

The Legislature intends that the Departments of Health and Environmental Quality use the ongoing funding provided in item 58 of Chapter 10, Laws of Utah 2019 to report on the items below to the Office of the Legislative Fiscal Analyst by May 1, 2020:

1. The Department of Environmental Quality and the Department of Health have the ability to partner together to find common solutions within finite budgets. What are the risks and benefits of changing the structure of this partnership?
  - a. Is the Department of Environmental Quality required to do its water testing through the Department of Health?

Since forming separate agencies in the early 1990's, the Department of Environmental Quality (DEQ) has maintained an allocation of \$900,000 annually in laboratory testing capacity at the Utah Public Health Lab (UPHL). Since these funds are not part of DEQ's operating budget, DEQ is required to use the UPHL in order to access that resource. Not all DEQ required tests are provided by UPHL; therefore, DEQ either contracts directly with private labs or requests that UPHL pass through the test requests to private labs and deduct the cost from DEQ's allocation. Other than the budgetary constraints, there is not requirement that DEQ analyze samples through UPHL.

Table 1. Labs currently under contract with DEQ.

Lab Name	Number of Tests Annually	Annual Cost	Description
Utah Public Health Lab	~60,000 Annually	~\$900,000 Annually	Wide range of environmental chemistry testing including metals, nutrients, inorganics, and cyanotoxins
USU Bug Lab	120	\$33,000	Macroinvertebrate taxonomic identification
Rushforth Phycology	200	\$50,000	Phytoplankton and benthic algae taxonomic identification
Phycotech	350	\$42,000	Rapid identification of Harmful Algae Bloom cell counts
Brooks Analytical	up to 100	\$57,500	Metals analysis in saline waters of Great Salt Lake
American West Analytical	Variable	Variable (reclaimed through penalties)	Spill response sampling for emergencies (billed to responsible parties)
Eurofins/TestAmerica	Variable	Variable	Spill response and future investigative

			work for emerging pollutants (PFAS)
Eberline Laboratory		\$8,000	Radiochemistry

2. What would need to change to allow the Department of Environmental Quality to order the testing that it needs to have done go through private labs?

If the general fund allocation were made directly to DEQ, then services could be procured through local private labs through a competitive process. Over the years DEQ has procured contractual services with a number of labs that provide services unavailable at UPHL. DEQ currently has contracts with eight private laboratories for various services (Table 1).

3. What are the pros and cons of maintaining state capacity for lab testing vs. using private labs?
  - a. What would be/are the pros and cons for the Department of Environmental Quality?

PROS for using private labs:

- Based on our experience using private labs, DEQ would receive timelier reporting of test results. Most private labs have a standard turn-around-time of results of 10 days, versus 21 days at the UPHL. In addition, private labs can often provide next day results for emergency spills.
- In terms of electronic delivery of data, private labs utilize reporting systems that can provide more flexible and complete reporting of data and meta-data. This saves DEQ considerable time in data integration and analysis.
- Private labs can rapidly provide quality assurance and quality control information at request.
- Local private labs are TNI-accredited (see below).
- Through past experience, private labs are more adaptable to changing situations and workloads and are more responsive to client needs and data requirements.
- Reduced cost and more timely data management and QA/QC.

CONS for using private labs:

- Shipping and handling costs for sample delivery could be higher if out of state labs are needed. However, there are multiple private labs in the Salt Lake Valley that could provide the vast majority of required testing.
- Temporary cost to DWQ data management operations to adapt to new data delivery formats.
- The UPHL is an independent resource for data comparison from private labs. The UPHL is certified by EPA instead of NELAC/TNI.
- Would require the development of some tests at private labs such as Selenium by Hydride and Total Nitrogen.

- b. What would be/are the pros and cons for the testing lab at the Department of Health?

PROS: From the perspective of DEQ, the main benefit for the UPHL of allowing DEQ to procure lab services on the open market would be to free up capacity at UPHL to focus on public health lab services rather than high throughput environmental chemistry testing that can be provided elsewhere.

CONS: There would likely be a reduction in the laboratory's environmental chemistry workforce given DEQ's allocation represents approximately 85% or more of the budget for the environmental chemistry section.

c. What would be/are the pros and cons with regard to taxpayer cost?

PROS: DEQ anticipates there could be a net reduction in taxpayer costs. A closer examination of the UPHL budget may be warranted, but based on information provided during the 2020 Legislative Session, the total budget for the Environmental Chemistry Lab is ~\$1.5 million, while the current allocation for DEQ (which represents ~85% of their throughput) is \$900,000. Even considering the potentially higher cost of private lab services (see #7 below), there could be up to \$600,000 in savings or added value realized by using private labs. Also, there would be savings to taxpayers in reducing the need for new analytical equipment, replacement, and operational and maintenance costs as evidenced by the recent building block request by UDOH of \$800,000 for new equipment. Such purchases are built into the sample costs at private labs. Based on a comparison of fee schedules of 2 local private labs and the Environmental Chemistry Lab under a variety of testing scenarios, private labs are approximately 15-40% higher in cost than the Environmental Chemistry Lab. A more complete privatization study would need to evaluate this question including the costs to DEQ for QA/QC and data management. For instance, some test groups are lower at some labs than others. Based on the volume of testing DEQ requests, there could be savings realized by the competitive procurement process.

CONS: The workforce would need to be reassigned or eliminated, causing underutilization of a new state of the art laboratory facility. Equipment not used on a routine basis must go through rigorous method validation and calibration prior to use which could take days to be able to analyze samples.

At least 95% of states maintain capacity for some level of this testing in a state government lab in case of emergency situations that need immediate analytical results for public health determination such as contamination of a drinking water source. What is their rationale? (sample of states)

While true that most states maintain public health lab systems, the most common services provided for emergency response are microbiology testing for outbreaks, bio-terrorism events, or chemical emergencies. UPHL has coordinated with Homeland Security for specific testing in case of a terrorist attack. They are able to analyze these samples in concert with Homeland Security requirements in minimal time. In terms of environmental chemistry services, many states like Utah certify private labs (both in-state and out) to provide drinking and surface water

testing. Based on a survey of states' public health laboratories, DEQ estimates that approximately half of state public health labs maintain drinking water testing services while fewer still provide general environmental chemistry (soil and water) testing, which is the vast majority of DEQ testing at UPHL. While it is not disputed that public health labs provide vital services to communities for microbial or chemical threat testing, DEQ does not require a state run lab to perform emergency testing of water, soil, or groundwater during emergency situations. In fact, as mentioned elsewhere, the UPHL Environmental Chemistry Lab cannot meet rapid turn-around times, nor provide certain services required during common emergency situations like hydrocarbon spills. DEQ's practice is to use private labs during such incidents (e.g. Red Butte Oil Spill, Provo River tanker truck turnover). As with most states, Utah has the ability to certify laboratories under UPHL Laboratory Certification Program which meets Safe Drinking Water Act, Clean Water Act, and Resource Conservation and Recovery Act requirements.

4. How much of the testing and what kinds that are needed by the Department of Environmental Quality does the Department of Health lab do? What capacity does the Department of Health lab have that is not being utilized by the Department of Environmental Quality?

DEQ is not aware of any additional capacity at UPHL not being utilized by DEQ's programs. Currently, DEQ utilizes its full allocation at UPHL which satisfies most of the basic environmental chemistry testing needed by DEQ, primarily for surface waters, with a few notable exceptions. For instance, the Division of Waste Management and Radiation Control and the Division of Emergency Response and Remediation have been outsourcing their work to private labs due to a lack of services offered by the UPHL Environmental Chemistry Lab (e.g. Organic Chemistry and Radiochemistry analyses), the inability to provide higher level Quality Assurance/Quality Control reporting, long turn-around times and the inability to validate specific EPA methods (e.g. explosives). In addition, the Division of Drinking Water (DDW) allows public water systems to self-select from a list of DDW approved certified labs that best meet their needs. All DDW approved labs are required to be TNI certified. An exception has been provided for the UPHL which is EPA certified. Figure 1 is the current list of laboratories the Division of Drinking Water receives compliance data from. This list identifies the number of samples received in 2019 from each lab. Less than 1.6% of drinking water samples were analyzed by UPHL.

Lab Name	Sample Count in 2019
CHEMTECH/FORD CHEMICAL LAB	18016
METROPOLITAN WATER DISTRICT LAB	7961
JORDAN VALLEY WTP LAB	7066
WEBER BASIN WATER QUALITY LAB (NP)	5274
BEAR RIVER DISTRICT HEALTH DEPT LAB	2478
DAVIS COUNTY HEALTH DEPT LAB	2255
CENTRAL VALLEY WATER RECLAMATION LAB	1815
SOUTHERN UTAH UNIVERSITY WATER LAB	1756
CENTRAL UTAH DIST HEALTH DEPT LAB	1452
SUMMIT COUNTY HEALTH DEPT LAB	1275
SE UTAH DISTRICT HEALTH DEPT LAB	1268
OTHER LABS	987
SOUTHWEST UTAH PUBLIC HEALTH DEPT	948
EUROFINS	710
TRICOUNTY HEALTH DEPT ENVIRMNTL LAB	581
UTAH DEPT OF HEALTH DIV OF LAB SRVCS	523
ST GEORGE RWRP LAB	432
EARTHNET CONSULTING INC (LAB)	325
RICHARDS LABS	298
BRIGHAM CITY LAB	208
AMERICAN WEST ANALYTICAL LAB INC	131
WASATCH COUNTY HEALTH DEPT LAB	109
KENNECOTT ENVIRONMENTAL LAB	21
CENTRAL UTAH WCD	18
ECOSYSTEMS RESEARCH INST LAB	8
TIMPVIEW ANALYTICAL LABS	8
OGDEN CITY WATER LAB	5
ASHLEY VALLEY WTP LAB	0
ATK THIOKOL ENVRNMNTL LAB	0
CEDAR CITY REGIONAL WATER TREATMENT LAB	0
DUCHESNE WATER TREATMENT PLANT LAB	0
HILL AFB LAB	0
SPECTRUM LABORATORIES	0
TREMONTON WTP LAB	0
UTAH VALLEY WTP LAB	0

**Figure 1. Division of Drinking Water 2019 compliance sample laboratory submissions**

Furthermore, the Division of Water Quality currently contracts with a number of private or university labs for services not provided by UPHL. DWQ utilizes the Utah State University Bug Lab and Rushforth Phycology for taxonomic identification of biological samples and Phycotech for rapid identification of Harmful Algae Bloom samples to inform its recreation advisory program. DEQ utilizes American West Analytical Lab for emergency spill sampling that require services and turn-around-times that UPHL can't provide, where hydrocarbon analysis and/or next day results are required to protect public health and safety. DWQ also maintains an Approved Vendor List and Agreement with labs that provide unique services or special studies for DWQ programs. These include labs specializing in microbial source tracking, analysis of

contaminants of emerging concern such as per-and polyfluoroalkyl substances (PFAS), and unique sample matrices such as metals in the Great Salt Lake with high salinity.

For tests ordered by the Department of Environmental Quality, what fraction of testing is performed by the Department of Health and what portion is performed by the private industry, in terms of:

- a. Number of tests
- b. Type(s) of tests
- c. Total Expenses
- d. Overall customer experience

The following summary is based on an average annual number of tests requested for each of the labs that provide services for DEQ. Note that this does not include detailed costs for labs that are utilized as part of the pass through process at UPHL. For instance, DWMRC passes through samples to private labs to perform testing but the UPHL pays for the analysis with DEQ's allocation. This occurs for other DEQ Divisions on an as needed basis (In FY2019 approximately \$42,000 in testing was pass through).

Overall customer service has been excellent at the labs listed above. DEQ has maintained long term contractual services (20 years or more) with some labs and continues to seek outside services where new methods are required for its programs. Customer service at the UPHL has been less than satisfactory over the years, requiring excessive review of reports and examination of results by DEQ staff which has caused additional work and cost to DEQ in comparison with its experience with private labs. DEQ programs, particularly DWQ and DWMRC have struggled to attain priority sampling and reporting needs from UPHL, even though they represent ~85% of the lab's throughput. Despite the fact that drinking water providers have increasingly opted to use private labs over the years due to better data quality and customer service (Fig. 1.), UPHL continues to prioritize drinking water testing services over those requested by Clean Water Act and Resource Conservation and Recovery Act programs. Furthermore, as discussed below, UPHL lacks the certification or capability required by some of DEQ's programs, necessitating outsourcing of those analyses to private labs.

5. What certifications does the state lab have and how does that compare to the certifications available at the private labs that we have in our community (or nationally)?

UPHL maintains EPA certification. This certification requires proficiency testing (PT)\* samples at least annually for each method and analyte for which they desire certification and periodic on-site inspections about every 3 years.

The National Environmental Laboratory Accreditation Conference (NELAC) Institute (TNI) certification requires proficiency testing (PT) samples twice a year for each method and analyte for which they desire certification and on-site inspection every two years. Proficiency Testing (PT) is defined as a means of evaluating a laboratory or testing organization's performance under controlled conditions relative to a given set of criteria through analysis of unknown

samples provided by an external source. More frequent on-site inspection and PT studies correlates with better laboratory performance.

If a TNI certified laboratory fails two PT studies in a row they will lose certification for that analyte. In addition, TNI certification has several managerial and operational components to ensure overall laboratory performance such as: ethics training, conflict of interests disclosures, change documentation, customer complaint procedures, billing, chain of custodies, equipment, QC procedures, record keeping, written operating procedures including sample prep through disposal, cross contamination protocols, and others.

There is currently an office (2 to 4) of state employees in the Bureau of Lab Management that provides TNI certification for any lab that requests it and manages reciprocity with other state TNI programs. However, UPHL has declined DEQ's request to obtain TNI certification.

6. One of the reasons given for the necessity for continuing the lab in the Department of Health was to have the lab available in case of an emergency situation where no responsible party is at fault. In what kind of an emergency situation might this be the case?
  - a. An evaluation of whether the private market has an adequate supply of private labs that could provide this service. What testing can be done in-state vs. out-of-state? If some testing can only be done with an out-of-state lab, what are the risks of relying on out-of-state labs? Maintaining capacity at the Department of Health lab reduces dependence on out-of-state labs. What are the benefits of this?

DEQ responds to a wide variety of emergency spill situations in response to reports through the Environmental Incident Hotline. Emergency sampling examples include: Tanker truck rollovers releasing crude oil (e.g. Provo and Price Rivers), diesel, butane, paints, solvents, etc.; drinking water facility intrusion or contaminant release; environmental contaminant release of pesticide/herbicides; hydrocarbon pipeline breaks; industrial and municipal wastewater discharges. The Division of Water Quality responds to 50 - 100 incidents a year, excluding algal blooms. Most of these involve the illicit discharge of pollution of some type to a waterbody in quantities that could impact public health or the environment. If a Notice of Violation (NOV) is issued as a result of a contaminant spill, DEQ can recoup the cost of analysis at a private lab as part of the cost recovery process from the responsible party. While there is a chance that a responsible party might not be identified (and analytical costs reimbursed through a penalty) this is rarely the case and would present a minimal financial burden if DEQ were to absorb the cost at a private lab.

It is important to have emergency lab capacity for these events. This works best when there is an existing and ongoing relationship with the lab. Since human health is potentially at risk through the contamination of drinking water sources or recreation areas, DEQ requires rapid (often next day) data in order to make decisions about risk, public health impacts, and public notification determinations. This turn-around-time has not been possible through the UPHL

Environmental Chemistry Lab, and as a result, DEQ has retained contractual services with a number of private labs to secure the necessary services to be responsive to these situations. In addition, UPHL cannot provide hydrocarbon or oil and grease analysis required for diesel and oil spills, and no longer offers drinking water certified analysis of Pesticides or Volatile Organic Carbons (VOCs) which are common analyses needed during drinking water emergency response sampling.

Samples collected during an incident response need to have a high level of quality assurance and quality control to inform regulatory decisions, meet public expectations, and be legally defensible in enforcement actions. A prominent example of an incident response for the Division of Water Quality was the Gold King Mine spill that occurred in Colorado's Animas River and affected the San Juan River in Utah. The Division worked with the Department of Public Safety to fly samples to Salt Lake City daily for the first 10 days following the event. All of these samples were submitted to a private laboratory with a 24-hour turnaround time. Follow-up sampling over the next year was sent to UPHL with accelerated turn-around-times of one week.

7. An analysis of the costs that the Department of Environmental Quality currently pays for routine monitoring done by the Department of Health lab vs. the costs they would incur for those tests through a private lab. Include the full costs of using private labs, including packaging and shipping. How would changes in yearly routine monitoring cycles affect those costs?

Routine testing for DEQ varies considerably from year to year and program to program. For example, DWQ, which represents the majority of testing at UPHL, maintains a rotating basin approach to sampling the 6 major watersheds in the state. Each targeted basin may present different water testing requirements in terms of number of sites as well as analytical needs. Over the years, DWQ has made significant efforts to efficiently design annual plans to meet the programmatic needs of the Division and optimize the use of the UPHL allocation. DEQ, in general, may be able to further optimize sampling designs, if the lab budget was under its direct control. As mentioned above, per sample costs at private labs are approximately 15-40% higher cost than UPHL, depending on the testing scenario. However, as noted previously, DEQ only accesses \$900,000 of the Environmental Chemistry Lab's \$1.5 million budget. A more comprehensive privatization study would be required to fully answer this question. DEQ suggests that such a study should be conducted by a third party.

The following represents a comparison of costs based on currently available fee schedules and historic average test requests at UPHL that represent a mid-level estimate of services. Keep in mind, these cost estimates are based on comparisons that represent comparable test analyses between labs and may not represent the full test capabilities of either private labs or UPHL. With that in mind, a thorough market comparability analysis with actual bids for services may reveal additional savings on the open market.

Table 2. Comparison of UPHL vs. 2 private labs over 3.5 years for a mid-level sample analysis estimate.

Costs are based on estimated annual needs of 60,318 sample analyses							
Parameter-Group Summaries							
# params		# params	UPHL	# params	ChemTechF	# params	AWAL
5	HABs	4	\$ 72,119	1	\$	0	\$
3	Filters	3	\$ 31,250	1	\$ 25,000	0	\$
12	Anions	7	\$ 29,400	5	\$ 57,400	4	\$ 16,000
6	Maj. Cations	6	\$ 112,864	6	\$ 112,864	6	\$ 103,458
5	Salinity/solids	5	\$ 77,937	5	\$ 100,450	5	\$ 106,150
2	BOD	2	\$ 5,940	1	\$ 5,760	1	\$ 6,300
1	pH	1	\$ 250	1	\$ 325	1	\$ 350
23	Metals w/ prep	23	\$ 280,176	22	\$ 384,635	22	\$ 257,799
6	Nutrients	5	\$ 265,075	5	\$ 510,700	4	\$ 583,500
2	Special Charge	2	\$ 4,100	2	\$	2	\$
	TOTAL		\$ 879,112		\$ 1,197,134		\$ 1,093,558
				<i>% diff</i>	136%	<i>% diff</i>	122%