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MALCOLM PIRNIE

PRELIMINARY WATER QUALITY CHARACTERIZATION SAMPLING REPORT

MARILLA STREET LANDFILL
SOLID WASTE MANAGEMENT FACILITY
INVESTIGATION PROGRAM

LTV STEEL COMPANY
CLEVELAND, OHIO

MARCH 1993

MALCOLM PIRNIE, INC.

S-3515 Abbott Road
P. O. Box 1938
Buffalo, New York 14219

0848-252-203

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LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP

PRELIMINARY WATER QUALITY CHARACTERIZATION REPORT

1.0. INTRODUCTION

The Preliminary Water Quality Characterization sampling event for the Marilla Street Landfill Solid Waste Management Facility Investigation Program (SWMFIP) was conducted on January 11, 12, and 13, 1993. The objective of the Preliminary sampling event was to develop a Site Specific Parameter List (SSPL) for analysis during subsequent environmental sampling. This report summarizes the analytical data and identifies parameters-of-interest for inclusion on the SSPL. Malcolm Pirnie's independent validation of the analytical data is also presented.

2.0 SAMPLING AND ANALYSIS PROGRAM

Sampling was completed at the locations shown in Table 2-1. These locations include eight shallow groundwater monitoring locations (MW-2B, MW-3B, MW-5B, MW-6B, MW-7B, MW-10B, MW-12B, and MW-14BR); three deep overburden groundwater monitoring locations (MW-2A, MW-5A, MW-6A); and one surface water location (West Pond)

All sampling was performed in accordance with the SWMFIP Work Plan and Field Sampling Plan except for a modification to location-specific QC sample collection. As indicated in a letter to Mary McIntosh (NYSDEC) on January 11, 1993 (Attachment B), the blind duplicate, matrix spike, and matrix spike duplicate were collected at MW-14BR instead of MW-10B. The results of parameter measurements performed in the field during the sampling event are summarized on Table 2-2.

All samples were analyzed by NYTEST Environmental, Inc. by the analytical methods listed in Table 2-3. Malcolm Pirnie's independent Data Validation Report, is appended as Attachment A.

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TABLE 2-1

PRELIMINARY WATER CHARACTERIZATION SAMPLING

Sampling Location[1]	Surface Water	Fill/Shallow Overburden Ground Water[2]	Deep Overburden Ground Water[2]	Quality Control
MW 2		2 B	2 A	
MW 3		3 B		
MW 5		5 B	5 A	
MW 6		6 B	6 A	
MW 7		7 B		
MW 10		10 B		
MW 12		12 B		
MW 14		14 BR		
West Pond	X			
Equipment Blank[3]				3
Duplicate				1
Matrix Spike				1
Matrix Spike Duplicate				1
Trip Blanks				3
Total No. of Samples	**1**	**8**	**3**	**9**

(1) Sampling locations are shown on Plate 1.
(2) Letters are individual well identifiers.
(3) Equipment blanks will be prepared for soluble and total metals sampling only. Dedicated or disposable bailers will be used for organics samplings.

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TABLE 2-2

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION

FIELD PARAMETERS

Parameters	Shallow Overburden Wells						
	Sample Location:	**MW-2B**	**MW-3B**	**MW-5B**	**MW-6B**	**MW-7B**	**MW-10B**	**MW-12B**
Temperature (deg C)		2.4°	3.7	3.5	3.9	2.0	3.5	3.1
pH (units)		12.79	13.58	12.50	8.13	13.30	13.33	12.43
Specific Conductivity (μmhos)		1265	7200	864	1182	--	--	876
Turbidity		45	>100	28	28	25	<100	52
Water Level[1]		9.74	7.32	8.55	13.95	35.77	33.20	17.15

TABLE 2-2 (Continued)

FIELD PARAMETERS

Parameters		Shallow Overburden Wells	Deep Overburden Wells			Surface Water
	Sample Location:	**MW-14BR**	**MW-2A**	**MW-5A**	**MW-6A**	**West Pond**
Temperature (°C)		5.0	3°	6.1	2.9	1
pH (units)		11.09	9.09	5.79	8.64	10.16
Specific Conductivity (μmhos)		--	774	1127	1149	6381
Turbidity (NTU)		15	34	27	57	78
Water Level[1]		26.0	10.03	8.34	14.23	--

(1) Water level below top of PVC riser.

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TABLE 2-3
SUMMARY OF ANALYTICAL METHODS, SAMPLE HANDLING AND PRESERVATION REQUIREMENTS FOR TCL PARAMETERS

MARILLA STREET LANDFILL

Parameter	Method	Holding Time	Preservation[1]	Container[2]
TCL Volatile Organics	ASP 91-1	7 days	Cool to 4°C	2-40 ml glass VOA vials with Teflon septums
TCL Semi-Volatile Organics (Acid/Base/Neutral Extractables)	ASP 91-2	5 days to extraction; 40 days to analysis	Cool to 4°C	2-1000 ml glass amber bottles with teflon-lined cap
TCL Pesticides/PCBs	ASP 91-3	5 days to extraction; 40 days to analysis	Cool to 4°C	1-1000 ml glass amber bottle with teflon-lined cap
Total Metals:	ASP 200 CLP-M Series	6 months	HNO_3 to pH<2; Cool to 4°C	1000 ml polyethylene bottle
Mercury		26 days	HNO_3 to pH<2; Cool to 4°C	500 ml polyethylene bottle
Cyanide, Total	335.2[3]	14 days	NaOH to pH>12; Cool to 4°C	500 ml polyethylene or glass bottle

NOTES:
(1) Preserved in the field at the time of sample collection.
(2) All sample containers will be precleaned in accordance with the procedure given in the FSAP Appendix C8.
(3) Methods of Chemical Analysis for Water and Wastes. USEPA, Cincinnati, Ohio. EPA 600/4-79-020, Revised, March 1983.

3.0 ANALYTICAL RESULTS

Analytical results are summarized in Tables 3-1 through 3-5. All data qualifiers shown on Tables 3-1 through 3-5 are based on the results of the data validation report presented in Attachment A. The complete NYTEST laboratory report is available for review upon request. Analytical results are discussed below.

3.1 VOLATILE ORGANIC COMPOUNDS (VOCs)

Volatile organic data are presented in Table 3-1. Acetone, 2-butanone, and 4-methyl 2-pentanone were detected at MW-3B, MW-7B, and MW-10B. In addition, traces of 2-hexanone were detected at MW-10B; tetrachloroethene at MW-2B, and MW-6B; and toluene at MW-10B and MW-12B. Volatile organics were only detected at shallow groundwater monitoring locations, and at generally low concentrations. Table 3-5 summarizes the tentatively identified non-TCL volatile organics detected during the Preliminary sampling event.

3.2 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)

As shown in Table 3-2, from one to four acid SVOCs (phenol, 2-methylphenol, 4-methylphenol, and 2,4-dimethylphenol) were detected at all shallow groundwater monitoring locations with the exception of MW-6B. Concentrations range from 6 ug/l to 1,730 ug/l total acid SVOCs. No acid SVOCs were detected in deep overburden groundwater locations or in the surface water.

A total of five poly-nuclear aromatic compounds (PNAs)-naphthalene, 2-methylnaphthalene, fluorene, phenanthrene, acenaphthene, acenaphthylene, and anthracene were detected at concentrations less than 9 ug/l at MW-3B. Trace concentrations of one to four of these PNAs were also detected at MW-7B, MW-10B, MW-12B, and MW-14BR. No PNA compounds were detected in deep overburden groundwater or surface water locations.

Trace concentrations of phthalate esters were also detected at all monitoring locations. Locations MW-3B, MW-7B, and MW-10B exhibited trace concentrations (1 to 9 ug/l) of up to six additional semi-volatile compounds (see Table 3-2). Table 3-5 summarizes the tentatively identified non-TCL SVOCs detected during the preliminary sampling event.

3.3 PESTICIDES/PCBS

No pesticides or PCBs were detected at or above the analytical method detection limits (see Table 3-3).

3.4 INORGANICS

Inorganic analyses included the analysis of both total and soluble (field filtered) metals fractions, and total cyanide. Table 3-4 presents a summary of inorganic analyses performed for the preliminary sampling event. All inorganic TCL parameters except selenium, silver, and mercury were detected above method detection limits at one or more locations. In addition, beryllium was detected in only two samples at estimated concentrations ranging from 1.4 to 1.2 ug/l; and cobalt was detected in one sample at an estimated concentration of 11.2 ug/l. The concentrations of beryllium and cobalt were reported below the Contract Required Detection Limits.

4.0 RECOMMENDATIONS

Based on a review of the Preliminary Water Quality Characterization sampling results the following Site Specific Parameter List is recommended for subsequent SWMFIP sampling events:

- TCL volatile organic compounds by ASP 91-1;
- TCL semi-volatile organic compounds by ASP 91-2
- All TAL inorganics by ASP 200 CLP-M Series, except beryllium, cobalt, selenium, silver, and mercury.

Total mercury has been analyzed as part of the 6NYCRR Part 373 quarterly monitoring program at the Marilla Street Landfill since 1989. During this period concentrations of total mercury have generally been below the analytical detection limit.

Total mercury was only detected above the Class "GA" Groundwater Quality Standard at one location on one occasion during this period. Since no pattern of elevated mercury concentrations has developed over a 16 quarter period, mercury is not included as parameter of interest for the SWMFIP.

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TABLE 3-1

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

VOLATILE ORGANIC COMPOUNDS

Parameter (ug/l)	Shallow Overburden Wells			
	MW-2B	MW-3B	MW-5B	MW-6B
Chloromethane	10U	10U	10U	10U
Bromomethane	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U
Chloroethane	10U	10U	10U	10U
Methylene Chloride	10UJ	10UJ	10UJ	10UJ
Acetone	10U	400	10U	10U
Carbon Disulfide	10U	10U	10U	10U
1,1-Dichloroethene	10U	10U	10U	10U
1,1-Dichloroethane	10U	10U	10U	10U
1,2-Dichloroethene (Total)	10U	10U	10U	10U
chloroform	10U	10U	10U	10U
1,2-Dichloroethane	10U	10U	10U	10U
2-Butanone	10U	40	10U	10U
1,1,1-Trichloroethane	10U	10U	10U	10U
Carbon Tetrachloride	10U	10U	10U	10U
Bromodichloromethane	10U	10U	10U	10U
1,2-Dichloropropane	10U	10U	10U	10U
cis-1,3-Dichloropropene	10U	10U	10U	10U
Trichloroethene	10U	10U	10U	10U
Dibromochloromethane	10U	10U	10U	10U
1,1,2-Trichloroethane	10U	10U	10U	10U
Benzene	10U	10U	10U	10U
trans-1,3-Dichloropropene	10U	10U	10U	10U
Bromoform	10U	10U	10U	10U
4-Methyl-2-Pentanone	10U	3J	10U	10U
2-Hexanone	10U	10U	10U	10U
Tetrachloroethene	5J	10U	10U	1J
1,1,2,2-Tetrachloroethane	10U	10U	10U	10U
Toluene	10U	10U	10U	10U
Chlorobenzene	10U	10U	10U	10U
Ethylbenzene	10U	10U	10U	10U
Styrene	10U	10U	10U	10U
Xylene (Total)	10U	10U	10U	10U

Notes:
U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation.
UJ = Not detected above an estimated analytical detection limit.
(1) = Samples collected January 11-13, 1993

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TABLE 3-1 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

VOLATILE ORGANIC COMPOUNDS

Parameter (ug/l)	Shallow Overburden Wells (continued)			
	MW-7B	MW-10B	MW-12B	MW-14BR
Chloromethane	10U	10U	10U	10U
Bromomethane	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U
Chloroethane	10U	10U	10U	10U
Methylene Chloride	10U	10UJ	10UJ	10UJ
Acetone	200J	690	10U	10U
Carbon Disulfide	10U	10U	10U	10U
1,1-Dichloroethene	10U	10U	10U	10U
1,1-Dichloroethane	10U	10U	10U	10U
1,2-Dichloroethene (Total)	10U	10U	10U	10U
chloroform	10U	10U	10U	10U
1,2-Dichloroethane	10U	10U	10U	10U
2-Butanone	33	190	10U	10U
1,1,1-Trichloroethane	10U	10U	10U	10U
Carbon Tetrachloride	10U	10U	10U	10U
Bromodichloromethane	10U	10U	10U	10U
1,2-Dichloropropane	10U	10U	10U	10U
cis-1,3-Dichloropropene	10U	10U	10U	10U
Trichloroethene	10U	10U	10U	10U
Dibromochloromethane	10U	10U	10U	10U
1,1,2-Trichloroethane	10U	10U	10U	10U
Benzene	10U	10U	10U	10U
trans-1,3-Dichloropropene	10U	10U	10U	10U
Bromoform	10U	10U	10U	10U
4-Methyl-2-Pentanone	5J	10	10U	10U
2-Hexanone	10U	10	10U	10U
Tetrachloroethene	10U	10U	10U	1J
1,1,2,2-Tetrachloroethane	10U	10U	10U	10U
Toluene	10U	1J	2J	10U
Chlorobenzene	10U	10U	10U	10U
Ethylbenzene	10U	10U	10U	10U
Styrene	10U	10U	10U	10U
Xylene (Total)	10U	10U	10U	10U

Notes:

U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation.
UJ = Not detected above an estimated analytical detection limit.
(1) = Samples collected January 11-13, 1993

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TABLE 3-1 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION(1)

VOLATILE ORGANIC COMPOUNDS

Parameter (ug/l)	Deep Overburden Wells			Surface Water
	MW-2A	MW-5A	MW-6A	West Pond
Chloromethane	10U	10U	10U	10U
Bromomethane	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U
Chloroethane	10U	10U	10U	10U
Methylene Chloride	10UJ	10UJ	10UJ	10UJ
Acetone	10&	10U	10U	10U
Carbon Disulfide	10U	10U	10U	10U
1,1-Dichloroethene	10U	10U	10U	10U
1,1-Dichloroethane	10U	10U	10U	10U
1,2-Dichloroethene (Total)	10U	10U	10U	10U
Chloroform	10U	10U	10U	10U
1,2-Dichloroethane	10U	10U	10U	10U
2-Butanone	10U	10U	10U	10U
1,1,1-Trichloroethane	10U	10U	10U	10U
Carbon Tetrachloride	10U	10U	10U	10U
Bromodichloromethane	10U	10U	10U	10U
1,2-Dichloropropane	10U	10U	10U	10U
cis-1,3-Dichloropropene	10U	10U	10U	10U
Trichloroethene	10U	10U	10U	10U
Dibromochloromethane	10U	10U	10U	10U
1,1,2-Trichloroethane	10U	10U	10U	10U
Benzene	10U	10U	10U	10U
trans-1,3-Dichloropropene	10U	10U	10U	10U
Bromoform	10U	10U	10U	10U
4-Methyl-2-Pentanone	10U	10U	10U	10U
2-Hexanone	10U	10U	10U	10U
Tetrachloroethene	10U	10U	10U	10U
1,1,2,2-Tetrachloroethane	10U	10U	10U	10U
Toluene	10U	10U	10U	10U
Chlorobenzene	10U	10U	10U	10U
Ethylbenzene	10U	10U	10U	10U
Styrene	10U	10U	10U	10U
Xylene (Total)	10U	10U	10U	10U

Notes:
U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation.
UJ = Not detected above an estimated analytical detection limit.
(1) = Samples collected January 11-13, 1993

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TABLE 3-2

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION(1)
SEMI-VOLATILE COMPOUNDS

Parameter (ug/l)	Shallow Overburden Wells					
	MW-2B	MW-3B	MW-5B	MW-6B	MW-7B	MW-10B
Phenol	9J	680	9J	10U	330	1300
bis(2-Chloroethyl)Ether	10U	10U	10U	10U	10U	20
2-Chlorophenol	10U	10U	10U	10U	10U	20
1,2-Dichlorobenzene	10U	10U	10U	10U	10U	20
1,3-Dichlorobenzene	10U	10U	10U	10U	10U	20
1,4-Dichlorobenzene	10U	10U	10U	10U	10U	20
2-Methylphenol	10U	3J	10U	10U	10U	20U
2,2'-oxybis(1-Chloropropane)	10U	10U	10U	10U	10U	20U
4-Methylphenol	2J	33	10U	10U	10U	180J
N-Nitroso-di-n-propylamine	10U	10U	10U	10U	10	20U
Hexachloroethane	10U	10U	10U	10U	10U	20U
Nitrobenzene	10U	10U	10U	10U	10U	20U
Isophorone	10U	2J	10U	10U	1J	2J
2-Nitrophenol	10U	10U	10U	10U	10U	20U
2,4-Dimethylphenol	10U	5J	10U	10U	4J	250
bis(2-Chloroethoxy)methane	10U	10U	10U	10U	10U	20U
2,4-Dichlorophenol	10U	10U	10U	10U	10U	20U
1,2,4-Trichlorobenzene	10U	10U	10U	10U	10U	20U
Naphthalene	10U	9J	10U	10U	10U	20U
4-Chloroaniline	10U	10U	10U	10U	10U	20U
Hexachlorobutadiene	10U	10U	10U	10U	10U	20U
4-Chloro-3-methylphenol	10U	10U	10U	10U	10U	20U
2-Methylnaphthalene	10U	1J	10U	10U	10U	10U
Hexachlorocyclopentadiene	10U	10U	10U	10U	10U	10U
2,4,6-Trichlorophenol	10U	10U	10U	10U	10U	10U
2,4,5-Trichlorophenol	25U	25U	25U	25U	25U	50U
2-chloronaphthalene	10U	10U	10U	10U	10U	20U
2-Nitroaniline	25U	9J	25U	25U	25U	50U
Dimethylphthalate	10U	10U	10U	10U	10U	20U
Acenaphthylene	10U	10UJ	10U	10U	2J	2J
2,6-Dinitrotoluene	10U	10U	10U	10U	10U	7J
3-Nitroaniline	25U	25U	25U	25U	25U	50U
Acenaphthene	10U	2J	10U	10U	10U	20U

Notes:
U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation
(1) = Samples collected January 11-13, 1993

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TABLE 3-2 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

SEMI-VOLATILE COMPOUND (continued)

Parameter (ug/l) (continued)	Shallow Overburden Wells					
	MW-2B	MW-3B	MW-5B	MW-6B	MW-7B	MW-10B
2,4-Dinitrophenol	25U	25U	25U	25U	25U	50U
4-Nitrophenol	25U	25U	25U	25U	25U	50U
Dibenzofuran	10U	1J	10U	10U	10U	20U
2,4-Dinitrotoluene	10U	10U	10U	10U	10U	20U
Diethylphthalate	10U	10U	10U	10U	10U	20U
4-Chlorophenyl-phenylether	10U	10U	10U	10U	10U	20U
Fluorene	10U	2J	10U	10U	10U	20U
4-Nitroaniline	25U	25U	25U	25U	25U	50U
4,6-Dinitro-2-methylphenol	25U	25U	25U	25U	25U	50U
N-Nitrosodiphenylamine(1)	10U	1J	10U	10U	10U	20U
4-Bromophenyl-phenylether	10U	10U	10U	10U	10U	20U
Hexachlorobenzene	10U	10U	10U	10U	10U	20U
Pentachlorophenol	25U	25U	25U	25U	25U	50U
Phenanthrene	10U	3J	10U	10U	10U	20U
Anthracene	10U	0.8J	10U	10U	10U	20U
Carbazole	10U	4J	10U	10U	10U	20U
Di-n-Butylphthalate	10U	10U	10U	10U	10U	20U
Fluoranthene	10U	10U	10U	10U	10U	20U
Pyrene	10U	10U	10U	10U	10U	20U
Butylbenzylphthalate	10U	10U	10U	10U	10U	20U
3,3'-Dichlorobenzidine	10U	10U	10U	10U	10U	20U
Benzo(a)anthracene	10U	10U	10U	10U	10U	20U
Chrysene	10U	10U	10U	10U	10U	20U
bis(2-Ethylhexyl)phthalate	1J	10U	1BJ	1J	10U	3BJ
Di-n-octylphthalate	3J	1J	1J	10U	3J	2J
Benzo(b)fluoranthene	10U	10U	10U	10U	10U	20U
Benzo(k)fluoranthene	10U	10U	10U	10U	10U	20U
Benzo(a)pyrene	10U	10U	10U	10U	10U	20U
Indeno(1,2,3-cd)pyrene	10U	10U	10U	10U	10U	20U
Dibenz(a,h)anthracene	10U	10U	10U	10U	10U	20U
Benzo(g,h,i)perylene	10U	10U	10U	10U	10U	20U

Notes:

U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation
BJ = Concentration estimated based on detection of compound in blank.
(1) = Samples collected January 11-13, 1993.

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TABLE 3-2 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION(1)
SEMI-VOLATILE COMPOUNDS (continued)

Parameter (ug/l)	Shallow Overburden		Deep Overburden Wells			Surface Water
	MW-12B	MW-14BR	MW-2A	MW-5A	MW-6A	West Pond
Phenol	2J	3J	10U	10U	10U	10U
bis(2-Chloroethyl)Ether	10U	10U	10U	10U	10U	10U
2-chlorophenol	10U	10U	10U	10U	10U	10U
1,2-Dichlorobenzene	10U	10U	10U	10U	10U	10U
1,3-Dichlorobenzene	10U	10U	10U	10U	10U	10U
1,4-Dichlorobenzene	10U	10U	10U	10U	10U	10U
2-Methylphenol	10U	10U	10U	10U	10U	10U
2,2'-oxybis(1-Chloropropane)	10U	10U	10U	10U	10U	10U
4-Methylphenol	10U	1J	10U	10U	10U	10U
N-Nitroso-di-n-propylamine	10U	10U	10U	10U	10U	10U
Hexachloroethane	10U	10U	10U	10U	10U	10U
Nitrobenzene	10U	10U	10U	10U	10U	10U
Isophorone	10U	10U	10U	10U	10U	10U
2-Nitrophenol	10U	10U	10U	10U	10U	10U
2,4-Dimethylphenol	10U	1J	10U	10U	10U	10U
bis(2-Chloroethoxy)methane	10U	10U	10U	10U	10U	10U
2,4-Dichlorophenol	10U	10U	10U	10U	10U	10U
1,2,4-Trichlorobenzene	10U	10U	10U	10U	10U	10U
Naphthalene	10U	1J	10U	10U	10U	10U
4-Chloroaniline	10U	10U	10U	10U	10U	10U
Hexachlorobutadiene	10U	10U	10U	10U	10U	10U
4-Chloro-3-methylphenol	10U	10U	10U	10U	10U	10U
2-Methylnaphthalene	10U	10U	10U	10U	10U	10U
Hexachlorocyclopentadien	10U	10U	10U	10U	10U	10U
2,4,6-Trichlorophenol	10U	10U	10U	10U	10U	10U
2,4,5-Trichlorophenol	25U	25U	25U	25U	25U	25U
2-Chloronaphthalene	10U	10U	10U	10U	10U	10U
2-Nitroaniline	25U	25U	25U	25U	25U	25U
Dimethylphthalate	10U	10U	10U	10U	10U	10U
Acenaphthylene	10U	10U	10U	10U	10U	10U
2,6-Dinitrotoluene	10U	10U	10U	10U	10U	10U
3-Nitroaniline	25U	25U	25U	25U	25U	25U
Acenaphthene	10U	10U	10U	10U	10U	10U

Notes:
U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation.
(1) = Samples collected January 11-13, 1993.

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TABLE 3-2 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]
SEMI-VOLATILE COMPOUNDS (continued)

Parameter (ug/l)	Shallow Overburden		Deep Overburden Wells			Surface Water
	MW-12B	MW-14BR	MW-2A	MW-5A	MW-6A	West Pond
2,4-Dinitrophenol	25U	25U	25U	25U	25U	25U
4-Nitrophenol	25U	25U	25U	25U	25U	25U
Dibenzofuran	10U	10U	10U	10U	10U	10U
2,4-Dinitrotoluene	10U	10U	10U	10U	10U	10U
Diethylphthalate	10U	10U	10U	10U	10U	1J
4-Chlorophenyl-phenylether	10U	10U	10U	10U	10U	10U
Fluorene	10U	1J	10U	10U	10U	10U
4-Nitroaniline	25U	25U	25U	25U	25U	25U
4,6-Dinitro-2-methylphenol	25U	25U	25U	25U	25U	25U
N-Nitrosodiphenylamine	10U	10U	10U	10U	10U	10U
4-Bromophenyl-phenylether	10U	10U	10U	10U	10U	10U
Hexachlorobenzene	10U	10U	10U	10U	10U	10U
Pentachlorophenol	25U	25U	25U	25U	25U	25U
Phenanthrene	1J	1J	10U	10U	10U	10U
Anthracene	10U	10U	10U	10U	10U	10U
Carbazole	10U	10U	10U	10U	10U	10U
Di-n-Butylphthalate	10U	10U	10U	10U	10U	10U
Fluoranthene	10U	10U	10U	10U	10U	10U
Pyrene	10U	10U	10U	10U	10U	10U
Butylbenzylphthalate	10U	10U	10U	10U	10U	10U
3,3'-Dichlorobenzidine	10U	10U	10U	10U	10U	10U
Benzo(a)anthracene	10U	10U	10U	10U	10U	10U
Chrysene	10U	10U	10U	10U	10U	10U
bis(2-Ethylhexyl)phthalate	10U	1BJ	2J	2BJ	2J	10U
Di-n-octylphthalate	2J	4J	4J	2J	10U	10U
Benzo(b)fluoranthene	10U	10U	10U	10U	10U	10U
Benzo(k)fluoranthene	10U	10U	10U	10U	10U	10U
Benzo(a)pyrene	10U	10U	10U	10U	10U	10U
Indeno(1,2,3-CD)pyrene	10U	10U	10U	10U	10U	10U
Dibenz(a,h)anthracene	10U	10U	10U	10U	10U	10U
Benzo(g,h,i)perylene	10U	10U	10U	10U	10U	10U

Notes:
U = Not detected above stated analytical detection limit.
J = Concentration estimated based on results of data validation
BJ = Concentration estimated based on detection of compound in blank.
(1) = Samples collected January 11-13, 1993.

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TABLE 3-3

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

PESTICIDES/PCBs

Parameter (ug/l)	Shallow Overburden Wells					
	MW-2B	MW-3B	MW-5B	MW-6B	MW-7B	MW-10B
alpha-BHC	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
beta-BHC	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
delta-BHC	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
gamma-BHC (Lindane)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Heptachlor	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Aldein	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Heptachlor epoxide	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Endosulfan I	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Dieldrin	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDE	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endosulfan II	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDD	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endosulfan sulfate	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDT	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Methoxychlor	0.50U	0.50U	0.50U	0.50U	0.50U	0.50U
Endrin ketone	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin aldehyde	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
alpha-Chlordane	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
gamma-Chlordane	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Toxaphene	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Arochlor-1016	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1221	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Arochlor-1232	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1242	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1248	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1254	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1260	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

U = Not detected above stated analytical detection limit.
(1) = Samples collected January 11-13, 1993.

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TABLE 3-3 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

PESTICIDES/PCBs

Parameter (ug/l)	Shallow Overburden Wells		Deep Overburden Wells			Surface Water
	MW-12B	MW-14BR	MW-2A	MW-5A	MW-6A	West Pond
alpha-BHC	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
beta-BHC	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
delta-BHC	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
gamma-BHC (Lindane)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Heptachlor	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Aldein	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Heptachlor epoxide	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Endosulfan I	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Dieldrin	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDE	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endosulfan II	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDD	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endosulfan sulfate	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
4,4'-DDT	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Methoxychlor	0.50U	0.50U	0.50U	0.50U	0.50U	0.50U
Endrin ketone	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
Endrin aldehyde	0.10U	0.10U	0.10U	0.10U	0.10U	0.10U
alpha-Chlordane	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
gamma-Chlordane	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
Toxaphene	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Arochlor-1016	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1221	2.0U	2.0U	2.0U	2.0U	2.0U	2.0U
Arochlor-1232	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1242	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1248	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1254	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Arochlor-1260	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U

U = Not detected above stated analytical detection limit.
(1) = Samples collected January 11-13, 1993

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TABLE 3-4

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

INORGANICS

Parameter (ug/l)	Shallow Overburden Wells					
	MW-2B		MW-3B		MW-5B	
	Total	Soluble	Total	Soluble	Total	Soluble
Aluminum	5090	214	663	424	194J	41.1J
Antimony	60.0U	60.0U	62.8	105	60.0U	60.0U
Arsenic	5.0U	5.0U	21.8	23.3	5.0U	5.0U
Barium	119J	65.5J	20.0U	20.0U	23.7J	20.0U
Beryllium	1.4U	1.4U	1.4U	1.4U	1.0U	1.0U
Cadmium	4.6U	4.6U	4.6U	4.6U	5.0U	5.0U
Calcium	121,000	91,900	253,000	248,000	58,900	52,100
Chromium	24.6	6.8U	6.8U	6.8U	7.0U	7.0U
Cobalt	8.8U	8.8U	8.8U	8.8U	9.0U	9.0U
Copper	14.2J	5.2UJ	24.1J	14.2J	10.2J	5.0U
Iron	10,600	279	5,570	79.7J	757	10.0U
Lead	11.7J	3.0UJ	762J	485J	6.0J	3.0U
Magnesium	5,990	706U	706U	706U	28,700	28,700
Manganese	788	1.1U	195	1.3J	438	154
Mercury	0.20UJ	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	41.1	38.9U	118	104	39.0U	39.0U
Potassium	43,600	46,300	718,000	728,000	7,650	7,820
Selenium	5.0UJ	5.0UJ	5.0UJ	5.0UJ	5.0UJ	5.0UJ
Silver	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.0UJ
Sodium	68,400	76,700	266,000	281,000	56,500	53,800
Thallium	5.6J	6.2J	102J	110J	5.0U	5.0U
Vanadium	59.0	53.9	6.0U	6.0U	6.0U	6.0U
Zinc	59.8	6.4U	107	25.0	48.4	7.6J
Cyanide	40.0	—	60.0	—	10.0U	—

Notes:
(1) = Samples collected January 11-13, 1993.
U = Not detected above stated analytical detection limit.
J = Estimated concentration based on results of data validation.
UJ = Not detected above estimated analytical detection limit.
- = Not analyzed.

MALCOLM PIRNIE

TABLE 3-4 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

INORGANICS

Parameter (ug/l)	Shallow Overburden Wells					
	MW-6B		MW-7B		MW-10B	
	Total	Soluble	Total	Soluble	Total	Soluble
Aluminum	290	41.2U	2,600	2,170	2,180	1,570
Antimony	60.0U	60.0U	60.0U	60.0U	60.0U	60.0U
Arsenic	5.0U	5.0U	9.8J	9.8J	11.3J	10.6
Barium	21.8J	21.8J	114J	119J	257	234
Beryllium	1.4U	1.4U	1.0U	1.0U	1.0U	1.0U
Cadmium	4.6U	4.6U	5.1	5.0U	5.0U	5.0U
Calcium	182,000	198,000	148,000	148,000	279,000	256,000
Chromium	6.8U	6.8U	7.0U	7.0U	7.0U	7.0U
Cobalt	8.8U	8.8U	9,0U	9.0U	9.0U	9.0U
Copper	14.2J	5.2UJ	49.7	38.2	30.6	30.6
Iron	1,630	386	614	215	1,430	102
Lead	3.0UJ	3.0UJ	181J	70.2	464J	22.3
Magnesium	54,000	59,900	706U	706U	706U	706U
Manganese	186	179	22.4	5.7J	102	8.5J
Mercury	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	38.9U	38.9U	107	75.1	64.3	79.4
Potassium	1,060J	1,050U	444,000	420,000	864,000	808,000
Selenium	5.0UJ	5.0UJ	50.0UJ	5.0UJ	50.0UJ	50.0UJ
Silver	7.4UJ	7.4UJ	7.4UJ	7.0UJ	7.4UJ	7.0UJ
Sodium	24,700	27,300	237,000	223,000	498,000	548,000
Thallium	7.4J	5.0UJ	5.0UJ	5.0U	5.0UJ	5.0UJ
Vanadium	6.0U	6.0U	6.0U	6.0U	6.0U	6.0U
Zinc	13.0J	6.4U	105	73.1	29.4	37.0
Cyanide	10.0U	-	10.0U	-	10.0U	-

Notes:
(1) = Samples collected January 11-13, 1993.
U = Not detected above stated analytical detection limit.
J = Estimated concentration based on results of data validation.
UJ = Not detected above estimated analytical detection limit.
- = Not analyzed.

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TABLE 3-4 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

INORGANICS

Parameter (ug/l)	Shallow Overburden Wells				Surface Water	
	MW-12B		MW-14B		West Pond	
	Total	Soluble	Total	Soluble	Total	Soluble
Aluminum	3,610	1,520	49.2J	41.0U	1,050	64.9J
Antimony	60.0U	60.0U	60.0U	60.0U	60.0U	60.0U
Arsenic	8.3J	8.2J	5.0U	5.0U	5.0U	5.0U
Barium	43.7J	21.8J	43.3J	41.2J	38.2J	32.8J
Beryllium	1.4U	1.4U	1.2J	1.0U	1.4J	1.4U
Cadmium	4.6U	4.6U	5.0U	5.0U	4.6U	4.6U
Calcium	55,700	50,300	285,000	266,000	52,700	56,800
Chromium	6.8U	6.8U	7.0U	7.0U	6.8U	6.8U
Cobalt	8.8U	8.8U	9.0U	9.0U	8.8U	8.8U
Copper	44.0	5.2UJ	5.0U	5.0U	7.1J	5.2UJ
Iron	3,530	348	477	163	1,900	57.8J
Lead	29.0J	3.0UJ	3UJ	3.0U	5.5J	3.0UJ
Magnesium	706U	706U	4,470J	1480J	6,610	6,990
Manganese	241	24.8	138	1.1J	138	85.1
Mercury	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	38.9U	38.9U	39.0U	39.0U	38.9U	38.9U
Potassium	74,300	77,500	123,000	127,000	22,000	24,400
Selenium	5.0UJ	5.0UJ	5.0UJ	5.0 UJ	5.0UJ	5.0UJ
Silver	7.4UJ	7.4UJ	7.0UJ	7.0UJ	7.4UJ	7.4UJ
Sodium	41,100	42,800	93,900	101,000	46,600	52,300
Thallium	6.8J	6.1J	5.0U	5.0U	7.8J	5.4J
Vanadium	47.3J	42.2J	6.0U	6.0U	8.4J	6.1J
Zinc	46.8	6.4U	12.1J	6.0U	9.8J	6.4U
Cyanide	1,130	-	690	-	40.0	-

Notes:
(1) = Samples collected January 11-13, 1993.
U = Not detected above stated analytical detection limit.
J = Estimated concentration based on results of data validation.
UJ = Not detected above estimated analytical detection limit.
- = Not analyzed.

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TABLE 3-4 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

INORGANICS

Parameter (ug/l)	Deep Overburden Wells					
	MW-2A		MW-5A		MW-6A	
	Total	Soluble	Total	Soluble	Total	Soluble
Aluminum	8,970	41.2U	16,200	41.0U	3,190	41.2U
Antimony	85.1	60.0U	60.0U	67.7	60.0U	60.0U
Arsenic	5.0U	5.0U	59.6J	8.0J	5.0U	5.0U
Barium	374	288	231	71.2J	109J	54.6J
Beryllium	1.4U	1.4U	1.0U	1.0U	1.4U	1.4U
Cadmium	4.6U	4.6U	5.0U	5.0U	4.6U	4.6U
Calcium	221,000	36,600	183,000	74,400	126,000	131,000
Chromium	15.5	6.8U	27.4	7.0U	6.8U	6.8U
Cobalt	8.8U	8.8U	11.2J	9.0U	8.8U	8.8U
Copper	20.0J	5.2UJ	30.6	5.0U	14.2J	5.2UJ
Iron	20,600	10.1U	19,200	85.8J	7,190	10.1U
Lead	12.6J	3.0UJ	78.4J	3.0U	4.9J	3.0UJ
Magnesium	73,600	33,200	93,200	62,300	46,600	49,700
Manganese	1,270	174	2,370	390	270	2.3J
Mercury	0.20U	0.20U	0.20U	0.20U	0.20U	0.20U
Nickel	38.9U	38.9U	39.0U	39.0U	38.9U	38.9U
Potassium	3,580J	2,680J	4,420J	1,230J	1,970J	1,220J
Selenium	5.0UJ	5.0UJ	50.0UJ	50.0UJ	5.0UJ	5.0UJ
Silver	7.4UJ	7.4UJ	7.4UJ	7.0UJ	7.4UJ	7.4UJ
Sodium	71,900	73,200	68,100	65,200	47,100	54,000
Thallium	6.6J	5.5J	5.0U	5.0UJ	5.0UJ	5.2J
Vanadium	26.2J	6.0U	32.0J	6.0U	8.4J	6.0U
Zinc	80.2	6.4U	486	10.4J	39.1	6.4U
Cyanide	10.0U	-	10.0U	-	10.0U	-

Notes:
(1) = Samples collected January 11-13, 1993.
U = Not detected above stated analytical detection limit.
J = Estimated concentration based on results of data validation.
UJ = Not detected above estimated analytical detection limit.
- = Not analyzed.

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TABLE 3-5

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

TENTATIVELY IDENTIFIED COMPOUNDS[2]

Parameter (ug/l)	Shallow Overburden Wells					
	MW-2B	MW-3B	MW-5B	MW-6B	MW-7B	MW-10B
Volatile Organics:						
$C_{10}H_8$ Aromatic Hydrocarbon unknown[1]	(1) 43J				(1) 11J	(2) 9-32J
Semi-Volatile Organics						
unknown Cycloalkane unknown unknown Acid unknown Aromatic Substituted Phenol Substituted Benzaldehyde	(2) 4-3JB (8) 2-28J	(7) 150-14J (7) 510-14J (5) 52-10J (1) 31J	(5) 2-5J	(2) 3JB (1) 2JB	(15) 200-2J (1) 2J (1) 8J (1) 25J	(1) 110J (11) 1600-11J (1) 24J (6) 340-22J (1) 48J

Note:
(1) Samples collected January 11-13, 1993
(2) Number of unknown TICs or classes of TICs detected and the range of estimated concentrations.

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TABLE 3-5 (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SWMFIP
PRELIMINARY WATER QUALITY CHARACTERIZATION[1]

TENTATIVELY IDENTIFIED COMPOUNDS[2]

Parameter (ug/l)	Shallow Overburden Wells		Deep Overburden Wells			Surface Water
	MW-12B	MW-14BR	MW-2A	MW-5A	MW-6A	West Pond
Volatile Organics:						
$C_{10}H_8$ Aromatic Hydrocarbon unknown[1]			(1) 6J 14J	(1) 19J		
Semi-Volatile Organics						
unknown Cycloalkane	(2) 3-2JB	(1) 3J	(2) 3JB		(2) 3JB	
unknown	(10) 12-2J	(15) 3-5J	(4) 2-13J	(9) 79-2J	(2) 2J	
unknown Acid						
unknown Aromatic		(1) 3J				
Substituted Phenol		(1) 12J				
Substituted Benzaldehyde						

Note:
(1) Samples collected January 11-13, 1993
(2) Number of unknown TICs or classes of TICs detected and the range of estimated concentrations.

MALCOLM PIRNIE

ATTACHMENT A

DATA VALIDATION REPORT

MALCOLM PIRNIE

DATA VALIDATION REPORT
FOR
PRELIMINARY WATER QUALITY CHARACTERIZATION SAMPLING

MARILLA STREET LANDFILL
SOLID WASTE MANAGEMENT FACILITY
INVESTIGATION PROGRAM

LTV STEEL COMPANY
BUFFALO, NEW YORK

MARCH 1993

MALCOLM PIRNIE, INC.

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MALCOLM PIRNIE

1.0 INTRODUCTION

The following discussion details Malcolm Pirnie's analytical data assessment and validation of results reported by NYTEST Environmental, Inc. for 11 groundwater samples and 1 surface water sample collected at the Marilla Street Landfill Site Each sample was analyzed for Target Compound List (TCL) volatile organic and TCL semi-volatile organic compounds, TCL pesticides/PCBs and Target Analyte List (TAL) metals. The assessment of analytical data included a review of data consistency and data completeness; adherence to accuracy and precision criteria; and review of anomalously high and low parameter values.

The validation is based on laboratory compliance with Method 91-1, Method 91-2, Method 91-3, and the 200-CLP series methods as contained in the 1991 NYSDEC Analytical Services Protocol (ASP). Data were evaluated as indicated in the following table:

Data Type	Criteria
All Data	Holding times, Calibrations, Blanks, Matrix spike/matrix spike duplicate (MS/MSD) recoveries, Field duplicate precision, and Data completeness.
Organic Data	Surrogate recoveries, Gas chromatograph/mass spectrometer (GC/MS) tuning, Matrix spike blank (MSB) recoveries, and Internal standard performance.
Inorganic Data	Contract-required detection limit (CRDL) standards for ICP and AA, Laboratory control sample (LCS), ICP interference check sample (ICS), ICP serial dilution analysis, and Furnace AA QC analysis.

The Functional Guidelines (herein called the Guidelines) for evaluating organic and inorganic data (1991 and 1988, respectively) have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "N" (presumptive evidence for the presence of the material), "U" (non-

detects), "R" (unusable), or "JN" (presumptive evidence for the presence of the material at an estimated value). The analytical results and appropriate data qualifiers are presented in Tables 1a through 1d, attached. The analytical data are contained in three separate data groups identified by "login numbers". The samples associated with each of the login numbers is listed in Table 2. All action is detailed in the discussion which follows.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. Second, no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves only to increase confidence in data.

1.1 ORGANIC DATA ASSESSMENT

1.1.1 Holding Time

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in samples whose holding time was exceeded are to be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "UJ", or unusable, "R", if the holding times are grossly exceeded. A review of the analytical data indicated that no samples should be qualified because of holding time.

1.1.2 Blank Contamination

Quality assurance (QA) blanks; i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for the common contaminants), the analytes are qualified as non-detects "U". The following analytes in the samples shown have been qualified with "U" for these reasons:

A) Method Blank Contamination:

Login #	Analyte	Sample
15385	Methylene Chloride	MW-5A, 5B, 7B, 10B, 14B-R
	Bis(2-ethylhexyl)phthalate	MW-5A, 5B, 7B, 10B, 14B-R
15392	Methylene Chloride Acetone	MW-2A, 2B, 3B, 6A, 6B, 12B, West Pond

B) Field or rinse blank contamination ("water blanks" or "distilled water blanks" are validated like any other sample):

Applicable only to metals analyses. In accordance with the Project Work Plan, samples for organic analyses were collected with dedicated/disposable bailers, and no field blanks were analyzed for organic parameters.

C) Trip Blank Contamination:

Login #		Parameter	Conc.
15385	Trip Blk	Methylene Chloride	4J ug/l
15392	Trip Blk	Methylene Chloride	13B ug/l
15404	Trip Blk	Methylene Chloride Acetone	11B ug/l 7J ug/l

1.1.3 Mass Spectrometer Tuning

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds, and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials; therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is bromofluorobenzene (BFB) and for semi-volatiles is decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error or missing, all associated data are to be classified as unusable, "R".

A review of the analytical data indicated that no samples should be qualified due to tuning requirements.

1.1.4 Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of providing acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is providing satisfactory daily performance.

A) Response Factor:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the VOA/BNA Target Compound List (TCL) must be ≥ 0.05 in both the initial and continuing calibrations. A value <0.05 indicates a serious detection and quantitation problem (poor sensitivity). If the mean relative response factor (RRF) of the initial calibration or the continuing calibration has a response factor <0.05 for any analyte, those analytes detected in environmental samples are to be qualified as estimated "J". All non-detects for those compounds are to be rejected ("R").

A review of the analytical data indicated that no samples should be qualified due to response factor requirements.

1.1.5 Calibration

A) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the RRF from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are to be flagged as estimated, "J", and non-detects are to be flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detect data may be qualified "R".

For the Pesticide/PCB fraction, if %RSD exceeds 20% for all analytes except for the 2 surrogates (which must not exceed 30% RSD), all associated positive results are to be qualified "J" and non-detects are to be qualified "UJ".

calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are to be qualified as estimated "J", and all non-detects are to be qualified as "UJ" only if IS area is <50%. Non-detects are to be qualified as "R" if there is a severe loss of sensitivity (<25% of associated IS area counts).

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction. The following analytes in the samples shown were qualified because of poor internal standards performance:

Login #	Analytes	Affected Samples
15404	All base neutral compounds	MW-3B

1.1.8 Compound Identification

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and ion spectra. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound, and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For tentatively identified compounds (TIC), the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

A review of the analytical data indicated that no samples should be qualified due to compound identification.

B) **Pesticide/PCB Fraction:**

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns. The percent difference (%D) of the positive results obtained on the two GC columns should be ≤ 25%. If the %D is >25%, then identification of the pesticide and/or PCB is questionable.

A review of the analytical data indicated that no samples should be qualified due to Pesticide/PCB compound identification.

1.1.9 Matrix Spike/Spike Duplicate, MS/MSD

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria such as surrogate recovery for some additional qualification of data.

A review of the analytical data indicated that no samples should be qualified due to MS/MSD criteria.

1.2 INORGANIC DATA ASSESSMENT

1.2.1 Holding Time

According to the ASP, CLP Methodology, the following maximum holding times for aqueous samples are recommended for the specified analyses:

Analyte	Recommended Holding Time
Mercury	Prepare and analyze within 26 days of VTSR.
Cyanide	Prepare and analyze within 14 days of VTSR.
Metals	Prepare and analyze within 180 days of VTSR.

Comparison of the dates of sample receipt (from the laboratory chain-of-custody forms) to the dates of sample preparation and analysis (from the laboratory preparation logs and Form XIVs) indicated that all samples were prepared/analyzed prior to expiration of the recommended holding time. Therefore, no qualification of the data due to holding time exceedance is necessary.

1.2.2 Instrument Calibration

Initial calibrations of the atomic absorption (AA), inductively coupled plasma (ICP), and mercury cold vapor (CV) systems are accomplished via the analysis of standards at concentrations which define the working range of the particular instrument. To verify the accuracy of the initial calibration for each analyte, an EPA initial calibration verification (ICV) solution must be analyzed at each wavelength that is used for sample analyses. Recoveries of each analyte contained in the ICV solution should be within the control limits established by the EPA. In addition, the correlation coefficient for the initial calibration curve must be >0.995 for AA analyses. To ensure calibration accuracy during each analytical run, a continuing calibration verification (CCV) solution must be analyzed at each wavelength that is used for sample analyses. The CCV solution must be analyzed at a frequency of 10% or every two (2) hours (whichever is more frequent) during an analytical run. The CCV solution must also be analyzed at the beginning of the analytical run and after the last analytical sample. In addition, recoveries of each analyte in the CCV solution should be within the control limits established by the EPA. If the criteria above are not met, calibration cannot be verified, and positive results are to be estimated and are qualified with a "J" and "non-detects" are to be qualified with a "UJ".

As assessment of the calibration data for all inorganic analyses indicated that the proper number of calibration standards were analyzed at the beginning of each analytical run and at the appropriate frequency throughout the analytical run. In addition, the recoveries of each analyte contained in the ICV and CCV solutions were within criteria, and the correlation coefficients for AA data were greater than 0.995.

1.2.3 Contract Required Detection Limit (CRDL) Standards for ICP and AA

To verify the linearity near the CRDL for ICP analysis, an ICP standard must be analyzed at a concentration of two (2) times the CRDL [or at the CRDL for AA], or two (2) times the instrument detection limit (IDL), whichever is greater. The standard must be analyzed at the beginning and end of each sample analysis run, or a minimum of twice per eight (8) hour shift, whichever is more frequent (but not before the ICV). To verify linearity near the CRDL for AA analysis, an AA standard must be analyzed at the CRDL or the IDL, whichever is greater. The standard must be analyzed at the beginning of each sample analysis run, but not before the ICV. If the criteria above is not met, linearity cannot be verified, and any positive results are to be estimated and qualified with a "J", and any "non-detects" are to be qualified with a "UJ". A review of the analysis run logs (Form XIVs) and the raw data indicated that the CRDL standards for both ICP and AA met these criteria.

1.2.4 Blank Contamination

For inorganic analyses, initial calibration blanks, (ICBs), continuing calibration blanks (CCBs), and preparation blanks (PBs), are analyzed to determine the existence and magnitude of any inorganic contamination. Ideally, no contaminants should be detected in any of the blanks and no contaminants should be detected in the preparation blanks or ICBs at concentrations greater than the CRDL. In addition, when more than one blank is associated with a given sample, qualification is based on a comparison with the associated blank having the highest concentration of a contaminant. An assessment of all blank analytical data indicated that no contaminants were detected at concentrations greater than the CRDL. However, the following table summarizes contaminants which were detected in blanks at concentrations greater than the IDL:

Element	Concentration (ug/l)	Action Level (ug/l)	CRDL (ug/l)
Login #15385:			
Aluminum	44.5	223	200
Iron	21.8	109	100
Potassium	1419	7095	5000
Logins #15392 and #15404:			
Cadmium	4.6	23	5
Beryllium	1.4	7.0	5.0
Iron	22.8	114	100
Cobalt	10.4	52	50
Zinc	6.5	32.5	20
Potassium	1729	8645	5000

The action levels listed for each analyte are equal to five (5) times the highest concentration of the analyte detected in any blank. According to The Guidelines, any positive results for these analytes detected in the sample at a concentration which is greater than the IDL but less than the action level must be qualified as not detected (ND), and the method detection limit (MDL) set equal to the value detected in the sample. The estimated value should be then be qualified with a "U". Qualification to the appropriate samples has been made and is presented in Tables 1c and 1d.

1.2.5 ICP Interference Check Sample (ICS)

To verify inter-element and background correction factors, an ICS is analyzed at the beginning and end of each analytical run (or a minimum of twice per eight-hour work shift). The ICS consists of two solutions, A and AB. Solution A contains the interferants and solution AB contains the analytes mixed with the interferants. The solutions are analyzed consecutively. If the solutions are not analyzed, potential interferences cannot be assessed and the data would be rejected. A review of the ICS analyses results indicated that Cd, Cu, and Pb were detected in the ICS Solution A at concentrations greater than two times (2x) the IDL. However, no substantial effect on the ICP analyses from these interferants was exhibited. In addition, the ICS solutions were analyzed at the proper frequency.

1.2.6 Matrix Spike (MS) Analysis

The analysis of an inorganic matrix spike sample provides the data user with information regarding sample matrix effects on the digestion procedure and analytical methodology. Matrix spike recoveries for inorganic elements must be within the 75% to 125% recovery "window" unless the sample concentration exceeds the spike concentration by a factor of four (4) or more. If the recovery of an analyte does not fall within this "window", a post-digestion spike must be analyzed for each element (except silver) which did not meet criteria. The following analytes, for the samples shown, have been qualified with a "J" (estimated) because of MS/MSD:

Analyte	MS/MSD	Samples Affected
Selenium Silver	MW-14BR	All Dissolved Metals samples in Login #15385
Selenium Silver Lead	MW-14BR	All Total Metals samples in Login #15385
Selenium Silver Lead Thallium Copper	MW-2A	All Total Metals samples in Logins #15392, #15404

It was noted that post-digestion spikes were analyzed for those analytes which did not meet matrix spike recovery criteria.

1.2.7 Duplicate Analyses

Laboratory duplicate analysis is an indicator of the precision of sample results and a measure of laboratory performance. A control limit of 20% RPD is used for aqueous sample results which are greater than five (5) times the CRDL, and a control limit of +/- the CRDL is used for soil sample results which are less than five (5) times the CRDL. If the criteria are not met, poor precision is indicated and any positive results are to be estimated and qualified with a "J"; any "non-detects" are to be qualified with a "UJ".

A review of the laboratory duplicate results indicated that the duplicate analyses criteria were met and no samples should be qualified.

1.2.8 Laboratory Control Sample (LCS) Analysis

As an additional measure of accuracy, the 1991 ASP requires that an aqueous LCS be prepared and analyzed for every group of aqueous samples in a sample delivery group (SDG), or for each batch of samples digested, whichever is more frequent. The percent recovery for analytes contained in the LCS must fall within the control limits established by the EPA. If the % recovery does not meet criteria, the laboratory must take corrective action such as analyzing another LCS after instrumentation adjustment. Review of the LCS data indicated that all criteria were met.

1.2.9 Furnace Atomic Absorption (AA) QC Analyses

All furnace AA analyses (As, Se, Tl, and Pb) require duplicate injections. For concentrations greater than the CRDL, the duplicate injection results must agree within 20% RSD. If the results do not agree to within 20% RSD, the sample must be rerun. In addition, analysis of a post-digestion spike is required for each sample. The recovery of the analyte in each post-digestion spike must be within the control limit, (i.e., 85-115%). If the recovery of the analyte is outside of this criteria, the analyte may be quantitated using the Method of Standard Addition (MSA), depending on sample absorbance. If the sample absorbance is >50% of the post-digestion spike absorbance and the spike recovery is outside the 85-115% control limit, the sample result is calculated using MSA. A review of the raw furnace atomic absorption data indicated the following elements/samples did not meet the 85-115% criteria but did not require the MSA for quantitation because the sample absorbance was <50% of the post digestion spike absorbance:

Selenium		Thallium	
Dissolved	**Total**	**Dissolved**	**Total**
MW-5B MW-6A MW-6B MW-7B MW-14BR	MW-5A MW-14BR	MW-2A MW-10B	MW-2A MW-2B MW-7B MW-10B West Pond

In addition, the MSA was required to quantitate arsenic in samples MW-10B and MW-5A, and to quantitate thallium in MW-3B, and to quantitate lead in MW-2A. The

MSA did not exhibit the required >0.995 correlation coefficient in samples MW-10B and 2A and, therefore, qualification of the data ("J", estimated) is necessary in these samples.

1.2.10Inductively coupled Plasma (CP) Serial Dilution Analysis

If the concentration of an analyte in a sample is sufficiently high (a minimum of 50 times the IDL), a five-fold dilution of the sample is analyzed to determine whether significant physical or chemical interferences exist. The results of the dilution must agree to within 10% difference (%D) of the original results.

A review of the ICP serial dilution results indicated that the serial dilution analysis criteria were met and that no samples should be qualified.

1.3 SUMMARY AND CONCLUSION

Overall, the analyses were compliant with the 1991 NYSDEC ASP. The laboratory reported a relatively high pH (11-13) in samples MW-2B, 3B, 7B, 10B and 12B, which may have had an effect on the extraction of the phenolic (acid extractable) compounds. Therefore, a potential low bias in the analytical results for the acid extractable compounds exists in these particular samples. In addition, although compliant, the following login numbers contained duplicate Form 1s due to the reasons given:

Login #	Sample	Reason
15385 & 15392	MW-5B	Dilution run for acetone
	MW-7B	Dilution run for acetone and for phenol
	MW-10B	Dilution run for acetone, 2-butanone, phenol, and 2,4-dimethylphenol
15404	MW-3B	Dilution run for phenol

The analytical data generated for the Marilla Street Landfill Site Investigation is valid and useful for the purposes of completing the site investigation.

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TABLE 1a

LTV STEEL COMPANY
MARILLA STREET LANDFILL SITE INVESTIGATION
DATA VALIDATION REPORT

VOLATILE COMPOUNDS (ug/l)

Sample Location:	MW-2A	MW-2B	MW-3B	MW-5A	MW-5B	MW-6A	MW-6B	MW-7B	MW-10B
Methylene Chloride	10UJ	10UJ	10UJ	10UJ	10UJ	10UJ	10UJ		10UJ
Acetone			400					200J	690
2-Butanone			40					33	190
Tetrachloroethene		5J					1J		
Toluene									1J
4-methyl-2 pentanone			3J					4J	10
2-hexanone									10

Sample Location:	MW-12B	MW-14B	West Pond			Trip Blk (#15385)	Trip Blk (#15392)	Blind Dupl. (#15385)	Trip Blk.3 (#15404)
Methylene Chloride	10UJ	10UJ	10UJ			10UJ	13U	ND	11B
Acetone									10UJ
Toluene	2J								

MW = Monitoring Well

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TABLE 1b

LTV STEEL COMPANY
MARILLA STREET LANDFILL SITE INVESTIGATION
DATA VALIDATION REPORT

SEMI-VOLATILE COMPOUNDS (ug/l)

Sample Location:	MW-2A	MW-2B	MW-3B	MW-5A	MW-5B	MW-6A	MW-6B	MW-7B	MW-10B
Phenol		9J	680		9J			330	1300
2-nitroaniline			9J						
Isophorone			2J					1J	2J
Naphthalene			9J						
2-Methylnaphthalene			1J						
Dibenzofuran			1J						
Fluorene			2J						
Phenanthrene			3J						
Acenaphthene			2J						
4-methyl phenol		2J	33					10	180J
2,4-dimethylphenol			5J					4J	250
2-methylphenol			3J						
Bis(2-ethylhexyl)phthalate	2J	1J		2BJ	1BJ	2J	1J		3BJ
Di-n-octylphthalate	4J	3J	1J	2J	1J			3J	2J
2,6-dinitrotoluene									7J
Acenaphthylene								2J	2J
N-nitrosodiphenylamine			1J						
Anthracene			0.8J						
Carbazole			4J						

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TABLE 1b

LTV STEEL COMPANY
MARILLA STREET LANDFILL SITE INVESTIGATION
DATA VALIDATION REPORT

SEMI-VOLATILE COMPOUNDS (ug/l)

Sample Location:	MW-12B	MW-14B	West Pond		Blind Dupl. (#15385)				
Phenol	2J	3J			3J				
Naphthalene		1J			1J				
Diethylphthalate			1J						
Fluorene		1J			1J				
Phenanthrene	1J	1J			1J				
2-methyl phenol					1J				
4-methyl phenol		1J			1J				
2,4-dimethylphenol		1J			1J				
Bis(2-ethylhexyl)phthalate		1BJ			1BJ				
Di-n-octylphthalate	2J	4J			3J				

MW = Monitoring Well

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TABLE 1c
LTV STEEL COMPANY
MARILLA STREET LANDFILL SITE INVESTIGATION
DATA VALIDATION REPORT

TOTAL METALS (ug/l)

Sample Location	MW-2A	MW-2B	MW-3B	MW-5A	MW-5B	MW-6A	MW-6B	MW-7B	MW-10B
Aluminum	8,970	5,090	663	16,200	194J	3,190	290	2,600	2,180
Antimony	85.1		62.8						
Arsenic			21.8	59.6J				9.8J	11.3J
Barium	374	119J		231	23.7J	109J	21.8J	114J	257
Cadmium								5.1	
Calcium	221,000	121,000	253,000	183,000	58,900	126,000	182,000	148,000	279,000
Chromium	15.5	24.6		27.4					
Cobalt				11.2J					
Copper	20J	14.2J	24.1J	30.6	10.2J	14.2J	14.2J	49.7	30.6
Iron	20,600	10,600	5,570	19,200	757	7,190	1,630	614	1,430
Lead	12.6J	11.7J	762J	78.4J	6J	4.9J	3UJ	181J	464J
Magnesium	73,600	5,990		93,200	28,700	46,600	54,000		
Manganese	1,270	788	195	2,370	438	270	186	22.4	102
Nickel		41.1	118					107	64.3
Potassium	3,580J	43,600	718,000	4,420J	7,650	1,970J	1,060J	444,000	864,000
Selenium	5UJ	5UJ	5UJ	50UJ	5UJ	5UJ	5UJ	50UJ	50UJ
Silver	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.4UJ	7.4UJ
Sodium	71,900	68,400	266,000	68,100	56,500	47,100	24,700	237,000	498,000
Thallium	6.6J	5.6J	102J			5UJ	7.4J	5UJ	5UJ
Vanadium	26.2J	59		32J		8.4J			
Zinc	80.2	59.8	107	486	48.4	39.1	13J	105	29.4
Cyanide		40	60						

TABLE 1c (Continued)

LTV STEEL COMPANY
MARILLA STREET LANDFILL SITE INVESTIGATION
DATA VALIDATION REPORT

TOTAL METALS (ug/l)

Sample Location	MW-12B	MW-14BR	West Pond		BDUP	EQBLK	QUBLK	Equip B	
Aluminum	3,610	49.2J	1,050						
Arsenic	8.3J							5UJ	
Barium	43.7J	43.3J	38.2J		42.1J				
Beryllium		1.2J	1.4J						
Calcium	55,700	285,000	52,700		288,000				
Copper	44J		7.1J		44.7		5.2UJ	5.2UJ	
Iron	3,530	477	1,900		464	18.3J	22.8J	30.8J	
Lead	29J	3UJ	5.5J		3UJ	3UJ	3UJ	3UJ	
Magnesium		4,470J	6,610		4,760J				
Manganese	241	138	138		146				
Potassium	74,300	123,000	22,000		124,000				
Selenium	5UJ	5UJ	5UJ		5UJ	5UJ	5UJ	5UJ	
Silver	7UJ	7UJ	7.4UJ		7UJ	7UJ	7.4UJ	7.4UJ	
Sodium	41,100	93,900	46,600		94,200				
Thallium	6.8J		7.8J				5UJ	5UJ	
Vanadium	47.3J		8.4J						
Zinc	46.8	12.1J	9.8J		7.5J				
Cyanide	1,130	690	40		730				

NOTE:
(1) Blind Duplicate collected at MW-14BR.

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TABLE 1d

LTV STEEL COMPANY
MARILLA STREET SITE INVESTIGATION
DATA VALIDATION REPORT

DISSOLVED METALS (ug/l)

Sample Location:	MW-2A	MW-2B	MW-3B	MW-5A	MW-5B	MW-6A	MW-6B	MW-7B	MW-10B
Aluminum		214	424		41.1J			2,170	1,570
Antimony			105	67.7					
Arsenic			23.3	8J				9.8J	10.6
Barium	288	65.5J		71.2J		54.6J	21.8J	119J	234
Calcium	36,600	91,900	248,000	74,400	52,100	131,000	198,000	148,000	256,000
Copper	5.2UJ	5.2UJ	14.2J			5.2UJ	5.2UJ	38.2	30.6
Iron		279	79.7J	85.8J			386	215	102
Lead	3UJ	3UJ	485J			3UJ	3UJ	70.2	22.3
Magnesium	33,200			62,300	28,700	49,700	59,900		
Manganese	174		1.3J	390	154	2.3J	179	5.7J	8.5J
Nickel			104					75.1	79.4
Potassium	2,680J	46,300	728,000	1,230J	7,820	1,220J		420,000	808,000
Selenium	5UJ	5UJ	5UJ	50UJ	5UJ	5UJ	5UJ	5UJ	50UJ
Silver	7.4UJ	7.4UJ	7.4UJ	7UJ	7UJ	7.4UJ	7.4UJ	7UJ	7UJ
Sodium	73,200	76,700	281,000	65,200	53,800	54,000	27,300	223,000	548,000
Thallium	5.5J	6.2J	110J	5UJ		5.2J	5UJ		5UJ
Vanadium		53.9							
Zinc			25	10.4J	7.6J			73.1	37

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TABLE 1d (Continued)

LTV STEEL COMPANY
MARILLA STREET SITE INVESTIGATION
DATA VALIDATION REPORT

DISSOLVED METALS (ug/l)

Sample Location:	MW-12B	MW-14BR	West Pond		DBDUP[1]	DEQBLK	DQUBLK		
Aluminum	1,520		64.9J		62.4J				
Arsenic	8.2J								
Barium	21.8J	41.2J	32.8J		41.2J				
Calcium	50,300	266,000	56,800		254,000				
Copper	5.2UJ		5.2UJ		11.5J		5.2UJ		
Iron	348	163	57.8J		159				
Lead	3.0UJ		3.0UJ				3.0UJ		
Magnesium		1,480J	6,990		989J				
Manganese	24.8	1.1J	85.1		1.4J				
Potassium	77,500	127,000	24,400		125,000				
Selenium	5UJ	5UJ	5UJ		5UJ	5UJ	5UJ		
Silver	7.4UJ	7UJ	7.4UJ		7UJ	7UJ	7.4UJ		
Sodium	42,800	101,000	52,300		98,600				
Thallium	6.1J		5.4J			5UJ	5UJ		
Vanadium	42.2J		6.1J						

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TABLE 1e

LTV STEEL COMPANY
MARILLA STREET LANDFILL SITE INVESTIGATION
DATA VALIDATION REPORT

PESTICIDES/PCBs (ug/l)

*** * NONE DETECTED * ***

TABLE 2

SUMMARY OF SAMPLE LOGIN DISTRIBUTION

Organic Data	
Login #15385	MW-14BR MW-14BR MS/MSD BLIND DUP MW-5B (VOA only) MW-10B (VOA only) MW-7B (VOA only) MW-5A (VOA only) TRIP BLK
Login #15392	WEST POND (A/BN, P/P) MW-7B (A/BN, P/P) MW-10B (A/BN, P/P) MW-5B (A/BN, P/P) MW-5A (A/BN, P/P) MW-6A (VOA Only) MW-6B (VOA Only) MW-28 (VOA Only) MW-3B (VOA Only) MW-12B (VOA Only) MW-2A (VOA Only) TRIP BLK2 (VOA Only)
Login #15404	MW-2B (A/BN, P/P) MW-6A (A/BN, P/P) MW-6B (A/BN, P/P) MW-12B (A/BN, P/P) MW-3B (A/BN, P/P) MW-2A (A/BN, P/P) TRIP BLK3 (VOA Only)
Inorganic Data	
Login #15385	BDUP - dissolved and total EQBLK - dissolved and total MW-5A - dissolved and total MW-5B - dissolved and total MW-7B - dissolved and total MW-10B - dissolved and total MW-14BR - dissolved and total MW-14BR DUP - dissolved and total MW-14BR SPIKE - dissolved and total

TABLE 2

SUMMARY OF SAMPLE LOGIN DISTRIBUTION

Inorganic Data (continued)	
Login #15392, 15404	EQBLK - dissolved and total West Point - dissolved and total MW-12B - dissolved and total MW-2A - dissolved and total MW-2B - dissolved and total MW-3B - dissolved and total MW-6A - dissolved and total MW-6B - dissolved and total MW-2A DUP - total only MW-2A SPIKE - total only

NOTES:

A/B = acid extractables/base neutral compounds
P/P = pesticides/PCBs

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ATTACHMENT B

CORRESPONDENCE WITH NYSDEC

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

January 20, 1993

Ms. Mary McIntosh
New York State Department of
Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2999

Re: LTV Steel Marilla Street Landfill
Solid Waste Management Facility
Investigation Program (SWMFIP)

Dear Ms. McIntosh:

The purpose of this letter is to document several revisions to the October 1992 SWMFIP Work Plan/Field Sampling and Analysis Plan (FSAP) for the Marilla Street Landfill that we discussed over the telephone on January 8 and 19, 1993. These are as follows:

- Table 3-7 of TCLP parameters in the Work Plan has been replaced with the attached Table 3-7. The original Table cited the correct reference to TCLP parameters in 40 CFR 261.24(b) revised by 55FR 22683, June 1, 1990, but inadvertently listed several volatile organic parameters that are not listed in the cited reference.

- Page 4-8 of the SWMFIP FSAP states that matrix spike/matrix spike duplicates will be collected at MW-10B during the SWMFIP. However, during the assessment of the existing wells at the site the recovery rate of MW-10B was found to be too low to provide the volume of water needed for quality control samples. Therefore, MS/MSD samples will be collected at MW-14BR.

- Malcolm Pirnie has proposed, and the NYSDEC has agreed, that monitoring well purge water and drilling rig/tools decontamination water will not be containerized. Therefore, the decontamination pad described in the FSAP will not be constructed. Cleaning of the rig and drilling tools will be performed in a marked area of the uncapped portion of the landfill and steam-cleaning water will be allowed to infiltrate the landfilled waste.

S. 3515 ABBOTT RD. P.O. BOX 1938 BUFFALO, NY 14219-0138 716-828-1300 FAX 716-828-0431

- Decontamination water containing solvents or acids generated during soil and groundwater sampling will be containerized.

- Drill cuttings will be containerized in 55-gallon DOT-approved drums and staged on-site. Pending review of the groundwater analyses, the contents of the drums will be disposed of on the uncapped portion of the landfill.

If there are any questions or comments on these revisions please call the writer at 828-1300.

Very truly yours,

MALCOLM PIRNIE, INC.

Robert O'Laskey

Robert O'Laskey
Senior Project Hydrogeologist

c: Robert Voytko, LTV
Kent McManus
File: C-1
RHO Wayne Gould - LTV

0848-252-105
RHO01203.L1

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TABLE 3-7

ANALYTICAL PARAMETERS FOR PRELIMINARY SAMPLING ROUND
SOIL/FILL

TCLP[1]
VOLATILE ORGANICS:

Benzene
Carbon Tetrachloride
Chlorobenzene
Chloroform
1,2-Dichloroethane
1,1-Dichloroethylene
Hexachloroethane
1,4 Dichlorobenzene
Methyl ethyl Ketone
Tetrachloroethylene
Trichloroethylene
Vinyl Chloride

TCLP[1]
SEMI-VOLATILE ORGANICS

Cresol
2,4 Dinitrotoluene
Hexachlorobenzene
Hexachlorobutadiene
Nitrobenzene
Pentachlorophenol
Pyridine
2,4,5 Trichlorophenol
2,4,6 Trichlorophenol

Chlordane
2,4,-D
Endrin
Heptachlor
Lindane
Methoxychlor
Toxaphene
2,4,5 TP (Silvex)

TCLP[1]
METALS:

Arsenic
Barium
Cadmium
Chromium
Lead
Mercury
Selenium
Silver

NOTES:

(1) From 40CFR 261.24(b) revised by 55 FR 22683; June 1, 1990.