ORGANIC CHEMISTRY
List of Acronyms

A	*Standard Methods*	*NH_4Cl*	*Ammonium Chloride*
BTEX	*Benzene, Toluene, Ethylbenzene, Xylenes*	*NR*	*Not Regulated*
CFR	*Code of Federal Regulations*	*PAH*	*Polynuclear Aromatic Hydrocarbons*
DBCP	*1,2-Dibromo-3-chloropropane*	*PCBs*	*Polychlorinated Biphenyls*
DRO	*Diesel Range Organics*	*POX*	*Purgeable Halocarbons*
EDB	*Dibromoethane*	*ppb*	*parts per billion*
EOX	*Extractable Organic Halogens*	*ppm*	*parts per million*
E or EPA	*US Environmental Protection Agency*	*PQLs*	*Practical Quantitation Limits The PQL of diluted samples will be correspondingly higher.*
EPH	*Extractable Petroleum Hydrocarbons*	*PVC*	*Polyvinyl Chloride*
		SW	*Solid Waste 846*
GC	*Gas Chromatograph*	*SVOC*	*Semi-Volatile Organic Compounds*
GC/FID	*Gas Chromatograph/Flame Ionization Detector*	*TCL*	*Target Compound List*
GC/MS	*Gas Chromatograph/Mass Spectrometer*	*TOX*	*Total Organic Halogens*
GRO	*Gasoline Range Organics*	*TEPH*	*Total Extractable Petroleum Hydrocarbons*
H_2SO_4	*Sulfuric Acid*	*TPH*	*Total Petroleum Hydrocarbons*
HCl	*Hydrochloric Acid*	*TPH-IR*	*Total Petroleum Hydrocarbons by Infrared Spectroscopy*
HPLC	*High Performance Liquid Chromatography*	*TRPH*	*Total Recoverable Petroleum Hydrocarbons*
IR	*Infrared Spectroscopy*	*VOCs*	*Volatile Organic Chemicals*
MCL	*Maximum Contaminant Level*	*VPH*	*Volatile Petroleum Hydrocarbons*
NaOH	*Sodium Hydroxide*		

ORGANIC CHEMISTRY

1. DRINKING WATER ANALYSIS

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Trihalomethanes	E502.2/E524.2	8
Maximum Trihalomethane Potential	40 CFR Part 141.30	8
Volatile Halogenated Compounds	E502.2/E524.2	8
Volatile Aromatic Compounds	E502.2/E524.2	9
EDB and DBCP, low level	E504.1	9
Nitrogen- Phosphorus and Sulfur Pesticides by GC/MS	E507 Mod.	10
PCBs as decachlorobiphenyl	E508A	--
Chlorinated Acid Herbicides	E515.4	11
Regulated and Unregulated VOCs	E524.2/E502.2	14
Regulated and Unregulated VOCs, long list	E524.2 long list	15
Pesticides (Semi-Volatile Organic Compounds), drinking water list	E525.2	12
Pesticides (Semi-Volatile Organic Compounds), Montana drinking water list	E525.2	13
Pesticides (Semi-Volatile Organic Compounds), long list	E525.2	13
Carbamates	E531.1	16
Glyphosate	E547	16
Endothall	E548.1	16
Diquat	E549.1	16
Haloacetic Acids	E552.2	17
Maximum Haloacetic Acid Potential	E552.2	--

2. VOLATILES

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Purgeable Halocarbons (POX)	E601/SW8021B/E624.1/ SW8260B	17
Purgeable Aromatics	E602/SW8021B/E624.1/ SW8260B	18
POX and Purgeable Aromatics together	E601+E602/E624.1/SW8260B	17, 18
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E602/SW8021B	18
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E524.2/E624.1/SW8260B	14, 18

2. VOLATILES (continued)

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Gasoline Range Organics (GRO)	SW8015C	26
BTEX and GRO together	E602/SW 8021B + SW8015C (GRO)	18, 26
Purgeable Organics (VOCs), short list	E624.1/SW8260B	22
Acrolein and Acrylonitrile	E624.1/SW8260B	21
Purgeable Organics (VOCs), long list	SW8260B	23
Total Petroleum Hydrocarbons	TNRCC 1005 (mod)	--

3. PETROLEUM, UST, LUST RELATED ANALYSIS

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E602/SW 8021B	18
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E524.2/E624.1/SW 8260B	9, 18
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E524.2	14
Gasoline Range Organics (GRO)	SW 8015C	26
BTEX and GRO together	E602/SW 8021B + SW 8015C (GRO)	18, 26
Diesel Range Organics (DRO)	SW 8015C	27
Extractable Petroleum Hydrocarbons Screen (EPH)	MT DEQ MA EPH	28
Extractable Petroleum Hydrocarbons (EPH) (after screening option without PAHs-if required)	MT DEQ MA EPH	28
Extractable Petroleum Hydrocarbons (EPH) (after screening option with PAHs-if required)	MT DEQ MA EPH	28
Extractable Petroleum Hydrocarbons (EPH) (complete without screening)	MT DEQ MA EPH	28
Volatile Petroleum Hydrocarbons (VPH)	MT DEQ MA VPH	27
Carbon Scan with DRO (product identification - fingerprinting)	SW 8015C or GC/FID - SimDist	27
Total Petroleum Hydrocarbons	TNRCC 1005 (mod)	--
Total Petroleum Hydrocarbons by Infrared Spectroscopy (TPH-IR)	E418.1	29
Purgeable Organics (VOCs)	E624.1/SW8260B	22, 23
Oil & Grease, Hexanes Extraction/Gravimetric	E1664A	29
Oil & Grease, Hexanes Extraction/Gravimetric Sulfur Corrected w/Copper	E1664-Cu	29
TPH, Hexanes Extraction/Gravimetric	E1664A	29
TPH, Hexanes Extraction/Gravimetric Sulfur Corrected w/Copper	E1664-Cu	29

ORGANIC CHEMISTRY

3. PETROLEUM, UST. LUST RELATED ANALYSIS (continued)

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Oil and Grease, Freon Extractable/Gravimetric	E413.1	29
Oil and Grease, Freon Extractable/Infrared Spectroscopy	E413.2	29
Oil and Grease or TPH by Soxhlet Extraction	SW9071	29
Hydrocarbons in Headspace Gas	GC/FID/ Kampbell (SW8015 Mod.)	30

4. SEMI-VOLATILES

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Semi-volatile Organics (SVOC) by GC/MS	E625.1/SW8270C	24
SVOC acid extractables	E625.1/SW8270C	24
SVOC base/neutral extractables	E625.1/SW8270C	24
2,3,7,8-TCDD Dioxin – Screening test	E625.1 screening	25
Phenols, individual compounds by GC/MS	E625.1/SW8270C	25
Phenols, total in water, colorimetric	E420.4	Waters – 5
Phenols, total in soil, colorimetric	SW9065	--
Phthalate Esters	E625.1/SW8270C	25
Polynuclear Aromatic Hydrocarbons (PAH), by GC/MS	E625.1/SW8270C	26
Polynuclear Aromatic Hydrocarbons (PAH), by GC/MS Low Level	E625.1/SW8270C	26
Diesel Range Organics (DRO)	SW8015C	27
Carbon Scan with DRO (product identification – fingerprinting)	SW 8015C or GC/FID - SimDist	27
Total Petroleum Hydrocarbons by Infrared Spectroscopy (TPH-IR)	E418.1	29

5. HERBICIDES, PESTICIDES AND PCBs

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Polychlorinated biphenyls (PCBs)	E608.3/SW8082A	19, 20
PCBs in transformer oil	SW8082A	20
Organochlorine Pesticides and PCBs	E608.3 or SW8081B+ SW8082A	19,20

ORGANIC CHEMISTRY

5. HERBICIDES, PESTICIDES AND PCBs (continued)

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Organochlorine Pesticides	E608.3/SW8081B	19, 20
Chlorinated Herbicides	E615/SW8151A	21

6. OTHER ORGANICS

ANALYSIS	METHOD	METHOD DETAILS, Organics Page
Total Organic Halogens (TOX)	SW9020	Waters – 6
Ethylene Glycol	ASTM D2982 Mod.	Waters – 4
Glycol by GC	GC-FID / SW8015M	28
Formaldehyde	NIOSH 3500 Mod.	Waters – 4
Methanol	SW8015C	--
Methane	GC-FID/ Kampbell (SW8015 Mod.)	Waters – 5, Organics - 29

7. PREPARATORY METHODS

Extractions, Preparations and Cleanups From SW-846, Test Methods For Evaluating Solid Waste
These methods are used to prepare or cleanup samples for analysis. Unless specified by the sample submitter, the laboratory will select the appropriate method based on the sample matrix, the analytical method, and the data objectives.

Method	DESCRIPTION
SW3510C	Separatory Funnel Liquid-Liquid Extraction
SW3520C	Continuous Liquid-Liquid Extraction
SW3545	Accelerated Solvent Extraction
SW3550C	Ultrasonic Extraction
SW3580A	Waste Dilution
SW5030B	Purge-and-Trap
SW5031	Azeotropic Distllation
SW5035	Extractions for Volatile Organics in Soil and Waste
SW3620B	Florisil Column Cleanup
SW3630C	Silica Gel Cleanup
SW3650A	Acid-Base Partition Cleanup
SW3660B	Sulfur Cleanup
SW3665A	Sulfuric Acid/Permanganate Cleanup

ORGANIC CHEMISTRY
SAMPLING AND PRESERVATION

METHOD	SAMPLE BOTTLE(s), Water [1]	SAMPLE BOTTLE, Solids [1]	Preservation of water samples (solids are not preserved) [2]	Additional treatment for chlorinated samples	Holding time to extraction, days	Holding time to analysis, days
E502.2	3-40 mL VOA [3]	NA	HCl to pH <2	sodium thiosulfate	NA	14
E504.1	3-40 mL VOA [3]	NA	3 mg sodium thiosulfate	ascorbic acid or sodium thiosulfate	14	24 hours
E507mod	2-1000 mL G	4oz w/m Amber Glass	None	sodium thiosulfate	14	28
E508A	2-1000 mL G	NA	None	None	14	30
E515.4	1-250 mL G	NA	None	Sodium Sulfite	14	28
E524.2	3-40 mL VOA [3]	NA	HCl to pH <2	ascorbic acid	NA	14
E525.2	2-1000 mL G	NA	HCl to pH <2	sodium sulfite – dechlorinate before adding acid.	14	30
E531.1	3-40 mL VOA [3]	NA	1.2 mL monochloro-acetic acid	sodium thiosulfate	NA	28
E547	1-40 mL VOA [3]	NA	None	sodium thiosulfate	NA	14
E548.1	1-1000 mL G	NA	None	sodium thiosulfate	7	14
E549	2-liter P (or PVC)	NA	None	sodium thiosulfate	7	21
E552.2	3-40 mL VOA [3]	NA	NH_4Cl, 100 mg/L	none	14	14
E601/ SW8021B	3-40 mL VOA [3]	4oz w/m Amber Glass	HCl to pH <2	ascorbic acid	NA	14
E602/ SW8021B	3-40 mL VOA [3]	4oz w/m Amber Glass	HCl to pH <2	ascorbic acid	NA	14
E608.3/ SW8081B	3-1000 mL G	4oz w/m Amber Glass	None	sodium thiosulfate	7 (w); 14 (s)	40
E612/ SW8121	1-1000 mL G	4oz w/m Amber Glass	None	none	7 (w); 14 (s)	40
E615/ SW8151A	1-1000 mL G	4oz w/m Amber Glass	None	sodium thiosulfate	7 (w); 14 (s)	40
E624.1/ SW8260B	3-40 mL VOA [3]	4oz w/m Amber Glass	HCl to pH <2	ascorbic acid	NA	14
Acrolein and Acrylonitrile should be sampled in separate vials from other VOCs 3-40 mL VOA vials. Unpreserved (raw), chilled to 4-6°C and analyzed within 3 days of collection. Or, pH adjusted to 4-5 with HCl, chilled to 4-6°C, and analyzed within 14 days. Add ascorbic acid to chlorinated samples. Store at 4-6°C. Contact the laboratory prior to sampling to arrange for this analysis						
E625.1/ SW8270C	2-1000 mL G	4oz w/m Amber Glass	None	sodium thiosulfate	7 (w); 14 (s)	40
BTEX	3-40 mL VOA [3]	4oz w/m Amber Glass	HCl to pH <2	ascorbic acid	NA	14
GRO	3-40 mL VOA [3]	4oz w/m Amber Glass	HCl to pH <2	none	NA	14
DRO	2-1000 mL G	4oz w/m Amber Glass	H_2SO4 to pH <2	none	7 (w); 14 (s)	40

ORGANIC CHEMISTRY
SAMPLING AND PRESERVATION (continued)

METHOD	SAMPLE BOTTLE(s), Water [1]	SAMPLE BOTTLE, Solids [1]	Preservation of water samples (solids are not preserved) [2]	Additional treatment for chlorinated samples	Holding time to extraction, days	Holding time to analysis, days
E418.1/TPH	1-1000 mL G	4oz w/m Amber Glass	H_2SO4 to pH <2	none	7	40
TPH by TNRCC 1005 (mod)	3-40mL VOA	4 oz G	HCl to pH <2	none	14	14
E1664 O & G	2-1000 mL c G	NA	H_2SO4 to pH <2	none	NA	28
E1664 TPH	2-1000 mL c G	NA	H_2SO4 to pH <2	none	NA	28
EPH	2-1000 mL G	4oz w/m Amber Glass	H_2SO_4 to pH <2	none	14(w); 14(s)	40
VPH	3-40 mL VOA [3]	4oz w/m Amber Glass	HCl to pH <2	ascorbic acid	7(s)	14 (w); 28(s)

Notes: 1 – Sample bottles; P = plastic; G = glass; w/m = wide mouth; c = clear
2 – Most parameters should be shipped and stored at 4-6°C.
3 – Water samples collected for volatiles must be taken with zero headspace. The VOA vial must be completely full, no headspace. 4 – 7 days if heptachlor epoxide is required.

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Trihalomethanes (Method E502.2/E524.2)

Sampling: 3-40 mL glass/teflon VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 (smaller blue capped ampule).

Holding Time: 14 days

Drinking Water MCL: 80 µg/L total of all four trihalomethanes

	CAS NO.	PQL, µg/L		CAS NO.	PQL, µg/L
Bromodichloromethane	75-27-4	0.5	Chloroform	67-66-3	0.5
Bromoform	75-25-2	0.5	Dibromochloromethane	124-48-1	0.5

Maximum Trihalomethane Potential (40 CFR Part 141.30)

Sampling: Sample in 40 mL glass/teflon VOA vials completely full with no air bubbles. If no residual chlorine is present, obtain 10 vials; if residual chlorine is present, take 4 vials. Store at 4-6°C. Do not preserve.

Holding Time: None specified in method. Incubation should be started upon receipt of samples.

Volatile Halogenated Compounds (Method E502.2/E524.2)

Sampling: 3-40 mL glass/Teflon VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 (smaller blue capped ampule).

Holding Time: 14 days

Notes: MCL = Drinking Water MCL
EPA MCL for the Total for all four Trihalomethanes = 80 µg/L
For regulatory compliance, DBCP and EDB should be analyzed by Method E504.1, which has lower PQLs.
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO.	MCL, µg/L	PQL, µg/L
Bromobenzene	108-86-1	NR	0.5	1,2-Dichloroethane	107-06-2	5	0.5
Bromochloromethane	74-97-5	NR	0.5	1,1-Dichloroethene	75-35-4	7	0.5
Bromodichloromethane	75-27-4	(See THM Note)	0.5	cis-1,2-Dichloroethene	156-59-2	70	0.5
Bromoform	75-25-2	(See THM Note)	0.5	trans-1,2-Dichloroethene	156-60-5	100	0.5
Bromomethane	74-83-9	NR	0.5	1,2-Dichloropropane	78-87-5	5	0.5
Carbon Tetrachloride	56-23-5	5	0.5	1,3-Dichloropropane	142-28-9	NR	0.5
Chlorobenzene	108-90-7	100	0.5	1,1-Dichloropropene	563-58-6	NR	0.5
Chloroethane	75-00-3	NR	0.5	Methylene Chloride (Dichloromethane)	75-09-2	5	0.5
Chloroform	67-66-3	(See THM Note)	0.5	1,1,1,2-Tetrachloroethane	630-20-6	NR	0.5
Chloromethane	74-87-3	NR	0.5	1,1,2,2-Tetrachloroethane	79-34-5	NR	0.5
2-Chlorotoluene	95-49-8	NR	0.5	Tetrachloroethene (Tetrachloroethylene)	127-18-4	5	0.5
Chlorodibromomethane	124-48-1	(See THM Note)	0.5	1,1,1-Trichloroethane	71-55-6	200	0.5
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2 (See Notes)	0.5	1,1,2-Trichloroethane	79-00-5	5	0.5
Dibromoethane (EDB)	106-93-4	0.05 (See Notes)	0.5	Trichloroethene (Trichloroethylene)	79-01-6	5	0.5
Dibromomethane	74-95-3	NR	0.5	Trichlorofluoromethane	75-69-4	NR	0.5
1,2-Dichlorobenzene	95-50-1	NR	0.5	1,2,3-Trichloropropane	96-18-4	NR	0.5
1,3-Dichlorobenzene	541-73-1	600	0.5	Vinyl Chloride (Chloroethene)	75-01-4	2	0.5
1,4-Dichlorobenzene	106-46-7	75	0.5				
Dichlorodifluoromethane	75-71-8	NR	0.5				
1,1-Dichloroethane	75-34-3	NR	0.5				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Volatile Aromatic Compounds (Method E502.2/E524.2)

Sampling: 3-40 mL glass/teflon VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 (smaller blue capped ampule).

Holding Time: 14 days

Notes: MCL = Drinking Water MCL
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

	CAS NO.	MCL, µg/L	PQL,µg/L		CAS NO.	MCL, µg/L	PQL µg/L
Benzene	71-43-2	5	0.5	Naphthalene	91-20-3	NR	0.5
Bromobenzene	108-86-1	NR	0.5	n-Propylbenzene	103-65-1	NR	0.5
n-Butylbenzene	104-51-8	NR	0.5	Styrene	100-42-5	100	0.5
sec-Butylbenzene	135-98-8	NR	0.5	Tetrachloroethene (Tetrachloroethylene)	127-18-4	5	0.5
tert-Butylbenzene	98-06-6	NR	0.5	Toluene	108-88-3	1000	0.5
Chlorobenzene	108-90-7	100	0.5	1,2,3-Trichlorobenzene	87-61-6	NR	0.5
2-Chlorotoluene	95-49-8	NR	0.5	1,2,4-Trichlorobenzene	120-82-1	70	0.5
4-Chlorotoluene	106-43-4	NR	0.5	Trichloroethene (Trichloroethylene)	79-01-6	5	0.5
1,2-Dichlorobenzene	95-50-1	600	0.5	1,2,4-Trimethylbenzene	95-63-6	NR	0.5
1,3-Dichlorobenzene	541-73-1	NR	0.5	1,3,5-Trimethylbenzene	108-67-8	NR	0.5
1,4-Dichlorobenzene	106-46-7	75	0.5	Xylenes:		10000	0.5
Ethylbenzene	100-41-4	700	0.5	M	108-38-3		
Hexachlorobutadiene	87-68-3	NR	0.5	P	106-42-3		
Isopropylbenzene	98-82-8	NR	0.5	O	95-47-6		
p-Isopropyltoluene	99-87-6	NR	0.5				

Low Level EDB and DBCP (Method E504.1)

Sampling: 3-40mL glass/teflon VOA vials completely full with no air bubbles. Store at 4-6°C. Add 3 mg sodium thiosulfate to chlorinated and non-chlorinated samples.

Holding Time: 14 days.

Notes: MCL = Drinking Water MCL
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO.	MCL, µg/L	PQL, µg/L
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	0.2	0.02	1,2-Dibromoethane (Ethylene Dibromide) (EDB)	106-93-4	0.05	0.1
1,2,3,-Trichloropropane	96-18-4	NR	0.05				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Nitrogen, Phosphorus, and Sulfur Containing Pesticides (Method E507 Mod.)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at 4-6°C. Add sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 14 days to extraction; 28 days to analysis

Notes: All analytes are analyzed and positively identified using a mass spectrometer detector in place of the nitrogen-phosphorus detector specified.

		PQL				PQL	
	CAS NO.	mg/Kg	µg/L		CAS NO.	mg/Kg	µg/L
Alachlor	15972-60-8	0.003	0.1	Metolachlor	51218-45-2	0.063	
Ametryn	834-12-8	0.003	0.1	Metribuzin	21087-64-9	0.003	0.1
Atraton	1610-17-9	0.003	0.1	Mevinphos	7786-34-7	0.003	0.1
Atrazine	1912-24-9	0.003	0.1	MGK-264	113-48-4	0.003	0.1
Benefin	1861-40-1	0.003	0.1	Molinate	2212-67-1	0.003	0.1
Bromacil	314-40-9	0.003	0.1	Napropamide	15299-99-7	0.003	0.1
Butachlor	23184-66-9	0.003	0.1	Norflurazon	27314-13-2	0.003	0.1
Butylate	2008-41-5	0.003	0.1	Oxadiazon	19666-30-9	0.003	0.1
Carboxin	5234-68-5	0.003	0.1	Oxyfluorfen	42874-03-3	0.003	0.5
Chlorpropham	101-21-3	0.003	0.1	Pebulate	1114-71-2	0.003	0.1
Chlorpyrifos	2921-88-2	0.003	0.1	Pendimethalin	40487-42-1	0.003	0.1
Cyanazine	21725-46-2	0.003	0.1	Phorate	298-02-2	0.003	0.1
Cycloate	1134-23-2	0.003	0.1	Profluralin	26399-36-0	0.003	0.1
Diazinon	333-41-5	0.003	0.1	Prometon	1610-18-0	0.003	0.1
Dichlorvos	62-73-7	0.003	0.1	Prometryne	7287-19-6	0.003	0.1
Diphenamid	957-51-7	0.003	0.1	Pronamide	23950-58-5	0.003	0.1
Disulfoton	298-04-4	0.003	0.1	Propachlor	1918-16-7	0.003	0.1
EPTC	759-94-4	0.003	0.1	Propazine	139-40-2	0.003	0.1
Ethalfluralin	55283-68-6	0.003	0.1	Simazine	122-34-9	0.003	0.1
Ethoprop	13194-48-4	0.003	0.1	Simetryn	1014-70-6	0.003	0.1
Fenamiphos	22224-92-6	0.003	0.1	Stirofos	22248-79-9	0.003	0.1
Fenarimol	60168-88-9	0.017	0.5	Terbacil	5902-51-2	0.003	0.1
Fluridone	59756-60-4	0.003	0.1	Terbufos	13071-79-9	0.003	0.1
Fonofos	944-22-9	0.003	0.1	Terbutryn	886-50-0	0.003	0.1
Hexazinone	51235-04-2	0.003	0.1	Triadimefon	43121-43-3	0.003	0.1
Isopropalin	33820-53-0	0.003	0.1	Triallate	2303-17-5	0.003	0.1
Malathion	121-7-5	0.3	0.1	Tricyclazole	41814-78-2	0.003	0.1
Merphos	150-50-5	0.003	0.1	Trifluralin	1582-09-8	0.003	0.1
Methyl paraoxon	950-35-6	0.017	0.1	Vernolate	1929-77-7	0.003	0.1

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Chlorinated Acid Herbicides (Method E515.4)

Sampling: 1-250 mL Amber Glass with Sodium Sulfite. Store at 4-6°C.

Holding Time: 14 days to extraction; 28 days to analysis.

Notes: MCL = Drinking Water MCL
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO.	MCL, µg/L	PQL, µg/L
2,4-D	94-75-7	70	1.0	Dinoseb	88-85-7	7	1.0
2,4-DB	94-82-6	NR	1.0	Pentachlorophenol (PCP)	87-86-5	1	0.10
Dalapon	75-99-0	200	2.5	Picloram	1918-02-1	500	0.50
Dicamba	1918-00-9	NR	1.0	2,4,5-TP (Silvex)	93-72-1	50	0.25
Dichlorprop	120-36-5	NR	1.0				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Pesticides (Method E525.2 - Drinking Water List)

Sampling: 2-1000 mL glass bottles preserved with hydrochloric acid (large blue capped ampule) to a pH <2. Residual chlorine is reduced in the sample by the addition of 40-50 mg of sodium sulfite. Mix well to ensure it is dissolved in the sample. It is very important that the sample be dechlorinated prior to adding acid to lower the pH. Store at 4-6°C.

Holding Time: 14 days to extraction; 30 days to analysis.

Notes: MCL = Drinking Water MCL
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO.	MCL, µg/L	PQL, µg/L
Alachlor	5972-60-8	2	0.1	Chlordane	57-74-9	2	1
Aldrin	309-00-2	NR	0.1	Dieldrin	60-57-1	NR	0.1
PCBs		0.5		Endrin	72-20-8	2	0.1
Aroclor 1016	12674-11-2	NR	0.08	gamma-BHC (Lindane)	58-89-9	0.2	0.1
Aroclor 1221	11104-28-2	NR	2	Heptachlor	76-44-8	0.4	0.1
Aroclor 1232	11141-16-5	NR	0.5	Heptachlor epoxide	1024-57-3	0.2	0.1
Aroclor 1242	53469-21-9	NR	0.3	Hexachlorobenzene	118-74-1	1	0.1
Aroclor 1248	12672-29-6	NR	0.1	Hexa-chlorocyclopentadiene	77-74-4	50	0.1
Aroclor 1254	11097-69-1	NR	0.1	Methoxychlor	72-43-5	40	0.1
Aroclor 1260	11096-82-5	NR	0.2	Metolachlor	51218-45-2	NR	0.1
Atrazine	1912-24-9	3	0.1	Metribuzin	21087-64-9	NR	0.1
Benzo(a)pyrene	50-32-8	0.2	0.1	Propachlor	1918-16-7	NR	0.1
bis(2-ethylhexyl)Adipate	103-23-1	400	0.5	Simazine	122-34-9	4	0.1
bis(2-ethylhexyl) Phthalate	117-81-7	6	2	Toxaphene	8001-35-2	3	2
Butachlor	23184-66-9	NR	0.1				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Pesticides (Method E525.2 - Long List)

Sampling: 2-1000 mL glass bottles preserved with hydrochloric acid (large blue capped ampule) to a pH <2. Residual chlorine is reduced in the sample by the addition of 40-50 mg of sodium sulfite. Mix well to ensure it is dissolved in the sample. It is very important that the sample be dechlorinated prior to adding acid to lower the pH. Store at 4-6°C.

Holding Time: 14 days to extraction; 30 days to analysis.

Notes: ** Compounds included on the State of Montana Drinking Water Pesticide List.
MCL = Drinking Water MCL
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO	MCL, µg/L	PQL, µg/L
Acenaphthylene	208-96-8	NR	0.10	** Di (2-ethylhexyl) Adipate	103-23-1	400	0.50
** Alachlor	15972-60-8	2	0.10	Fluorene	86-73-7	NR	0.10
** Aldrin	309-00-2	NR	0.10	** Heptachlor	76-44-8	0.4	0.10
Anthracene	120-12-7	NR	0.10	** Heptachlor Epoxide	1024-57-3	0.2	0.10
** Atrazine	1912-24-9	3	0.10	Heptachlorobiphenyl	52663-71-5	NR	0.10
Benzo(a)anthracene	56-55-3	NR	0.10	** Hexachlorobenzene	118-74-1	1	0.10
Benzo(b)fluoranthene	205-99-2	NR	0.10	Hexachlorobiphenyl	60145-22-4	NR	0.10
Benzo(k)fluoranthene	207-08-9	NR	0.10	** Hexachlorocyclopentadiene	77-47-4	50	0.50
Benzo(g h i)perylene	191-24-2	NR	0.10	Indeno(1 2 3-cd)pyrene	193-39-5	NR	0.10
** Benzo(a)pyrene	50-32-8	0.2	0.10	** Lindane	58-89-9	0.2	0.10
** Butachlor	23184-66-9	NR	0.10	** Methoxychlor	72-43-5	40	0.10
Butylbenzylphthalate	85-68-7	NR	0.10	** Metolachlor	51218-45-2	NR	0.10
** Alpha-chlordane	5103-71-9	(Chlordane	0.10	** Metribuzin	21087-64-9	NR	0.10
** Gamma-chlordane	5103-74-2	MCL: 2)	0.10	Trans-Nonachlor	21641-70-3	NR	0.10
2-Chlorobiphenyl	2051-60-7	NR	0.10	Octachlorobiphenyl	40186-71-8	NR	0.10
Chrysene	218-01-9	NR	0.10	Pentachlorophenol	87-86-5	1	1.0
Dibenzo(a h)anthracene	53-70-3	NR	0.10	Phenanthrene	85-01-8	NR	0.10
2,3-Dichlorobiphenyl	16605-91-7	NR	0.10	** Propachlor	1918-16-7	NR	0.10
** Dieldrin	60-57-1	NR	0.10	** Pyrene	129-00-0	NR	0.10
Diethylphthalate	84-66-2	NR	0.10	**Simazine	122-34-9	4	0.10
** Di(2-ethylhexyl)Phthalate	117-81-7	6	2.0	Tetrachlorobiphenyl	2437-79-8	NR	0.10
Dimethyl Phthalate	131-11-3	NR	0.10	** Toxaphene	8001-35-2	3	0.10
Di-n-Butylphthalate	84-74-2	NR	0.10	2,4,5-Trichlorobiphenyl	15862-07-4	NR	0.10
** Endrin	72-20-8	2	0.10				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Regulated and Unregulated Volatile Organic Compounds (VOCs) (Method E524.2)

Sampling: 3-40 mL glass/teflon VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 (smaller blue capped ampule).

Holding Time: 14 days

Notes: MCL = Drinking Water MCL
EPA MCL for the Total for all four Trihalomethanes = 80 µg/L
For regulatory compliance, DBCP and EDB should be analyzed by EPA Method 504.1, which has lower PQLs.
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

Regulated VOCs	CAS NO.	MCL, µg/L	PQL*µg/L	Regulated VOCs	CAS NO.	MCL, µg/L	PQL*µg/L
Benzene	71-43-2	5	0.5	Styrene	100-42-5	100	0.5
Carbon Tetrachloride	56-23-5	5	0.5	Tetrachloroethene	127-18-4	5	0.5
Chlorobenzene	108-90-7	100	0.5	Toluene	108-88-3	1000	0.5
1,2-Dichlorobenzene	95-50-1	600	0.5	1,2,4-Trichlorobenzene	120-82-1	70	0.5
1,4-Dichlorobenzene	106-46-7	75	0.5	1,1,1-Trichloroethane	71-55-6	200	0.5
1,2-Dichloroethane	107-06-2	5	0.5	1,1,2-Trichloroethane	79-00-5	5	0.5
1,1-Dichloroethene	75-35-4	7	0.5	Trichloroethene	79-01-6	5	0.5
cis-1,2-Dichloroethene	156-59-2	70	0.5	Vinyl Chloride	75-01-4	2	0.5
trans-1,2-Dichloroethene	156-60-5	100	0.5	Xylenes:		10000	0.5
1,2-Dichloropropane	78-87-5	5	0.5	M	108-38-3		
Ethylbenzene	100-41-4	700	0.5	P	106-42-3		
Methylene Chloride	75-09-2	5	0.5	O	95-47-6		

Total Trihalomethanes	CAS NO.	MCL, µg/L	PQL µg/L	Total Trihalomethanes	CAS NO.	MCL, µg/L	PQL µg/L
Bromodichloromethane	75-27-4	See Note	0.5	Chlorodibromomethane	124-48-1	See Note	0.5
Bromoform	75-25-2	See Note	0.5	Chloroform	67-66-3	See Note	0.5

Other EPA Listed VOCs	CAS NO.	MCL, µg/L	PQL µg/L	Other EPA Listed VOCs	CAS NO.	MCL, µg/L	PQL µg/L
Bromobenzene	108-86-1	NR	0.5	1,3-Dichloropropane	142-28-9	NR	0.5
Bromochloromethane	74-97-5	NR	0.5	cis-1,3-Dichloropropene	10061-01-5	NR	0.5
Bromomethane	74-83-9	NR	0.5	trans-1,3-Dichloropropene	10061-02-6	NR	0.5
n-Butylbenzene	104-51-8	NR	0.5	2,2-Dichloropropane	590-20-7	NR	0.5
sec-Butylbenzene	135-98-8	NR	0.5	Hexachlorobutadiene	87-68-3	NR	0.5
tert-Butylbenzene	98-06-6	NR	0.5	Isopropylbenzene	98-82-8	NR	0.5
Chloroethane	75-00-3	NR	0.5	p-Isopropyltoluene	99-87-6	NR	0.5
Chloromethane	74-87-3	NR	0.5	Trichlorofluoromethane	75-69-4	NR	0.5
2-Chlorotoluene	95-49-8	NR	0.5	Naphthalene	91-20-3	NR	0.5
4-Chlorotoluene	106-43-4	NR	0.5	n-Propylbenzene	103-65-1	NR	0.5
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2 (See Note)	1	1,1,1,2-Tetrachloroethane	630-20-6	NR	0.5
1,2-Dibromoethane (EDB)	106-93-4	0.05 (See Note)	0.5	1,1,2,2-Tetrachloroethane	79-34-5	NR	0.5
Dibromomethane	74-95-3	NR	0.5	Methyl-t-butyl ether	1634-04-4	NR	0.5
1,3-Dichlorobenzene	541-73-1	NR	0.5	1,2,3-Trichlorobenzene	87-61-6	NR	0.5
Dichlorodifluoromethane	75-71-8	NR	0.5	1,2,3-Trichloropropane	96-18-4	NR	0.5
1,1-Dichloroethane	75-34-3	NR	0.5	1,2,4-Trimethylbenzene	95-63-6	NR	0.5
1,1-Dichloropropene	563-58-6	NR	0.5	1,3,5-Trimethylbenzene	108-67-8	NR	0.5

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Volatile Organic Compounds (VOCs) (Method E524.2 - Long List)

Sampling: 3-40 mL glass/teflon VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 (smaller blue capped ampule).

Holding Time: 14 days

Notes: MCL = Drinking Water MCL
EPA MCL Total for all four Trihalomethanes = 80 µg/L
For regulatory compliance, DBCP and EDB should be analyzed by Method E504.1, which has lower PQLs.
E500 series methods are appropriate only for drinking water analyses. For other waters, wastewaters or solids use the E600 or SW 8000 series methods.

Regulated VOCs	CAS NO.	MCL, µg/L	PQL, µg/L	Regulated VOCs	CAS NO.	MCL, µg/L	PQL, µg/L
Benzene	71-43-2	5	0.5	Styrene	100-42-5	100	0.5
Carbon Tetrachloride	56-23-5	5	0.5	Tetrachloroethene	127-18-4	5	0.5
Chlorobenzene	108-90-7	100	0.5	Toluene	108-88-3	1000	0.5
1,2-Dichlorobenzene	95-50-1	600	0.5	1,2,4-Trichlorobenzene	120-82-1	70	0.5
1,4-Dichlorobenzene	106-46-7	75	0.5	1,1,1-Trichloroethane	71-55-6	200	0.5
1,2-Dichloroethane	107-06-2	5	0.5	1,1,2-Trichloroethane	79-00-5	5	0.5
1,1-Dichloroethene	75-35-4	7	0.5	Trichloroethene	79-01-6	5	0.5
cis-1,2-Dichloroethene	156-59-2	70	0.5	Vinyl Chloride	75-01-4	2	0.5
trans-1,2-Dichloroethene	156-60-5	100	0.5	Xylenes:		10000	0.5
1,2-Dichloropropane	78-87-5	5	0.5	M	108-38-3		
Ethylbenzene	100-41-4	700	0.5	P	106-42-3		
Methylene Chloride	75-09-2	5	0.5	0	95-47-6		

Total Trihalomethanes	CAS NO.	MCL, µg/L	PQL, µg/L	Total Trihalomethanes	CAS NO.	MCL, µg/L	PQL, µg/L
Bromodichloromethane	75-27-4	See Note	0.5	Chlorodibromomethane	124-48-1	See Note	0.5
Bromoform	75-25-2	See Note	0.5	Chloroform	67-66-3	See Note	0.5

Other EPA Listed VOCs	CAS NO.	MCL, µg/L	PQL, µg/L	Other EPA Listed VOCs	CAS NO.	MCL, µg/L	PQL, µg/L
Acetone	67-64-1	NR	20	trans-1,3-Dichloropropene	10061-02-6	NR	0.5
Acrylonitrile	107-13-1	NR	20	2,2-Dichloropropane	590-20-7	NR	0.5
Allyl chloride	107-05-1	NR	10	Diethyl ether	60-29-7	NR	1.0
Bromobenzene	108-86-1	NR	0.5	Ethyl methacrylate	97-63-2	NR	10
Bromochloromethane	74-97-5	NR	0.5	Fluorotrichloromethane	75-69-4	NR	0.5
Bromomethane	74-83-9	NR	0.5	Hexachlorobutadiene	87-68-3	NR	0.5
2-Butanone	78-93-3	NR	20	Hexachloroethane	67-72-1	NR	10
n-Butylbenzene	104-51-8	NR	0.5	2-Hexanone	591-78-6	NR	10
sec-Butylbenzene	135-98-8	NR	0.5	Isopropylbenzene	98-82-8	NR	0.5
tert-Butylbenzene	98-06-6	NR	0.5	p-Isopropyltoluene	99-87-6	NR	0.5
Carbon disulfide	75-15-0	NR	10	Methacrylonitrile	126-98-7	NR	10
Chloroacetonitrile	107-14-2	NR	10	Methylacrylate	96-33-3	NR	10
1-Chlorobutane	109-69-3	NR	10	Methyliodide (Iodomethane)	74-88-4	NR	1.0
Chloroethane	75-00-3	NR	0.5	Methylmethacrylate	80-62-6	NR	10
Chloromethane	74-87-3	NR	0.5	4-Methyl-2-pentanone	108-10-1	NR	10
2-Chlorotoluene	95-49-8	NR	0.5	Methyl-t-butyl ether	1634-04-4	NR	1.0
4-Chlorotoluene	106-43-4	NR	0.5	Naphthalene	91-20-3	NR	0.5
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2 (See Note)	1	Nitrobenzene	98-95-3	NR	50
1,2-Dibromoethane (EDB)	106-93-4	0.05 (See Note)	0.5	2-Nitropropane	79-46-9	NR	20
Dibromomethane	74-95-3	NR	0.5	Pentachloroethane	76-01-7	NR	10
1,3-Dichlorobenzene	541-73-1	NR	0.5	Propionitrile	107-12-0	NR	20
trans-1,4-Dichloro-2-butene	110-57-6	NR	1.0	n-Propylbenzene	103-65-1	NR	0.5
Dichlorodifluoromethane	75-71-8	NR	0.5	1,1,1,2-Tetrachloroethane	630-20-6	NR	0.5
1,1-Dichloroethane	75-34-3	NR	0.5	1,1,2,2-Tetrachloroethane	79-34-5	NR	0.5
1,1-Dichloropropanone	513-88-2	NR	20	Tetrahydrofuran	109-99-9	NR	50
1,1-Dichloropropene	563-58-6	NR	0.5	1,2,3-Trichlorobenzene	87-61-6	NR	0.5
1,3-Dichloropropane	142-28-9	NR	0.5	1,2,3-Trichloropropane	96-18-4	NR	0.5
cis-1,3-Dichloropropene	10061-01-5	NR	0.5	1,2,4-Trimethylbenzene	95-63-6	NR	0.5
				1,3,5-Trimethylbenzene	108-67-8	NR	0.5

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Carbamates (Method E531.1)

Sampling: 3-40 mL glass/teflon VOA vials or 1-60 mL vial. The bottle must not be prerinsed with sample. Samples must be preserved at pH 3 with monochloro-acetic acid buffer (1.2 mL/40 mL VOA vial). Store at 4-6°C. Add sodium thiosulfate to chlorinated samples.

Holding Time: 28 days

Note: MCL = Drinking Water MCL
E500 series methods are appropriate only for drinking water analyses

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO.	MCL, µg/L	PQL µg/L
Aldicarb Sulfone	1646-88-4	2	1.0	3-Hydroxycarbofuran	16655-82-6	NR	1.0
Aldicarb Sulfoxide	NA	4	1.0	Methiocarb (Mesurol®)	2032-65-7	NR	1.0
Aldicarb (Temik®)	116-06-3	3	1.0	Methomyl (Lannate®)	16752-77-5	NR	1.0
Carbaryl (Sevin®)	63-25-2	NR	1.0	Oxamyl (Vydate®)	23135-22-0	200	1.0
Carbofuran (Furadan®)	1563-66-2	40	1.0	Propoxur (Baygon®)	114-26-1	NR	1.0

Glyphosate (Method E547)

Sampling: 2-40 mL glass VOA vials. Store at 4-6°C. Add sodium thiosulfate to chlorinated samples.

Note: E500 series methods are appropriate only for drinking water analyses

Holding Time	CAS NO.	Drinking Water MCL, µg/L	PQL, µg/L
14 days	1071-83-6	700	10

Endothall (Method E548.1)

Sampling: 1-1000 mL glass bottle. Store at 4-6°C. Add sodium thiosulfate to chlorinated samples.

Note: E500 series methods are appropriate only for drinking water analyses

Holding Time	CAS NO.	Drinking Water MCL, µg/L	PQL, µg/L
7 days to extraction 14 days to analysis	145-73-3	100	8

Diquat (Method E549.1)

Sampling: 2-1000 mL plastic or PVC bottles. Store at 4-6°C. Add sodium thiosulfate to chlorinated samples.

Note: E500 series methods are appropriate only for drinking water analyses

Holding Time	CAS NO.	Drinking Water MCL, µg/L	PQL, µg/L
7 days to extraction 21 days to analysis	85-00-7	20	2.0

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Haloacetic Acids (Method E552.2)

Sampling: 3-40 mL amber glass VOA vials. Store at 4-6°C in dark. Vials are pre-preserved with NH_4Cl.

Holding Time: 14 days to extraction (if preserved with NH_4Cl); 14 days to analysis.

Note: Drinking Water MCL: 60 µg/L total of all five regulated Haloacetic Acids.
Determination of Haloacetic Acids in drinking water by Liquid - Liquid Extraction, Derivitization, and Gas Chromatography with Electron Capture Detection.
E500 series methods are appropriate only for drinking water analyses

	CAS NO.	PQL µg/L		CAS NO.	PQL µg/L
Bromochloroacetic Acid	5589-96-3	0.5 (NR)	Monobromoacetic Acid	79-08-3	0.5
Dibromoacetic Acid	631-64-1	0.25	Monochloroacetic Acid	79-11-8	0.75
Dichloroacetic Acid	79-43-6	0.75	Trichloroacetic Acid	76-03-9	0.5

Purgeable Halocarbons (POX) (Method E601/E624.1/SW 8021B/SW8260B)

Sampling: Water: 4-40 mL (2 preserved samples in glass and 2 unpreserved samples in Teflon) VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 except for 2-Chloroethyl vinyl ether which requires neutral pH and Acrolein which require a pH of 4-5 for 14 day hold time.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 14 days

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
Bromodichloromethane	75-27-4	1.0	0.2	1,1-Dichloroethene	75-35-4	1.0	0.2
Bromoform	75-25-2	1.0	0.2	Cis-1,2-Dichloroethene	156-59-4	1.0	0.2
Bromomethane	74-83-9	1.0	0.2	trans-1,2-Dichloroethene	156-60-5	1.0	0.2
Carbon Tetrachloride	56-23-5	1.0	0.2	1,2-Dichloropropane	78-87-5	1.0	0.2
Chlorobenzene	108-90-7	1.0	0.2	Cis-1,3-Dichloropropene	10061-01-5	1.0	0.2
Chloroethane	75-00-3	1.0	0.2	trans-1,3-Dichloropropene	10061-02-6	1.0	0.2
Chloroform	67-66-3	1.0	0.2	Methylene Chloride	75-09-2	1.0	0.2
Chloromethane	74-87-3	1.0	0.2	(Dichloromethane)			
2-Chlorotoluene	95-49-8	1.0	0.2	1,1,2,2-Tetrachloroethane	79-34-5	1.0	0.2
Chlorodibromomethane	124-48-1	1.0	0.2	Tetrachloroethene	127-18-4	1.0	0.2
1,2-Dichlorobenzene	95-50-1	1.0	0.2	(Tetrachloroethylene)			
1,3-Dichlorobenzene	541-73-1	1.0	0.2	1,1,1-Trichloroethane	71-55-6	1.0	0.2
1,4-Dichlorobenzene	106-46-7	1.0	0.2	1,1,2-Trichloroethane	79-00-5	1.0	0.2
Dichlorodifluoromethane	75-71-8	1.0	0.2	Trichloroethene	79-01-6	1.0	0.2
1,1-Dichloroethane	75-34-3	1.0	0.2	(Trichloroethylene)			
1,2-Dichloroethane	107-06-2	1.0	0.2	Trichlorofluoromethane	75-69-4	1.0	0.2
				Vinyl Chloride (Chloroethene)	75-01-4	1.0	0.2

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Purgeable Aromatics (Method E602/E624.1/SW 8021B/SW8260B)

Sampling: Water: 3-40 mL (2 preserved samples in glass and 2 unpreserved samples in Teflon) VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2

Soil: 4oz wide mouth amber glass jar. Store at 4-6°C.

Holding Time: 14 days

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Benzene	71-43-2	1.0	0.2	Ethylbenzene	100-41-4	1.0	0.2
Chlorobenzene	108-90-7	1.0	0.2	Toluene	108-88-3	1.0	0.2
1,2-Dichlorobenzene	95-50-1	1.0	0.2	Xylenes:	-	1.0	0.2
1,3-Dichlorobenzene	541-73-1	1.0	0.2	M	108-38-3		
1,4-Dichlorobenzene	106-46-7	1.0	0.2	P	106-42-3		
				O	95-47-6		

Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) (Method E602/SW 8021B or E624.1/SW 8260B)

Sampling: Water: 3-40 mL glass VOA vials with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2.

Soil: 4oz wide mouth amber glass jar. Store at 4-6°C.

Holding Time: 14 days

Note: The PQL for BTEX in air is 2.5 mg/m^3; for MTBE it is 10 mg/m^3.

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Benzene	71-43-2	0.5	0.2	Xylenes	-	1.0	0.2
Toluene	108-88-3	0.5	0.2	M	108-38-3		
Ethylbenzene	100-41-4	0.5	0.2	P	106-42-3		
MTBE	1634-04-4	2	0.8	O	95-47-6		

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Organochlorine Pesticides and PCBs (Method E608.3)

Sampling: Water: 3-1000 mL glass/teflon bottle. Store at 4-6°C. Add sodium thiosulfate to chlorinated samples.

Holding Time: 7 days to extraction ; 40 days to analysis

PESTICIDES	CAS NO.	PQL µg/L	PCB'S	CAS NO.	PQL µg/L
Aldrin	309-00-2	0.01	Aroclor-1016	12674-11-2	0.08
alpha-BHC	319-84-6	0.009	Aroclor-1221	11104-28-2	0.08
beta-BHC	319-85-7	0.01	Aroclor-1232	11141-16-5	0.08
delta-BHC	319-86-8	0.01	Aroclor-1242	53469-21-9	0.08
gamma-BHC (Lindane)	58-89-9	0.01	Aroclor-1248	12672-29-6	0.08
alpha-Chlordane	5103-71-9	0.004	Aroclor-1254	11097-69-1	0.08
gamma-Chlordane	5103-74-2	0.004	Aroclor-1260	11096-82-5	0.08
4,4'-DDD	72-54-8	0.01	Aroclor-1262	37324-23-5	0.08
4,4'-DDE	72-55-9	0.01	Aroclor-1268	11100-14-4	0.08
4,4'-DDT	50-29-3	0.01			
Dieldrin	60-57-1	0.006			
Endosulfan I	959-98-8	0.01			
Endosulfan II	33213-65-9	0.01			
Endosulfan Sulfate	1031-07-8	0.01			
Endrin	72-20-8	0.004			
Endrin Aldehyde	7421-93-4	0.030			
Endrin Ketone	53494-70-5	0.01			
Heptachlor	76-44-8	0.009			
Heptachlor Epoxide	1024-57-3	0.01			
Isodrin	465-73-6	0.01			
Methoxychlor	72-43-5	0.01			
Chlordane (technical)	57-74-9	0.1			
Toxaphene	8001-35-2	1.0			

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Organochlorine Pesticides (Method SW 8081B)

Sampling: Water: 3-1000 mL glass/teflon bottle. Store at 4-6°C.

Soil: 4 oz wide mouth amber glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
Aldrin	309-00-2	0.004	0.00067	Endrin	72-20-8	0.004	0.00067
alpha-BHC	319-84-6	0.004	0.00067	Endrin Aldehyde	7421-93-4	0.004	0.00067
beta-BHC	319-85-7	0.004	0.00067	Endrin Ketone	53494-70-5	0.004	0.00067
delta-BHC	319-86-8	0.004	0.00067	Heptachlor	76-44-8	0.004	0.00067
gamma-BHC (Lindane)	58-89-9	0.004	0.00067	Heptachlor Epoxide	1024-57-3	0.004	0.00067
alpha-Chlordane	5103-71-9	0.004	0.00067	Isodrin	465-73-6	0.004	0.00067
gamma-Chlordane	5103-74-2	0.004	0.00067	Kepone	143-50-0	0.02	0.004
4,4'-DDD	72-54-8	0.004	0.00067	Methoxychlor	72-43-5	0.004	0.00067
4,4'-DDE	72-55-9	0.004	0.00067	Chlordane (technical)	57-74-9	0.10	0.0167
4,4'-DDT	50-29-3	0.004	0.00067	Toxaphene	8001-35-2	0.5	0.08
Dieldrin	60-57-1	0.004	0.00067				
Endosulfan I	959-98-8	0.004	0.00067				
Endosulfan II	33213-65-9	0.004	0.00067				
Mirex	2385-85-5	0.004	0.00067				
Endosulfan Sulfate	1031-07-8	0.004	0.00067				

Polychlorinated Biphenyls (PCBs) (Method SW 8082A)

Sampling: Water: 3-1000 mL glass/teflon bottle. Store at 4-6°C.

Soil: 4 oz wide mouth amber glass jar. Store at 4-6°C.

Transformer Oil: 4 dram vial. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

		PQL		Transformer Oil
PCBs	CAS NO.	µg/L	mg/Kg	mg/Kg
Aroclor-1016	12674-11-2	0.08	0.013	2.0
Aroclor-1221	11104-28-2	0.08	0.013	2.0
Aroclor-1232	11141-16-5	0.08	0.013	2.0
Aroclor-1242	53469-21-9	0.08	0.013	2.0
Aroclor-1248	12672-29-6	0.08	0.013	2.0
Aroclor-1254	11097-69-1	0.08	0.013	2.0
Aroclor-1260	11096-82-5	0.08	0.013	2.0
Aroclor-1262	37324-23-5	0.08	0.013	2.0
Aroclor-1268	11100-14-4	0.08	0.013	2.0

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Chlorinated Herbicides (Method E615/SW8151A)

Sampling: Water: 1-1000 mL glass/teflon bottle. Store at 4-6°C. Add ascorbic acid to chlorinated samples.

Soil: 125 mL wide mouth glass/teflon jar. Store at 4-6°C.

Waste: 125 mL wide mouth glass/teflon jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
2,4-D	94-75-7	1.0	0.020	Dinoseb	88-85-7	1.0	0.02
2,4-DB	94-82-6	1.0	0.020	2,4,5-TP (Silvex)	93-72-1	0.20	0.004
Dalapon	75-99-0	10	0.2	2,4,5-T	93-76-1	0.20	0.004
Dicamba	1918-00-9	0.25	0.005	MCPA	94-74-6	250	5
Dichlorprop	120-36-5	1.0	0.02	MCPP	93-65-2	250	5
				Pentachlorophenol	87-86-5	0.10	0.002

Acrolein (E624.1/SW8260B)

Sampling: Water: 3-40 mL VOA vials. Unpreserved (raw), chilled to 4-6°C and analyzed within 3 days of collection. Or, pH adjusted to 4-5 with HCL, chilled to 4-6°C, and analyzed within 14 days. Add ascorbic acid to chlorinated samples. The vials must be completely full with no air bubbles. Store at 4-6°C. Contact the laboratory prior to sampling to arrange for this analysis.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 14 days (3 days for unpreserved Acrolein)

	PQL				PQL	
CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
Acrolein 107-02-8	20	4.0	Acrylonitrile	107-13-1	20	4.0

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Purgeable Organics (VOCs) by GC/MS (Method E624.1/SW8260B - Short List)

Sampling: Water: 3-40 mL (2 preserved samples in glass and 2 unpreserved samples in Teflon) VOA vials completely full with no air bubbles. Store at 4-6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 except the Acrolein and Acrylonitrile which require a pH of 4-5.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 14 days

Note: Method SW 8260B is the capillary column equivalent to Method SW 8240

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
Benzene	71-43-2	1.0	0.20	2,2-Dichloropropane	594-20-7	1.0	0.20
Bromobenzene	108-86-1	1.0	0.20	1,1-Dichloropropene	563-58-6	1.0	0.20
Bromochloromethane	74-97-5	1.0	0.20	cis-1,3-Dichloropropene	10061-01-5	1.0	0.20
Bromodichloromethane	75-27-4	1.0	0.20	trans-1,3-Dichloropropene	10061-02-6	1.0	0.20
Bromoform	75-25-2	1.0	0.20	Ethylbenzene	100-41-4	1.0	0.20
Bromomethane	74-83-9	1.0	0.20	Methyl -t-butyl ether	1634-04-4	1.0	0.20
Carbon Tetrachloride	56-23-5	1.0	0.20	Methylene Chloride	75-09-2	1.0	0.20
Chlorobenzene	108-90-7	1.0	0.20	(Dichloromethane)			
Chloroethane	75-00-3	1.0	0.20	Methyl Ethyl Ketone	78-93-3	20	4.0
Chloroform	67-66-3	1.0	0.20	(2-Butanone)			
Chloromethane	74-87-3	1.0	0.20	Styrene	100-42-5	1.0	0.20
2-Chlorotoluene	95-49-8	1.0	0.20	1,1,1-2-Tetrachloroethane	630-20-6	1.0	0.20
4-Chlorotoluene	106-43-4	1.0	0.20	1,1,2,2-Tetrachloroethane	79-34-5	1.0	0.20
Chlorodibromomethane	124-48-1	1.0	0.20	Tetrachloroethene	127-18-4	1.0	0.20
1,2-Dibromoethane	106-93-4	1.0	0.20	(Tetrachloroethylene)			
Dibromomethane	74-95-3	1.0	0.20	Toluene	108-88-3	1.0	0.20
1,2-Dichlorobenzene	95-50-1	1.0	0.20	1,1,1-Trichloroethane	71-55-6	1.0	0.20
1,3-Dichlorobenzene	541-73-1	1.0	0.20	1,1,2-Trichloroethane	79-00-5	1.0	0.20
1,4-Dichlorobenzene	106-46-7	1.0	0.20	Trichloroethene	79-01-6	1.0	0.20
Dichlorodifluoromethane	75-71-8	1.0	0.20	(Trichloroethylene)			
1,1-Dichloroethane	75-34-3	1.0	0.20	Trichlorofluoromethane	75-69-4	1.0	0.20
1,2-Dichloroethane	107-06-2	1.0	0.20	1,2,3-Trichloropropane	96-18-4	1.0	0.20
1,1-Dichloroethene	75-35-4	1.0	0.20	Vinyl Chloride	75-01-4	1.0	0.20
cis-1,2-Dichloroethene	156-59-2	1.0	0.20	(Chloroethene)			
trans-1,2-Dichloroethene	156-60-5	1.0	0.20	Benzene	71-43-2	1.0	0.20
1,2-Dichloropropane	78-87-5	1.0	0.20	Ethylbenzene	100-41-4	1.0	0.20
1,3-Dichloropropane	142-28-9	1.0	0.20	Toluene	108-88-3	1.0	0.20
				Xylenes:	-	1.0	0.20
				meta-	108-38-3		
				Para-	106-42-3		
				ortho-	95-47-6		

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Purgeable Organics (VOCs) by GC/MS (Method SW8260B - Long List)

Sampling: Water: 3-40 mL glass/teflon VOA vials. Add 3-5 drops of HCl.

For Acrolein and Acrylonitrile take an additional 3-40 mL VOA vials. Unpreserved (raw) and analyzed within 3 days of collection. Or, pH adjusted to 4-5 with HCL, and analyzed within 14 days. Contact the laboratory prior to sampling to arrange for this analysis.
Add sodium thiosulfate or ascorbic acid to chlorinated samples. The vials must be completely full with no air bubbles. Store at 6°C.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C

Holding Time: 14 days (3 days for unpreserved Acrolein and Acrylonitrile)

Note: Method SW 8260B is the capillary column equivalent to Method SW 8240

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Acetone	67-64-1	50	10	2,2-Dichloropropane	594-20-7	1.0	0.20
Acetonitrile	75-08-8	20	4.0	1,1-Dichloropropene	563-58-6	1.0	0.20
Acrolein	107-02-8	20	4.0	cis-1,3-Dichloropropene	10061-01-5	1.0	0.20
Acrylonitrile	107-13-1	20	4.0	trans-1,3-Dichloropropene	10061-02-6	1.0	0.20
Benzene	71-43-2	1.0	0.20	Ethylbenzene	100-41-4	1.0	0.20
Bromobenzene	108-86-1	1.0	0.20	Hexachlorobutadiene	87-68-3	1.0	0.20
Bromochloromethane	74-97-5	1.0	0.20	2-Hexanone	591-78-6	20	4.0
Bromodichloromethane	75-27-4	1.0	0.20	Iodomethane	74-88-4	1.0	0.20
Bromoform	75-25-2	1.0	0.20	Isopropylbenzene	98-82-8	1.0	0.20
Bromomethane	74-83-9	1.0	0.20	p-Isopropyltoluene	99-87-6	1.0	0.20
n-Butylbenzene	104-51-8	1.0	0.20	Methyl-t-butyl ether	1634-04-4	1.0	0.20
sec-Butylbenzene	135-98-8	1.0	0.20	Methyl Ethyl Ketone	78-93-3	20	4.0
tert-Butylbenzene	98-06-6	1.0	0.20	(2-Butanone)			
Carbon Disulfide	75-15-0	1.0	0.20	Methyl Isobutyl Ketone	108-10-1	20	4.0
Carbon Tetrachloride	56-23-5	1.0	0.20	(4-Methyl-2-pentanone)			
Chlorobenzene	108-90-7	1.0	0.20	Methylene Chloride	75-09-2	1.0	0.20
Chloromethane	124-48-1	1.0	0.20	(Dichloromethane)			
Chloroethane	75-00-3	1.0	0.20	Naphthalene	91-20-3	1.0	0.20
2-Chloroethyl Vinyl Ether	110-75-8	1.0	0.20	n-Propylbenzene	103-65-1	1.0	0.20
Chloroform	67-66-3	1.0	0.20	Styrene	100-42-5	1.0	0.20
Chloromethane	74-87-3	1.0	0.20	Tetrachloroethene	127-18-4	1.0	0.20
				(Tetrachloroethylene)			
2-Chlorotoluene	95-49-8	1.0	0.20	1,1,1,2-Tetrachloroethane	630-20-6	1.0	0.20
4-Chlorotoluene	106-43-4	1.0	0.20	1,1,2,2-Tetrachloroethane	79-34-5	1.0	0.20
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	1.0	0.20	1,2,3-Trichlorobenzene	87-61-6	1.0	0.20
1,2-Dibromoethane (EDB)	106-93-4	1.0	0.20	1,2,4-Trichlorobenzene	120-82-1	1.0	0.20
Dibromomethane	74-95-3	1.0	0.20	1,1,1-Trichloroethane	71-55-6	1.0	0.20
1,2-Dichlorobenzene	95-50-1	1.0	0.20	1,1,2-Trichloroethane	79-00-5	1.0	0.20
1,3-Dichlorobenzene	541-73-1	1.0	0.20	Trichloroethene			
1,4-Dichlorobenzene	106-46-7	1.0	0.20	(Trichloroethylene)	79-01-6	1.0	0.20
Dichlorodifluoromethane	75-71-8	1.0	0.20	Trichlorofluoromethane	75-69-4	1.0	0.20
1,1-Dichloroethane	75-34-3	1.0	0.20	1,2,3-Trichloropropane	96-18-4	1.0	0.20
1,2-Dichloroethane	107-06-2	1.0	0.20	1,2,4-Trimethylbenzene	95-63-6	1.0	0.20
1,1-Dichloroethene	75-35-4	1.0	0.20	1,3,5-Trimethylbenzene	108-67-8	1.0	0.20
cis-1,2-Dichloroethene	156-59-2	1.0	0.20	Toluene	108-88-3	1.0	0.20
trans-1,2-Dichloroethene	156-60-5	1.0	0.20	Vinyl Acetate	108-05-4	1.0	0.20
1,2-Dichloropropane	78-87-5	1.0	0.20	Vinyl Chloride			
1,3-Dichloropropane	142-28-9	1.0	0.20	(Chloroethene)	75-01-4	1.0	0.20
				Xylenes:		1.0	0.20
				meta-	108-38-3		
				para-	106-42-3		
				ortho-	95-47-6		

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Semi-Volatile Organics (SVOCs) by GC/MS (Method E625.1/SW8270C)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at 4-6°C. Add 80 mg sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

ACID EXTRACTABLES

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	59-50-7	10	0.33	4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	534-52-1	50	1.65
2-Chlorophenol	95-57-8	10	0.33	2,4-Dinitrophenol	51-28-5	50	1.65
4-Chlorophenol	106-48-9	10	0.33	2-Nitrophenol	88-75-5	10	0.33
Cresols:				4-Nitrophenol	100-02-7	50	1.65
2-Methylphenol	95-48-7	10	0.33	Pentachlorophenol	87-86-5	50	1.65
3-Methylphenol	108-39-4	10	0.33	Phenol	108-95-2	10	0.33
4-Methylphenol	106-44-5	10	0.33	2,4,5-Trichlorophenol	95-95-4	10	0.33
2,4-Dichlorophenol	120-83-2	10	0.33	2,4,6-Trichlorophenol	88-06-2	10	0.33
2,4-Dimethylphenol	105-67-9	10	0.33				

BASE NEUTRAL EXTRACTABLES

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Acenaphthene	83-32-9	10	0.33	Diethyl phthalate	84-66-2	10	0.33
Acenaphthylene	208-96-8	10	0.33	Dimethyl phthalate	131-11-3	10	0.33
Anthracene	120-12-7	10	0.33	2,4-Dinitrotoluene	121-14-2	10	0.33
Benzo(a)anthracene	56-55-3	10	0.33	2,6-Dinitrotoluene	606-20-2	10	0.33
Benzidine	92-87-5	20	0.66	1,2-Diphenylhydrazine as Azobenzene	103-33-3	10	0.33
Benzo(b)fluoranthene	205-99-2	10	0.33				
Benzo(k)fluoranthene	207-08-9	10	0.33	Fluorene	86-73-7	10	0.33
Benzo(g,h,i)perylene	191-24-2	10	0.33	Fluoranthene	206-44-0	10	0.33
Benzo(a)pyrene	50-32-8	10	0.33	Hexachlorobenzene	118-74-1	10	0.33
Bis(2-chloroethoxy)methane	111-91-1	10	0.33	Hexachlorobutadiene	87-68-3	10	0.33
Bis(2-chloroethyl)ether	111-44-4	10	0.33	Hexachlorocyclopentadiene	77-47-4	10	0.33
Bis(2-chloroisopropyl)ether	108-60-1	10	0.33	Hexachloroethane	67-72-1	10	0.33
Bis(2-ethylhexyl)phthalate	117-81-7	10	0.33	Indeno(1,2,3-cd)pyrene	193-39-5	10	0.33
4-Bromophenylphenylether	101-55-3	10	0.33	Isophorone	78-59-1	10	0.33
Butyl benzyl phthalate	85-68-7	10	0.33	1-Methylnaphthalene	90-12-0	10	0.33
2-Chloronaphthalene	91-58-7	10	0.33	2-Methylnaphthalene	91-57-6	10	0.33
4-Chlorophenyl-phenylether	7005-72-3	10	0.33	Naphthalene	91-20-3	10	0.33
Chrysene	218-01-9	10	0.33	Nitrobenzene	98-95-3	10	0.33
Di-n-butyl phthalate	84-74-2	10	0.33	N-Nitrosodi-n-propylamine	621-64-7	10	0.33
Di-n-octyl phthalate	117-84-0	10	0.33	N-Nitrosodimethylamine	62-75-9	10	0.33
Dibenzo(a,h)anthracene	53-70-3	10	0.33	N-Nitrosodiphenylamine	86-30-6	10	0.33
1,2-Dichlorobenzene	95-50-1	10	0.33	Phenanthrene	85-01-8	10	0.33
1,3-Dichlorobenzene	541-73-1	10	0.33	Pyrene	129-00-0	10	0.33
1,4-Dichlorobenzene	106-46-7	10	0.33	Pyridine	110-86-1	20	0.66
3,3'-Dichlorobenzidine	91-94-1	20	0.66	1,2,4-Trichlorobenzene	120-82-1	10	0.33

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Phenols, Individual Compounds by GC/MS (Method E625.1/SW8270C)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at 4-6°C. Add 80 mg sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
4-Chloro-3-methylphenol (p-chloro-m-cresol)	59-50-7	10	0.33	4,6-Dinitro-2-methylphenol (4-6-Dinitro-o-cresol)	534-52-1	50	1.65
2-Chlorophenol	95-57-8	10	0.33	2,4-Dinitrophenol	51-28-5	50	1.65
Cresols:				2-Nitrophenol	88-75-5	10	0.33
2-Methylphenol	95-48-7	10	0.33	4-Nitrophenol	100-02-7	50	1.65
3-Methylphenol	106-44-5	10	0.33	Pentachlorophenol	87-86-5	50	1.65
4-Methylphenol	108-39-4	10	0.33	Phenol	108-95-2	10	0.33
2,4-Dichlorophenol	120-83-2	10	0.33	2,4,5-Trichlorophenol	95-95-4	10	0.33
2,4-Dimethylphenol	105-67-9	10	0.33	2,4,6-Trichlorophenol	88-06-2	10	0.33

Phthalate Esters (Method E625.1/SW 8270C)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at 4-6°C.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
Bis(2-ethylhexyl) Phthalate	117-81-7	10	0.33	Di-n-octyl phthalate	117-84-0	10	0.33
Butyl benzyl phthalate	85-68-7	10	0.33	Diethyl phthalate	84-66-2	10	0.33
Di-n-butyl phthalate	84-74-2	10	0.33	Dimethyl phthalate	131-11-3	10	0.33

2,3,7,8-TCDD - Dioxin Screening (Method E625.1 Screening Test)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at 4-6°C.
Soils: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis.

PQL: Water: 2 µg/L
Soils: 0.066 mg/kg

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Polynuclear Aromatic Hydrocarbons (PAH) (Method E625.1/SW8270C - GC/MS)

Sampling: Water: 2-1000 mL glass/Teflon bottles. Store at 4-6°C. Add 80 mg sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	mg/Kg
1-Methylnaphthalene*	90-12-0	10	0.33	Benzo(a)pyrene	50-32-8	10	0.33
2-Methylnaphthalene*	91-57-6	10	0.33	Chrysene	218-01-9	10	0.33
Acenaphthene	83-32-9	10	0.33	Dibenzo(a,h)anthracene	53-70-3	10	0.33
Acenaphthylene	208-96-8	10	0.33	Fluoranthene	206-44-0	10	0.33
Anthracene	120-12-7	10	0.33	Fluorene	86-73-7	10	0.33
Benzo(a)anthracene	56-55-3	10	0.33	Indeno(1,2,3-cd)pyrene	193-39-5	10	0.33
Benzo(b)fluoranthene	205-99-2	10	0.33	Naphthalene	91-20-3	10	0.33
Benzo(k)fluoranthene	207-08-9	10	0.33	Phenanthrene	85-01-8	10	0.33
Benzo(g,h,I)perylene	191-24-2	10	0.33	Pyrene	129-00-0	10	0.33

*Included in the Montana PAH list

Gasoline Range Organics (GRO)

EPA Method: SW8015C

Sampling: Water: 3-40 mL glass/teflon VOA vials completely full with no air bubbles. Preserved with 5-10 drops hydrochloric acid to pH <2. Store at 4-6°C.

Soil: 125 mL glass jar. Store at 4-6°C.

Holding Time: 14 days

PQL: GRO: 20 µg/L (water); 2 mg/Kg (soil); 20 mg/m^3 (air)

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Diesel Range Organics (DRO) or Carbon Scan

EPA Method: SW8015C or Carbon Scan = SimDist

Sampling: Water: 2-1000 mL glass bottles preserved with sulfuric acid. Store at 4-6°C.

Soil: 4oz Wide Mouth Amber Glass jar. Store at 4-6°C.

Holding Time: 7(water) or 14(soil) days to extraction; 40 days to analysis

PQL: 0.3 mg/L (water); 10 mg/Kg (soil)

Volatile Petroleum Hydrocarbons (VPH)

EPA Method: May 2004 Massachusetts method as modified by Montana DEQ

Sampling: Water: 3-40 mL glass/teflon VOA vials completely full with no air bubbles. Preserved with 5-10 drops hydrochloric acid to pH <2. Store at 4-6°C.

Soil: 4oz Wide Mouth Amber Glass jar. Store at 4-6°C.

Holding Time: 7 (soil) days to extraction; 14 (water) & 28 (soil) days to analysis

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Methyl t-butylether	1634-04-4	1.0	0.10	Total Xylenes	NA	0.50	0.050
Benzene	71-43-2	0.50	0.050	Naphthalene	91-20-3	1.0	0.10
Toluene	108-88-3	0.50	0.050	C_9 to C_{10} Aromatics	NA	20	2.0
Ethylbenzene	100-41-4	0.50	0.050	C_5 to C_8 Aliphatics	NA	20	2.0
m+p Xylenes	108-38-3/ 106-42-3	0.50	0.050	C_9 to C_{12} Aliphatics	NA	20	2.0
				Total Purgeable Hydrocarbons	NA	20	2.0
o-Xylene	95-47-6	0.50	0.050				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Extractable Petroleum Hydrocarbons (EPH)

Method: May 2004 Massachusetts method as modified by Montana DEQ

Sampling: Water: 2-1000 mL glass bottles preserved with sulfuric acid. Store at 4-6°C.

Soils: 4oz Wide Mouth Amber Glass jar. Store at 4-6°C.

Holding Time: 14(water) or 14(soil) days to extraction; 40 days to analysis

PQL EPH Screen: Water: 300 ug/L as total extractable hydrocarbons

Soil: 10 mg/Kg as total extractable hydrocarbons

Notes: EPH screening: Samples that contain 200 mg/Kg for soil or 1000 µg/L for water may require EPH aromatic/aliphatic fractionation and MBTEX analysis. The need for PAH analysis on these samples will be determined by the MDEQ case manager on a case by case basis.

PAHs are analyzed using GC-MS method SW-846 8270C.

EPH Complete:

	CAS NO.	PQL ug/L	PQL mg/Kg		CAS NO.	PQL ug/L	PQL mg/Kg
C9-C18 Aliphatics	NA	300	10	Anthracene	120-12-7	5.0	0.167
C19-C36 Aliphatics	NA	300	10	Fluoranthene	206-44-0	5.0	0.167
C11-C22 Aromatics	NA	300	10	Pyrene	129-00-0	5.0	0.167
Total Extractable Hydrocarbons (Screen)	NA	300	10	Benzo(a)Anthracene	56-55-3	5.0	0.167
				Chrysene	218-01-9	5.0	0.167
Total Extractable Hydrocarbons (Fractionation)	NA	300	10	Benzo(b)Fluoranthene & Benzo(k)Fluoranthene	205-99-2 207-08-9	5.0	0.167
Naphthalene	91-20-3	5.0	0.167	Benzo(a)pyrene	50-32-8	5.0	0.167
2-Methylnaphthalene	91-57-6	5.0	0.167	Indeno(1,2,3-cd)Pyrene & Dibenzo(a,h)Anthracene	193-39-5 53-70-3	5.0	0.167
Acenaphthylene	208-96-8	5.0	0.167				
Acenaphthene	83-32-9	5.0	0.167	Benzo(g,h,i)Perylene	191-24-2	5.0	0.167
Fluorene	86-73-7	5.0	0.167	1-Methylnaphthalene	90-12-0	5.0	0.167
Phenanthrene	85-01-8	5.0	0.167				

Glycols by GC-FID

EPA Method: SW 8015 M

Sampling: Water: 500 mL glass or plastic bottle, unpreserved. Store at 4-6°C.
Soil: 4oz Wide Mouth Amber Glass jar. Store at 4-6°C.

Holding Time: N/A

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Ethylene Glycol	107-21-1	5	5	Propylene Glycol	57-55-6	5	5

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Total Petroleum Hydrocarbons by IR

Method: Method E418.1 or E418.1 Mod. using Freon extraction and infrared spectroscopy.

Sampling: Water: 1000 mL glass bottle preserved with sulfuric acid.
Soil: 125 mL glass jar.

Holding Time: 7 days to extraction; 40 days to analysis

PQL: 0.1 mg/L (water); 10 mg/Kg (soil)

Note: TPH by IR is primarily recommended for use as a screening tool, as it cannot speciate between hydrocarbon types.

Oil and Grease - Freon Extraction/Gravimetric

Method: E413.1 Freon Extraction/Gravimetric

Sampling: Water: 1000 mL glass bottle preserved with sulfuric acid.
Soil: NA

Holding Time: 28 days

PQL: 1 mg/L (water)

Notes: This method is used to determine relatively non-volatile hydrocarbons, vegetable or animal oils, and related matter. It is not applicable to the measurement of light hydrocarbons that volatilize below 85°C. Petroleum fuels, from gasoline through No. 2 fuel oils, are completely or partially lost.

Oil and Grease - Freon Extraction/IR

EPA Method: E413.2 or E413.2 Mod. using Freon extraction and infrared spectroscopy.

Sampling: Water: 1000 mL glass bottle preserved with sulfuric acid.
Soil: 125 mL glass jar.

Holding Time: 28 days

PQL: 0.1 mg/L (water); 10 mg/Kg (soil)

Oil and Grease or TPH - Soxhlet Extraction

EPA Method: SW9071 Soxhlet Extraction/Gravimetric

Sampling: Water: NA
Soil: 125 mL glass jar

Note: This method is used to measure relatively polar, non-volatile petroleum hydrocarbons. It is not suitable for fractions that volatilize below 70°C.

Oil and Grease - Hexanes Extraction/Gravimetric and Sulfur Corrected w/Copper

EPA and Standard Method: E1664/A 5520 B, Hexanes Extractable/Gravimetric

E1664-Cu Hexanes Extractable/Gravimetric Sulfur Corrected w/Copper

Sampling: Water: 1000 mL glass bottle preserved with sulfuric acid.
Soil: NA

Holding Time: 28 days

Note: This method is not applicable to the measurement of light hydrocarbons that volatilize below 85°C. Petroleum fuels, from gasoline through No. 2 fuel oils, are completely or partially lost.

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Total Organic Halogens (TOX)

Method: SW9020

Sampling: Water: 250 mL amber glass septum bottles, completely full no air bubbles, preserved with sulfuric acid. Store at 4-6°C.

Soil: 125 mL wide mouth glass jar. Store at 4-6°C.

Holding Time: 14 days

Hydrocarbons in Headspace Gas

Method: GC/FID Kampbell (SW8015 Mod.)

Sampling: 3-40 mL VOA vials, completely full with no air bubbles, preserved with 5-10 drops H_2SO_4

Holding Time: NA

Note: This analysis determines the ppm concentration of methane and heavier volatile hydrocarbons in air.