

The Environmental Quality Laboratory (EQL)-Utah Water Research Laboratory
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USU community

Option 1: Faculty member, researcher, or student is interested in using lab space (bench space, constant temperature room, etc.), general lab instrumentation, or diverse analytical instruments at hourly/daily rates (Table 1 and 2).

The EQL also offers two per sample fee structures to the USU community:

Option 2: Per sample fee for EQL standard analyses (Table 3) when the USU researcher or their graduate student(s) perform sample preparation and analysis using EQL equipment/instrumentation (Table 4)

Option 3: Per sample fee for EQL standard analyses (Table 3) when EQL staff performs sample preparation and analysis (Table 4)

Non USU community

Option 4: Per sample fee for EQL standard analyses (Table 2) for non USU clients (Table 3) where EQL staff performs sample preparation and analysis.

All per sample costs were calculated to include QC sample costs.

USU Investigator Use of Environmental Quality Lab (EQL)

Option 1: Faculty member, researcher, or student is interested in using lab space (bench space, constant temperature room, etc.), general lab instrumentation, or diverse analytical instruments at hourly/daily rates (Table 1 and 2).

Daily rates for lab space rental and general lab instrumentation are provided to allow researchers to use space within the EQL, set up experiments, and use the general lab instrumentation and supplies (Table 1). All USU employees using the EQL must have completed Initial Lab Safety training provided by EH&S and be up to date with annual safety training. A safety walk-through of the EQL is required.

Table 1. General laboratory use fee

<p>Short Term General Lab Use – Includes use of lab supplies (gloves, paper towels, DI water), general use instruments/equipment (pH, EC, turbidity, UV-vis spectrometers, centrifuges, microwave digester, hot blocks, solvent evaporator, etc.)</p>	<p>\$16.75 day use rate for short term projects using lab space</p>
<p>Longer Term General Lab Use - Lab space rental for extended period that includes access to research space, general use lab instruments and equipment (listed above)</p>	<p>\$16.75 day use rate \$509 per month \$6,294 per year</p>
<p>EQL chemist hourly rate for training</p>	<p>\$54.49</p>

Advanced EQL instruments are also available for hands-on use by USU investigators and their students (Table 2). Following training and a period of supervised use (see training rates in Table 1), researchers may exercise independent, unattended use of an instrument with approval. Instruction is instrument specific and is provided at the discretion of the EQL management based on anticipated project or research group needs and compatibility of the proposed project and standard practices at the EQL. Assumptions are that investigators bring processed samples and their own supplies including standards, analytical columns, vials, etc. This fee structure is to accommodate USU investigators' needs across broad research applications and is not limited to typical EQL analyses or matrices. Please call to discuss specifics.

Table 2. Instrument hourly use rates*.

Instrument	Hourly use rate	Instrument	Hourly use rate
LCMSMS Agilent 6495D triple quad mass spectrometer/1290 HPLC	\$44.10	ICPMS Agilent 8900 ICP-triple quad mass spectrometer	\$61.86
HPLC Agilent 1200 HPLC-diode-array and fluorescence detectors	\$34.34	Scanning UV-VIS Shimadzu UV-2600i with integrating sphere	\$11.50
Ion chromatograph Dionex Integrion	\$17.27	AQ2 Seal discrete analyzer	\$8.62
Shimadzu TOC-L combustion	\$17.46	SpectraMax iD3 plate reader	\$6.84
Nanobrook 90Plus PALS dynamic light scattering/zeta potential	\$41.60	Frontier Lab Multi-shot micro furnace pyrolyzer	\$42.09
Horiba Aqualog	\$58.78	qPCR Bio-Rad CFX Opus 96	\$4.50
Fluorescence microscope ECHO Revolve 4, hybrid	\$8.47		

*the daily lab fee is charged against the time the faculty member or student is in the lab preparing to use instruments.

USU Per Sample Rates

There are two additional options for analytical support from the EQL for USU researchers.

Option 2: A USU researcher or their graduate student can pay a per sample rate and use the EQL for sample preparation and/or instrumental analysis (Table 3) following protocols developed by the EQL (appendix). After a period of training at an additional charge USU researchers can access EQL facilities. They are responsible for data acquisition and processing.

Option 3: EQL staff will process and analyze samples at a per sample rate (Table 3). These charges include review of sample results including QC data and generation of a final report including QC. QC samples include procedure blanks, laboratory control samples, instrument blanks, CCVs, and duplicate matrix spikes. The EQL is not an accredited laboratory, but we follow standard methods and QC protocols as specified by the EPA.

Non-USU Per Sample Rates

Option 4: For non-USU clients, EQL staff process and analyze samples at a per sample rate (Table 3). EQL staff perform sample preparation and analysis (Table 4). These charges include review of sample results and QC data and generation of a final report including QC. QC samples include procedure blanks, laboratory control samples, instrument blanks, CCVs, and duplicate matrix spikes. The EQL is not an accredited laboratory, but we follow standard methods and QC protocols as specified by the EPA. These fees include University overhead at 23% and an additional service fee.

We can provide sampling equipment such as sample bottles, syringe filters, acid preservative, and coolers at cost. Return shipping and handling are not included.

Table 3. Per sample cost for USU users and non-USU clients

Organics	Option 2: USU cost per sample user analysis/sample preparation	Option 3: USU cost per sample EQL chemist/QC program	Option 4: Cost per sample non-USU EQL chemist/QC program
Total organic carbon-water	\$11.07	\$19.48	\$29.95
Total carbon-water	\$11.07	\$19.48	\$29.95
PFAS-direct injection	\$38.07	\$70.66	\$130
PFAS-water samples	\$61.85	\$166.91	\$308
PFAS-solid samples	\$62.38	\$182.15	\$336
Microcystins-water samples	TBA*	TBA	TBA
Anatoxin-a, cylindrospermopsin-water samples	TBA	TBA	TBA
PPCP-water samples	TBA	TBA	TBA
PPCP-solid samples	TBA	TBA	TBA
Inorganic, metal/trace elements-water (dissolved / total) or solids			
Major cations	\$15.53	\$30.62	\$56.49
Major cations + trace elements	\$15.53	\$34.00	\$62.73
Digestion for water or solids samples	\$4.93	\$13.10	\$24.17
Rare earth elements	TBA	TBA	TBA
Single particle analysis	TBA	TBA	TBA
Inorganic, anions dissolved	\$16.31	\$24.72	\$38.01
Inorganic, nutrients			
Nitrate + nitrate -N dissolved	\$6.10	\$14.51	\$22.31
Nitrite -N dissolved	\$6.10	\$14.51	\$22.31
Ammonium-N dissolved	\$6.10	\$14.51	\$22.31
Phosphate -P dissolved	\$6.10	\$14.51	\$22.31
Total nitrogen	\$9.91	\$23.77	\$36.55
Total phosphorus	\$9.91	\$23.77	\$36.55

*TBA = to be arranged. Call for quote.

Additional potential charges:

- Additional charge will be added if sample filtration is required - \$4 per filter (includes labor)
- Additional charge will be added for certified sample bottles - \$10 per bottle-required for non-USU clients.
- Additional charges may be applied to difficult samples and to samples in matrices not commonly analyzed by the EQL.

We reserve the right to refuse sample in hazardous matrices or are not compatible with our protocols.

Sample Processing Protocols

Submitting samples

Please call to schedule analyses and for sample delivery methods. Clients must provide a completed Sample Submission Form and a Chain of Custody Form-submitted either physically or electronically. If the Sample Submission Form is not submitted or is filled out incorrectly the associated sample may not be accepted.

Sample Requirements

Samples may be rejected for submission for the following reasons:

- the sample container is damaged, or the container is empty
- Sample label is illegible or missing
- Sample temperature is not 4°C
- Samples submitted after the holding time required for specific analyses.

QA/QC

We maintain a QA/QC program following EPA protocols to ensure accuracy and precision of the reported results. We, however, are not an accredited lab. Results for QC samples will be included in the analysis report.

Time Sensitive samples

Certain analytes require analysis within 24 to 48 h. If samples are submitted after this holding time the sample is compromised and will not be analyzed.

Turnaround Time

Samples are analyzed on a first come first served basis. Turnaround time will vary depending on the tests required, the matrix, time of year, and the length of the queue. Priority samples are accepted, but at twice the cost.

Invoicing

Payment is due upon receipt of results. The Business Office will send an invoice. Payment can be by check or credit card. Payment is due within 30 business days.

Appendix

Standard analyses performed by the EQL

The EQL performs routine analyses for a variety of parameters in water (surface and groundwater, wastewater, storm water) and solids (soil, sediment, plants, biosolids) (Table 2). We follow EPA and APHA protocols including a thorough QC program.

Table 4. Standard procedures and instrumentation performed by the EQL

Analyte	Media	Analytes	Method	Instrument	Sample preparation
Major anions	Surface waters, groundwaters, drinking water and wastewaters	Cl, nitrate, nitrite, sulfate, phosphate (F, Br on request)	Dionex Method 123	IC Dionex Integriion IC	Filtered water samples
Nutrients	Surface waters, groundwaters, drinking water and wastewaters	Total phosphate	EPA 365.4 Rev 2.0	Seal AQ2	Persulfate digestion (Valderrama (1981))
	Surface waters, groundwaters, drinking water and wastewaters	Total nitrogen	EPA 353.2 Rev 2.0	Seal AQ2	Persulfate digestion
	Surface waters, groundwaters, drinking water and wastewaters	Nitrate-N + nitrite-N	EPA 353.2 Rev 2.0 with Cd reduction	Seal AQ2	Filtered water sample
	Surface waters, groundwaters, drinking water and wastewaters	Nitrite-N	EPA 353.2 Rev 2.0	Seal AQ2	Filtered water sample
	Surface waters, groundwaters, drinking water and wastewaters	Soluble phosphate	EPA 365.1 Rev 2.0	Seal AQ2	Filtered water sample
	Surface waters, groundwaters, drinking water and wastewaters	Ammonium-N	EPA 350.1	Seal AQ2	Filtered water sample
Major cations and trace	Surface waters, groundwaters,	Na, Ca, Mg, K, Si, P, Be, Al, P, V, Cr,	EPA 6020	ICPMS Agilent 8900	Dissolved after filtration.

elements- Water and solids	drinking water and wastewaters Solids-soils, plants, biosolids, etc.	Mn, Fe, Co, Ni, CU, Zn, As, Se, Sr, Cd, Sn, Sb, Ba, Tl, Pb, U (Additional trace elements can be included at an additional cost)		ICP-triple quad mass spectrometer	Totals after digestion of water (ambient, wastewaters) (EPA 3030E) or solids (soils, plants, biosolids, other geo materials) (EPA 3050B)
Carbon Analysis Total organic carbon, total carbon	Surface waters, groundwaters, drinking water and wastewaters	Total organic carbon/Dissolved organic carbon - Water samples	EPA 415.1, 415.3, 9060A	Shimadzu TOC-L carbon analyzer	Filtered or unfiltered water samples
	Surface waters, groundwaters, drinking water and wastewaters	Inorganic carbon	EPA 415.1, 415.3, 9060A	Shimadzu TOC-L carbon analyzer	Filtered or unfiltered water samples
PFAS-Water and solids samples	Surface waters, groundwaters, drinking water and wastewaters Solids-soils, plants, biosolids, etc.	PFBA, PFMPA, 3-3 FICA, PFPeA, PFMBA, 4-2 FTS, NFDHA, PFHxA, PFBS, HFPO-DA, 5-3 FTCA, PFEESA, PFHpA, PFPeS, ADONA, 6- 2 FTSA, PFOA, PFHxS, PFNA, 7-3 FTCA, 8-2 FTS, PFHpS, PFDA, NMeFOSAA, NEtFOSAA, PFOS, PFUnA, 9 Cl- PF3ONS, PFNS, PFDoA, PFDA, PFTrA, 11 Cl- PF3OUdS, PFTeDa, PFOSA, PFDoS, NMeFOSE, NMeFOSA, NEtFOSE, NEtFOSA	Drinking Water EPA 537 Wastewaters and solids EPA 1633	LCMSMS Agilent 6495D triple quad mass spectrometer/ 1290 HPLC	Drinking Water EPA 537 Wastewaters and solids EPA 1633
PPCPs-water and solids samples	Surface waters, groundwaters, drinking water		EPA 1694	LCMSMS Agilent 6495D triple	

	and wastewaters Solids-soils, plants, biosolids, etc.			quad mass spectrometer/ 1290 HPLC	
Cyanotoxins -Water samples	Surface waters, groundwaters, drinking water	Microcystins MC- LR, MC-RR, MC- LA, MC-LY, MC- LW, MC-LF, nodularin	EPA/600/R- 17/344 Nov 2017	LCMSMS Agilent 6495D triple quad mass spectrometer/ 1290 HPLC	
	Surface waters, groundwaters, drinking water	Anatoxin-a, Cylindrospermopsin	EPA/600/R- 17/130 Nov 2017	LCMSMS Agilent 6495D triple quad mass spectrometer/ 1290 HPLC	