

INORGANIC ANALYSIS WATER/WASTEWATER

Acidity	SM2310B
Alkalinity	
Phenophthalein Alkalinity.....	SM 2320B
Total Alkalinity.....	SM 2320B
Bicarbonate Alkalinity.....	SM 2320B
Carbonate Alkalinity.....	SM 2320B
Biochemical Oxygen Demand	
BOD5.....	SM 5210 B
CBOD5.....	SM 5210 B
Soluble BOD.....	SM 5210 B
Carbon	
Carbon Dioxide.....	SM 4500 CO2 C
Carbon, Total Organic-TOC.....	SM 5310 B
Chemical Oxygen Demand - COD	EPA 410.4
Chloride	SM 500 Cl C & E
Chlorine, Total Residual	SM 4500 Cl G
Conductivity, Specific	EPA 120.1
Color	SM 2120 B
Cyanide	
Total.....	SM 4500-CN-E
Amenable to Chlorination.....	SM 4500 CN G
Reactive.....	EPA SW-846 Section 7.3
Dissolved Oxygen	
Electrode.....	SM 4500-O-G
Fluoride	
Fluoride.....	SM 4500 F C
Hardness	SM 2340 B & C
Nitrogen	
Ammonia Nitrogen.....	EPA 350.1
Nitrate Nitrogen.....	EPA 353.2
Nitrate-Nitrite Nitrogen.....	EPA 353.2
Total Kjeldahl Nitrogen.....	SM 4500 N org B
Total Organic Nitrogen.....	TKN – NH3
Total Nitrogen.....	TKN + NO3/NO2
Oil & Grease	
Hexane, Gravimetric.....	EPA 1664A & B
SGT – HEM.....	EPA 1664A & B
Orthophosphate	EPA 365.3
Phosphorus, Total	SM 4500-P-E
pH by Electrode	SM 4500 H+B

Solids	
Total Suspended Solids.....	SM 2540 D
Volatile Solids.....	SM 2540 E
Total Dissolved Solids.....	SM 2540 C
Settleable Solids.....	SM 2540 F
Total Solids.....	SM 2540 B
Specific Gravity - Pycnometer	ASTM D854
Sulfate	SM 4500 SO4 E
Phenolics, Total	EPA 420.4

INORGANIC ANALYSIS SOIL/SEDIMENTS/SLUDGES

Alkalinity	
Bicarbonate Alkalinity.....	SM 2320B
Carbonate Alkalinity.....	SM 2320B
Ash	ASTM D-482
Carbon	
Carbon, Total Organic TOC.....	Various
Cation Exchange Capacity CEC	USDA 19(MSA-NH4-SAT)
Chloride	USDA 13(SW 9251)
Conductivity, Specific	USDA 4B (EPA 120.1)
Cyanide	
Total.....	EPA 9012 B
Weak and Dissociable (Free).....	SM 4500 CN I
Amenable to Chlorination.....	SM 4500-CN G
Reactive.....	EPA SW-846 Section 7.3
Ignitibility	
Ignitibility.....	EPA 1010 A
Closed Cup Flash.....	ASTM D93
Open Cup Flash.....	ASTM D92 & EPA 1310
Nitrogen	
Ammonia Nitrogen.....	EPA 350.1 Mod.
Nitrate Nitrogen.....	USDA 15 (EPA 353.2
Mod.)	
Plant Available Nitrogen.....	USDA
Total Kjeldahl Nitrogen.....	SM 4500 N org B
Total Organic Nitrogen.....	TKN – NH3
Oil & Grease	
Hexane, Gravimetric.....	EPA 9071 B
Orthophosphate	EPA 365.3
Paint Filters Test	EPA 9095 B

Phosphorus, Total	EPA 365.3
pH by Electrode	SW 9045 D
Resistivity	Various ASTM
Sieve Testing	Various ASTM
Sodium Absorption Ratio - SAR	Various
Potassium Absorption Ratio-PAR	Various
Sulfate	SM 4500 SO4 E
Sulfide	
Total Sulfide.....	EPA 9030 B
Reactive Sulfide.....	EPA SW-846 Section 7.3

METALS ANALYSIS

Metals Preparation	
Waters / Wastewater Digestion.....	EPA 3005A / 3010A
Sediment/Soils Digestion.....	EPA 3050A
Hydrocarbon Digestion.....	EPA 3020
Metals Analysis	
Metals by ICP *	EPA 6010B & 200.7
Metals by ICP/MS**	EPA 6020 & 200.8
Mercury Analysis	
Water/Wastewaters.....	EPA 245.1
Soil/Sediments.....	EPA 7471 B
Hexavalent Chromium	EPA 7196 A

* Elements analyzed routinely by ICP
Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Vanadium, and Zinc – Others upon request
** Elements analyzed routinely by ICP/MS
Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Vanadium, and Zinc – Others upon request

ORGANICS ANALYSIS

Semivolatile Organics	
Base/Neutral/Acids - BNA.....	EPA 8270D or 625

Dioxin Scan with BNA's.....	EPA 8270D or 625
Polynuclear Aromatics-.....	PNA's EPA 8270D or 625
Volatile Organics	
Volatile Organics.....	EPA 8260C or 624
Trihalomethanes – TTHM's.....	EPA 8260C or 624
BTEX by GC/MS.....	EPA 8260C or 624
UST Testing	
BTEX only.....	EPA 8021B or 602
BTEX & TPH-GRO*.....	EPA 8021B or 602 & ODEQ GRO
BTEX & TPH-DRO**.....	EPA 8021B or 602 & ODEQ DRO
BTEX & GRO & DRO.....	EPA 8021B or 602 & GRO & DRO
BTEX + MTBE & Naphthalene	EPA 8021B or 602
TPH-GRO* only.....	ODEQ GRO
TPH-DRO** only.....	ODEQ DRO
TPH, Total Extractables.....	EPA 8015 Mod.

* TPH-GRO	Total Petroleum Hydrocarbons by Oklahoma Department of Environmental Quality for Gasoline Range Organics
** TPH-DRO	Total Petroleum Hydrocarbons by Oklahoma Department of Environmental Quality for Diesel Range Organics

MICROBIOLOGICAL ANALYSIS

Microbiological Analysis	
Fecal Coliform.....	SM 9222D & SM 9223B
Total Coliform.....	SM 9222B
e. Coli.....	SM 9223B & m-ColiBlue

SPECIALITY GROUPS

RCRA Analytes	
TCLP Pb Only.....	EPA 1311 / 6010B
TCLP Metals (As, Ba, Cd, Cr, Pb, Se, Ag, & Hg)...	EPA 1311 & 6010B/7470A
TCLP Volatiles.....	EPA 1311 & 8260C
TCLP Semivolatiles.....	EPA 1311 & 8270D
Reactive Cyanide.....	EPA SW-846 Section 7.3
Reactive Sulfide.....	EPA SW-846 Section 7.3
Corrosivity.....	EPA 9045D

Ignitibility.....	EPA 1010A
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City of Tulsa Permit – Normal Parameters	
Metals (As, Cd, Cr, Cu, Ni, Mo, Pb, Ag, Zn, & Hg), BOD, COD, Cyanide, Oil & Grease-SGT by Hexane, TSS, and Sampling (includes pH and Temperature determination on site)	

Priority Pollutants (40CFR Part 122, Appendix D)	
Volatile Organics.....	EPA 8260C or 624
Semivolatile Organics.....	EPA 8270D or 625
Pesticides & PCB's.....	EPA 8081B & 8082A or 608
13 Metals*.....	EPA 6010B/7470A or 200.7/245.2
Cyanide.....	EPA 9010C or SM 4500 CN-E
Phenolics.....	EPA 9065 or 420.4

FIELD SERVICES

Travel and On-Site based on per hour	
Technician.....	
Chemist.....	
Senior Chemist.....	
Equipment Rental.....	

GENERAL SAMPLING GUIDE

Analyte	Volume	Container	Preservation	Holding Time
Acidity.....	100ml.....	p.....	1.....	14 Days
Alkalinity.....	100ml.....	p.....	1.....	14 Days
Ammonia.....	400ml.....	p.....	2.....	28 Days
BOD 1000ml.....	p.....	1.....	48 Hours	
COD 125ml.....	p.....	2.....	28 Days	
Chloride.....	125ml.....	p.....	1.....	28 Days
Chlorine.....	500ml.....	p.....	None.....	Analyze Immediately
Cyanide.....	1000ml.....	p.....	3.....	14 Days
Fluoride.....	500ml.....	p.....	None.....	28 Days
Hardness.....	250ml.....	p.....	4.....	6 Months
pH 100ml.....	p.....	None.....	Analyze Immediately	
TKN 1000ml.....	p.....	2.....	28 Days	
Chromium VI.....	500ml.....	p.....	1.....	24 Hours
Mercury.....	250.....	p.....	5.....	28 Days
Metals, except above.....	500ml.....	p.....	5.....	6 Months
Nitrate.....	250ml.....	p.....	1.....	48 Hours
Nitrate-Nitrite.....	250ml.....	p.....	1.....	28 Days
Nitrite.....	125ml.....	p.....	1.....	48 Hours
Oil & Grease.....	1000ml.....	g,a.....	2.....	28 Days
Phenolics.....	1000ml.....	g,a.....	2.....	28 Days
Phosphate, ortho.....	125ml.....	p.....	1.....	48 Hours
Phosphorus, total.....	125ml.....	p.....	2.....	28 Days
TDS, TSS, & TVS.....	1000ml.....	p.....	1.....	7 Days
Specific Conductance.....	250ml.....	p.....	1.....	28 Days
Sulfate.....	250ml.....	p.....	1.....	28 Days
Sulfide.....	1000ml.....	p.....	6.....	7 Days
Surfactants-MBAS.....	500ml.....	p.....	1.....	48 Hours
Total Organic Carbon.....	40ml.....	g,a.....	2.....	28 Days
Turbidity.....	250ml.....	p.....	1.....	48 Hours
Volatile Organics.....	3 40ml.....	VOA Vials.....	7.....	14 Days
Semivolatile Organics.....	1000ml.....	g,a.....	8.....	7 Days
Semivolatiles includes: Base/Neutral/Acids, Pesticides, PCB's, Herbicides, Polynuclear Aromatics, and others				

Container Codes

p HPDE Plastic Container **g,a** Glass Amber Container

Preservation Codes

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|--|--|
| 1 Cool to 6°C | 2 pH<2 H ₂ SO ₄ , Cool to 6°C |
| 3 pH>12 NaOH+Asc, 6°C | 4 pH<2 HNO ₃ , Cool to 6°C |
| 5 pH<2 HNO ₃ , Cool to 6°C | 6 pH>9 NaOH, Zn Acetate, Cool to 6°C |
| 7 pH<2 HCl, Cool to 4°C | 8 Cool to 4°C |