

**Pennsylvania Department of Environmental Protection
Marcellus Frac and Flowback Water Study List of Analytes**

Inorganics

Specific Con	Aluminum T	Copper D	Potassium T
pH	Antimony D	Copper T	Silver D
Alkalinity	Antimony T	Iron D	Silver T
Hot Acidity	Arsenic D	Iron T	Sodium D
Oil & Grease	Arsenic T	Lead D	Sodium T
Ammonia-N T	Barium D	Lead T	Selenium D
Hardness T	Barium T	Lithium D	Selenium T
Sulfate - IC	Beryllium D	Lithium T	Strontium D
TDS @105 C	Beryllium T	Magnesium D	Strontium T
TSS Wash 3X	Cadmium D	Magnesium T	Thallium T
Bromide	Cadmium T	Manganese D	Thallium D
Chloride	Calcium D	Manganese T	Zinc D
Osmotic Pres	Calcium T	Nickel D	Zinc T
Phenols-Dist	Chromium D	Nickel T	Mbas
Aluminum D	Chromium T	Potassium D	

Volatile Organic Compounds

1,1,1,2-Tetrachloroethane	Acetone	Methyl Tert-Butyl Ether
1,1,1-Trichloroethane	Benzene	Methylene Chloride
1,1,2,2-Tetrachloroethane	Bromobenzene	MIBK
1,1,2-Trichloroethane	Bromodichloromethane	Naphthalene
1,1-Dichloroethane	Bromoethane	n-Butylbenzene
1,1-Dichloroethene	Bromoform	n-Propylbenzene
1,1-Dichloropropene	Carbon Disulfide	o-Chlorotoluene
1,2,3-Trichlorobenzene	Carbon Tetrachloride	o-Xylene
1,2,3-Trichloropropane	Chlorobenzene	p-Chlorotoluene
1,2,4-Trichlorobenzene	Chloroethane	PCTFB
1,2,4-Trimethylbenzene	Chloroethene	Sec-Butylbenzene
1,3,5-Trimethylbenzene	Chloroform	Styrene
1,2-Dibromo-3-chloropropane	Chloromethane	t-Butyl alcohol
1,2-Dibromoethane	cis-1,2-Dichloroethene	tert-Butyl Acetate
1,2-Dichlorobenzene	cis-1,3-Dichloropropene	Tert-Butylbenzene
1,2-Dichloroethane	Dibromochloromethane	Tetrachloroethene
1,2-Dichloropropane	Dibromomethane	Tetrahydrofuran
1,3-Dichlorobenzene	Dichlorodifluoromethane	Toluene
1,3-Dichloropropane	Ethylbenzene	trans-1,2-Dichloroethene
1,4-Dichlorobenzene	Hexachlorobutadiene	trans-1,3-Dichloropropene
1,4-Dioxane	Isopropylbenzene	Trichloroethene
2,2-Dichloropropane	m/p-Xylene	Trichlorofluoromethane
2-Hexanone	MEK	Vinyl Acetate
4-Isopropyltoluene		

Semivolatile Organic Compounds

2-Picoline (2-Methylpyridine)	Acenaphthene	Fluoranthene
1,2,4,5-Tetrachlorobenzene	Acenaphthylene	Fluorene
1,2,4-Trichlorobenzene	Acetophenone	gamma-BHC (Lindane)
1,2-Dichlorobenzene	Aldrin	Heptachlor
1,3-Dichlorobenzene	Alpha-Bhc	Heptachlor Epoxide
1,3-Dinitrobenzene	Aniline	Hexachlorobenzene
1,4-Dichlorobenzene	Anthracene	Hexachlorobutadiene
1,4-Napthoquinone	Aramite	Hexachlorocyclopentadiene
2,3,4,6-Tetrachlorophenol	Benz(A)Anthracene	Hexachloroethane
2,4,5-Trichlorophenol	Benzo(A)Pyrene	Hexachloropropene
2,4,6-Trichlorophenol	Benzo(B)Fluoranthene	Indeno-1,2,3-cd-pyrene
2,4-Dichlorophenol	Benzo(G,H,I)Perylene	Isodrin
2,4-Dimethylphenol	Benzo(K)Fluoranthene	Isophorone
2,4-Dinitrophenol	Benzyl Alcohol	Isosafrole
2,4-Dinitrotoluene	Beta-Bhc	Methoxychlor
2,6-Dichlorophenol	Bis-(2-Chloroethoxy)Methane	Methyl Methanesulfonate
2,6-Dinitrotoluene	Bis-(2-Chloroethyl)Ether	Naphthalene
2-Acetylaminofluorene	Bis-(2-Chloroisopropyl)Ether	Nitrobenzene
2-Chloronaphthalene	Bis-(2-Ethylhexyl)Phthalate	N-Nitrosodibutylamine
2-Chlorophenol	Butylbenzylphthalate	N-Nitrosodiethylamine
2-Methylnaphthalene	Chlorobenzilate	N-Nitrosodimethylamine
2-Methylphenol	Chrysene	N-Nitrosodipropylamine
2-Nitroaniline	Delta-Bhc	N-Nitrosomethylethylamine
2-Nitrophenol	Diallate (Cis or Trans)	N-Nitrosomorpholine
3&4-Methylphenol	Dibenzo(A,H)Anthracene	N-Nitrosopiperidine
3,3'-Dichlorobenzidine	Dibenzofuran	O,O,O-Triethyl Phosphorothioat
3-Methylcholanthrene	Dieldrin	o-Toluidine
3-Nitroaniline	Diethylphthalate	Pentachlorobenzene
4,4'-DDD	Dimethoate	Pentachloroethane
4,4'-DDE	Dimethylaminoazobenzene	Pentachloronitrobenzene
4,4'-DDT	Dimethylphthalate	Pentachlorophenol
4,6-Dinitro-2-Methylphenol	Di-N-Butylphthalate	Phenanthrene
4-Aminobiphenyl	Di-N-Octylphthalate	Phenol
4-Bromophenyl-Phenyl Ether	Dinoseb	Phorate
4-Chloro-3-Methylphenol	Diphenylamine	Pronamide
4-Chloroaniline	Disulfoton	Pyrene
4-Chlorophenyl-Phenyl Ether	Endosulfan I	Pyridine
4-Nitroaniline	Endosulfan II	Safrole
4-Nitrophenol	Endrin	Tetraethyl Dithiopyrophosphate
5-Nitro-O-Toluidine	Ethyl Methanesulfonate	Thionazine
7,12-Dimethylbenz(A)-Anthracen	Ethyl Parathion	

Glycol

1,2-Propanediol
Ethylene Glycol

Radionuclides

RA 228	PB 214
RA 226	Uranium 235
Uranium 238	PB 212
Actinium 228	