



PETROLEUM
LABORATORIES, INC.

**SCHEDULE
OF
SERVICES**

July 1, 2018

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Water & Wastewater Analyses

- Acidity – titration
- Alkalinity – titration (SM 2320-B)
- Amine Residual – existing curve
- Amine Residual – new curve
- Ammonia (see Nitrogen)
- B.O.D. (5 Day) / C.B.O.D. (SM 5210-B)
- Chloride – titration (SM 4500-Cl⁻ B)
- Chlorine – colorimetric (SM 4500-Cl₂ G, HACH 8167)
- C.O.D. – dichromate reflux (SM 5220-D)
- Color – platinum-cobalt
- Conductivity – meter (SM 2510-B)
- Fluoride (HACH 8029)
- Hardness – titration

- **Metals by ICAP**
EPA 200.7
EPA 6010B
Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron,
Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead,
Magnesium, Manganese, Molybdenum, Nickel, Potassium,
Phosphorus, Selenium, Silica, Silver, Sodium, Strontium,
Thallium, Tin, Titanium, Vanadium, Zinc

- Chromium, Hexavalent (SM 3500-Cr B)
- Mercury – cold vapor (EPA 245.1, EPA 7470)
- Metals Preparation / Digestion

- Nitrogen
 - Ammonia Nitrogen – distillation (SM 4500-NH₃ C)
 - Kjeldahl Nitrogen – distillation, digestion*
 - Nitrate Nitrogen – colorimetric (HACH 8171)
 - Nitrite Nitrogen – colorimetric (HACH 8507)

*Subcontracted

Water & Wastewater Analyses (cont'd.)

➤ Oil & Grease

Gravimetric (EPA 1664 HEM)

Gravimetric Silica (EPA 1664 SGT)

Gravimetric & Gravimetric Silica (EPA 1664 HEM & SGT)

Infrared

Soluble Oil (Infrared w/SGT)

➤ Oxygen – dissolved

➤ pH – meter (SM 4500-H+ B, EPA 9040B)

➤ Phenol – distillation (EPA 420.1)

➤ Phosphate

➤ Resistivity

➤ Solids

Dissolved – gravimetric (SM 2540-C)

Dissolved, volatile – gravimetric

Settleable – imhoff cone

Suspended – glass fiber filtration (SM 2540-D)

Suspended, volatile – glass fiber filtration

Total – gravimetric (SM 2540-B)

➤ Specific Conductance – meter (SM 2510-B)

➤ Specific Gravity – pycnometer

➤ Sulfate – turbidimetric (SM 4500-SO₄⁻ E)

➤ Sulfite

➤ Total Organic Carbon (SM 5310-B)

➤ Turbidity – meter (SM 2130-B)

*Subcontracted

Comprehensive Water Analyses

- **Oilfield Brine**
 - Cations – Sodium (calc), Calcium, Magnesium, Barium, Iron (dissolved and precipitated)
 - Anions – Chloride, Sulfate, Carbonate, BiCarbonate
 - Other Properties - pH, Specific Gravity, Resistivity, Total Dissolved Solids (calc.), Mineral Analysis Pattern, Stiff & Davis Stability Index (calc.), for scaling or corrosion tendencies, calcium sulfate solubility, barium sulfate solubility, and total equivalent sodium chloride will be calculated upon request

 - **Fresh Water**
 - Cations - Silica, Manganese, Iron, Calcium, Magnesium, Sodium
 - Anions - Chloride, BiCarbonate, Carbonate, Sulfate, Fluoride, Nitrate
 - Other Properties – Total Hardness, “P” Alkalinity, “MO” Alkalinity, pH, Turbidity, Color, Langelier Saturation Index or Ryzner Stability Index
-
-

Bacteriological Analyses

- Acid Producing Bacteria
 - 1st Dilution
 - Each additional dilution

 - Anaerobic Sulfate Reducers
 - 1st Dilution
 - Each additional dilution

 - Fecal Coliform – MFP (SM 9222-D)
 - Fecal Coliform – MPN (SM 9221-E+C)

 - Total Bacteria – MFP
 - Total Coliform – MFP (SM 9222-B)
 - Enterococci – MFP (EPA 1600)
-
-
-
-
-
-
-
-

Glycol Analyses

- Water (Karl Fisher Method)
 - Hydrocarbon
 - Chloride (also as NaCl)
 - Suspended Solids
 - pH
 - Iron (by ICAP)
 - TEA Requirements
 - Foaming Tendencies
 - Reserve Alkalinity
-

Lube Oil Analyses

- 20 Element Spectrographic Analysis (ICAP)
 - Physical Properties Analysis
 - Glycol (coolant) Test
 - Particle Count Analysis (by Laser Counter)
 - Particle Count Analysis (by Microscope)
-

- Volume Price Breakdown (Basic Analysis Only)

1 – 9 Samples Per Month

10 – 39 Samples Per Month

40 – 79 Samples Per Month

80 – 99 Samples Per Month

100 + Samples Per Month

Hydrocarbon Analyses

- Algae (organic matter)
- API Gravity – ASTM D287
- Ash Content – ASTM D482
- Ash, Sulfated Residue – ASTM D874
- Asphaltenes
- Bottom Sediment & Water – ASTM D96
- Carbon Residue – ASTM D189
- Cetane Index – ASTM D849 (includes Distillation & API Gravity)
- Cloud Point – ASTM D2500
- Color, Saybolt – ASTM D156
- Corrosion, Copper Strip – ASTM D849
- Distillation – ASTM D86
- Fire Point (includes Flash Point) – ASTM D92
- Flash Point:
 - Closed Cup – ASTM D56 (Fisher Tag)
 - Closed Cup – ASTM D93 (Pensky Martin)
 - Open Cup – ASTM D92
- Melting Point
- Metals (see Lube Oil Analysis section)
- Paraffin Content – low temp. extraction
- Pour Point – ASTM D97
- Reid Vapor Pressure
- Salt Content – ASTM D878
- Sulfur – ASTM D4294
- Total Acid Number
- Total Base Number
- Viscosity – ASTM D445

*Subcontracted

Soils / Statewide Order 29-B

➤ WATER:

Reserve Pit (pH, TSS, Chloride, COD, Cr, Zn, Oil & Grease)

➤ SOIL:

LA 29-B Full (package)

LA 29-B Salts

LA 29-B Metals

Drying & Grinding

pH

Moisture

Oil and Grease (TPH)

EC

ESP

SAR

CEC

Paste & Extraction

Digestion for Metals

Chloride

Corrosion Coupons

➤ Cleaned, Weighed, MPY Calculated

➤ Mild Steel Rod Type Coupons – up to 3"

➤ Mild Steel Rod Type Coupons – over 3"

➤ Mild Steel Flat Type Coupons – up to 3"

➤ Mild Steel Flat Type Coupons – over 3"

➤ Scale Coupons – Flat Type – most sizes

➤ Scale Coupons – Rod Type – most sizes

➤ Disc Coupons

➤ Coupon Accessories – Available Upon Request

 ½" Coupon holder – rod type

 ¾" Coupon holder – rod type

 ¾" Coupon holder – flat type

 1" Coupon holder – rod type

 1" Coupon holder – flat type

 2" Coupon holder – rod type

 2" Coupon holder – flat type

 2" Coupon holder – multi chuck

 Extensions (other than standard)

 Plastic Sleeve or Envelope

➤ Prices of all coupons include:

 Surface preparation, serial no., weighed and packed in

 VCI envelopes

➤ Special metals and coupons upon request

Miscellaneous / Special Studies

- Asbestos*
- B.T.E.X.* (In Soil or Water)
- Base/Neutral & Acid Extractables*
- Bromide*
- Carbon Dioxide
- Carbon Distribution*
- Compatibility of 2 Brines
- Cyanide – distillation*
- Membrane Filter Analysis - Total Solids, Hydrocarbons, Acid Solubles, Acid Insolubles
- Membrane Filter Analysis - Total Solids, Hydrocarbons, Carbonates, Iron Compounds, Acid Insolubles
- Particle Size Distribution:
 - Microscopic
 - Sieve
- Paint Chip Analysis (Total Lead)
- PCB's (EPA approved test kit)
- PCB's*
- Pesticides & Herbicides*
- NORM (RA 226 & RA 228)*
- RCI (Reactivity, Corrosivity, Ignitability)*
- Solids Identification / Scale Analysis:
 - Qualitative
 - Quantitative
- Sulfide*
- Surfactants (MBAS) – colorimetric*

*Subcontracted

Miscellaneous / Special Studies (cont'd.)

- TCLP * (with RCI and Pesticides & Herbicides)
- (with RCI, without Pesticides & Herbicides)
- TCLP Benzene*
- TCLP Lead
- TCLP Metals
- TCLP Extraction
- Total Toxic Organics (TTO)*
- Total Organic Halogens (TOX)*
- Total Petroleum Hydrocarbons (TPH)*
- Volatile Organic Compounds*

Field Services

- Field Time – Hourly Rates:
 - Technician: Weekdays (8am to 5pm)
 - Weekends and Overtime
 - Chemist: Weekdays (8 am to 5pm)
 - Weekends and Overtime
- Weekend Callout for Lab Analysis
- Direct Expenses:
 - Mileage - per mile
 - Meals, Lodging, etc.

*Subcontracted

Lab Supplies

➤ **Beakers** Various Sizes

➤ **Graduated Cylinders** Various Sizes

➤ **Separatory Funnels** Various Sizes

➤ **Chemicals**

4 oz. Dilute Hydrochloric Acid

8 oz. Dilute Hydrochloric Acid

32 oz. Dilute Hydrochloric Acid

Gallon Dilute Hydrochloric Acid

Gallon TF Solvent / Freon

Gallon Hexane

Quart S316 Solvent

Quart Vertrel

Gallon Vertrel

➤ **Bottles**

6 oz. Sani-Glass Bottles (48/case)

32 oz. Glass Quart Bottles (each)

32 oz. Glass Quart Bottles (12/case)

4 oz. Plastic (narrow mouth)

8 oz. Plastic (narrow mouth)

16 oz. Plastic (narrow mouth)

32 oz. Plastic (narrow mouth)

32 oz. Plastic (wide mouth)

➤ **Miscellaneous**

Empty 4 pack Box

pH Test Strips (100/pack)

Squeeze Bottle / Dispensing Bottle (Various Sizes)

Disposable Gloves

Kim Wipes (280/pk)

Silica Gel (quart)

Silica Gel (4 oz.)

pH Buffer (quart)

Pocket Pal pH Tester

Septum Caps

SRB / APB Vials

Pre-weighed Membrane Filters

Filter Paper (100/box)

Advantec No. 1

Advantec No. 2S (Phase Separator)

Analyzers & Supplies

➤ CALIBRATIONS ON THE FOLLOWING INFRARED ANALYZERS OFFERED BY QUOTATION:

MIRAN I FF (FOXBORO)

DURATECH DTIR ANALYZER

HATR T2

WILKS CVH MODEL

SPECTRO ATR-SP

SPECTRO CUVETTE MODEL

➤ Above Calibrations offered with the following solvents:

Hexane

S316 Solvent

Vertrel

Perc Solvent

TF Solvent / Freon

➤ OTHER SUPPLIES

Quartz Cuvette

Power Cord

Calibration Standards

➤ REPAIRS

➤ IR RENTAL Daily Rate (4 day minimum)

Notes

Sample containers, bottles, and tags are provided at no charge if returned to Petroleum Laboratories, Inc.

Quality Assurance records are kept at our laboratories and are available for inspection by our customers

For those who have NPDES permits, we will prepare quarterly DMR reports for a minimal fee.

TERMS: NET 30 DAYS

Prices subject to change without notice.

Samples shipped to us "Collect" will be accepted. Such transportation charges will be added to our laboratory charges with a receipt attached to our original copy of the invoice.

Chemical solutions and supplies by quotation.

Additional charges may be charged for:

- Disposal Cost
- Excessive H₂S
- Sample Preparation
- Shipping

Normal turnaround time for analytical services is 3 – 5 days. Additional charges will apply for rush services at the following rate:

Same Day	100% upcharge
24 Hour Turnaround	75% upcharge
48 Hour Turnaround	50% upcharge

Minimum Invoice charge \$ 25.00

Quantity discounts available

Where applicable, analysis are determined as outlined in current editions of Standard Methods, EPA, API, ASTM, USDA, or NACE.

Lab Supplies pricing may vary due to changes in PLI's supplier cost