	U
77-47-4-----	Hexachlorocyclopentadiene	11	U
88-06-2-----	2,4,6-Trichlorophenol	11	U
95-95-4-----	2,4,5-Trichlorophenol	56	U
91-58-7-----	2-Chloronaphthalene	11	U
88-74-4-----	2-Nitroaniline	56	U
131-11-3-----	Dimethyl Phthalate	11	U
208-96-8-----	Acenaphthylene	11	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3

Lab Name: RECRA ENVIRON Contract: 001918Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02Matrix: (soil/water) WATER Lab Sample ID: JGW-3Sample wt/vol: 900 (g/mL) ML Lab File ID: 372YLevel: (low/med) LOW Date Received: 11/03/88% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q

99-09-2-----	3-Nitroaniline	56	U
83-32-9-----	Acenaphthene	2	J
51-28-5-----	2,4-Dinitrophenol	56	U
100-02-7-----	4-Nitrophenol	56	U
132-64-9-----	Dibenzofuran	1	J
121-14-2-----	2,4-Dinitrotoluene	11	U
606-20-2-----	2,6-Dinitrotoluene	11	U
84-66-2-----	Diethylphthalate	11	U
7005-72-3-----	4-Chlorophenyl-phenylether	11	U
86-73-7-----	Fluorene	11	U
100-01-6-----	4-Nitroaniline	56	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	56	U
86-30-6-----	N-Nitrosodiphenylamine (1)	11	U
101-55-3-----	4-Bromophenyl-phenylether	11	U
118-74-1-----	Hexachlorobenzene	11	U
87-86-5-----	Pentachlorophenol	56	U
85-01-8-----	Phenanthrene	3	J
120-12-7-----	Anthracene	11	U
84-74-2-----	Di-n-Butylphthalate	11	U
206-44-0-----	Fluoranthene	11	U
129-00-0-----	Pyrene	11	U
85-68-7-----	Butylbenzylphthalate	11	U
91-94-1-----	3,3'-Dichlorobenzidine	22	U
56-55-3-----	Benzo(a)Anthracene	11	U
117-81-7-----	bis(2-Ethylhexyl)Phthalate	16	B
218-01-9-----	Chrysene	11	U
117-84-0-----	Di-n-Octyl Phthalate	11	U
205-99-2-----	Benzo(b)Fluoranthene	11	U
207-08-9-----	Benzo(k)Fluoranthene	11	U
50-32-8-----	Benzo(a)Pyrene	11	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	11	U
53-70-3-----	Dibenz(a,h)Anthracene	11	U
191-24-2-----	Benzo(g,h,i)Perylene	11	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

JGW-3

Ubo

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

Case No.: 1709

SAS No.: -

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: JGW-3

Sample wt/vol: 900 (g/mL) ML

Lab File ID: 372Y

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec. dec.

Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.0

Number TIC's found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	-	08:43	87	J
2.	-	14:53	40	J
3.	-	19:52	13	J
4.	-	20:49	18	J
5.	-	21:04	15	J
6.	-	21:41	14	J
7.	-	26:12	440	BJ
8.	-	33:01	12	J
9.	-	33:47	91	BJ
10.	-	37:18	110	J
11.				
12.				
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FORM I SV-TIC

1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3MS

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3MS

Sample wt/vol: 900 (g/mL) ML Lab File ID: 373Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

108-95-2-----	Phenol	11	U
111-44-4-----	bis(2-Chloroethyl) Ether	11	U
95-57-8-----	2-Chlorophenol	11	U
541-73-1-----	1,3-Dichlorobenzene	11	U
106-46-7-----	1,4-Dichlorobenzene	11	U
100-51-6-----	Benzyl Alcohol	11	U
95-50-1-----	1,2-Dichlorobenzene	11	U
95-48-7-----	2-Methylphenol	11	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	11	U
106-44-5-----	4-Methylphenol	11	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	11	U
67-72-1-----	Hexachloroethane	11	U
98-95-3-----	Nitrobenzene	11	U
78-59-1-----	Isophorone	11	U
88-75-5-----	2-Nitrophenol	11	U
105-67-9-----	2,4-Dimethylphenol	11	U
65-85-0-----	Benzoic Acid	56	U
111-91-1-----	bis(2-Chloroethoxy) Methane	11	U
120-83-2-----	2,4-Dichlorophenol	11	U
120-82-1-----	1,2,4-Trichlorobenzene	11	U
91-20-3-----	Naphthalene	4	J
106-47-8-----	4-Chloroaniline	11	U
87-68-3-----	Hexachlorobutadiene	11	U
59-50-7-----	4-Chloro-3-Methylphenol	11	U
91-57-6-----	2-Methylnaphthalene	11	U
77-47-4-----	Hexachlorocyclopentadiene	11	U
88-06-2-----	2,4,6-Trichlorophenol	11	U
95-95-4-----	2,4,5-Trichlorophenol	56	U
91-58-7-----	2-Chloronaphthalene	11	U
88-74-4-----	2-Nitroaniline	56	U
131-11-3-----	Dimethyl Phthalate	11	U
208-96-8-----	Acenaphthylene	11	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3MS

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3MS

Sample wt/vol: 900 (g/mL) ML Lab File ID: 373Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
99-09-2-----	3-Nitroaniline	56	U
83-32-9-----	Acenaphthene	11	U
51-28-5-----	2,4-Dinitrophenol	56	U
100-02-7-----	4-Nitrophenol	56	U
132-64-9-----	Dibenzofuran	1	J
121-14-2-----	2,4-Dinitrotoluene	11	U
606-20-2-----	2,6-Dinitrotoluene	11	U
84-66-2-----	Diethylphthalate	11	U
7005-72-3-----	4-Chlorophenyl-phenylether	11	U
86-73-7-----	Fluorene	11	U
100-01-6-----	4-Nitroaniline	56	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	56	U
86-30-6-----	N-Nitrosodiphenylamine (1)	11	U
101-55-3-----	4-Bromophenyl-phenylether	11	U
118-74-1-----	Hexachlorobenzene	11	U
87-86-5-----	Pentachlorophenol	56	U
85-01-8-----	Phenanthrene	3	J
120-12-7-----	Anthracene	11	U
84-74-2-----	Di-n-Butylphthalate	11	U
206-44-0-----	Fluoranthene	11	U
129-00-0-----	Pyrene	11	U
85-68-7-----	Butylbenzylphthalate	11	U
91-94-1-----	3,3'-Dichlorobenzidine	22	U
56-55-3-----	Benzo(a)Anthracene	11	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	7	BJ
218-01-9-----	Chrysene	11	U
117-84-0-----	Di-n-Octyl Phthalate	11	U
205-99-2-----	Benzo(b) Fluoranthene	11	U
207-08-9-----	Benzo(k) Fluoranthene	11	U
50-32-8-----	Benzo(a) Pyrene	11	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	11	U
53-70-3-----	Dibenz(a,h)Anthracene	11	U
191-24-2-----	Benzo(g,h,i) Perylene	11	U

(1) - Cannot be separated from Diphenylamine

1207

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3MSD

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3MSD

Sample wt/vol: 900 (g/mL) ML Lab File ID: 374Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND Q

108-95-2-----	Phenol	11	U
111-44-4-----	bis(2-Chloroethyl) Ether	11	U
95-57-8-----	2-Chlorophenol	11	U
541-73-1-----	1,3-Dichlorobenzene	11	U
106-46-7-----	1,4-Dichlorobenzene	11	U
100-51-6-----	Benzyl Alcohol	11	U
95-50-1-----	1,2-Dichlorobenzene	11	U
95-48-7-----	2-Methylphenol	11	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	11	U
106-44-5-----	4-Methylphenol	11	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	11	U
67-72-1-----	Hexachloroethane	11	U
98-95-3-----	Nitrobenzene	11	U
78-59-1-----	Isophorone	11	U
88-75-5-----	2-Nitrophenol	11	U
105-67-9-----	2,4-Dimethylphenol	11	U
65-85-0-----	Benzoic Acid	56	U
111-91-1-----	bis(2-Chloroethoxy) Methane	11	U
120-83-2-----	2,4-Dichlorophenol	11	U
120-82-1-----	1,2,4-Trichlorobenzene	11	U
91-20-3-----	Naphthalene	5	J
106-47-8-----	4-Chloroaniline	11	U
87-68-3-----	Hexachlorobutadiene	11	U
59-50-7-----	4-Chloro-3-Methylphenol	11	U
91-57-6-----	2-Methylnaphthalene	11	U
77-47-4-----	Hexachlorocyclopentadiene	11	U
88-06-2-----	2,4,6-Trichlorophenol	11	U
95-95-4-----	2,4,5-Trichlorophenol	56	U
91-58-7-----	2-Chloronaphthalene	11	U
88-74-4-----	2-Nitroaniline	56	U
131-11-3-----	Dimethyl Phthalate	11	U
208-96-8-----	Acenaphthylene	11	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JGW-3MSD

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JGW-3MSD

Sample wt/vol: 900 (g/mL) ML Lab File ID: 374Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	Q
99-09-2-----	3-Nitroaniline	56 U
83-32-9-----	Acenaphthene	11 U
51-28-5-----	2,4-Dinitrophenol	56 U
100-02-7-----	4-Nitrophenol	56 U
132-64-9-----	Dibenzofuran	1 J
121-14-2-----	2,4-Dinitrotoluene	11 U
606-20-2-----	2,6-Dinitrotoluene	11 U
84-66-2-----	Diethylphthalate	11 U
7005-72-3-----	4-Chlorophenyl-phenylether	11 U
86-73-7-----	Fluorene	11 U
100-01-6-----	4-Nitroaniline	56 U
534-52-1-----	4,6-Dinitro-2-Methylphenol	56 U
86-30-6-----	N-Nitrosodiphenylamine (1)	0.4 J
101-55-3-----	4-Bromophenyl-phenylether	11 U
118-74-1-----	Hexachlorobenzene	11 U
87-86-5-----	Pentachlorophenol	56 U
85-01-8-----	Phenanthrene	3 J
120-12-7-----	Anthracene	11 U
84-74-2-----	Di-n-Butylphthalate	11 U
206-44-0-----	Fluoranthene	11 U
129-00-0-----	Pyrene	11 U
85-68-7-----	Butylbenzylphthalate	11 U
91-94-1-----	3,3'-Dichlorobenzidine	22 U
56-55-3-----	Benzo(a)Anthracene	11 U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	13 B
218-01-9-----	Chrysene	11 U
117-84-0-----	Di-n-Octyl Phthalate	11 U
205-99-2-----	Benzo(b)Fluoranthene	11 U
207-08-9-----	Benzo(k)Fluoranthene	11 U
50-32-8-----	Benzo(a)Pyrene	11 U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	11 U
53-70-3-----	Dibenz(a,h)Anthracene	11 U
191-24-2-----	Benzo(g,h,i)Perylene	11 U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 075

JFIELDBLANK

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JFIELDBLANK

Sample wt/vol: 960 (g/mL) ML Lab File ID: 370Y

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl) Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl) Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	52	U
111-91-1	bis(2-Chloroethoxy) Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	52	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	52	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JFIELDBLANK

Lab Name: RECRA ENVIRON

Contract: 001918

Lab Code: RECNY

Case No.: 1709

SAS No.: _____

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: JFIELDBLANK

Sample wt/vol: 960 (g/mL) ML

Lab File ID: 370Y

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/08/88

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/09/88

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q

99-09-2-----	3-Nitroaniline	52	U
83-32-9-----	Acenaphthene	10	U
51-28-5-----	2,4-Dinitrophenol	52	U
100-02-7-----	4-Nitrophenol	52	U
132-64-9-----	Dibenzofuran	10	U
121-14-2-----	2,4-Dinitrotoluene	10	U
606-20-2-----	2,6-Dinitrotoluene	10	U
84-66-2-----	Diethylphthalate	10	U
7005-72-3-----	4-Chlorophenyl-phenylether	10	U
86-73-7-----	Fluorene	10	U
100-01-6-----	4-Nitroaniline	52	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	52	U
86-30-6-----	N-Nitrosodiphenylamine (1)	10	U
101-55-3-----	4-Bromophenyl-phenylether	10	U
118-74-1-----	Hexachlorobenzene	10	U
87-86-5-----	Pentachlorophenol	52	U
85-01-8-----	Phenanthrene	10	U
120-12-7-----	Anthracene	10	U
84-74-2-----	Di-n-Butylphthalate	10	U
206-44-0-----	Fluoranthene	10	U
129-00-0-----	Pyrene	10	U
85-68-7-----	Butylbenzylphthalate	10	U
91-94-1-----	3,3'-Dichlorobenzidine	21	U
56-55-3-----	Benzo(a)Anthracene	10	U
117-81-7-----	bis(2-Ethylhexyl) Phthalate	15	B
218-01-9-----	Chrysene	10	U
117-84-0-----	Di-n-Octyl Phthalate	10	U
205-99-2-----	Benzo(b) Fluoranthene	10	U
207-08-9-----	Benzo(k) Fluoranthene	10	U
50-32-8-----	Benzo(a) Pyrene	10	U
193-39-5-----	Indeno(1,2,3-cd) Pyrene	10	U
53-70-3-----	Dibenz(a,h) Anthracene	10	U
191-24-2-----	Benzo(g,h,i) Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
JFIELD BLANK

077

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: 001918
 Lab Code: RECNY Case No.: 1709 SAS No.: - SDG No.: LW02
 Matrix: (soil/water) WATER Lab Sample ID: JFIELD BLANK
 Sample wt/vol: 960 (g/mL) ML Lab File ID: 370Y
 Level: (low/med) LOW Date Received: 11/03/88
 % Moisture: not dec. dec. Date Extracted: 11/08/88
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88
 GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0
 Number TIC's found: 2 CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN	26:09	52	BJ
2. -	UNKNOWN	33:46	45	BJ
3.				
4.				
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1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

086

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: 001918
 Lab Code: RECNY Case No.: 1709 SAS No.: NA SDG No.: LW02
 Matrix: (soil/water) WATER Lab Sample ID: SW2848
 Sample wt/vol: 910 (g/mL) ML Lab File ID: -
 Level: (low/med) LOW Date Received: 11/03/88
 % Moisture: not dec. - dec. - Date Extracted: 11/07/88
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/07/88
 GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.1	U
72-55-9	4,4'-DDE	0.1	U
72-20-8	Endrin	0.1	U
33213-65-9	Endosulfan II	0.1	U
72-54-8	4,4'-DDD	0.1	U
1031-07-8	Endosulfan sulfate	0.1	U
50-29-3	4,4'-DDT	0.1	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.1	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	5.1	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST

ID
 PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918JGW-3Lab Code: RECNY Case No.: 1709SAS No.: NA SDG No.: LW02Matrix: (soil/water) WATERLab Sample ID: SW2845Sample wt/vol: 930 (g/mL) MLLab File ID: -Level: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. - dec. -Date Extracted: 11/07/88Extraction: (SepF/Cont/Sonc) SEPFDate Analyzed: 12/07/88GPC Cleanup: (Y/N) N pH: 7.0Dilution Factor: 1

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.1	U
72-55-9	4,4'-DDE	0.1	U
72-20-8	Endrin	0.1	U
33213-65-9	Endosulfan II	0.1	U
72-54-8	4,4'-DDD	0.1	U
1031-07-8	Endosulfan sulfate	0.1	U
50-29-3	4,4'-DDT	0.12	U
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.1	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

1408

SAMPLE NO.

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

JGW-3MS

Lab Code: RECNY

Case No.: 1709

SAS No.: NA

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: SW2846

Sample wt/vol: 930 (g/mL) ML

Lab File ID: -

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec. - dec. -

Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/07/88

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1

CAS NO.

COMPOUND

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/L

Q

319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	-	
76-44-8	Heptachlor	-	
309-00-2	Aldrin	-	
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	-	
72-55-9	4,4'-DDE	0.1	U
72-20-8	Endrin	-	
33213-65-9	Endosulfan II	0.1	U
72-54-8	4,4'-DDD	0.1	U
1031-07-8	Endosulfan sulfate	0.1	U
50-29-3	4,4'-DDT	-	
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.1	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO. **1420**

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

JGW-3 MSD

Lab Code: RECNY

Case No.: 1709

SAS No.: NA

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: SW2847

Sample wt/vol: 930 (g/mL) ML

Lab File ID: -

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec. - dec. -

Date Extracted: 11/07/88

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/07/88

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	-	
76-44-8	Heptachlor	-	
309-00-2	Aldrin	-	
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	-	
72-55-9	4,4'-DDE	0.1	U
72-20-8	Endrin	-	
33213-65-9	Endosulfan II	0.1	U
72-54-8	4,4'-DDD	0.1	U
1031-07-8	Endosulfan sulfate	0.1	U
50-29-3	4,4'-DDT	-	
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.1	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST

1D
 PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: RECRA ENVIRONMENTAL, INC.Contract: 001918J FIELD
BLANKLab Code: RECNYCase No.: 1709SAS No.: NASDG No.: LW02Matrix: (soil/water) WATERLab Sample ID: SW2849Sample wt/vol: 920 (g/mL) MLLab File ID: -Level: (low/med) LOWDate Received: 11/03/88% Moisture: not dec. - dec. -Date Extracted: 11/07/88Extraction: (SepF/Cont/Sonc) SEPFDate Analyzed: 12/07/88GPC Cleanup: (Y/N) N pH: 7.0Dilution Factor: 1

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

319-84-6-----	alpha-BHC	0.05	U
319-85-7-----	beta-BHC	0.05	U
319-86-8-----	delta-BHC	0.05	U
58-89-9-----	gamma-BHC (Lindane)	0.05	U
76-44-8-----	Heptachlor	0.05	U
309-00-2-----	Aldrin	0.05	U
1024-57-3-----	Heptachlor epoxide	0.05	U
959-98-8-----	Endosulfan I	0.05	U
60-57-1-----	Dieldrin	0.1	U
72-55-9-----	4,4'-DDE	0.1	U
72-20-8-----	Endrin	0.1	U
33213-65-9-----	Endosulfan II	0.1	U
72-54-8-----	4,4'-DDD	0.1	U
1031-07-8-----	Endosulfan sulfate	0.1	U
50-29-3-----	4,4'-DDT	0.064	J
72-43-5-----	Methoxychlor	0.5	U
53494-70-5-----	Endrin ketone	0.1	U
5103-71-9-----	alpha-Chlordane	0.5	U
5103-74-2-----	gamma-Chlordane	0.5	U
8001-35-2-----	Toxaphene	1.0	U
12674-11-2-----	Aroclor-1016	0.5	U
11104-28-2-----	Aroclor-1221	0.5	U
11141-16-5-----	Aroclor-1232	0.5	U
53469-21-9-----	Aroclor-1242	0.5	U
12672-29-6-----	Aroclor-1248	0.5	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

FORM I PEST

BAZZ

Form I

025

Sample No.

JGW-2

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.

CASE NO. 88-1709A

CONTRACT NO. 001918

LAB RECEIPT DATE 11/3/88

LAB SAMPLE ID. NO. 5404

QC REPORT NO. 88-1709A

Elements Identified and Measured

Concentration: Low

Medium

Matrix: Water X Soil Sludge Other

(ug/L) or mg/kg dry weight (Circle One)

1. Aluminum	17,900	P	13. Magnesium	82,000	NP
2. Antimony	10U	F	14. Manganese	1,230	P
3. Arsenic	13.9	F	15. Mercury	0.2U	* CV
4. Barium	640	P	16. Nickel	60	P
5. Beryllium	5.0U	A	17. Potassium	21,400	P
6. Cadmium	5.0U	A	18. Selenium	5.0U	N F
7. Calcium	259,000	N P	19. Silver	10U	N P
8. Chromium	48	* A	20. Sodium	95,400	P
9. Cobalt	50U	P	21. Thallium	5.0U	F
10. Copper	90	P	22. Vanadium	[45]	P
11. Iron	53,000	N P	23. Zinc	236	* P
12. Lead	46	* F	Percent Solids (%)	NR	
Cyanide	10U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

Form I

Sample No.

JGw-3

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1709ACONTRACT NO. 001918LAB RECEIPT DATE 11 3 88LAB SAMPLE ID. NO. 5405QC REPORT NO. 88-1709AElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water X Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

1. Aluminum	3,750	P	13. Magnesium	57,600	N P
2. Antimony	10U	F	14. Manganese	528	P
3. Arsenic	5.0U	F	15. Mercury	0.47	* CV
4. Barium	340	P	16. Nickel	40U	P
5. Beryllium	5.0U	A	17. Potassium	16,500	P
6. Cadmium	5.0U	A	18. Selenium	5.0U	N F
7. Calcium	144,000	NP	19. Silver	10U	N P
8. Chromium	13	* A	20. Sodium	154,000	P
9. Cobalt	50U	P	21. Thallium	5.0U	F
10. Copper	27	P	22. Vanadium	10U	P
11. Iron	19,300	NP	23. Zinc	68	* P
12. Lead	14	* F	Percent Solids ($\frac{3}{8}$)	NR	
Cyanide	10U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

Sample No.
JGW-3
DUPLICATE

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1709ACONTRACT NO. 001918LAB RECEIPT DATE 11/3/88LAB SAMPLE ID. NO. 5406QC REPORT NO. 88-1709AElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water X Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

1. Aluminum	3,680	P	13. Magnesium	59,200	N P
2. Antimony	10U	F	14. Manganese	538	P
3. Arsenic	5.0U	F	15. Mercury	0.99	* CV
4. Barium	350	P	16. Nickel	40U	P
5. Beryllium	5.0U	A	17. Potassium	16,700	P
6. Cadmium	6.0	A	18. Selenium	5.0	N F
7. Calcium	146,000	NP	19. Silver	10U	N P
8. Chromium	[9.0]	* A	20. Sodium	151,000	P
9. Cobalt	50U	P	21. Thallium	5.0U	F
10. Copper	33	P	22. Vanadium	10U	P
11. Iron	19,600	N P	23. Zinc	96	* P
12. Lead	21	* F	Percent Solids (%)	NR	
Cyanide	10U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

Sample No.
J FIELD
BLANK

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1709ACONTRACT NO. 001918LAB RECEIPT DATE 11/3/88LAB SAMPLE ID. NO. 5403QC REPORT NO. 88-1709AElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water X Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

1. Aluminum	240	P	13. Magnesium	200U	N P
2. Antimony	10U	F	14. Manganese	10U	P
3. Arsenic	5.0U	F	15. Mercury	0.2U	* CV
4. Barium	60U	P	16. Nickel	40U	P
5. Beryllium	5.0U	A	17. Potassium	[300]	P
6. Cadmium	5.0U	A	18. Selenium	6.9	N F
7. Calcium	200U	NP	19. Silver	10U	N P
8. Chromium	5.0	* A	20. Sodium	[1,590]	P
9. Cobalt	50U	P	21. Thallium	5.0U	F
10. Copper	[17]	P	22. Vanadium	10	P
11. Iron	50U	N P	23. Zinc	[11]	* P
12. Lead	5.0U	* F	Percent Solids (%)	NR	
Cyanide	10U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JUNIAGARARVR

Lab Name: RECRA ENVIRON Contract: 001918

Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02

Matrix: (soil/water) WATER Lab Sample ID: JUNIAGARARVR

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 6907

Level: (low/med) LOW Date Received: 11/03/88

% Moisture: not dec. _____ Date Analyzed: 11/08/88

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	3	J
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	U
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	10	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	10	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-dichloropropene	5	U
75-25-2	-----Bromoform	5	U
591-78-6	-----2-Hexanone	10	U
108-10-1	-----4-Methyl-2-Pentanone	10	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Total Xylenes	5	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

030

JNIAGARARVR

Lab Name: RECRA ENVIRONMENTAL, INC.

Contract: 001918

Lab Code: RECNY

CASE NO.: 1709

SAS No.: -

SDG No.: LW02

Matrix: (soil/water) WATER

Lab Sample ID: JNIAGARARVR

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 6907

Level: (low/med) LOW

Date Received: 11/03/88

% Moisture: not dec.

Date Analyzed: 11/08/88

Column: (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN	02:08	11	EJ
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
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22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM I VOA-TIC

1B
SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JN1AGARVR

Lab Name: RECRA ENVIRON Contract: 001918Lab Code: RECNY Case No.: 1709 SAS No.: _____ SDG No.: LW02Matrix: (soil/water) WATER Lab Sample ID: JN1AGARVRSample wt/vol: 900 (g/mL) ML Lab File ID: 369YLevel: (low/med) LOW Date Received: 11/03/88% Moisture: not dec. _____ dec. _____ Date Extracted: 11/08/88Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	11	U
111-44-4-----	bis(2-Chloroethyl) Ether	11	U
95-57-8-----	2-Chlorophenol	11	U
541-73-1-----	1,3-Dichlorobenzene	11	U
106-46-7-----	1,4-Dichlorobenzene	11	U
100-51-6-----	Benzyl Alcohol	11	U
95-50-1-----	1,2-Dichlorobenzene	11	U
95-48-7-----	2-Methylphenol	11	U
108-60-1-----	bis(2-Chloroisopropyl) Ether	11	U
106-44-5-----	4-Methylphenol	11	U
621-64-7-----	N-Nitroso-Di-n-Propylamine	11	U
67-72-1-----	Hexachloroethane	11	U
98-95-3-----	Nitrobenzene	11	U
78-59-1-----	Isophorone	11	U
88-75-5-----	2-Nitrophenol	11	U
105-67-9-----	2,4-Dimethylphenol	11	U
65-85-0-----	Benzoic Acid	56	U
111-91-1-----	bis(2-Chloroethoxy) Methane	11	U
120-83-2-----	2,4-Dichlorophenol	11	U
120-82-1-----	1,2,4-Trichlorobenzene	11	U
91-20-3-----	Naphthalene	11	U
106-47-8-----	4-Chloroaniline	11	U
87-68-3-----	Hexachlorobutadiene	11	U
59-50-7-----	4-Chloro-3-Methylphenol	11	U
91-57-6-----	2-Methylnaphthalene	11	U
77-47-4-----	Hexachlorocyclopentadiene	11	U
88-06-2-----	2,4,6-Trichlorophenol	11	U
95-95-4-----	2,4,5-Trichlorophenol	56	U
91-58-7-----	2-Chloronaphthalene	11	U
88-74-4-----	2-Nitroaniline	56	U
131-11-3-----	Dimethyl Phthalate	11	U
208-96-8-----	Acenaphthylene	11	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

JN1AGARARVR

Lab Name: RECRA ENVIRONContract: 001918Lab Code: RECNYCase No.: 1709

SAS No.: _____

SDG No.: LW02Matrix: (soil/water) WATERLab Sample ID: JN1AGARARVRSample wt/vol: 900 (g/mL) MLLab File ID: 369YLevel: (low/med) LOWDate Received: 11/03/88

% Moisture: not dec. _____ dec. _____

Date Extracted: 11/08/88Extraction: (SepF/Cont/Sonc) SEPFDate Analyzed: 12/09/88GPC Cleanup: (Y/N) N pH: 7.0Dilution Factor: 1.00

CAS NO.

COMPOUND

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Q

99-09-2-----	3-Nitroaniline	56	U
83-32-9-----	Acenaphthene	11	U
51-28-5-----	2,4-Dinitrophenol	56	U
100-02-7-----	4-Nitrophenol	56	U
132-64-9-----	Dibenzofuran	11	U
121-14-2-----	2,4-Dinitrotoluene	11	U
606-20-2-----	2,6-Dinitrotoluene	11	U
84-66-2-----	Diethylphthalate	11	U
7005-72-3-----	4-Chlorophenyl-phenylether	11	U
86-73-7-----	Fluorene	11	U
100-01-6-----	4-Nitroaniline	56	U
534-52-1-----	4,6-Dinitro-2-Methylphenol	56	U
86-30-6-----	N-Nitrosodiphenylamine (1)	11	U
101-55-3-----	4-Bromophenyl-phenylether	11	U
118-74-1-----	Hexachlorobenzene	11	U
87-86-5-----	Pentachlorophenol	56	U
85-01-8-----	Phenanthrene	11	U
120-12-7-----	Anthracene	11	U
84-74-2-----	Di-n-Butylphthalate	11	U
206-44-0-----	Fluoranthene	11	U
129-00-0-----	Pyrene	11	U
85-68-7-----	Butylbenzylphthalate	11	U
91-94-1-----	3,3'-Dichlorobenzidine	22	U
56-55-3-----	Benzo(a)Anthracene	11	U
117-81-7-----	bis(2-Ethylhexyl)Phthalate	4	BJ
218-01-9-----	Chrysene	11	U
117-84-0-----	Di-n-Octyl Phthalate	11	U
205-99-2-----	Benzo(b)Fluoranthene	11	U
207-08-9-----	Benzo(k)Fluoranthene	11	U
50-32-8-----	Benzo(a)Pyrene	11	U
193-39-5-----	Indeno(1,2,3-cd)Pyrene	11	U
53-70-3-----	Dibenz(a,h)Anthracene	11	U
191-24-2-----	Benzo(g,h,i)Perylene	11	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
JN1AGARVR

071

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: 001918
 Lab Code: RECNY Case No.: 1709 SAS No.: - SDG No.: LW02
 Matrix: (soil/water) WATER Lab Sample ID: JN1AGARVR
 Sample wt/vol: 900 (g/mL) ML Lab File ID: 369Y
 Level: (low/med) LOW Date Received: 11/03/88
 % Moisture: not dec. dec. Date Extracted: 11/08/88
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/09/88
 GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.0
 Number TIC's found: 2 CONCENTRATION UNITS:
 (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. -	UNKNOWN ALCOHOL	26:09	27	BJ
2. -	UNKNOWN	33:47	35	BJ
3.				
4.				
5.				
6.				
7.				
8.				
9.				
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FORM I SV-TIC

1/87 Rev.

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

Lab Name: RECRA ENVIRONMENTAL, INC. Contract: 001918
 Lab Code: RECNY Case No.: 1709 SAS No.: NA SDG No.: LW02
 Matrix: (soil/water) WATER Lab Sample ID: SW2844
 Sample wt/vol: 910 (g/mL) ML Lab File ID: -
 Level: (low/med) LOW Date Received: 11/03/88
 % Moisture: not dec. - dec. - Date Extracted: 11/07/88
 Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/07/88
 GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
319-84-6	alpha-BHC	0.05	U
319-85-7	beta-BHC	0.05	U
319-86-8	delta-BHC	0.05	U
58-89-9	gamma-BHC (Lindane)	0.05	U
76-44-8	Heptachlor	0.05	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor epoxide	0.05	U
959-98-8	Endosulfan I	0.05	U
60-57-1	Dieldrin	0.1	U
72-55-9	4,4'-DDE	0.1	U
72-20-8	Endrin	0.1	U
33213-65-9	Endosulfan II	0.1	U
72-54-8	4,4'-DDD	0.1	U
1031-07-8	Endosulfan sulfate	0.1	U
50-29-3	4,4'-DDT	0.095	J
72-43-5	Methoxychlor	0.5	U
53494-70-5	Endrin ketone	0.1	U
5103-71-9	alpha-Chlordane	0.5	U
5103-74-2	gamma-Chlordane	0.5	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.5	U
11104-28-2	Aroclor-1221	0.5	U
11141-16-5	Aroclor-1232	0.5	U
53469-21-9	Aroclor-1242	0.5	U
12672-29-6	Aroclor-1248	0.5	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

FORM I PEST

Sample No.
J NIAGARA
RIVER

INORGANIC ANALYSIS DATA SHEET

LAB NAME RECRA ENVIRONMENTAL, INC.CASE NO. 88-1709ACONTRACT NO. 001918LAB RECEIPT DATE 11/3/88LAB SAMPLE ID. NO. 5402QC REPORT NO. 88-1709AElements Identified and Measured

Concentration: Low _____ Medium _____

Matrix: Water X Soil _____ Sludge _____ Other _____

(ug/L) or mg/kg dry weight (Circle One)

1. Aluminum	430	P	13. Magnesium	10,200	N P
2. Antimony	10U	F	14. Manganese	17	P
3. Arsenic	5.0U	F	15. Mercury	0.2U	* CV
4. Barium	60U	P	16. Nickel	40U	P
5. Beryllium	5.0U	A	17. Potassium	[1,580]	P
6. Cadmium	5.0U	A	18. Selenium	6.7	N, S F
7. Calcium	41,900	N P	19. Silver	10U	N P
8. Chromium	5.0U	* A	20. Sodium	10,500	P
9. Cobalt	50U	P	21. Thallium	5.0U	F
10. Copper	25	P	22. Vanadium	[12]	P
11. Iron	300	N P	23. Zinc	[13]	* P
12. Lead	5.0U	* F	Percent Solids (%)	NR	
Cyanide	10U				

Footnote: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: CV - cold vapor



APPENDIX J
QA/QC REPORTS

APPENDIX J

QA/QC REPORTS

Appendix J contains Nytest Environmental Inc.'s (NEI) quality assurance reviews of all the Brzezinski Property site data collected as part of the Phase II investigation. Also included is LMS' report on the usability determination of the data.

The validator found the pesticide fraction noncompliant, as discussed in their report. Upon further investigation by LMS, it was found usable as discussed in the LMS usability report.

Brzezinski samples are represented by J.



RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

October 11, 1989

Mr. Ed Maikish
Lawler, Matusky and Skelly Engineers
One Blue Hill Plaza
P.O. Box 1509
Pearl River, New York 10965

RECEIVED

OCT 16 1989

RE: LMS Usability Determination - Brzezinski Landfill
Case #'s 1606, 1675 and 1709

LAWLER, MATUSKY & SKELLY
ENGINEERS

Dear Mr. Maikish:

The following summarizes the LMS usability report dated September 13, 1989 concerning the Brzezinski Landfill project.

Volatile Data	-	Compliant and Usable (exception - sample JGW4 - Carbon Disulfide)
Semivolatile Data	-	Compliant
Pesticide/PCB Data	-	Usable
Inorganic Data	-	Compliant

The Carbon Disulfide result for volatile sample JGW4 was determined to be non-compliant and unusable due to the presence of elevated levels of Carbon Disulfide in the associated Method Blank. Since this TCL constituent was undetected in sample JGW4 the data remains unaffected. All other volatile data for this sample was determined to be usable.

This letter documents the completion of the data validation and usability review process regarding the Brzezinski Landfill site. If I may be of further assistance, do not hesitate to contact me at (716) 691-2600.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Verl D. Harbison

Verl D. Harbison
CLP Programs Manager

VDH/sh

cc: RKW
KCM

BRZEZINSKI
USABILITY DETERMINATION FOR
FRACTIONS OTHER THAN PESTICIDES
576-017

Case 1709

All samples are compliant and usable.

Case 1675

Volatile fraction

Sample JGW-4 is considered non-compliant since the concentration of carbon disulfide in the associated method blank exceeded limits. Only the carbon disulfide data for that sample cannot be used. All other data are usable.

BRZEZINSKI
PESTICIDE DATA USABILITY REPORT
576-017

Case 1709

<u>SAMPLE ID</u>	<u>MATRIX</u>	<u>NYTEST ORIG REVIEW</u>	<u>NYTEST REREVIEW</u>	<u>DATA</u>	<u>REASON FOR FAILURE</u>	<u>FINAL DETERMINATION</u>
J-Niagara River	water	NC	NC	4,4' DDT-0.095j	a	usable ^a
J-GW-2	water	NC	NC	ND	a	usable ^a
J-FB	water	NC	NC	4,4' DDT-0.064j	a	usable ^a
J-GW-3	water	NC	NC	4,4' DDT-0.12	a	usable ^a

Case 1675

J-GW-4	soil	NC	NC	Aroclor 1260-21j	b	usable
J-SS-2	soil	NC	NC	4,4' DDT-39j	b	usable

- a
- | | | |
|--|---|--------------------|
| % D > 15% Endrin ketone (18%) 12/8/88, 11:38 | } | SP2250/2401 column |
| % D > 15% Endrin ketone (20%) 12/8/88, 14:58 | | |
| % D > 20% Heptachlor (27.3%) 12/7/88, 13:39 | } | 3% OV-1 column |

Apparently if the % D > 15% on column SP2250/2401, RECRA used column OV-1 for quantification. Column SP2250/2401 should only be used for quantification and column OV-1 should only be used for confirmation.

Since neither of these compounds were detected in any of the samples the results are usable.

- Did not use same 4 peaks for ICAL 1254 and continuing calibration 1254, on OV-1 confirmation 12/7/88, 15:39.

- Heptachlor merges with DBP and does not give 25% resolution.

4,4' DDT appears in JFB, JGW-3 and J Niagara River. Since RECRA did not respond to this question in their resubmittal must assume data are questionable and not usable.

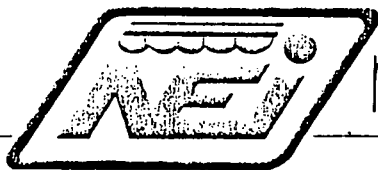
All non-detects are usable since other problems affect only positive hits.

- b
- | | |
|--|--------------------|
| % D > 15% Endosulfan sulfate (54%) 12/3/88, 20:00. | SP2250/2401 column |
|--|--------------------|

- DBP merges with Heptachlor INDA on 3% OV-1 column.

- DBC not detected in Toxophene standard of 12/2/88.

Since none of the samples had pesticides detected in any of the samples that had problems all of the data are usable.



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

RECEIVED

MAY 15 1989

May 5, 1989

LAWLER, MATUSKY & SKELLY
ENGINEERS

Mr. Ed Maikish
Lawler, Matusky & Skelly Engineers
One Blue Hill Plaza
P.O. Box 1509
Pearl River, NY 10965-8509

Re: Data Validation Report - Resubmittal of Brzezinski and
Pirro Case #1675

89-15612

Dear Mr. Maikish:

Enclosed please find our Data Validation Report for the
resubmitted inorganic and organic results for the Brzezinski and
Pirro sites (Case #1675).

The data was reviewed in accordance with the guidelines
established by NYSDEC on March 21, 1989.

I was contacted by RECRA concerning the EP Toxicity data and left
a message that the original data was not compliant due to the
metals analytical sequences

If you have any questions concerning this report, please call me
at 516-625-5500.

Very truly yours,

A handwritten signature in cursive script that reads 'Douglas Sheeley'.

Douglas Sheeley
Laboratory Director

cc: Mike Komoroske
NYSDEC
50 Wolf Rd.
Albany, NY 12233

Robert Wyeth/Debbie Travis
RECRA Env
10 Hazelwood Dr.
Suite No. 106
Amherst, NY 14150

nytest environmental inc.

89-15612

Additional comments on the resubmittal of Case #1675

A. Inorganics

In general the inorganics data package is not organized properly, and is difficult to review. The EPA significant figure rules are not followed throughout. The

1. Pages 90-95 and 96-101 are duplicates of the raw Be data.
2. Pages 49 and 50 are both labeled Form X.
3. Note the following inconsistent IDL's

	p41	p44	p47
Sb	IDL 10	IDL 10	IDL 5
Cr	IDL 5	IDL 5	IDL 10
Pb	IDL 50	IDL 50	IDL 5

4. No digestion log for sample JGW-4.
5. Ca for JSS-2 should be 69,400 not 601.
6. Several samples on p.76 are listed more than once and there is no indication which results were used.
7. On p.145, for Pb, sample 5380 is run at a dilution after the last CCV.
8. P. 25, Pb listed as P, but there were no GFA results.
9. Na should have 2 CCV's.

B. Volatile

1. The concentration of Carbon Disulfide in VBLK15 exceeded limits, samples JGW-4, JGW-4DL, JGW-4DLRE are not compliant.

B. Semivolatile

1. ISW-4 was reanalyzed outside holding times.

C. Pesticide/PCB

The pesticide/PCB fraction is still not compliant with CLP

nytest environmental inc.

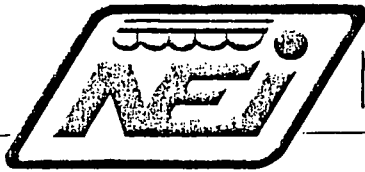
SITE: FERRO CORPORATION AND BRZEZINSKI LANDFILL - RESUBMITTAL
CASE #1675
89-15612

SAMPLE #	METALS	CN	VOA	BNA	PEST	RECRA
-----	-----	--	---	---	----	-----
JGW-4	R	OK	NC	OK	NC	--
ISS-1	R	OK	OK	OK	NC	NC
ISS-2	R	OK	OK	OK	NC	NC
ISS-3	R	OK	OK	OK	NC	NC
ISS-4	R	OK	OK	OK	NC	NC
ISW-1	R	OK	OK	OK	NC	NC
ISW-2	R	OK	OK	OK	NC	--
ISW-4	R	OK	OK	OK	NC	--
ISW-5	R	OK	OK	NC	NC	--
ISW-8	R	OK	OK	OK	NC	--
JSS-2	R	OK	OK	OK	NC	--
ISS-3 MS	R	OK	OK	OK	NC	--
ISS-3 MSD(MD)	R	OK	OK	OK	NC	--

R= RESUBMIT, THE INORGANIC DATA MUST BE CORRECTED
BEFORE THE REPORT IS COMPLIANT - Consult with the
NYSDEC.

NC= NON COMPLIANT WITH CLP

NOTE: RECRA = EPTox Metals were never resubmitted



TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc

May 8, 1989

RECEIVED

MAY 16 1989

Mr. Ed Maikish
Lawler, Matusky & Skelly Engineers
One Blue Hill Plaza
P.O. Box 1509
Pearl River, NY 10965-8509

LAWLER, MATUSKY & SKELLY
ENGINEERS

Re: Data Validation Report - Resubmittal of Brzezinski and
Ferro Case #1709

89-15613

Dear Mr. Maikish:

Enclosed please find our Data Validation Report for the
resubmitted inorganic and organic results for the Brzezinski and
Ferro sites (Case #1709).

The data was reviewed in accordance with the guidelines
established by NYSDEC on March 21, 1989.

If you have any questions concerning this report, please call me
at 516-625-5500.

Very truly yours,

Douglas Sheeley
Laboratory Director

cc: Mike Komoroske
NYSDEC
50 Wolf Rd.
Albany, NY 12233

Robert Wyeth/Debbie Travis
RECRA Env
10 Hazelwood Dr.
Suite No. 106
Amherst, NY 14150

nytest environmental inc.

89-15613

Additional comments on the resubmittal of Case #1709

A. Inorganics

In general the inorganics data package is not organized properly, and is difficult to review. The EPA significant figure rules, and IDL rules are not followed throughout. If the entire data package was reanalyzed and resubmitted, why were the analyses performed by 1986 protocol?

1. IDL forms on pages 43 and 44 are listed as ICP, but flame was used.

2. LCS forms on p. 40 and 41 are not clear as to what instrument was used.

3. Cd on ISW-9 results not found in raw data.

4. Ca for IField Blank should be [600], not [280]. on p.113-114 the sample was run line 80 and run again on line 88 whihout explanation.

5. Cr for ISW-1DUP should be [8], not 5U.

6. Co had inconsistent IDL reported.

7. Fe the result for sample ISW-3 should be 23.800 not 21,300.

8. K for ISW-3 was run after CCV. 5

9. Na CCV on p.29 should be 25.00 not 24.00.

10. No raw data for Na for 5 samples in group 88-1709A.

11. Se on JGW-3DUP should be 5U not 5.

12. Tl for group 88-1709A The CCV should be 84.3, not 79.6.

B. Volatile

Resubmittal is compliant.

B. Semivolatile

Resubmittal is compliant.

C. Pesticide/PCB

The pesticide/PCB fraction is still not compliant with CLP

1. The %D for Endrin Ketone in INDB 12/8/88, 14:58, on column 2250/2401 was outside limits.

2. DPB coelutes with Heptachlor.

nytest environmental inc.

SITE: Ferro and Brzezinski Resubmittal

SAMPLE #	METALS	CN	VOA	BNA	PEST	RECRA-1
-----	-----	--	---	---	---	-----
ISW-1	R	OK	OK	OK	NC	
ISW-2	R	OK	OK	OK	NC	
ISW-3	R	OK	OK	OK	NC	
ISW-4	R	OK	OK	OK	NC	
ISW-5	R	OK	OK	OK	NC	
ISW-6	R	OK	OK	OK	NC	
ISW-7	R	OK	OK	OK	NC	
ISW-9	R	OK	OK	OK	NC	
I-FIELD BLANK	R	OK	OK	OK	NC	
I-TRIP BLANK			OK			
JGW-2	R	OK	OK	OK	NC	
JGW-3	R	OK	OK	OK	NC	
J-NIAGRA RIVER	R	OK	OK	OK	NC	
J-FIELD BLANK	R	OK	OK	OK	NC	
TRIP BLANK			OK			

NC= NOT COMPLIANT

R= RESUBMIT