ORGANIC CHEMISTRY
List of Acronyms

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

ORGANIC CHEMISTRY

1. DRINKING WATER ANALYSIS

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER
Trihalomethanes	E502.2/E524.2	7	$100.00
Maximum Trihalomethane Potential	40 CFR Part 141.30	7	150.00
Volatile Halogenated Compounds	E502.2/E524.2	7	90.00
Volatile Aromatic Compounds	E502.2/E524.2	8	90.00
EDB and DBCP, low level	E504.1	8	130.00
Nitrogen- Phosphorus and Sulfur Pesticides by GC/MS	E507 Mod.	10	150.00
Chlorinated Pesticides and PCBs	E508	9	180.00
PCBs as decachlorobiphenyl	E508A	10	200.00
Chlorinated Acid Herbicides	E515.1	11	180.00
Chlorinated Acid Herbicides, long list	E515.1	11	225.00
Regulated and Unregulated VOCs	E524.2/E502.2	13	130.00
Regulated and Unregulated VOCs, long list	E524.2 long list	14	220.00
Pesticides (Semi-Volatile Organic Compounds), drinking water list	E525.2	11	350.00
Pesticides (Semi-Volatile Organic Compounds), Montana drinking water list	E525.2	12	300.00
Pesticides (Semi-Volatile Organic Compounds), long list	E525.2	12	400.00
Carbamates	E531.1	15	175.00
Glyphosate	E547	15	140.00
Endothall	E548.1	15	200.00
Diquat	E549.1	15	180.00
Haloacetic Acids	E552.2	16	200.00
Maximum Haloacetic Acid Potential	E552.2	--	250.00

2. VOLATILES

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER or SOLIDS
Purgeable Halocarbons (POX)	E601/SW 8021B/E624/ SW 8260B	16	$110.00
Purgeable Aromatics	E602/SW 8021B/E624/ SW 8260B	17	90.00
POX and Purgeable Aromatics together	E601+E602/E624/SW 8260B	16, 17	150.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E602/SW 8021B	17	$75.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E524.2/E624/SW 8260B	17	90.00

ORGANIC CHEMISTRY

2. VOLATILES (continued)

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER or SOLIDS
Gasoline Range Organics (GRO)	1990 Draft Method	24	75.00
BTEX and GRO together	1990 Draft Method	17, 24	120.00
Purgeable Organics (VOCs), short list	E624/SW 8260B	20	150.00
Acrolein and Acrylonitrile	E624/SW 8260B	19	80.00
Purgeable Organics (VOCs), long list	SW 8260B	21	220.00
Total Petroleum Hydrocarbons as Gasoline (TPH-G)	SW 8015 Mod.	24	75.00
Total Petroleum Hydrocarbons	TCEQ 1005		60.00

3. PETROLEUM, UST, LUST RELATED ANALYSIS

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER, SOLIDS, or AIR
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E602/SW 8021B	17	$75.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E524.2/E624/SW 8260B	17	90.00
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	E524.2	13	90.00
Gasoline Range Organics (GRO)	1993 Draft Method	24	75.00
BTEX and GRO together	E602/SW 8021B + GRO	17, 24	120.00
Diesel Range Organics (DRO)	1993 Draft Method	25	75.00
Extractable Petroleum Hydrocarbons Screen (EPH)	MT DEQ MA EPH	26	75.00
Extractable Petroleum Hydrocarbons (EPH) (after screening option without PAHs-if required)	MT DEQ MA EPH	26	150.00
Extractable Petroleum Hydrocarbons (EPH) (after screening option with PAHs-if required)	MT DEQ MA EPH	26	200.00
Extractable Petroleum Hydrocarbons (EPH) (complete without screening)	MT DEQ MA EPH	26	250.00
Volatile Petroleum Hydrocarbons (VPH)	MT DEQ MA VPH	25	120.00
Carbon Scan with DRO (product identification - fingerprinting)	GC/FID	25	120.00
Total Petroleum Hydrocarbons as Gasoline (TPH-G)	SW 8015 Mod.	24	75.00
Total Petroleum Hydrocarbons as Diesel (TPH-D)	SW 8015 Mod.	25	75.00
Total Petroleum Hydrocarbons	TCEQ 1005		60.00
Total Petroleum Hydrocarbons by Infrared Spectroscopy (TPH-IR)	E418.1	27	75.00
Purgeable Organics (VOCs)	E624/SW 8260B	20, 21	150.00
Oil & Grease, Hexanes Extraction/Gravimetric	E1664A	28	75.00
Oil & Grease, Hexanes Extraction/Gravimetric Sulfur Corrected w/Copper	E1664-Cu	27	100.00
TPH, Hexanes Extraction/Gravimetric	E1664A	28	75.00
TPH, Hexanes Extraction/Gravimet Sulfur Corrected w/Copper	E1664-Cu	27	100.00

ORGANIC CHEMISTRY

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

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER, SOLIDS, or AIR
Oil and Grease, Freon Extractable/Gravimetric	E413.1	27	75.00
Acrylamide by HPLC	SW 8316	28	100.00
Oil and Grease, Freon Extractable/Infrared Spectroscopy	E413.2	27	$75.00
Oil and Grease or TPH by Soxhlet Extraction	SW 9071	27	125.00
Hydrocarbons in Headspace Gas	GC/FID/ Kampbell (SW 8015 Mod.)	28	50.00

4. SEMI-VOLATILES

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER or SOLIDS
Semi-volatile Organics (SVOC) by GC/MS	E625/SW 8270C	22	$370.00
SVOC acid extractables	E625/SW 8270C	22	170.00
SVOC base/neutral extractables	E625/SW 8270C	22	200.00
2,3,7,8-TCDD Dioxin – Screening test	E625 screening	23	100.00
Phenols, individual compounds by GC/MS	E625/SW 8270C	23	170.00
Phenols, total in water, colorimetric	E420.4	Waters – 6	20.00
Phenols, total in soil, colorimetric	E420.2 Mod.	Waters – 6	150.00
Phthalate Esters	E625/SW 8270C	23	200.00
Polynuclear Aromatic Hydrocarbons (PAH), by GC/MS	E625/SW 8270C	24	200.00
Polynuclear Aromatic Hydrocarbons (PAH), by HPLC	SW 8310	24	200.00
Diesel Range Organics (DRO)	1993 Draft Method	25	75.00
Carbon Scan with DRO (product identification – fingerprinting)	GC/FID	25	120.00
Total Petroleum Hydrocarbons as Diesel (TPH-D)	SW 8015 Mod.	25	75.00
Total Petroleum Hydrocarbons by Infrared Spectroscopy (TPH-IR)	E418.1	27	60.00
Acrylamide by HPLC	SW 8316	28	100.00
Explosives – Nitroaromatics and Nitramines by HPLC	SW 8330	28	300.00
Explosives – Nitroglycerine and PETN by HPLC	SW 8332	28	200.00

5. HERBICIDES, PESTICIDES AND PCBs

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER or SOLIDS
Polychlorinated biphenyls (PCBs)	E608/SW 8082	18	$120.00
PCBs in transformer oil (5 mg/Kg)	SW 8082	19	120.00
Organochlorine Pesticides and PCBs	E608 or SW 8081A+ SW 8082	18	250.00

5. HERBICIDES, PESTICIDES AND PCBs (continued)

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER or SOLIDS
Organochlorine Pesticides	E608/SW 8081A	18	200.00
Chlorinated Herbicides	E615/SW 8151A	19	225.00

6. OTHER ORGANICS

ANALYSIS	METHOD	METHOD DETAILS, Organics Page	PRICE, WATER or SOLIDS
Total Organic Carbon (TOC)	E415.2	Waters – 6	$25.00
Total Organic Halogens (TOX)	SW 9020	Waters – 7	90.00
Ethylene Glycol	ASTM D2982 Mod.	Waters – 5, Waters – 17	50.00
Glycol by GC	GC-FID / SW 8015M	Organics – 27	100.00
Formaldehyde	NIOSH 3500 Mod.	Waters – 5	60.00
Methanol	SW 8015	24	90.00
Methane	GC-FID/ Kampbell (SW 8015 Mod.)	Waters – 5, Organics – 28	50.00

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
SW 3510C	Separatory Funnel Liquid-Liquid Extraction
SW 3520C	Continuous Liquid-Liquid Extraction
SW 3540C	Soxhlet Extraction
SW 3545	Accelerated Solvent Extraction
SW 3550B	Ultrasonic Extraction
SW 3580A	Waste Dilution
SW 5030B	Purge-and-Trap
SW 3620B	Florisil Column Cleanup
SW 3630C	Silica Gel Cleanup
SW 3640A	Gel-Permeation Cleanup
SW 3650A	Acid-Base Partition Cleanup
SW 3660B	Sulfur Cleanup
SW 3665A	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	125 mL w/m G	none	sodium thiosulfate	14	28
E508	1-1000 mL G	NA	none	sodium thiosulfate	7	14
E508A	2-1000 mL G	NA	none	None	14	30
E515.1	1-1000 mL G	NA	none	ascorbic acid	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/ SW 8021B	3-40 mL VOA [3]	125 mL w/m G	HCl to pH <2	ascorbic acid	NA	14
E602/ SW 8021B	3-40 mL VOA [3]	125 mL w/m G	HCl to pH <2	ascorbic acid	NA	14
E608/ SW 8081A	1-1000 mL G	125 mL w/m G	none	sodium thiosulfate	7 (w); 14 (s)	40
E612/ SW 8121	1-1000 mL G	125 mL w/m G	none	none	7 (w); 14 (s)	40
E615/ SW 8151A	1-1000 mL G	125 mL w/m G	none	sodium thiosulfate	7 (w); 14 (s)	40
E624/ SW 8260B	4-40 mL VOA [3]	125 mL w/m G	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 6°C and analyzed within 3 days of collection. Or, pH adjusted to 4-5 with HCL, chilled to 6°C, and analyzed within 14 days. Add ascorbic acid to chlorinated samples. Store at 6°C. Contact the laboratory prior to sampling to arrange for this analysis						
E625/ SW 8270C	2-1000 mL G	125 mL w/m G	none	sodium thiosulfate	7 (w); 14 (s)	40
SW 8310	2-1000 mL G	125 mL w/m G	none	none	7 (w); 14 (s)	40
SW 8316	3-40 mL VOA	125 mL w/m G	none	none	NA	14
SW 8330	2-1000 mL G	125 mL w/m G	none	none	7 (w); 14 (s)	40
SW 8332	2-1000 mL G	125 mL w/m G	none	none	7 (w); 14 (s)	40
BTEX	3-40 mL VOA [3]	125 mL w/m G	HCl to pH <2	ascorbic acid	NA	14
GRO/TPH-g	3-40 mL VOA [3]	125 mL w/m G	HCl to pH <2	none	NA	14
DRO/TPH-d	2-1000 mL G	125 mL w/m G	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	125 mL w/m G	H_2SO4 to pH <2	none	7	40
TPH byTCEQ 1005	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	125 mL w/m G	H_2SO_4 to pH <2	none	14(w); 7(s)	40
VPH	3-40 mL VOA [3]	125 mL w/m G	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 at6°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 at6°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 at6°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 at6°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	0.02 (See Notes)	0.5	1,1,2-Trichloroethane	79-00-5	5	0.5
Dibromoethane (EDB)	106-93-4	0.01 (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 at6°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 at6°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	0.002	0.02	1,2-Dibromoethane (Ethylene Dibromide) (EDB)	106-93-4	0.001	0.01
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 at6°C. Add sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at6°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 E515.1)

Sampling: 1-1000 mL glass/teflon bottle. Store at6°C. Add ascorbic acid or sodium thiosulfate to chlorinated.

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	2.5	Pentachlorophenol (PCP)	87-86-5	1	0.10
Dalapon	75-99-0	200	10	Picloram	1918-02-1	500	0.50
Dicamba	1918-00-9	NR	0.25	2,4,5-TP (Silvex)	93-72-1	50	0.20
Dichlorprop	120-36-5	NR	1.0				

Chlorinated Acid Herbicides (Method E515.1 - Long List)

Sampling: 1-1000 mL glass/teflon bottle. Store at6°C. Add ascorbic acid or sodium thiosulfate to chlorinated samples.

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

Notes: MCL = Drinking Water MCL
These compounds are only qualitatively identified.

	CAS NO.	MCL, µg/L	PQL, µg/L		CAS NO.	MCL, µg/L	PQL, µg/L
Acifluorfen	50594-66-6	NR	0.5	3,5-Dichlorobenzoic acid	88-85-7	NR	0.5
Bentazon	25057-89-0	NR	2.5	Dichlorprop	87-86-5	NR	1.0
Chloramben	133-90-4	NR	See Note	Dinoseb	1918-02-1	7	1.0
2,4-D	94-75-7	70	1.0	4-Nitrophenol	93-72-1	NR	0.5
2,4-DB	94-82-6	NR	2.5	Pentachlorophenol (PCP)	87-86-5	1	0.10
Dalapon	75-99-0	200	10	Picloram	1918-02-1	500	0.50
DCPA acid metabolites	2136-79-0	NR	See Note	2,4,5-T	93-76-5	NR	0.1
Dicamba	1918-00-9	NR	0.25	2,4,5-TP (Silvex)	93-72-1	50	0.20

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 insure it is dissolved in the sample. It is very important that the sample be dechlorinated prior to adding acid to lower the pH. Store at6°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 insure it is dissolved in the sample. It is very important that the sample be dechlorinated prior to adding acid to lower the pH. Store at6°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	Pentachlorobiphenyl	55215-17-3	NR	0.10
Chrysene	218-01-9	NR	0.10	Octachlorobiphenyl	40186-71-8	NR	0.10
Dibenzo(a h)anthracene	53-70-3	NR	0.10	Pentachlorophenol	87-86-5	1	1.0
2,3-Dichlorobiphenyl	16605-91-7	NR	0.10	Phenanthrene	85-01-8	NR	0.10
** Dieldrin	60-57-1	NR	0.10	** Propachlor	1918-16-7	NR	0.10
Diethylphthalate	84-66-2	NR	0.10	** Pyrene	129-00-0	NR	0.10
** Di(2-ethylhexyl)Phthalate	117-81-7	6	2.0	Simazine	122-34-9	4	0.10
Dimethyl Phthalate	131-11-3	NR	0.10	Tetrachlorobiphenyl	2437-79-8	NR	0.10
Di-n-Butylphthalate	84-74-2	NR	0.10	** Toxaphene	8001-35-2	3	0.10
** Endrin	72-20-8	2	0.10	2,4,5-Trichlorobiphenyl	15862-07-4	NR	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 at6°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	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
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	0.1 (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 at6°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	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
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	0.1 (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 at6°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: 1-40 mL glass VOA vial. Store at6°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 at6°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	20

Diquat (Method E549.1)

Sampling: 2-1000 mL plastic or PVC bottles. Store at6°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 at6°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	0.25

Purgeable Halocarbons (POX) (Method E601/E624/SW 8021B/SW 8260B)

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 ≤ 6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 except the Acrolein and Acroylontirile compound which require a pH of 4-5.

Soil: 125 mL wide mouth glass jar. Store at6°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
2-Chloroethyl Vinyl Ether	110-75-8	1.0	0.2	Methylene Chloride	75-09-2	1.0	0.2
Chloroform	67-66-3	1.0	0.2	(Dichloromethane)			
Chloromethane	74-87-3	1.0	0.2	1,1,2,2-Tetrachloroethane	79-34-5	1.0	0.2
2-Chlorotoluene	95-49-8	1.0	0.2	Tetrachloroethene	127-18-4	1.0	0.2
Chlorodibromomethane	124-48-1	1.0	0.2	(Tetrachloroethylene)			
1,2-Dichlorobenzene	95-50-1	1.0	0.2	1,1,1-Trichloroethane	71-55-6	1.0	0.2
1,3-Dichlorobenzene	541-73-1	1.0	0.2	1,1,2-Trichloroethane	79-00-5	1.0	0.2
1,4-Dichlorobenzene	106-46-7	1.0	0.2	Trichloroethene	79-01-6	1.0	0.2
Dichlorodifluoromethane	75-71-8	1.0	0.2	(Trichloroethylene)			
1,1-Dichloroethane	75-34-3	1.0	0.2	Trichlorofluoromethane	75-69-4	1.0	0.2
1,2-Dichloroethane	107-06-2	1.0	0.2	Vinyl Chloride (Chloroethene)	75-01-4	1.0	0.2

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Purgeable Aromatics (Method E602/E624/SW 8021B/SW 8260B)

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 ≤ 6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 except the Acrolein and Acroylontirile compound which require a pH of 4-5.

Soil: 125 mL wide mouth glass jar. Store at6°C.

Holding Time: 14 days

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	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/SW 8260B)

Sampling: Water: 3-40 mL glass VOA vials with no air bubbles. Store at6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2.

Soil: 125 mL wide mouth glass jar. Store at6°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.

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	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 or SW 8081A+SW 8082)

Sampling: Water: 1-1000 mL glass/teflon bottle. Store at6°C. Add sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at6°C.

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

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Aldrin	309-00-2	0.050	0.0017	Endrin	72-20-8	0.050	0.0017
alpha-BHC	319-84-6	0.050	0.0017	Endrin Aldehyde	7421-93-4	0.050	0.0017
beta-BHC	319-85-7	0.050	0.0017	Heptachlor	76-44-8	0.050	0.0017
delta-BHC	319-86-8	0.050	0.0017	Heptachlor Epoxide	1024-57-3	0.050	0.0017
gamma-BHC (Lindane)	58-89-9	0.050	0.0017	Isodrin	465-73-6	0.050	0.0017
alpha-Chlordane	5103-71-9	0.050	0.0017	Kepone	143-50-0	0.10	0.0033
gamma-Chlordane	5103-74-2	0.050	0.0017	Methoxychlor	72-43-5	0.050	0.0017
4,4'-DDD	72-54-8	0.050	0.0017	Chlordane (technical)	57-74-9	0.50	0.017
4,4'-DDE	72-55-9	0.050	0.0017	Toxaphene	8001-35-2	5.0	0.167
4,4'-DDT	50-29-3	0.050	0.0017	PCBs			
Dieldrin	60-57-1	0.050	0.0017	Aroclor-1016	12674-11-2	1.0	0.033
Endosulfan I	959-98-8	0.050	0.0017	Aroclor-1221	11104-28-2	2.0	0.067
Endosulfan II	33213-65-9	0.050	0.0017	Aroclor-1232	11141-16-5	1.0	0.033
Endosulfan Sulfate	1031-07-8	0.050	0.0017	Aroclor-1242	53469-21-9	1.0	0.033
				Aroclor-1248	12672-29-6	1.0	0.033
				Aroclor-1254	11097-69-1	1.0	0.033
				Aroclor-1260	11096-82-5	1.0	0.033

Organochlorine Pesticides (Method E608/SW 8081A)

Sampling: Water: 1-1000 mL glass/teflon bottle. Store at6°C. Add sodium thiosulfate to chlorinated samples.

Soil: 125 Ml wide mouth glass jar. Store at6°C.

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

	CAS NO.	PQL µg/L	PQL mg/Kg		CAS NO.	PQL µg/L	PQL mg/Kg
Aldrin	309-00-2	0.050	0.0017	Endrin	72-20-8	0.050	0.0017
alpha-BHC	319-84-6	0.050	0.0017	Endrin Aldehyde	7421-93-4	0.050	0.0017
beta-BHC	319-85-7	0.050	0.0017	Endrin Ketone	53494-70-5	0.050	0.0017
delta-BHC	319-86-8	0.050	0.0017	Heptachlor	76-44-8	0.050	0.0017
gamma-BHC (Lindane)	58-89-9	0.050	0.0017	Heptachlor Epoxide	1024-57-3	0.050	0.0017
alpha-Chlordane	5103-71-9	0.050	0.0017	Isodrin	465-73-6	0.050	0.0017
gamma-Chlordane	5103-74-2	0.050	0.0017	Kepone	143-50-0	0.10	0.0033
4,4'-DDD	72-54-8	0.050	0.0017	Methoxychlor	72-43-5	0.050	0.0017
4,4'-DDE	72-55-9	0.050	0.0017	Chlordane (technical)	57-74-9	0.50	0.017
4,4'-DDT	50-29-3	0.050	0.0017	Toxaphene	8001-35-2	5.0	0.167
Dieldrin	60-57-1	0.050	0.0017				
Endosulfan I	959-98-8	0.050	0.0017				
Endosulfan II	33213-65-9	0.050	0.0017				
Mirex	2385-85-5	0.050	0.0017				
Endosulfan Sulfate	1031-07-8	0.050	0.0017				

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Polychlorinated Biphenyls (PCBs) (Method SW 8082)

Sampling:

Water: 1-1000 mL glass/teflon bottle. Store at6°C. Add sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at6°C.

Transformer Oil: 4 dram vial

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	0.50	0.017	2.0
Aroclor-1221	11104-28-2	1.0	0.033	2.0
Aroclor-1232	11141-16-5	0.50	0.017	2.0
Aroclor-1242	53469-21-9	0.50	0.017	2.0
Aroclor-1248	12672-29-6	0.50	0.017	2.0
Aroclor-1254	11097-69-1	0.50	0.017	2.0
Aroclor-1260	11096-82-5	0.50	0.017	2.0
Aroclor-1262	37324-23-5	0.50	0.017	2.0
Aroclor-1268	11100-14-4	0.50	0.017	2.0

Chlorinated Herbicides (Method E615/SW 8151A)

Sampling:

Water: 1-1000 mL glass/teflon bottle. Store at6°C. Add ascorbic acid to chlorinated samples.

Soil: 125 mL wide mouth glass/teflon jar. Store at6°C.

Waste: 125 mL wide mouth glass/teflon jar. Store at6°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/SW 8260B)

Sampling:

Water: 3-40 mL VOA vials. Unpreserved (raw), chilled to 6°C and analyzed within 3 days of collection. Or, pH adjusted to 4-5 with HCL, chilled to 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 6°C. Contact the laboratory prior to sampling to arrange for this analysis.

Soil: 125 mL wide mouth glass jar. Store at6°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/SW 8260B - 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 ≤ 6°C. Add ascorbic acid to chlorinated samples. Preserve with 5-10 drops hydrochloric acid to pH <2 except the Acrolein and Acroylontirile compound which require a pH of 4-5.

Soil: 125 mL wide mouth glass jar. Store at6°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
2-Chloroethyl Vinyl Ether	110-75-8	1.0	0.20	(2-Butanone)			
Chloroform	67-66-3	1.0	0.20	Styrene	100-42-5	1.0	0.20
Chloromethane	74-87-3	1.0	0.20	1,1,1-2-Tetrachloroethane	630-20-6	1.0	0.20
2-Chlorotoluene	95-49-8	1.0	0.20	1,1,2,2-Tetrachloroethane	79-34-5	1.0	0.20
4-Chlorotoluene	106-43-4	1.0	0.20	Tetrachloroethene	127-18-4	1.0	0.20
Chlorodibromomethane	124-48-1	1.0	0.20	(Tetrachloroethylene)			
1,2-Dibromoethane	106-93-4	1.0	0.20	Toluene	108-88-3	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	79-01-6	1.0	0.20
1,4-Dichlorobenzene	106-46-7	1.0	0.20	(Trichloroethylene)			
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	Vinyl Chloride	75-01-4	1.0	0.20
1,1-Dichloroethene	75-35-4	1.0	0.20	(Chloroethene)			
cis-1,2-Dichloroethene	156-59-2	1.0	0.20	Benzene	71-43-2	1.0	0.20
trans-1,2-Dichloroethene	156-60-5	1.0	0.20	Ethylbenzene	100-41-4	1.0	0.20
1,2-Dichloropropane	78-87-5	1.0	0.20	Toluene	108-88-3	1.0	0.20
1,3-Dichloropropane	142-28-9	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 SW 8260B - Long List)

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

For Acrolein 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 at6°C

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

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
Acolein	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/SW 8270C)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at6°C. Add 80 mg sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at6°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/SW 8270C)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at6°C. Add 80 mg sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at6°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/SW 8270C)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at6°C.

Soil: 125 mL wide mouth glass jar. Store at6°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 Screening Test)

Sampling: Water: 2-1000 mL glass/teflon bottles. Store at6°C.
Soils: 125 mL wide mouth glass ajr. Store at6°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/SW 8270C - GC/MS or SW 8310 - HPLC)

Sampling: Water: 2-1000 mL glass/Teflon bottles. Store at6°C. Add 80 mg sodium thiosulfate to chlorinated samples.

Soil: 125 mL wide mouth glass jar. Store at6°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
Acenaphthene	83-32-9	10	0.33	Chrysene	218-01-9	10	0.33
Acenaphthylene	208-96-8	10	0.33	Dibenzo(a,h)anthracene	53-70-3	10	0.33
Anthracene	120-12-7	10	0.33	Fluoranthene	206-44-0	10	0.33
Benzo(a)anthracene	56-55-3	10	0.33	Fluorene	86-73-7	10	0.33
Benzo(b)fluoranthene	205-99-2	10	0.33	Indeno(1,2,3-cd)pyrene	193-39-5	10	0.33
Benzo(k)fluoranthene	207-08-9	10	0.33	Naphthalene	91-20-3	10	0.33
Benzo(g,h,I)perylene	191-24-2	10	0.33	Phenanthrene	85-01-8	10	0.33
Benzo(a)pyrene	50-32-8	10	0.33	Pyrene	129-00-0	10	0.33

Gasoline Range Organics (GRO) and Total Petroleum Hydrocarbons as Gasoline or Methanol

EPA Method: 1990 Draft GRO Method or SW 5030/SW 8015 Mod. - Purge & Trap/GC-FID

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 at6°C.

Soil: 125 mL glass jar. Store at6°C.

Holding Time: 14 days

PQL: GRO: 20 µg/L (water); 2 mg/Kg (soil); 30 mg/m^3 (air)
Methanol: 2.5 mg/L (water)

Notes: The analysis for Gasoline Range Organics includes three components:

Gasoline Range Organics are defined as all the hydrocarbons eluting between 2-Methylpentane and 1,2,4-Trimethylbenzene.

Gasoline Range Organics as Gasoline is defined by the analyst as the portion of the chromatogram in the gasoline range that resembles gasoline.

Total Purgeable Hydrocarbons as Gasoline include all the hydrocarbon responses regardless of elution time. This is equivalent to Method SW 8015 Mod. TPH as gasoline.

ORGANIC CHEMISTRY
DESCRIPTION OF METHODS

Diesel Range Organics (DRO), Total Petroleum Hydrocarbons as Diesel, or Carbon Scan

EPA Method: 1990 EPA/API Draft DRO Method or SW 3550/E 8015 Mod. - Methylene chloride extraction/GC-FID.

Sampling: Water: 2-1000 mL glass bottles preserved with sulfuric acid. Store at6°C.

Soil: 125 mL glass jar. Store at6°C.

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

PQL: 0.5 mg/L (water); 10 mg/Kg (soil)

Notes: The analysis for Diesel Range Organics includes three components:

Diesel Range Organics are defined as all hydrocarbons eluting between C10 and C28.

Diesel Range Organics as Diesel is the portion of the hydrocarbons between C10 and C28, which resemble diesel.

Total Extractable Hydrocarbons as Diesel is the total hydrocarbon response regardless of elution time. This value is equivalent to Method SW 8015 Mod. TPH as diesel.

Volatile Petroleum Hydrocarbons (VPH)

EPA Method: January 1998 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 at6°C.

Soil: 125 mL glass jar. Store at6°C.

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

		PQL				PQL	
	CAS NO.	µg/L	mg/Kg		CAS NO.	µg/L	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/	0.50	0.050	C_9 to C_{12} Aliphatics	NA	20	2.0
	106-42-3			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: January 1998 Massachusetts method as modified by Montana DEQ

Sampling: Water: 2-1000 mL glass bottles preserved with sulfuric acid. Store at6°C.

Soils: 125 mL glass jar. Store at6°C.

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

PQL EPH Screen: Water: 0.30 mg/L as total extractable hydrocarbons

Soil: 20 mg/Kg as total extractable hydrocarbons

Notes: EPH screening: Samples that contain 50 mg/Kg for soil or 1000 µg/L for water will 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.

MBTEX will be performed by Method SW 8021B or SW 8260B. PAH analysis on soil extracts may be analyzed by GC-FID. On waters, PAHs are analyzed using Method SW 8270C. PAH hits must be confirmed by second column analysis or GC-MS.

EPH Complete:

	CAS NO.	PQL mg/L	PQL mg/Kg		CAS NO.	PQL mg/L	PQL mg/Kg
C9-C18 Aliphatics	NA	0.60	20	Anthracene	120-12-7	0.010	0.33
C19-C36 Aliphatics	NA	0.60	20	Fluoranthene	206-44-0	0.010	0.33
C11-C22 Aromatics	NA	0.60	20	Pyrene	129-00-0	0.010	0.33
Total Extractable Hydrocarbons (Screen)	NA	0.30	20	Benzo(a)Anthracene	56-55-3	0.010	0.33
				Chrysene	218-01-9	0.010	0.33
Total Extractable Hydrocarbons (Fractionation)	NA	0.60	10	Benzo(b)Fluoranthene & Benzo(k)Fluoranthene	205-99-2 207-08-9	0.020	0.67
Naphthalene	91-20-3	0.010	0.33	Benzo(a)pyrene	50-32-8	0.010	0.33
2-Methylnaphthalene	91-57-6	0.010	0.33	Indeno(1,2,3-cd)Pyrene & Dibenzo(a,h)Anthracene	193-39-5 53-70-3	0.020	0.67
Acenaphthylene	208-96-8	0.010	0.33				
Acenaphthene	83-32-9	0.010	0.33	Benzo(g,h,i)Perylene	191-24-2	0.010	0.33
Fluorene	86-73-7	0.010	0.33				
Phenanthrene	85-01-8	0.010	0.33				

Glycols by GC-FID

EPA Method: SW 8015 M

Sampling: Water: 500 mL glass or plastic bottle, unpreserved. Store at6°C.
Soil: 125 mL glass jar. Store at6°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: SW 9071 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: SW 9020

Sampling: Water: 4-40 mL glass septum bottles, completely full, no air bubbles. Preserve chlorinated samples with 10 mg sodium thiosulfate. Store at6°C.

Soil: 125 mL wide mouth glass jar. Store at6°C.

Holding Time: 14 days

Hydrocarbons in Headspace Gas

Method: GC/FID Kampbell (SW 8015 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.

Acrylamide (Method SW 8316 HPLC)

Method: SW 8316 HPLC

Sampling: 3-40 mL VOA vials, completely full with no air bubbles. Store at6°C.

Holding Time: 14 days

Nitroaromatics and Nitramines (Method SW 8330 - HPLC)

Sampling: Water: 2-1000 mL glass/Teflon bottles. Store at6°C.

Soil: 125 mL wide mouth glass jar. Store at6°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
HMX	2691-41-0	0.20	0.10	4-Amino-2,6-dinitrotoluene	19406-51-0	0.20	0.10
RDX	121-82-4	0.20	0.10	2-Amino-4,6-dinitrotoluene	355-72-78-2	0.20	0.10
1,3,5-Trinitrobenzene	99-35-4	0.20	0.10	2,6-Dinitrotoluene	606-20-2	0.20	0.10
1,3-Dinitrobenzene	99-65-0	0.20	0.10	2,4-Dinitrotoluene	121-14-2	0.20	0.10
TETRYL	479-45-8	0.20	0.10	2-Nitrotoluene	88-72-2	0.20	0.10
Nitrobenzene	98-95-3	0.20	0.10	4-Nitrotoluene	99-99-0	0.20	0.10
2,4,6-Trinitrotoluene	118-96-7	0.20	0.10	3-Nitrotoluene	99-08-1	0.20	0.10

Nitroglycerin and PETN (Method SW 8332 - HPLC)

Sampling: Water: 2-1000 mL glass/Teflon bottles. Store at6°C.

Soil: 125 mL wide mouth glass jar. Store at6°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
Nitroglycerin	55-63-0	0.20	0.10	PETN	75-11-5	0.20	0.10

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