PRELIMINARY
WASTE CHARACTERIZATION TEST RESULTS
NEW BUFFALO INDUSTRIAL PARK
BUFFALO, NEW YORK

Volume I

Prepared for:

Buffalo Urban Renewal Agency
Buffalo, New York

Prepared by:

Goldberg-Zoino Associates of New York, P.C.
Buffalo, New York

May 1987

GZA

GOLDBERG • ZOINO ASSOCIATES OF NEW YORK, P.C.
GEOTECHNICAL-GEOHYOROLOGICAL CONSULTANTS

DONALD T GOLDBERG
WILLIAM S ZOINO
JOSEPH D GUERTIN, JR
JOHN E AYRES
MATTHEW J BARVENIK
WILLIAM R BELOFF
NICHOLAS A CAMPAGNA, JR
MATHEW A DIPILATO
CARL EIDAM
LAWRENCE FELDMAN
JOSEPH P HEHIR
ROBERT A HELLER
ROSS T McGILLIVRAY
MICHAEL A POWERS
JAMES H REYNOLDS
PAUL M SANBORN
RICHARD M SIMON
STEVEN J TRETTEL
CONSULTANTS
WALTER E JAWORSKI, JR
STANLEY M BEMBEN
IRVINE G REINIG II
GENERAL MANAGER

May 22, 1987
File: R5726.70

Buffalo Urban Renewal Agency
920 City Hall
Buffalo, New York 14202

Attention: Ms. Rosanne Frandina

Re: New Buffalo Industrial Park
Preliminary Waste Characterization Test Results

Gentlemen:

Pursuant to our discussion of May 18, 1987, Goldberg-Zoino Associates of New York, P.C. (GZA) has reviewed Recra Environmental, Inc.'s (REI) report of test results for the samples collected from test pits made within the Area II and Area III "purple" sludge deposits (as shown on Figures 1, 2 and 3). A summary of the analytical test results and the REI report are enclosed.

SAMPLE IDENTIFICATION

Composite Sample No.	LOCATION[1] Areas	Test Pit No.	Sample Description
1	III	A-III-11	"Purple" sludge
		A-III-21	"Purple" sludge
2	III	A-III-9	"Purple" sludge
		A-III-5	"Purple" sludge
3	II	A-II-30	"Purple" sludge
		A-II-8	"Purple" sludge
4	II	A-II-45	"Purple" sludge
		A-II-53	"Purple" sludge

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Composite Sample No.	LOCATION[1] Areas	Test Pit No.	Sample Description
5a (not a composite)	II	A-II-13	Oil-laden soil
5b (not a composite)	III	A-III-33	Oil-laden soil
6	III	Surface deposit ~200 feet north	Blue granular material

[1]See Figures 1 and 2 (enclosed)

Test Parameters

TOX
Hazardous substances list
pH
Total/amenable cyanide
Total sulfide
Reactivity (if sample contains ≥250 ppm total cyanide and/or ≥500 ppm total sulfide)
Weak/dissociable cyanide (if sample positive for cyanide)
EP Toxicity (metals fraction)

Results

The analytical test results for each sample are presented in Appendix A. Please note that samples have not been tested for the following parameters pending receipt of the applicable test methods from the New York State Department of Environmental Conservation (NYSDEC): Sulfate, chloride, total organic and inorganic carbon and specific gravity. Additionally, testing of samples 5a and 5b (oil-laden soils) was not complete at the time of this writing, but the results will be forwarded to BURA under separate cover following their receipt and review by GZA.

The sample test results indicate that the "purple" sludge, as represented by Composite Sample Nos. 1, 2, 3 and 4, does not exhibit the following characteristics of a hazardous waste: reactivity, corrosivity and EP toxicity (40 CFR 261). Additionally, volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) were not detected.

The "purple" sludge samples (Composite Sample Nos. 1, 2, 3 and 4) contain relatively low levels of polynuclear aromatic compounds [PNAs (4 to 61 ppm)], endosulfan sulfate (1.2 to 3.2 ppm), total recoverable phenols (6.4 to 10 ppm) and total organic halides

GZA

(3.2 to 12 ppm). However, such values for these constituents, per se, do not appear to be sufficient cause to designate the "purple" sludge as hazardous. Ammonia was also detected in the range of 54 to 990 ppm and may reflect decomposition of organic material found in association with the "purple" sludge deposits.

Composite Sample No. 6 (surface deposit of blue granular material located approximately 200 feet north of Area III) test results indicate that the material does not exhibit the above-referenced characteristics of a hazardous waste. Additionally, base/neutral/acid extractable compounds, organochloride pesticides/PCBs and total recoverable phenolics were not detected. This sample did contain relatively low levels of total xylenes (6 ppm), methylene chloride (13 ppm), total organic halides (15 ppm) and ammonia (37 ppm). These concentrations, per se, do not appear to be sufficient cause to designate the material as hazardous.

Summary

Preliminary test results indicate that the "purple" sludge does not exhibit the characteristics of a hazardous waste. Additionally, the presence of relatively low levels of PNAs, endosulfan sulfate, total recoverable phenols and total organic halide do not appear to be sufficient cause to designate the "purple" sludge as hazardous. Similarly, test results for Sample No. 6 (blue granular material located approximately 200 feet north of Area III) do not appear to be sufficient cause to designate this material as hazardous. However, a final determination by NYSDEC as to the classification of the material(s) as hazardous or non-hazardous waste cannot occur until NYSDEC has reviewed the analytical test results.

We are hopeful that this letter report is suitable for your purposes. If you are in need of any additional information, please feel free to contact the undersigned.

Very truly yours,

GOLDBERG-ZOINO ASSOCIATES OF NY, PC

Rick P. Harding, Ph.D.
Project Manager

Irvine G. Reinig II, P.E.
Associate-In-Charge

Raymond L. Kampff
Project Reviewer
RPH:kf
Enclosures

1/5431

RECRA ENVIRONMENTAL, INC.

Chemical Waste Analysis, Prevention and Control

May 13, 1987

Dr. Rick Harding
Goldberg-Zoino Associates
364 Nagel Drive
Buffalo, NY 14225

Re: Analytical Results

Dear Dr. Harding:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm.

Applicable methodology to perform Sulfate and Chloride analysis was not available for this matrix.

Pertinent Information: Quote #: Q87-311
Matrix: Sludge

If you have any questions concerning these data, do not hesitate to contact our Customer Service Representative at (716) 691-2600.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Arun K. Bhattacharya, Ph.D.
Senior Vice President/
Laboratory Director

AKB/skk
Enclosure

I.D. #87-527
87-527A
#7A510614

ANALYTICAL RESULTS

Prepared For

Goldberg-Zoino Associates
364 Nagel Drive
Buffalo, New York 14225

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14150

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference unless noted otherwise in this report.

- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods". Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

COMMENTS

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

The values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

The values reported as "less than or equal to" ($\leq$) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

Methods used for the EP Toxicity Test procedure as well as the analysis of the resulting extract are presented in U.S. Environmental Protection Agency publication, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods". November 1986, SW-846, Third Edition.

Results of the analysis of Pesticide/PCB's are based on 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.

METHOD 9010 - TOTAL AND AMENABLE CYANIDE

SAMPLE IDENTIFICATION	ANALYSIS DATE	PARAMETER (UNITS OF MEASURE) TOTAL CYANIDE (µg/g)
TP-II-8	4/27/87	1,900

METHOD 9010 - TOTAL AND AMENABLE CYANIDE

SAMPLE IDENTIFICATION	ANALYSIS DATE	PARAMETER (UNITS OF MEASURE) TOTAL CYANIDE (µg/g)
TP-II-30	4/28/87	1,200

METHOD 9010 - TOTAL AND AMENABLE CYANIDE

SAMPLE IDENTIFICATION	ANALYSIS DATE	PARAMETER (UNITS OF MEASURE) TOTAL CYANIDE (µg/g)
TP-II-45	4/29/87	1.300
TP-II-53	4/29/87	1.200

METHOD 9010 - TOTAL AND AMENABLE CYANIDE

SAMPLE IDENTIFICATION	ANALYSIS DATE	PARAMETER (UNITS OF MEASURE) TOTAL CYANIDE (µg/g)
TP-III-5	4/30/87	2,100
TP-III-9	4/30/87	2,100
TP-III-11	4/30/87	2,100

METHOD 9010 - TOTAL AND AMENABLE CYANIDE

SAMPLE IDENTIFICATION	ANALYSIS DATE	PARAMETER (UNITS OF MEASURE) TOTAL CYANIDE (µg/g)
TP-III-21	4/29/87	1,600

SLUDGE MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST VOLATILE ORGANICS

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #1	COMPOSITE #2
Acetone	<10	<10
Benzene	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
2-Butanone	<10	<10
Carbon disulfide	<5.0	<5.0
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
2-Hexanone	<10	<10
Methylene chloride	<2.8	<2.8
4-Methyl-2-pentanone	<10	<10
Styrene	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	<6.0	<6.0
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Vinyl acetate	<10	<10
Vinyl chloride	<10	<10
Total Xylenes	<5.0	<5.0
Analysis Date	5/7/87	5/7/87
Internal Standards Level Added = 5.0 µg/g (% Recovery)		
Bromochloromethane	98	99
1,4-Difluorobenzene	92	102
Chlorobenzene D_5	97	101

I.D. #87-527

SLUDGE MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST VOLATILE ORGANICS

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #3	COMPOSITE #4
Acetone	<10	<10
Benzene	<4.4	<4.4
Bromodichloromethane	<2.2	<2.2
Bromoform	<4.7	<4.7
Bromomethane	<10	<10
2-Butanone	<10	<10
Carbon disulfide	<5.0	<5.0
Carbon tetrachloride	<2.8	<2.8
Chlorobenzene	<6.0	<6.0
Chloroethane	<10	<10
2-Chloroethylvinyl ether	<10	<10
Chloroform	<1.6	<1.6
Chloromethane	<10	<10
Dibromochloromethane	<3.1	<3.1
1,1-Dichloroethane	<4.7	<4.7
1,2-Dichloroethane	<2.8	<2.8
1,1-Dichloroethylene	<2.8	<2.8
trans-1,2-Dichloroethylene	<1.6	<1.6
1,2-Dichloropropane	<6.0	<6.0
cis-1,3-Dichloropropene	<5.0	<5.0
trans-1,3-Dichloropropene	<5.0	<5.0
Ethylbenzene	<7.2	<7.2
2-Hexanone	<10	<10
Methylene chloride	<2.8	<2.8
4-Methyl-2-pentanone	<10	<10
Styrene	<5.0	<5.0
1,1,2,2-Tetrachloroethane	<6.9	<6.9
Tetrachloroethylene	<4.1	<4.1
Toluene	<6.0	<6.0
1,1,1-Trichloroethane	<3.8	<3.8
1,1,2-Trichloroethane	<5.0	<5.0
Trichloroethylene	<1.9	<1.9
Vinyl acetate	<10	<10
Vinyl chloride	<10	<10
Total Xylenes	<5.0	<5.0
Analysis Date	5/7/87	5/7/87
Internal Standards Level Added = 5.0 µg/g (% Recovery)		
Bromochloromethane	98	101
1,4-Difluorobenzene	103	101
Chlorobenzene D_5	100	98

SLUDGE MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST VOLATILE ORGANICS

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION COMPOSITE #6
Acetone	<10
Benzene	<4.4
Bromodichloromethane	<2.2
Bromoform	<4.7
Bromomethane	<10
2-Butanone	<10
Carbon disulfide	<5.0
Carbon tetrachloride	<2.8
Chlorobenzene	<6.0
Chloroethane	<10
2-Chloroethylvinyl ether	<10
Chloroform	<1.6
Chloromethane	<10
Dibromochloromethane	<3.1
1,1-Dichloroethane	<4.7
1,2-Dichloroethane	<2.8
1,1-Dichloroethylene	<2.8
trans-1,2-Dichloroethylene	<1.6
1,2-Dichloropropane	<6.0
cis-1,3-Dichloropropene	<5.0
trans-1,3-Dichloropropene	<5.0
Ethylbenzene	<7.2
2-Hexanone	<10
Methylene chloride	13
4-Methyl-2-pentanone	<10
Styrene	<5.0
1,1,2,2-Tetrachloroethane	<6.9
Tetrachloroethylene	<4.1
Toluene	<6.0
1,1,1-Trichloroethane	<3.8
1,1,2-Trichloroethane	<5.0
Trichloroethylene	<1.9
Vinyl acetate	<10
Vinyl chloride	<10
Total Xylenes	6.0
Analysis Date	5/7/87
Internal Standards	
Level Added = 5.0 µg/g	
(% Recovery)	
Bromochloromethane	107
1,4-Difluorobenzene	103
Chlorobenzene D_5	103

I.D. #87-527

SLUDGE MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #1	COMPOSITE #2
Acenaphthene	<3.3	<3.3
Acenaphthylene	<1.2	<3.3
Anthracene	5.9	8.9
Benzo(a)anthracene	19	14
Benzo(a)pyrene	7.6	7.1
Benzo(b)fluoranthene	21*	18*
Benzo(g,h,i)perylene	8.3	8.1
Benzo(k)fluoranthene	<3.3	<3.3
Benzoic acid	<3.3	<3.3
Benzyl alcohol	<3.3	<3.3
Bis(2-chloroethoxy)methane	<3.3	<3.3
Bis(2-chloroethyl)ether	<3.3	<3.3
Bis(2-chloroisopropyl)ether	<3.3	<3.3
Bis(2-ethylhexyl)phthalate	<3.3	<3.3
4-Bromophenylphenylether	<3.3	<3.3
Butylbenzylphthalate	<3.3	<3.3
4-Chloroaniline	<3.3	<3.3
2-Chloronaphthalene	<3.3	<3.3
4-Chlorophenylphenylether	<3.3	<3.3
Chrysene	17	14
Dibenzo(a,h)anthracene	9.7	8.1
Dibenzofuran	17	16
1,2-Dichlorobenzene	<3.3	<3.3
1,3-Dichlorobenzene	<3.3	<3.3
1,4-Dichlorobenzene	<3.3	<3.3
3,3'-Dichlorobenzidine	<6.6	<6.6
Diethylphthalate	<3.3	<3.3
Dimethylphthalate	<3.3	<3.3
Di-n-butylphthalate	<3.3	<3.3
2,6-Dinitrotoluene	<3.3	<3.3
2,4-Dinitrotoluene	<3.3	<3.3
Di-n-octylphthalate	<3.3	<3.3
Fluoranthene	57	56
Fluorene	4.9	7.3
Hexachlorobenzene	<3.3	<3.3
Hexachlorobutadiene	<3.3	<3.3
Hexachlorocylopentadiene	<3.3	<3.3
Hexachloroethane	<3.3	<3.3
Indeno(1,2,3-cd)pyrene	5.0	4.7
Isophorone	<3.3	<3.3

*Chromatographically, Benzo(b)fluoranthene and Benzo(k)fluoranthene coelute. The reported value is therefore an "and/or" value.

(Continued)

SLUDGE MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #1	COMPOSITE #2
2-Methylnaphthalene	16	8.9
Naphthalene	44	30
2-Nitroaniline	<16	<16
3-Nitroaniline	<16	<16
4-Nitroaniline	<16	<16
Nitrobenzene	<3.3	<3.3
N-nitrosodi-n-propylamine	<3.3	<3.3
N-nitrosodiphenylamine	<3.3	<3.3
Phenanthrene	61	69
Pyrene	41	40
1,2,4-Trichlorobenzene	<3.3	<3.3
2-Chlorophenol	<3.3	<3.3
2,4-Dichlorophenol	<3.3	<3.3
2,4-Dimethylphenol	<3.3	<3.3
4,6-Dinitro-o-cresol	<16	<16
2,4-Dinitrophenol	<16	<16
2-Methylphenol	<3.3	<3.3
4-Methylphenol	<3.3	<3.3
2-Nitrophenol	<3.3	<3.3
4-Nitrophenol	<16	<16
p-Chloro-m-cresol	<3.3	<3.3
Pentachlorophenol	<16	<16
Phenol	<3.3	<3.3
2,4,5-Trichlorophenol	<16	<16
2,4,6-Trichlorophenol	<3.3	<3.3
Additional Compounds		
Aniline	<3.3	<3.3
Benzidine	<100	<100
N-Nitrosodimethylamine	<3.3	<3.3
Extraction Date	5/6/87	5/6/87
Analysis Date	5/7/87	5/7/87
Internal Standards		
Level Added = 1.0 µg/g		
Phenanthrene-D10 (% Recovery)	109	142
Surrogates		
Level Added = 5.0 µg/g (% Recovery)		
Decafluorobiphenyl	58	53
2-Fluorobiphenyl	45	48
2-Fluorophenol	38	37
Phenol-D_6	39	41

SLUDGE MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #3	COMPOSITE #4
Acenaphthene	<0.98	3.6
Acenaphthylene	<3.3	<3.2
Anthracene	<3.3	<3.3
Benzo(a)anthracene	11	19
Benzo(a)pyrene	4.4	3.4
Benzo(b)fluoranthene	15*	13*
Benzo(g,h,i)perylene	5.7	8.2
Benzo(k)fluoranthene	<3.3	<3.3
Benzoic acid	<3.3	<3.3
Benzyl alcohol	<3.3	<3.3
Bis(2-chloroethoxy)methane	<3.3	<3.3
Bis(2-chloroethyl)ether	<3.3	<3.3
Bis(2-chloroisopropyl)ether	<3.3	<3.3
Bis(2-ethylhexyl)phthalate	<3.3	<3.3
4-Bromophenylphenylether	<3.3	<3.3
Butylbenzylphthalate	<3.3	<3.3
4-Chloroaniline	<3.3	<3.3
2-Chloronaphthalene	<3.3	<3.3
4-Chlorophenylphenylether	<3.3	<3.3
Chrysene	13	18
Dibenzo(a,h)anthracene	<3.3	8.2
Dibenzofuran	<3.3	3.8
1,2-Dichlorobenzene	<3.3	<3.3
1,3-Dichlorobenzene	<3.3	<3.3
1,4-Dichlorobenzene	<3.3	<3.3
3,3'-Dichlorobenzidine	<6.6	<6.6
Diethylphthalate	<3.3	<3.3
Dimethylphthalate	<3.3	<3.3
Di-n-butylphthalate	<3.3	<3.3
2,6-Dinitrotoluene	<3.3	<3.3
2,4-Dinitrotoluene	<3.3	<3.3
Di-n-octylphthalate	<3.3	<3.3
Fluoranthene	31	39
Fluorene	<3.3	8.2
Hexachlorobenzene	<3.3	<3.3
Hexachlorobutadiene	<3.3	<3.3
Hexachlorocylopentadiene	<3.3	<3.3
Hexachloroethane	<3.3	<3.3
Indeno(1,2,3-cd)pyrene	8.3	3.9
Isophorone	<3.3	<3.3

*Chromatographically, Benzo(b)fluoranthene and Benzo(k)fluoranthene coelute. The reported value is therefore an "and/or" value.

(Continued)

SLUDGE MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #3	COMPOSITE #4
2-Methylnaphthalene	3.8	7.0
Naphthalene	17	13
2-Nitroaniline	<16	<16
3-Nitroaniline	<16	<16
4-Nitroaniline	<16	<16
Nitrobenzene	<3.3	<3.3
N-nitrosodi-n-propylamine	<3.3	<3.3
N-nitrosodiphenylamine	<3.3	<3.3
Phenanthrene	19	47
Pyrene	27	57
1,2,4-Trichlorobenzene	<3.3	<3.3
2-Chlorophenol	<3.3	<3.3
2,4-Dichlorophenol	<3.3	<3.3
2,4-Dimethylphenol	<3.3	<3.3
4,6-Dinitro-o-cresol	<16	<16
2,4-Dinitrophenol	<16	<16
2-Methylphenol	<3.3	<3.3
4-Methylphenol	<3.3	<3.3
2-Nitrophenol	<3.3	<3.3
4-Nitrophenol	<16	<16
p-Chloro-m-cresol	<3.3	<3.3
Pentachlorophenol	<16	<16
Phenol	<3.3	<3.3
2,4,5-Trichlorophenol	<16	<16
2,4,6-Trichlorophenol	<3.3	<3.3
Additional Compounds		
Aniline	<3.3	<3.3
Benzidine	<100	<100
N-Nitrosodimethylamine	<3.3	<3.3
Extraction Date	5/6/87	5/6/87
Analysis Date	5/7/87	5/7/87
Internal Standards		
Level Added = 1.0 µg/g		
Phenanthrene-D10 (% Recovery)	120	117
Surrogates		
Level Added = 5.0 µg/g (% Recovery)		
Decafluorobiphenyl	55	64
2-Fluorobiphenyl	52	66
2-Fluorophenol	36	46
Phenol-D_6	40	53

SLUDGE MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION
	COMPOSITE #6
Acenaphthene	<3.3
Acenaphthylene	<3.3
Anthracene	<3.3
Benzo(a)anthracene	<3.3
Benzo(a)pyrene	<3.3
Benzo(b)fluoranthene	<3.3
Benzo(g,h,i)perylene	<3.3
Benzo(k)fluoranthene	<3.3
Benzoic acid	<3.3
Benzyl alcohol	<3.3
Bis(2-chloroethoxy)methane	<3.3
Bis(2-chloroethyl)ether	<3.3
Bis(2-chloroisopropyl)ether	<3.3
Bis(2-ethylhexyl)phthalate	<3.3
4-Bromophenylphenylether	<3.3
Butylbenzylphthalate	<3.3
4-Chloroaniline	<3.3
2-Chloronaphthalene	<3.3
4-Chlorophenylphenylether	<3.3
Chrysene	<3.3
Dibenzo(a,h)anthracene	<3.3
Dibenzofuran	<3.3
1,2-Dichlorobenzene	<3.3
1,3-Dichlorobenzene	<3.3
1,4-Dichlorobenzene	<3.3
3,3'-Dichlorobenzidine	<6.6
Diethylphthalate	<3.3
Dimethylphthalate	<3.3
Di-n-butylphthalate	<3.3
2,6-Dinitrotoluene	<3.3
2,4-Dinitrotoluene	<3.3
Di-n-octylphthalate	<3.3
Fluoranthene	<3.3
Fluorene	<3.3
Hexachlorobenzene	<3.3
Hexachlorobutadiene	<3.3
Hexachlorocylopentadiene	<3.3
Hexachloroethane	<3.3
Indeno(1,2,3-cd)pyrene	<3.3
Isophorone	<3.3

(Continued)

SLUDGE MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION COMPOSITE #6
2-Methylnaphthalene	<3.3
Naphthalene	<3.3
2-Nitroaniline	<16
3-Nitroaniline	<16
4-Nitroaniline	<16
Nitrobenzene	<3.3
N-nitrosodi-n-propylamine	<3.3
N-nitrosodiphenylamine	<3.3
Phenanthrene	<3.3
Pyrene	<3.3
1,2,4-Trichlorobenzene	<3.3
2-Chlorophenol	<3.3
2,4-Dichlorophenol	<3.3
2,4-Dimethylphenol	<3.3
4,6-Dinitro-o-cresol	<16
2,4-Dinitrophenol	<16
2-Methylphenol	<3.3
4-Methylphenol	<3.3
2-Nitrophenol	<3.3
4-Nitrophenol	<16
p-Chloro-m-cresol	<3.3
Pentachlorophenol	<16
Phenol	<3.3
2,4,5-Trichlorophenol	<16
2,4,6-Trichlorophenol	<3.3
Additional Compounds	
Aniline	<3.3
Benzidine	<100
N-Nitrosodimethylamine	<3.3
Extraction Date	5/6/87
Analysis Date	5/7/87
Internal Standards	
Level Added = 1.0 µg/g	
Phenanthrene-D10	
(% Recovery)	92
Surrogates	
Level Added = 5.0 µg/g	
(% Recovery)	
Decafluorobiphenyl	17
2-Fluorobiphenyl	42
2-Fluorophenol	25
Phenol-D_6	21

SLUDGE MATRIX
METHOD 8080 - HAZARDOUS SUBSTANCE LIST ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #1	COMPOSITE #2
Aldrin	<0.07	<0.2
Alpha-BHC	<0.1	<0.06
Beta-BHC	<0.7	<0.4
Delta-BHC	<0.3	<0.2
Gamma-BHC	<0.2	<0.1
Chlordane	<2	<1
4,4'-DDD	<0.2	<0.1
4,4'-DDE	<0.2	<0.1
4,4'-DDT	<0.4	<0.2
Dieldrin	<0.2	<0.1
Endosulfan I	<0.4	<0.2
Endosulfan II	<0.2	<0.1
Endosulfan sulfate	1.5	1.2
Endrin	<0.2	<0.1
Heptachlor	<0.2	<0.1
Heptachlor epoxide	<0.2	<0.1
Toxaphene	<4	<2
Aroclor 1016	<10	<6
Aroclor 1221	<20	<10
Aroclor 1232	<20	<10
Aroclor 1242	<10	<6
Aroclor 1248	<10	<6
Aroclor 1254	<4	<3
Aroclor 1260	<4	<3
Endrin ketone	<2	<0.7
Methoxychlor	<1	<0.6
Additional Compounds		
Endrin Aldehyde	<0.2	<0.1
Extraction Date	5/6/87	5/6/87
Analysis Date	5/8/87	5/8-12/87

SLUDGE MATRIX
METHOD 8080 - HAZARDOUS SUBSTANCE LIST ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION	
	COMPOSITE #3	COMPOSITE #4
Aldrin	<0.2	<0.6
Alpha-BHC	<0.06	<0.3
Beta-BHC	<0.2	<0.6
Delta-BHC	<0.2	<0.3
Gamma-BHC	<0.06	<0.3
Chlordane	<2	<10
4,4'-DDD	<0.1	<1
4,4'-DDE	<0.1	<0.6
4,4'-DDT	<0.3	<1
Dieldrin	<0.1	<0.6
Endosulfan I	<0.2	<2
Endosulfan II	<0.1	<1
Endosulfan sulfate	1.5	3.2
Endrin	<0.1	<0.6
Heptachlor	<0.2	<0.3
Heptachlor epoxide	<0.2	<0.3
Toxaphene	<1	<30
Aroclor 1016	<5	<20
Aroclor 1221	<10	<30
Aroclor 1232	<10	<30
Aroclor 1242	<5	<20
Aroclor 1248	<5	<20
Aroclor 1254	<3	<10
Aroclor 1260	<3	<10
Endrin ketone	<0.4	<3
Methoxychlor	<0.3	<3
Additional Compounds		
Endrin Aldehyde	<0.1	<0.6
Extraction Date	5/6/87	5/6/87
Analysis Date	5/8/87	5/12/87

SLUDGE MATRIX
METHOD 8080 - HAZARDOUS SUBSTANCE LIST ORGANOCHLORINE PESTICIDES/PCB'S

COMPOUND (Units of Measure = µg/g dry)	SAMPLE IDENTIFICATION COMPOSITE #6
Aldrin	<0.02
Alpha-BHC	<0.01
Beta-BHC	<0.02
Delta-BHC	<0.02
Gamma-BHC	<0.01
Chlordane	<0.2
4,4'-DDD	<0.02
4,4'-DDE	<0.02
4,4'-DDT	<0.05
Dieldrin	<0.02
Endosulfan I	<0.4
Endosulfan II	<0.02
Endosulfan sulfate	<0.02
Endrin	<0.02
Heptachlor	<0.1
Heptachlor epoxide	<0.02
Toxaphene	<0.5
Aroclor 1016	<2
Aroclor 1221	<5
Aroclor 1232	<5
Aroclor 1242	<2
Aroclor 1248	<2
Aroclor 1254	<2
Aroclor 1260	<2
Endrin ketone	<0.2
Methoxychlor	<0.1
Additional Compounds	
Endrin Aldehyde	<0.02
Extraction Date	5/6/87
Analysis Date	5/9/87

SLUDGE MATRIX
METALS

PARAMETER (Units of Measure = µg/g dry)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION	
			COMPOSITE #1	COMPOSITE #2
Total Arsenic	7060	5/8/87	50	40
Total Barium	7080	5/8/87	830	780
Total Cadmium	7130	5/11/87	<0.6	1.5
Total Calcium	7140	5/11/87	11,200	1,400
Total Chromium	7190	5/11/87	27	32
Hexavalent Chromium	7195	5/9/87	<0.4	<0.5
Total Lead	7421	5/9/87	1,100	2,200
Total Magnesium	7450	5/11/87	3,100	410
Total Mercury	7471	5/9/87	2.8	2.7
Total Nickel	7520	5/9/87	41	<5
Total Selenium	7740	5/8/87	<0.6	<0.6
Total Silver	7760	5/11/87	1.7	1.8
Total Sodium	7770	5/11/87	<600	850

SLUDGE MATRIX
METALS

PARAMETER (Units of Measure = µg/g dry)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION	
			COMPOSITE #3	COMPOSITE #4
Total Arsenic	7060	5/8/87	65	58
Total Barium	7080	5/8/87	670	490
Total Cadmium	7130	5/11/87	<0.7	<0.5
Total Calcium	7140	5/11/87	29,000	52,000
Total Chromium	7190	5/11/87	29	19
Hexavalent Chromium	7195	5/9/87	<0.5	<0.4
Total Lead	7421	5/9/87	1,200	930
Total Magnesium	7450	5/11/87	5,900	6,600
Total Mercury	7471	5/9/87	2.3	0.71
Total Nickel	7520	5/9/87	<3	9.7
Total Selenium	7740	5/8/87	<0.7	<0.5
Total Silver	7760	5/11/87	1.1	1.3
Total Sodium	7770	5/11/87	<700	<500

SLUDGE MATRIX
METALS

PARAMETER (Units of Measure = µg/g dry)	METHOD NUMBER	ANALYSIS DATE	SAMPLE IDENTIFICATION COMPOSITE #6
Total Arsenic	7060	5/8/87	390
Total Barium	7080	5/8/87	1,100
Total Cadmium	7130	5/11/87	47
Total Calcium	7140	5/11/87	15,000
Total Chromium	7190	5/11/87	380
Hexavalent Chromium	7195	5/9/87	<0.4
Total Lead	7421	5/9/87	1,000
Total Magnesium	7450	5/11/87	8,800
Total Mercury	7471	5/9/87	3.4
Total Nickel	7520	5/9/87	610
Total Selenium	7740	5/8/87	<0.7
Total Silver	7760	5/11/87	12
Total Sodium	7770	5/11/87	3,000

SLUDGE MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION	
				COMPOSITE #1	COMPOSITE #2
Ammonia	*	µg/g dry	5/8/87	54	990
Total Cyanide	9010	µg/g dry	5/7/87	-	-
Weak and Dissociable Cyanide	412H**	µg/g dry	5/7/87	400	970
Total Available Cyanide	7.3.3.2	µg/g dry	5/8/87	44	<15
Leachable pH	9045	Standard Units	5/7/87	6.55	3.81
Total Recoverable Phenolics	9065	µg/g dry	5/7/87	8.3	10
Sulfides	9030	µg/g dry	5/7/87	7,550	8,550
Total Available Sulfide	7.3.4.1	µg/g dry	5/8/87	55	14

*U.S. EPA "Chemistry Laboratory Manual for Bottom Sediments and Elutriate Testing" PB-294 596, March 1979 - Methods CRL 324, 312 followed by specific ion method for Ammonia.

**Standard Methods for the Examination of Water and Wastewater, 16th Edition.

SLUDGE MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION	
				COMPOSITE #3	COMPOSITE #4
Ammonia	*	µg/g dry	5/8/87	430	510
Total Cyanide	9010	µg/g dry	5/7/87	-	-
Weak and Dissociable Cyanide	412H**	µg/g dry	5/7/87	930	105
Total Available Cyanide	7.3.3.2	µg/g dry	5/8/87	<16	<12
Leachable pH	9045	Standard Units	5/7/87	5.16	6.92
Total Recoverable Phenolics	9065	µg/g dry	5/7/87	6.5	6.4
Sulfides	9030	µg/g dry	5/7/87	4,650	3,670
Total Available Sulfide	7.3.4.1	µg/g dry	5/8/87	31	12

*U.S. EPA "Chemistry Laboratory Manual for Bottom Sediments and Elutriate Testing" PB-294 596, March 1979 - Methods CRL 324, 312 followed by specific ion method for Ammonia.

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SLUDGE MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	ANALYSIS DATE	SAMPLE IDENTIFICATION COMPOSITE #6
Ammonia	*	µg/g dry	5/8/87	37
Total Cyanide	9010	µg/g dry	5/7/87	0.91
Weak and Dissociable Cyanide	412H**	µg/g dry	5/7/87	<0.75
Total Available Cyanide	7.3.3.2	µg/g dry	5/8/87	<15
Leachable pH	9045	Standard Units	5/7/87	7.69
Total Recoverable Phenolics	9065	µg/g dry	5/7/87	<0.7
Sulfides	9030	µg/g dry	5/7/87	10,900
Total Available Sulfide	7.3.4.1	µg/g dry	5/8/87	12

*U.S. EPA "Chemistry Laboratory Manual for Bottom Sediments and Elutriate Testing" PB-294 596, March 1979 - Methods CRL 324, 312 followed by specific ion method for Ammonia.

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SLUDGE MATRIX

SAMPLE IDENTIFICATION	PARAMETER (UNITS OF MEASURE) DRY WEIGHT AT 103°C (%)
Composite #1	70
Composite #2	65
Composite #3	65
Composite #4	83
Composite #6	67

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION	
			COMPOSITE #1	COMPOSITE #2
Total Arsenic	5/8/87	5.0	0.005	<0.005
Total Barium	5/8/87	100.0	0.41	0.07
Total Cadmium	5/9/87	1.0	<0.005	0.009
Total Chromium	5/9/87	5.0	<0.01	<0.01
Total Lead	5/9/87	5.0	0.11	0.42
Total Mercury	5/9/87	0.2	<0.0006	<0.0006
Total Selenium	5/8/87	1.0	<0.005	<0.005
Total Silver	5/9/87	5.0	<0.005	<0.005

_X_ Standard Addition
___ Non-Standard Addition

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION	
			COMPOSITE #3	COMPOSITE #4
Total Arsenic	5/8/87	5.0	<0.005	0.010
Total Barium	5/8/87	100.0	0.22	0.61
Total Cadmium	5/9/87	1.0	<0.005	<0.005
Total Chromium	5/9/87	5.0	<0.01	<0.01
Total Lead	5/9/87	5.0	<0.03	0.81
Total Mercury	5/9/87	0.2	<0.0006	<0.0006
Total Selenium	5/8/87	1.0	<0.005	<0.005
Total Silver	5/9/87	5.0	<0.005	<0.005

X Standard Addition
___ Non-Standard Addition

EP TOXICITY TEST EXTRACT - METALS

PARAMETER (Units of Measure = mg/l)	ANALYSIS DATE	EPA MAX. CONC.	SAMPLE IDENTIFICATION COMPOSITE #6
Total Arsenic	5/8/87	5.0	<0.005
Total Barium	5/8/87	100.0	2.7
Total Cadmium	5/9/87	1.0	0.02
Total Chromium	5/9/87	5.0	<0.01
Total Lead	5/9/87	5.0	3.4
Total Mercury	5/9/87	0.2	<0.0006
Total Selenium	5/8/87	1.0	<0.005
Total Silver	5/9/87	5.0	<0.005

X Standard Addition
___ Non-Standard Addition

SLUDGE MATRIX
METHOD 9020

SAMPLE IDENTIFICATION	PARAMETER (UNITS OF MEASURE) TOTAL ORGANIC HALIDE (µg/g dry)
Composite #1	3.2
Composite #2	12
Composite #3	6.1
Composite #4	3.5
Composite #6	15

QUALITY CONTROL INFORMATION
SLUDGE MATRIX
METHOD 8240 HAZARDOUS SUBSTANCE LIST VOLATILE ORGANICS

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

SAMPLE IDENTIFICATION COMPOSITE #6

COMPOUND	CONC. SPIKE ADDED (ng)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC
Benzene	250	0	156	62	252	101
Chlorobenzene	250	0	192	77	296	118
1,1-Dichloro-ethylene	250	0	217	87	312	125
Toluene	250	0	158	63	261	104
Trichloroethylene	250	0	210	84	351	140

ADDITIONAL SAMPLE INFORMATION	SAMPLE RESULT	MATRIX SPIKE	MATRIX SPIKE DUPLICATE
Analysis Date	5/7/87	5/7/87	5/7/87
Internal Standard Level Added = 5.0 µg/g (% Recovery)			
Bromochloromethane	107	105	103
1,4-Difluoromethane	103	97	101
Chlorobenzene D_5	103	102	100

QUALITY CONTROL INFORMATION
SLUDGE MATRIX
METHOD 8270 HAZARDOUS SUBSTANCE LIST BASE/NEUTRAL/ACID EXTRACTABLES

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

SAMPLE IDENTIFICATION COMPOSITE #6

COMPOUND	CONC. SPIKE ADDED (ng)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC
2-Chlorophenol	2.5	0	1.1	44	2.2	88
1,3-Dichlorobenzene	2.5	0	1.7	68	2.1	84
Di-n-octylphthalate	2.5	0	1.7	68	2.7	108
Fluoranthene	2.5	0	2.7	108	3.1	124
Fluorene	2.5	0	1.6	64	1.6	64
Naphthalene	2.5	0	2.1	84	2.2	88
Nitrobenzene	2.5	0	1.1	44	1.2	48
2,4,6-Trichloro-phenol	2.5	0	0.21	8.0	0.53	21

ADDITIONAL SAMPLE INFORMATION	SAMPLE RESULT	MATRIX SPIKE	MATRIX SPIKE DUPLICATE
Extraction Date	5/6/87	5/6/87	5/6/87
Analysis Date	5/7/87	5/7/87	5/7/87
Internal Standards			
Level Added = 1.0 µg/g			
Phenanthrene-D_{10} (% Recovery)	92	98	102
Surrogates			
Level Added = 5.0 µg/g (% Recovery)			
Decafluorobiphenyl	17	41	47
2-Fluorobiphenyl	42	33	44
2-Fluorophenol	25	16	34
Phenol-D_6	21	25	39

QUALITY CONTROL INFORMATION - PRECISION
SLUDGE MATRIX
METHOD 8080 - HAZARDOUS SUBSTANCE LIST ORGANOCHLORINE PESTICIDES

SAMPLE IDENTIFICATION COMPOSITE #2

COMPOUND (Units of Measure = µg/g dry)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Endosulfan sulfate	0.68	1.8	1.2	0.79
Extraction Date Analysis Date	5/6/87 5/8/87	5/6/87 5/12/87		

QUALITY CONTROL INFORMATION - ACCURACY
SLUDGE MATRIX
METHOD 8080 - HAZARDOUS SUBSTANCE LIST ORGANOCHLORINE PESTICIDES

SAMPLE IDENTIFICATION Method Blank Spike

COMPOUND	NANOGRAMS OF SPIKE	PERCENT RECOVERY
Aldrin	0.20	94
Gamma-BHC	0.20	104
4,4'-DDE	0.20	114
Endosulfan II	0.20	103
Endrin	0.20	122
Heptachlor	0.20	138
Extraction Date	5/6/87	
Analysis Date	5/8/87	

QUALITY CONTROL INFORMATION - PRECISION
SLUDGE MATRIX
METALS

PARAMETER (Units of Measure = µg/g Dry)	METHOD NUMBER	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Arsenic	7060	Composite #6	390	390	390	0
Total Barium	7080	Composite #6	1,700	490	1,100	860
Total Cadmium	7130	Composite #6	45	49	47	2.8
Total Chromium	7190	Composite #6	370	390	380	14
Hexavalent Chromium	7195	Composite #6	<0.4	<0.4	<0.4	-
Total Lead	7421	Composite #6	870	1,200	1,000	230
Total Magnesium	7450	Composite #6	11,000	6,517	8,800	3,200
Total Mercury	7471	Composite #4	0.72	0.69	0.71	0.021
Total Nickel	7520	Composite #6	670	540	610	92
Total Selenium	7740	Composite #6	<0.7	<0.7	<0.7	-
Total Silver	7760	Composite #6	13	10	12	2.1
Total Sodium	7770	Composite #6	2,400	3,500	3,000	780

QUALITY CONTROL INFORMATION - ACCURACY
SLUDGE MATRIX
METALS

PARAMETER	METHOD NUMBER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Total Arsenic	7060	Composite #6	50	92
Total Barium	7080	Composite #6	5,000	94
Total Cadmium	7130	Composite #6	500	97
Total Calcium	7140	Composite #6	5,000	101
Total Chromium	7190	Composite #6	500	92
Hexavalent Chromium	7195	Composite #6	500	112
Total Lead	7421	Composite #6	50	102
Total Magnesium	7450	Composite #6	5,000	94
Total Mercury	7471	Composite #6	0.4	93
Total Nickel	7520	Composite #6	500	101
Total Selenium	7740	Composite #6	50	80
Total Silver	7760	Composite #6	500	97
Total Sodium	7770	Composite #6	5,000	102

QUALITY CONTROL INFORMATION - PRECISION
SLUDGE MATRIX

PARAMETER	METHOD NUMBER	UNITS OF MEASURE	SAMPLE IDENTIFICATION	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Ammonia	*	µg/g dry	Composite #4	510	500	510	7.1
Weak and Dissociable Cyanide	412H**	µg/g dry	***	1.5	1.5	1.5	0
Total Available Cyanide	7.3.3.2	µg/g dry	Composite #1	40	48	44	5.7
Leachable pH	9045	Standard Units	Composite #1	6.53	6.57	6.55	0.028
Total Recoverable Phenolics	9065	µg/g dry	Composite #3	8.4	4.5	6.5	2.8
Sulfides	9030	µg/g dry	Composite #6	11,700	10,200	11,000	1,061
Total Available Sulfide	7.3.4.1	µg/g dry	Composite #1	38	71	55	23

*U.S. EPA "Chemistry Laboratory Manual for Bottom Sediments and Elutriate Testing" PB-294 596, March 1979 - Methods CRL 324, 312 followed by specific ion method for Ammonia.

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***Quality control results were generated from a sample of similar matrix at the time of analysis.

QUALITY CONTROL INFORMATION - ACCURACY
SLUDGE MATRIX

PARAMETER	SAMPLE IDENTIFICATION	MICROGRAMS OF SPIKE	PERCENT RECOVERY
Ammonia	Composite #4	500	100
Weak and Dissociable Cyanide	*	45	84
Total Available Cyanide	Composite #1	230	154
Total Recoverable Phenolics	Composite #3	40	95
Total Available Sulfide	Composite #6	1,100	76

*Quality control results were generated from a sample of similar matrix at the time of analysis.

QUALITY CONTROL INFORMATION - PRECISION
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION COMPOSITE #6

PARAMETER (Units of Measure = mg/l)	VALUE 1	VALUE 2	MEAN	STANDARD DEVIATION
Total Arsenic	<0.005	<0.005	<0.005	-
Total Barium	2.7	2.6	2.7	0.071
Total Cadmium	0.19	0.20	0.20	0.0071
Total Chromium	<0.01	<0.01	<0.01	-
Total Lead	3.3	3.4	3.4	0.071
Total Mercury	<0.0006	<0.0006	<0.0006	-
Total Selenium	<0.005	<0.005	<0.005	-
Total Silver	<0.005	<0.005	<0.005	-

X Standard Addition
___ Non-Standard Addition

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION COMPOSITE #1

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	82
	50	83
Total Barium	2,500	100
	5,000	101
Total Cadmium	250	103
	500	102
Total Chromium	250	84
	500	85
Total Lead	2,500	99
	5,000	98
Total Mercury	0.2	102
	0.4	101
Total Selenium	25	92
	50	98
Total Silver	250	100
	500	101

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION COMPOSITE #2

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	92
	50	94
Total Barium	2,500	106
	5,000	104
Total Cadmium	250	102
	500	102
Total Chromium	250	85
	500	86
Total Lead	2,500	98
	5,000	97
Total Mercury	0.2	97
	0.4	101
Total Selenium	25	88
	50	92
Total Silver	250	97
	500	93

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION COMPOSITE #3

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	88
	50	90
Total Barium	2,500	100
	5,000	103
Total Cadmium	250	105
	500	106
Total Chromium	250	92
	500	91
Total Lead	2,500	100
	5,000	101
Total Mercury	0.2	104
	0.4	101
Total Selenium	25	84
	50	84
Total Silver	250	95
	500	93

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION COMPOSITE #4

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	104
	50	110
Total Barium	2,500	99
	5,000	102
Total Cadmium	250	107
	500	104
Total Chromium	250	85
	500	83
Total Lead	2,500	98
	5,000	101
Total Mercury	0.2	107
	0.4	99
Total Selenium	25	88
	50	90
Total Silver	250	100
	500	100

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION COMPOSITE #6

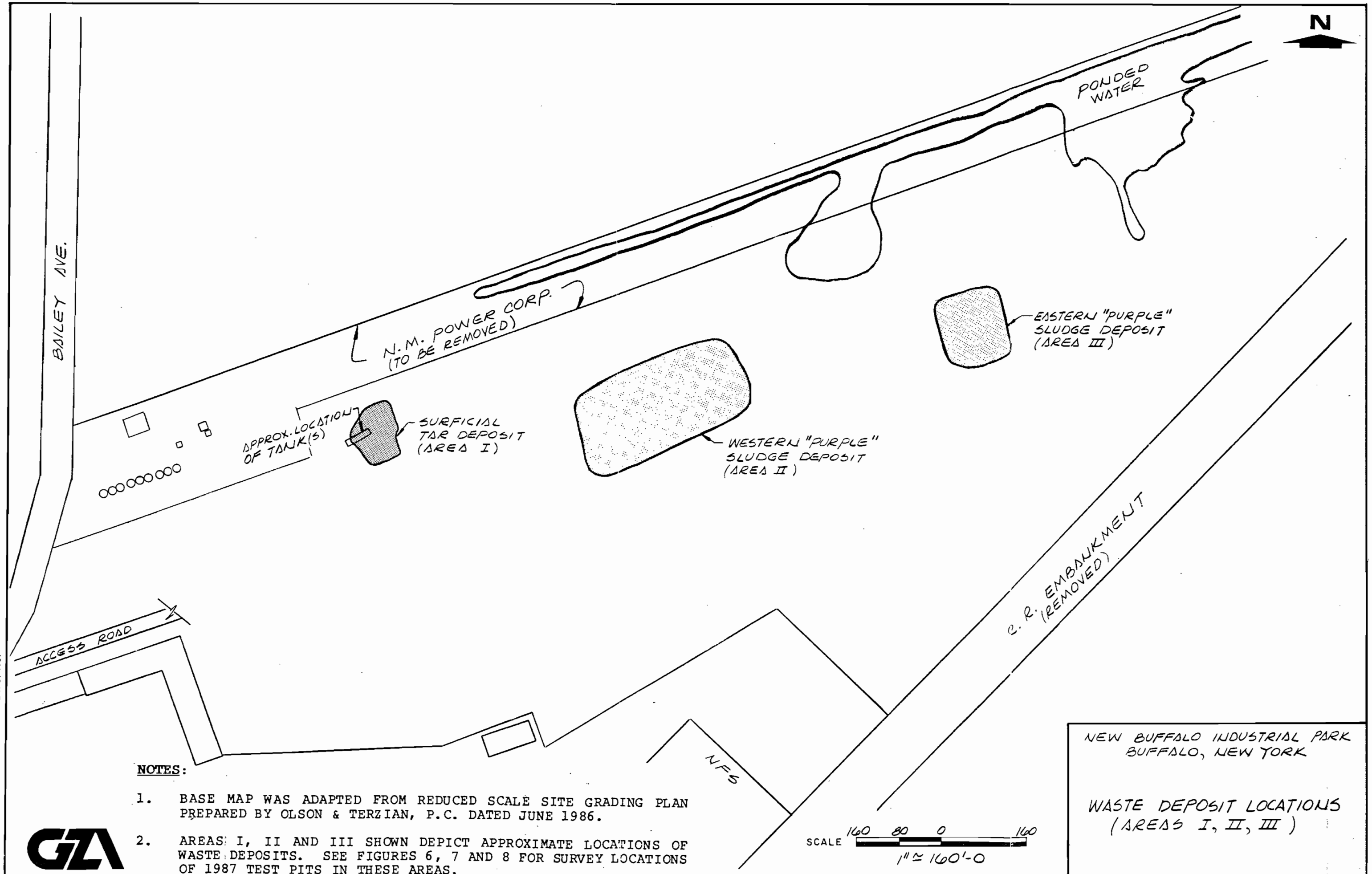
PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	108
	50	110
Total Barium	2,500	96
	5,000	97
Total Cadmium	250	106
	500	102
Total Chromium	250	96
	500	92
Total Lead	2,500	105
	5,000	101
Total Mercury	0.2	99
	0.4	101
Total Selenium	25	92
	50	92
Total Silver	250	97
	500	98

QUALITY CONTROL INFORMATION - ACCURACY
EP TOXICITY TEST EXTRACT - METALS

SAMPLE IDENTIFICATION *

PARAMETER	µg OF SPIKE	% RECOVERY
Total Arsenic	25	88
	50	104
Total Barium	2,500	97
	5,000	102
Total Cadmium	250	105
	500	103
Total Chromium	250	101
	500	101
Total Lead	2,500	98
	5,000	101
Total Mercury	0.2	98
	0.4	96
Total Selenium	25	108
	50	106
Total Silver	250	98
	500	97

*Quality control results were generated from a sample of similar matrix at the time of analysis.



NOTES:

1. BASE MAP WAS ADAPTED FROM REDUCED SCALE SITE GRADING PLAN PREPARED BY OLSON & TERZIAN, P.C. DATED JUNE 1986.
2. AREAS I, II AND III SHOWN DEPICT APPROXIMATE LOCATIONS OF WASTE DEPOSITS. SEE FIGURES 6, 7 AND 8 FOR SURVEY LOCATIONS OF 1987 TEST PITS IN THESE AREAS.

GZA

DWG. No.

FILE No.

NEW BUFFALO INDUSTRIAL PARK
BUFFALO, NEW YORK

WASTE DEPOSIT LOCATIONS (AREAS I, II, III)

MAY 1987 FIGURE 1

N

N6300
N6200
N6100
N6000

E4400
E4500
E4600
E4700
E4800
E4900
E5000
E5100

AII-44
AII-20
AII-33
AII-21
AII-27
AII-26
AII-19
AII-25
AII-28
AII-49
AII-43
AII-18
AII-61
AII-1
AII-16
AII-30
AII-2
AII-31
AII-48
AII-22
AII-29
AII-62
AII-45
AII-14
AII-24
AII-3
AII-32
AII-50
AII-4
AII-46
AII-11
AII-5
AII-17
AII-36
AII-47
AII-38
AII-9
AII-23
AII-7
AII-39
AII-57
AII-35
AII-41
AII-8
AII-40
AII-10
AII-34
AII-42
AII-15
AII-9
AII-37
AII-60
AII-13
AII-58
AII-51
AII-12
AII-53
AII-52
AII-54
AII-56
AII-55
AII-59

APPROXIMATE LIMITS OF "PURPLE" SLUDGE

LEGEND

AII-35 TEST PIT LOCATION & NUMBER MADE IN 1987

0 50 100
1"=50'-0

NOTES:

1. TEST PITS WERE LOCATED IN THE FIELD USING OPTICAL SURVEY METHODS BY SODERHOLM ENGINEERING. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

2. THE APPROXIMATE LIMITS OF THE "PURPLE" SLUDGE DEPOSIT SHOWN ARE BASED ON VISUAL OBSERVATIONS MADE DURING 1987 TEST PITS AND ANALYTICAL TEST RESULTS FROM TEST PIT SAMPLES AVAILABLE AT THIS TIME.

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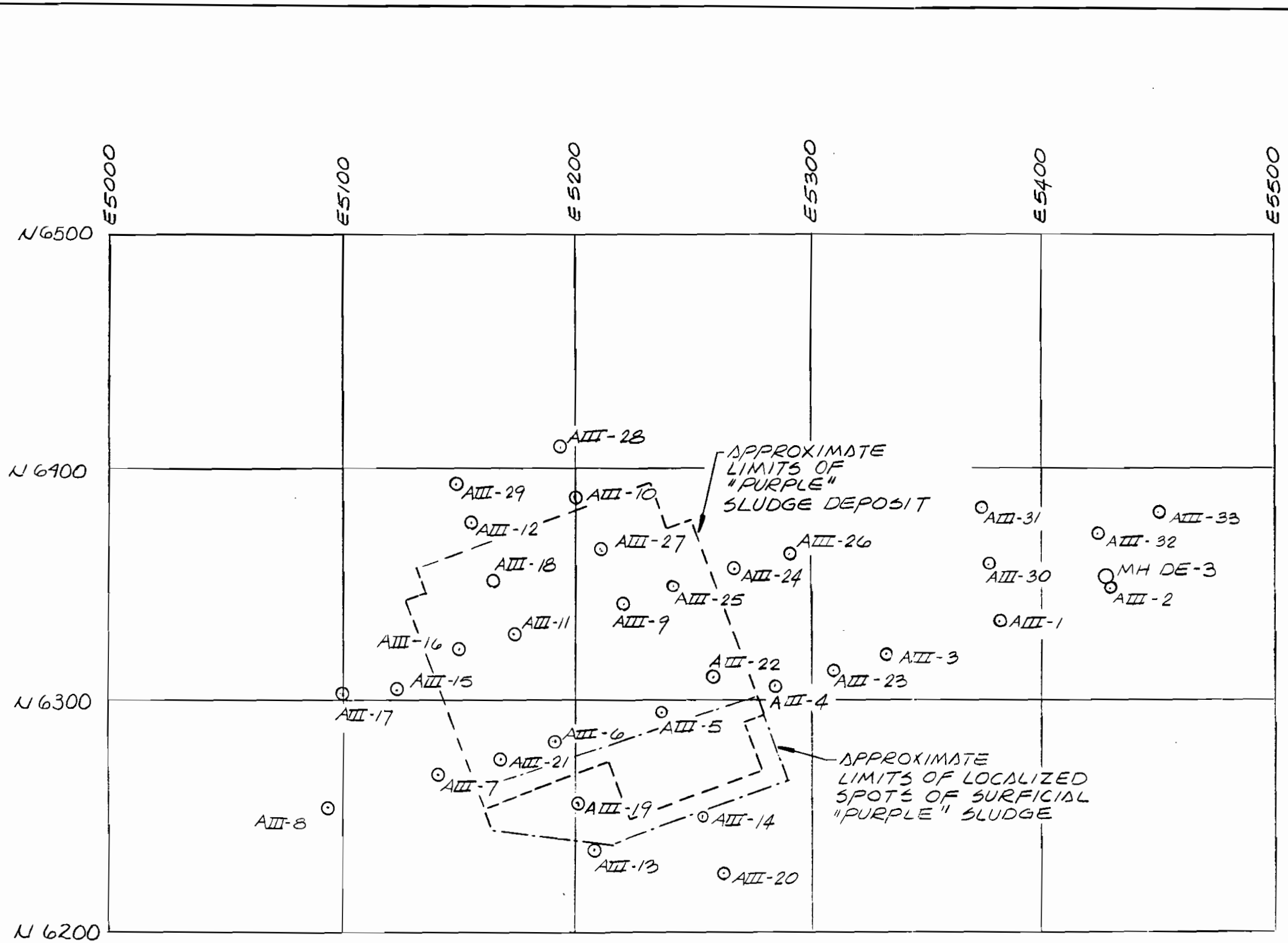
AREA II
EXPLORATIONS

APRIL 1987 FIGURE 2



LEGEND

AIII-5 TEST PIT LOCATION & NUMBER MADE IN 1987

NOTES: 1. TEST PITS WERE LOCATED IN THE FIELD USING OPTICAL SURVEY METHODS BY SODERHOLM ENGINEERING. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

2. THE APPROXIMATE LIMITS OF THE "PURPLE" SLUDGE DEPOSIT SHOWN ARE BASED ON VISUAL OBSERVATIONS MADE DURING 1987 TEST PITS AND ANALYTICAL TEST RESULTS FROM TEST PIT SAMPLES AVAILABLE AT THIS TIME.

3. THE APPROXIMATE LIMIT OF LOCALIZED SPOTS OF SURFICIAL "PURPLE" SLUDGE IS BASED UPON VISUAL OBSERVATION.

0 50 100

1" = 50'-0

GZA

NEW BUFFALO INDUSTRIAL PARK
BUFFALO, NEW YORK

AREA III
EXPLORATIONS

APRIL 1987 FIGURE 3