APPENDIX VIII
CLP METHODS SHORT SHEETS

TITLE: USEPA CONTRACT LABORATORY PROGRAM
STATEMENT OF WORK FOR ORGANIC ANALYSIS
MULTI-MEDIA, MULTI CONCENTRATION

DOCUMENT NUMBER:	OLM01.0
DOCUMENT DATE:	Not Applicable
EFFECTIVE DATES:	September 28, 1990 through February 1994
CONCENTRATION:	Low to Medium
DATA TURNAROUND:	14 Days or 35 Days
MATRICES:	Aqueous/Soil/Sediment*

SIGNIFICANT FEATURES

- The compounds include volatiles, semivolatiles, and pesticide/PCBs.
- Volatiles and semivolatiles are analyzed by GC/MS; pesticides/PCBs are analyzed by GC/ECD.
- Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.
- Second column confirmation by GC/ECD is required for all pesticides/PCBs. Pesticides/PCBs which are identified by GC/ECD at concentrations above 10 ng/uL are confirmed by GC/MS analysis.

REVISIONS/MODIFICATIONS

The following is a list of the significant changes from the 2/88 SOW that are incorporated in the OLM01.0 SOW:

- Selected volatile CRQLs have been raised; pesticide/PCB low soil CRQLs have been lowered; and selected pesticide/PCB aqueous CRQLs have been changed.
- Target Compound List (TCL) changes include the elimination of vinyl acetate from the volatile TCL, the elimination of benzyl alcohol and benzoic acid from the semivolatile TCL, the addition of carbazole to the semivolatile TCL, and the addition of endrin aldehyde to the pesticide TCL. The semivolatile TCL compound bis(2-chloroisopropyl)ether was renamed 2,2'oxybis(1-chloropropane).
- A new method for analysis of pesticides/PCBs is used. Changes include the use of wide bore capillary columns, new surrogates, and new calibration techniques.
- Pesticide/PCB quantitation is performed using both the primary and secondary columns. The lower value is reported by the laboratory.

The only significant change in the OLM01.1 (December, 1990) and OLM01.1.1 (February, 1991) revisions to the OLM01.1 through OLM01.0 SOW was the lowering of selected semivolatile CRQLs. The significant changes in the OLM01.1 through OLM01.7 revisions to the OLM01.0 SOW were the lowering of selected semivolatile CRQLs and options for either a 14 day or 35 day data turnaround.

RECOMMENDED USES

This Routine Analytical Services (RAS) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during SSI, LSI, and RI/FS activities. This method is suitable when a 14 day or 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

* Sediment samples with high moisture content should be solicited as RAS + SAS (Special Analytical Service) in order to achieve the CRQLs.

COMPOUNDS AND CRQLs

The Target Compound List compounds included in the analysis and their Contract Required Quantitation Limits (CRQLs) are listed in Attachment 1.

TITLE: USEPA CONTRACT LABORATORY PROGRAM
STATEMENT OF WORK FOR ORGANIC ANALYSIS
MULTI-MEDIA, HIGH CONCENTRATION

DOCUMENT NUMBER:	Not Applicable
DOCUMENT DATE:	September 1988
EFFECTIVE DATES:	June 7, 1989 through December 26, 1991
CONCENTRATION:	High: Greater than 20 ppm
DATA TURNAROUND:	35 Days
MATRICES:	Liquid/Solid/Multi-phase

SIGNIFICANT FEATURES

- No holding times are designated for high concentration samples.
- The analyses are suitable for highly contaminated samples (>20 mg/Kg).
- The analyses are acceptable for liquid, solid, or multi-phase samples. Multi-phase samples are separated into water miscible liquid, water immiscible liquid, or solid phases. Each phase is analyzed separately.
- Volatile, extractable (semivolatiles and pesticides), and multicomponent extractable (Aroclors and Toxaphene) compounds are included.
- Volatiles and extractables are analyzed by GC/MS; Aroclors and Toxaphene are analyzed by GC/ECD.
- Second column confirmation by GC/ECD is required for Aroclors and Toxaphene.
- Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.

REVISIONS/MODIFICATIONS

The 1/89 and 4/89 revisions to the 9/88 SOW do not significantly affect data useability.

RECOMMENDED USES

This Routine Analytical Services (RAS) method is recommended for pre-remedial, remedial, or removal projects where high concentrations of organic contaminants (greater than 20 mg/Kg) are suspected and a 35 day turnaround for results is adequate. It is recommended for samples obtained from drummed material, waste pits or lagoons, waste piles, tanker trucks, onsite tanks, and apparent contaminated soil areas. The waste material may be industrial process waste, byproducts, raw materials, intermediates and contaminated products. Samples may be spent oil, spent solvents, paint wastes, metal treatment wastes, and polymer formulations.

The method is suitable for solids, liquids, or multiphase samples, a phase being either water miscible liquid, water immiscible liquid, or solid. Various methods of phase separation may be utilized depending on the number and types of phases in a sample.

COMPOUNDS AND CRQLs

The Target Compound List compounds included in the analysis and their Contract Required Quantitation Limits (CRQLs) are listed in Attachment 1.

TITLE: USEPA CONTRACT LABORATORY PROGRAM
STATEMENT OF WORK FOR INORGANIC ANALYSIS
MULTI-MEDIA, MULTI CONCENTRATION

DOCUMENT NUMBER:	ILM01.0
DOCUMENT DATE:	Not Applicable
EFFECTIVE DATES:	September 7, 1990 through September 26, 1993
CONCENTRATION:	Low to Medium
DATA TURNAROUND:	35 Days
MATRICES:	Aqueous/Soil/Sediment*

SIGNIFICANT FEATURES

- The analyses are suitable for aqueous, soil, or sediment samples at low to medium concentration levels.
- This Statement of Work includes the midi distillation for cyanide analysis and the microwave digestion for GFAA and ICP analyses. These two sample preparation procedures require less sample volume than the traditional Statement of Work sample preparation procedures.

REVISIONS/MODIFICATIONS

None to date

RECOMMENDED USES

This Routine Analytical Service (RAS) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during SSI, LSI, and RI/FS activities. This method is suitable when a 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

* Sediment samples with high moisture content should be solicited as RAS + SAS (Special Analytical Service) in order to achieve the CRQLs.

ANALYTES AND CRQLs

The Target Analyte List analytes included in the analysis and their Contract Required Quantitation Limits (CRQLs) are listed in Attachment 2.

TITLE: USEPA CONTRACT LABORATORY PROGRAM
STATEMENT OF WORK FOR INORGANIC ANALYSIS
MULTI-MEDIA, HIGH CONCENTRATION

DOCUMENT NUMBER:	IHC01.2
DOCUMENT DATE:	Not Applicable
EFFECTIVE DATES:	May 15, 1991 through November 30, 1993
CONCENTRATION:	High
DATA TURNAROUND:	35 Days
MATRICES:	Liquid/Solid/Multi-phase

SIGNIFICANT FEATURES

- The analyses are suitable for highly contaminated samples.
- The analyses are acceptable for liquid, solid, or multi-phase samples. Multi-phase samples are separated into water miscible liquid, water immiscible liquid, or solid phases. Each phase is analyzed separately.
- The analyses include conductivity and pH; potassium is not included.

REVISIONS/MODIFICATIONS

The IHC01.1 and IHC01.2 revisions to the IHC01.0 SOW do not significantly affect data useability.

RECOMMENDED USES

This routine Analytical Service (RAS) method is recommended for pre-remedial, remedial, or removal projects where high concentrations of inorganic contaminants are suspected and a 35 day turnaround for results is adequate. It is recommended for samples obtained from drummed material, waste pits or lagoons, waste piles, tanker trucks, onsite tanks, and apparent contaminated soil areas. The waste material may be industrial process waste, byproducts, raw materials, intermediates, and contaminated products. Samples may be spent oil, spent solvents, paint wastes, metal treatment wastes, and polymer formulations.

The method is suitable for solids, liquids, or multiphase samples, a phase being either water miscible liquid, water immiscible liquid, or solid. A phase separation step is applied prior to digestion. Each phase is analyzed and reported as a separate sample.

ANALYTES AND CRQLs

The Target Analyte List analytes included in the analysis and their Contract Required Quantitation Limits (CRQLs) are listed in Attachment 2.

Attachment 1 (Cont'd)
Target Compound List and Associated CRQLs

Semi-Volatiles	*Semi-Volatiles (1,2) Low to Medium*		*Extractables (3,4) High Concentration*
Compound	*Aqueous CRQL (ug/L, ppb)*	*Low Soil CRQL (ug/kg, ppb)*	*Liquid/Solid/Multi-Phase CRQL (mg/kg, ppm)*
Acenaphthalene	10	330	20
2,4-Dinitrophenol	25*	800*	100
4-Nitrophenol	25*	800*	100
Dibenzofuran	10	330	20
2,4-Dinitrotoluene	10	330	20
Diethylphthalate	10	330	20
4-Chlorophenyl-phenylether	10	330	20
Fluorene	10	330	20
4-Nitroaniline	25*	800*	100
4,6-Dinitro-2-methylphenol	25*	800*	100
N-nitrosodiphenylamine	10	330	20
4-Bromophenyl-phenylether	10	330	20
Hexachlorobenzene	10	330	20
Pentachlorophenol	25*	800*	100
Phenanthrene	10	330	20
Anthracene	10	330	20
Carbazole	10	330	--
Di-n-butylphthalate	10	330	20
Fluoranthene	10	330	20
Pyrene	10	330	20
Butylbenzylphthalate	10	330	20
3,3'-Dichlorobenzidine	10**	330**	40
Benzo(a)anthracene	10	330	20
Chrysene	10	330	20
bis(2-Ethylhexyl)phthalate	10	330	20
Di-n-octylphthalate	10	330	20
Benzo(b)fluoranthene	10	330	20
Benzo(k)fluoranthene	10	330	20
Benzo(a)pyrene	10	330	20
Indeno(1,2,3-cd)pyrene	10	330	20
Dibenzo(a,h)anthracene	10	330	20
Benzo(g,h,i)perylene	10	330	20

* CRQLs previously 5 ug/L and 5 ug/kg in 2/88 SOW
** CRQLs previously 20 ug/L and 600 ug/kg in 2/88 SOW

Note:

1 The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

2 Medium level soil CRQL = 120 x Aqueous CRQL reported in ug/kg.

3 All CRQLs are based on wet weight and apply to solid and liquid samples.

4 Results for both solid and liquid samples are reported as mg/kg, wet weight.

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Attachment 1 (Cont'd)
Target Compound List and Associated CRQLs

Semi-Volatiles	*Semi-Volatiles (1,2) Low to Medium*		*Extractables (3,4) High Concentration*
Compound	*Aqueous CRQL (ug/L, ppb)*	*Low Soil CRQL (ug/kg, ppb)*	*Liquid/Solid/Multi-Phase CRQL (mg/kg, ppm)*
Acenaphthalene	10	330	20
2,4-Dinitrophenol	25*	800*	100
4-Nitrophenol	25*	800*	100
Dibenzofuran	10	330	20
2,4-Dinitrotoluene	10	330	20
Diethylphthalate	10	330	20
4-Chlorophenyl-phenylether	10	330	20
Fluorene	10	330	20
4-Nitroaniline	25*	800*	100
4,6-Dinitro-2-methylphenol	25*	800*	100
N-nitrosodiphenylamine	10	330	20
4-Bromophenyl-phenylether	10	330	20
Hexachlorobenzene	10	330	20
Pentachlorophenol	25*	800*	100
Phenanthrene	10	330	20
Anthracene	10	330	20
Carbazole	10	330	--
Di-n-butylphthalate	10	330	20
Fluoranthene	10	330	20
Pyrene	10	330	20
Butylbenzylphthalate	10	330	20
3,3'-Dichlorobenzidine	10**	330**	40
Benzo(a)anthracene	10	330	20
Chrysene	10	330	20
bis(2-Ethylhexyl)phthalate	10	330	20
Di-n-octylphthalate	10	330	20
Benzo(b)fluoranthene	10	330	20
Benzo(k)fluoranthene	10	330	20
Benzo(a)pyrene	10	330	20
Indeno(1,2,3-cd)pyrene	10	330	20
Dibenzo(a,h)anthracene	10	330	20
Benzo(g,h,i)perylene	10	330	20

* CRQLs previously 5 ug/L and 5 ug/kg in 2/88 SOW
** CRQLs previously 20 ug/L and 600 ug/kg in 2/88 SOW

Note:

1 The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

2 Medium level soil CRQL = 120 x Aqueous CRQL reported in ug/kg.

3 All CRQLs are based on wet weight and apply to solid and liquid samples.

4 Results for both solid and liquid samples are reported as mg/kg, wet weight.

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Attachment 1 (Cont'd)
Target Compound List and Associated CRQLs

	Semi-Volatiles (1,2) Low to Medium		*High Concentration (3,4)*
Compound	*Aqueous CRQL (ug/L, ppb)*	*Low Soil CRQL (ug/kg, ppb)*	*Liquid/Solid/Multi-Phase CRQL (mg/kg, ppm)*
Phenol	10	330	20
bis(2-Chloroethyl)ether	10	330	20
2-Chlorophenol	10	330	20
1,3-Dichlorobenzene	10	330	20
1,4-Dichlorobenzene	10	330	20
1,2-Dichlorobenzene	10	330	20
2-Methylphenol	10	330	20
2,2'-oxybis(1-Chloropropane)	10	330	20
4-Methylphenol	10	330	20
N-nitroso-di-n-dipropylamine	10	330	20
Hexachloroethane	10	330	20
Nitrobenzene	10	330	20
Isophorone	10	330	20
2-Nitrophenol	10	330	20
2,4-Dimethylphenol	10	330	20
bis(2-Chloroethoxy)methane	10	330	20
2,4-Dichlorophenol	10	330	20
1,2,4-Trichlorobenzene	10	330	20
Naphthalene	10	330	20
4-Chloroaniline	10	330	20
Hexachlorobutadiene	10	330	20
4-Chloro-3-methylphenol	10	330	20
2-Methylnaphthalene	10	330	20
Hexachlorocyclopentadiene	10	330	20
2,4,6-Trichlorophenol	10	330	20
2,4,5-Trichlorophenol	25*	800*	100
2-Chloronaphthalene	10	330	20
2-Nitroaniline	25*	800*	100
Dimethylphthalate	10	330	20
Acenaphthalene	10	330	20
2,6-Dinitrotoluene	10	330	20
3-Nitroaniline	25	800*	100

* CRQLs previously 5 ug/L and 5 ug/kg in 2/88 SOW

Note:

1 The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

2 Medium level soil CRQL = 1000 x Aqueous CRQL reported in ug/kg.

3 All CRQLs are based on wet weight and apply to solid and liquid samples.

4 Results for both solid and liquid samples are reported as mg/kg, wet weight.

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Attachment 1 (Cont'd)
Target Compound List and Associated CRQLs

Semi-Volatiles	*Semi-Volatiles Low to Medium*		*Extractables (1,2) High Concentration*
Compound	*Aqueous CRQL (ug/L, ppb)*	*Low Soil** CRQL (ug/kg, ppb)*	*Liquid/Solid/Multi-Phase CRQL (mg/kg, ppm)*
alpha-BHC	0.05	1.7	20
beta-BHC	0.05	1.7	20
delta-BHC	0.05	1.7	20
gamma-BHC (Lindane)	0.05	1.7	20
Heptachlor	0.05	1.7	20
Aldrin	0.05	1.7	20
Heptachlor epoxide	0.05	1.7	20
Endosulfan I	0.05	1.7	20
Dieldrin	0.10	3.3	20
4,4'-DDE	0.10	3.3	20
Endrin	0.10	3.3	20
Endosulfan II	0.10	3.3	20
4,4'-DDD	0.10	3.3	20
Endosulfan sulfate	0.10	3.3	20
4,4'-DDT	0.10	3.3	20
Methoxychlor	0.5	17.0	20
Endrin ketone	0.10	3.3	20
Endrin aldehyde	0.10	3.3	--
alpha-Chlordane	0.05*	1.7	20
gamma-Chlordane	0.05*	1.7	20

Note:

1 All CRQLs are based on wet weight and apply to solid and liquid samples.

2 Results for both solid and liquid samples are reported as mg/kg, wet weight.

Aqueous CRQLs changed from 2/88 SOW to the following:

* Aqueous CRQLs (ug/L) - alpha- and gamma-Chlordane from 0.5 to 0.05.

All low soil CRQLs changed from 2/88 SOW to the following:

** Low Soil CRQLs (ug/kg): alpha-BHC through Endosulfan I from 8.0 to 1.7;
Dieldrin through 4,4'-DDT and Endrin ketone from 16.0 to 3.3;
Methoxychlor from 80.0 to 17.0;
alpha- and gamma-Chlordane from 80.0 to 1.7.

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Attachment 1 (Cont'd)
Target Compound List and Associated CRQLs

	Semi-Volatiles Low to Medium		*Extractables (1,2) High Concentration*
Compound	*Aqueous CRQL (ug/L, ppb)*	*Low Soil** CRQL (ug/kg, ppb)*	*Liquid/Solid/Multi-Phase CRQL (mg/kg, ppm)*
Butyl alcohol	--	--	20
Benzoic acid	--	--	100
Monochlorobiphenyl	--	--	100
Dichlorobiphenyl	--	--	100
Trichlorobiphenyl	--	--	100
Tetrachlorobiphenyl	--	--	100
Hexachlorobiphenyl	--	--	100
Pentachlorobiphenyl	--	--	100
Octachlorobiphenyl	--	--	200
Nonachlorobiphenyl	--	--	200
Decachlorobiphenyl	--	--	200
Heptachlorobiphenyl	--	--	100
Toxaphene	5.0*	170.0	50
Aroclor-1016	1.0*	33.0	10
Aroclor-1221	2.0*	67.0	10
Aroclor-1232	1.0*	33.0	10
Aroclor-1242	1.0*	33.0	10
Aroclor-1248	1.0*	33.0	10
Aroclor-1254	1.0	33.0	10
Aroclor-1260	1.0	33.0	10

Note:

1 All CRQLs are based on wet weight and apply to solid and liquid samples.

2 Results for both solid and liquid samples are reported as mg/kg, wet weight.

Aqueous CRQLs changed from 2/88 SOW to the following:

* Aqueous CRQLs (ug/L) - Toxaphene from 1.0 to 5.0;
Aroclors-1016, 1232, 1242, and 1248 from 0.5 to 1.0;
Aroclor-1221 from 0.5 to 2.0.

All low soil CRQLs changed from 2/888 SOW to the following:

** Low Soil CRQLs (ug/kg): Toxaphene from 160.0 to 170.0;
Aroclor-1016, 1232, 1242, and 1248 from 80.0 to 33.0;
Aroclor-1221 from 80.0 to 67.0;
Aroclor-1254 and 1260 from 160.0 to 33.0.TCL Ex

21-002-079.4

Attachment 2
Target Analyte List and Associated CRQLs

	Multi-Concentration (1)		*High Concentration (2,3)*
Analyte	*Aqueous CRQL (ug/L, ppb)*	*Low Soil CRQL (ug/kg, ppb)*	*Liquid/Solid/Multi-Phase CRQL (mg/kg, ppm)*
Aluminum	200	40	80
Antimony	60	12	20
Arsenic	10	2	5
Barium	200	40	80
Beryllium	5	1	5
Cadmium	5	1	10
Calcium	5000	1000	80
Chromium	10	2	10
Cobalt	50	10	20
Copper	25	5	40
Iron	100	20	20
Lead	3	0.6	10
Magnesium	5000	1000	80
Manganese	15	3	10
Mercury	0.2	0.1	0.3
Nickel	40	8	20
Potassium	5000	1000	--
Selenium	5	1	5
Silver	10	2	10
Sodium	5000	1000	80
Thallium	10	2	20
Vanadium	50	10	20
Zinc	20	4	10
Cyanide	10	2	1.5
pH	--	--	N/A
Conductivity	--	--	3.0 (umhos/cm)

Note:

1 The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

2 Medium level soil CRQL = 120 x Aqueous CRQL reported in ug/kg.

3 Results for both solid and liquid samples are reported as mg/kg, wet weight.

21-002-079,5