STANDARD OPERATING PROCEDURE FOR LAKE WATER SAMPLING AND DATA COLLECTION

WATER QUALITY

State of Utah
Department of Environmental Quality
Division of Water Quality

Revision 2.2
Effective February 2022

Foreword

Utah Division of Water Quality (DWQ) Standard Operating Procedures (SOPs) are adapted from published methods, or developed by in-house technical experts. This document is intended primarily for internal DWQ use. This SOP should not replace any official published methods.

Any reference within this document to specific equipment, manufacturers, or supplies is only for descriptive purposes and does not constitute an endorsement of a particular product or service by DWQ. Additionally, any distribution of this SOP does not constitute an endorsement of a particular procedure or method.

Although DWQ will follow this SOP in most instances, there may be instances in which DWQ will use an alternative methodology, procedure, or process.

The methodology detailed below is the protocol followed by DWQ's monitoring staff and verified by DWQ's Quality Assurance officer.

Signature: Benjamin Brown
Benjamin Brown (Jan 31, 2022 10:44 MST)

Email: brbrown@utah.gov

Benjamin R. Brown — **Date**
Monitoring Section Manager

Signature: Toby Hooker
Toby Hooker (Jan 31, 2022 10:36 MST)

Email: tobyhooker@utah.gov

Toby Hooker — **Date**
Quality Assurance Officer

Revision page

Date	Revision	Summary of Changes	Sections	Other Comments
11/1/13	1	not applicable	N/A	Previous version was put into a new standardized format. Began document control/revision tracking.
5/1/14	0	Changed revision number, minor formatting	N/A	First version should have been revision 0
3/26/20	2.0	Updated language, grammar, and structure.	All	Major update to reflect 2020 sampling procedures and to improve overall clarity. Added lugols sol to procedure
4/1/20	2.1	Added Hydrolab SOP to Lake Sampling SOP	All	Combined SOPs and updated language and title for consistency. Added procedure for determining the thermocline.
1/27/22	2.2	Updated preservative from Lugol's solution to Glutaraldehyde	2, 4, 8, 9	
1/27/22	2.2	Updated language and grammar.	All	

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1.0 SCOPE AND APPLICABILITY

This document presents the Utah Division of Water Quality's (DWQ) Standard Operating Procedure (SOP) for performing routine water sample collection on lakes, reservoirs, and ponds. This SOP applies to all DWQ field staff, DWQ cooperators, and volunteer monitors trained on this SOP.

This SOP describes water samples taken at any depth within the water column from the water surface to the bottom. This application is limited to water samples collected for chemical and biological analysis. Secchi readings are covered in a separate DWQ SOP. Equipment decontamination to prevent the spread of invasive species is done in accordance with Division of Wildlife Resources (DWR) aquatic invasive species (AIS) policy.

2.0 SUMMARY OF METHOD

Water samples are collected from the surface, above and below the thermocline, and at water bottom using a variety of equipment. Samples collected for lakes are generally tested for total chemical analysis and dissolved constituents. Depending on the water samples being collected, filtering of the collected sample may be performed. The following are the primary types of lake water samples:

- **Grab sample:** a surface sample bottle filled below the water surface; used for shallow lakes.
- **Photic Zone sample:** a surface sample that is a depth-integrated (vertically-integrated) sample of up to the first two meters of the water column relative to the Secchi disk depth.
- **Depth samples:** a set of samples that are collected at specific depths around the thermocline and at the bottom of the lake.

A calibrated Hydrolab® multiparameter sonde is taken to the lake sampling site. Generally, water quality parameters are measured at regular 1 m depth intervals depending on the water column depth from the surface to the bottom of the lake. This is done to identify the thermocline and determine what depths samples will be taken.

At most lakes, inflow measurements are also taken. This includes streamflow measurements, multiparameter sonde measurements, and water sample collection.

3.0 DEFINITIONS

AIS: Aquatic Invasive Species

Annotation: A series of numbers and/or letters stored on the Hydrolab® Surveyor® that identifies the DWQ's site code, project code, type of water being sampled, sampling organization, weather conditions,

	site conditions, Secchi reading, sample depths, and other pertinent information.
DI:	Deionized Water
°C:	degrees Celsius
EPA:	Environmental Protection Agency
Kemmerer:	An open tube container with gaskets/stoppers attached at each end, a line for lowering and measuring depth, and a messenger (a weighted metal cylinder which, when sent down the line, closes the ends of the tube to collect the discrete sample. This sampler can be lowered to any depth and then tripped by the messenger to collect water from a specific depth.
Glutaraldehyde solution:	Glutaraldehyde, C5H8O2 or $OCH(CH_2)_3CHO$, is a transparent oily, liquid with a pungent odor. Used to preserve phytoplankton samples.
m:	meter(s)
Primary site:	Generally, the deepest site in the reservoir or lake. If you are sampling a reservoir, this site is likely near the dam. This is called the 01 site.
SAP:	Sampling and Analysis Plan.
Sample Type:	Specific sample depths correlate to sample type numbers according to where they were taken in the water column. For example, sample **type 2** is the photic sample, sample **type 23** is 1 meter above the thermocline, sample **type 25** is mid-way in the water column (only sampled for special studies), sample **type 27** is one meter below the thermocline, and sample **type 29** is 0.5 meter above the lake bottom.
Sonde:	A multiparameter measuring device used to take temperature, dissolve Oxygen, pH, conductivity, and depth readings. Additionally it is used to determine the thermocline. In this document, this is referred to as a Hydrolab®.
Surveyor®:	The electronic data storage portion of the Hydrolab® that is equipped with a screen, numbers, letters, symbols and arrow buttons. All annotations entered and data collected are stored within the Surveyor®.

Thermocline: As defined by the EPA, a thermocline is the middle layer of a thermally stratified lake or reservoir. In this layer, there is a rapid decrease in temperatures. DWQ uses a sonde with a temperature probe to find the thermocline (a change in > 1°C over a depth of 1 meter).

Triple-Rinse: Triple-rinsing is an EPA verified procedure proven to remove and/or dilute contamination. To do this, fill a sample container ½ full with native or DI water, agitate, and empty three times.

Vertegrator: This is the State of Utah's abbreviated term for an integrated vertical sampler. This sampler allows a composite water sample to be collected from the first two meters of the water column (photic sample). It is constructed of a two meter long PVC tube with a valve on the bottom and a rubber cork on top.

4.0 HEALTH AND SAFETY WARNINGS

Hazardous conditions potentially exist at every waterbody. If unfavorable conditions are present at the time of sampling, it is recommended that the sampling be rescheduled. If hazardous conditions arise during sampling, such as lightning, high winds, rising water, or flash flood warning, personnel should cease sampling and move to a safe location.

When working in Utah and other warm climates, take steps to avoid heat induced illnesses such as heat stroke or heat exhaustion.

Use caution when working in waders as drowning hazards exist.

Take appropriate precautions when operating equipment and working on, in, or around water, as well as possibly steep and unconsolidated banks, bridges, or edges of ponds/lagoons. All field crews should follow DWQ health and safety procedures and be equipped with safety equipment such as proper wading gear, personal flotation devices (PFDs), gloves, first aid kits, cellular phone, etc.

Use caution when sampling from a bridge or boat and take appropriate actions to make the situation as safe as possible; suspend the sampling if conditions are unsafe.

Take appropriate precautions when operating watercraft and working on, in, or around water. All boats should be equipped with safety equipment according to Utah's "Boating Laws and Rules." (https://stateparks.utah.gov/activities/boating/boating-laws-rules/)

Be careful to avoid contact with preservative (acid) found in some sample bottles. If minor skin contact occurs, rinse with copious amounts of water. If major skin or contact occurs, seek medical attention. During packing and handling of bottles, be sure that caps are tightly sealed.

Glutaraldehyde is toxic by inhalation, harmful if swallowed, causes burns by all exposure routes and may cause allergic respiratory and skin reaction. Wear protective glasses and gloves when preserving samples using Glutaraldehyde solution. Store solution in a cool location.

5.0 CAUTIONS

When operating a boat, hidden hazards exist underwater. Boat operators should take caution when sampling to avoid equipment damage.

Adverse sampling conditions could increase the likelihood of equipment damage. Boat operators should take extra caution when sampling under adverse conditions. If conditions are unsafe, reschedule sampling.

6.0 INTERFERENCES

The amber transfer bottle used to collect the chlorophyll-a sample, should be triple-rinsed with site water.

Samples collected for chlorophyll-a (transfer/amber bottle) and phytoplankton analyses should be placed on ice in the dark immediately while on the lake between sites and the shore before processing.

½ gallon transfer bottles, if reused, should be triple-rinsed with site water.

The bucket, used to homogenize the photic zone sample, should be triple-rinsed with site water.

Sample contamination can occur if sampling devices are not properly rinsed. Equipment (Vertegrator and Kemmerer) must be triple-rinsed on the opposite side of the boat from where water samples will be collected to avoid potential sample contamination.

All equipment that comes in contact with sample water should be rinsed with DI water and allowed to dry between sampling lakes/reservoirs.

Contamination may also occur at the lake bottom due to agitation of bottom sediments. To prevent this, do not take bottom samples near the boat anchor. Use the depth finder at the water sample collection point to avoid hitting the bottom with the Kemmerer.

Samples should not be collected near the boat motor for risk of contamination by gas/oil.

7.0 PERSONNEL QUALIFICATIONS/RESPONSIBILITIES

DWQ personnel performing water sampling must be familiar with sampling techniques, safety procedures, proper handling, and record keeping. Samplers are responsible for attending refresher

meetings held each spring/summer to review procedures and techniques. New staff will be trained in the field and lab by DWQ personnel.

Cooperators are required to read this SOP annually and acknowledge they have done so via a signature page (see **Appendix 1**) that will be kept on-file at DWQ along with the official hard copy of this SOP.

8.0 EQUIPMENT AND SUPPLIES

Many different types of equipment are needed for lake water sampling. Below is a list of general equipment needs. Also consult DWQ's SOPs for *Water Chemistry Sample Collection* and *Chlorophyll-a sample Collection and Filtration* for a more exhaustive equipment list.

- ❑ Copy of this SOP
- ❑ Boat with safety equipment
- ❑ Chlorophyll-a sampling kit
- ❑ Boat anchor
- ❑ Depth finder
- ❑ Maps or GPS unit
- ❑ Secchi disk
- ❑ Vertegrator
- ❑ Wildco® Kemmerer sampler
- ❑ Labeled sample bottles
- ❑ Run portfolio/SAP
- ❑ Glutaraldehyde solution (25%)
- ❑ Clean, 2000 mL amber bottles for collecting Chlorophyll-a water samples to be filtered
- ❑ Clean or triple-rinsed ½ gallon "transfer bottles" for collecting constituents to be filtered
- ❑ Triple-rinsed bucket used for homogenizing photic zone samples
- ❑ Hydrolab® or other Multiparameter Sonde
- ❑ Surveyor® or other Portable Data Recorder
- ❑ DI water
- ❑ Geo-pump
- ❑ Filters
- ❑ Aluminum Foil
- ❑ Ziptop Bags
- ❑ Cooler with ice
- ❑ Lab sheets/field notebook
- ❑ Pens/markers
- ❑ Camera or Phone

9.0 PROCEDURE

Pack sampling equipment and supplies onto the boat to be used for sampling. Launch the boat into the waterbody, navigate (using a GPS unit) to the sampling point and anchor the boat.

9.1 Temperature Profile Collection Using a Multiparameter Sonde

9.1.1 Data Collection

1. Calibrate the Hydrolab® the day of sampling. See DWQ's *SOP for Calibration, Maintenance, and Use of Multiparameter Water Quality Sondes* regarding calibration and/or recalibration at the field site.

Note: Prior to sampling a waterbody, the monitor should check the depth of that waterbody and bring the correct equipment.

2. Once at the sample site, remove the clear plastic cup from the sonde and replace it with the weighted sonde guard.

3. Attach the Surveyor® to the sonde by using the appropriate cord. Make sure the cord is long enough to allow the sonde to reach the lake bottom.

4. Turn on the Surveyor®; the screen will indicate if the sonde is not properly connected.

5. Take depth reading with sonar or other water depth finder. This depth will determine the increments where water quality field parameters will be measured:

   - **Shallow depth sites (≤3 m):** Record water quality readings at 0 depth surface (2x secchi depth up to 2 m) and then at every 0.5 meter ending at 0.5 meters above bottom.

   - **Medium depth sites (3 – 20 m):** Record water quality readings at surface (2x secchi depth up to 2 m) 0 depth and then at every 1 meter ending at 0.5 meters above bottom.

   - **Deep depth sites (> 20 m):** Record water quality readings at surface (2x secchi depth up to 2 m) 0 depth and then at every 1 meter down to 20 meters below surface. After 20 meter depth, record water quality readings at every 2 meters ending at 0.5 meter above bottom. If the thermocline is below the 20 m mark, continue to take 1 m measurements until the thermocline is identified.

6. Calibrate the Surveyor® for depth by zeroing the sonde:

   a. Place the sonde into the water until the sensors are submerged.

   b. On the Surveyor®, enter "0" for depth.

   c. Sonde will zero to the current depth.

7. Look over the water quality readings displayed on the Hydrolab® to make sure they are within water quality thresholds (see the *SOP for Calibration, Maintenance, and Use of Multiparameter Water Quality Sondes* for more information). If these thresholds are exceeded in the photic zone, after the profile is complete, check the parameter against the appropriate reference solution. If the calibration check fails, recalibrate, repeat the profile, and make a note on the trip sheet.

8. Select "Store" to record the first reading.

9. Lower the sonde to the next appropriate depth. Allow the sonde to achieve an accurate reading of parameters by holding it in place until readings stabilize, paying particular attention to the DO and pH readings (roughly 20-30 seconds).

10. Select "Store" again to record the second reading.

11. Continue lowering the sonde in increments according to the total depth of the water body (detailed above), storing the data at each increment. Take the last profile reading at a 0.5 meter above the lake bottom.

Note: The total lake depth is determined with a depth finder. Additionally, the Hydrolab® operator may also be able to feel the sonde touch the lake bottom.

12. Raise the Hydrolab® back up to the surface. Take the weighted probe guard off of the sonde and replace it with the clear plastic cup containing a small amount of water (DI water *should not* be used).

13. Review the data stored on the Surveyor®. Use the collected data points to determine the location of the thermocline within the water column.

14. Record the depths where samples will be taken on the trip sheet (**Figure 1**).

9.1.2 Determining the Thermocline

A thermocline is present when there is a greater than 1 degree (Celsius) change in the water temperature from one meter to the next down through the water column. Accurately determining the presence and location of the thermocline is essential in lake sampling because water samples are collected at one meter above the top of the thermocline and one meter below the bottom of the thermocline.

A thermocline can be present within several meters of the water column. The bottom of the thermocline is evident when the water temperature stabilizes. Stable water temperature is achieved when there is a less than 1 degree Celsius temperature change from one meter to the next.

For example:

Sample Depth (m)	Temperature
5.0 **(collect sample 23)**	7.4°C
6.0 **(top of thermocline)**	7.1°C
7.0	5.9°C
8.0	4.7°C
9.0 **(bottom of thermocline)**	3.5°C
10.0 **(collect sample 27)**	3.4°C
11.0	3.3°C
12.0	3.2°C

Note(s):

*Stratification of the water column does not always occur. If there are stable temperature readings throughout the entire water column then a thermocline is not present and sample types **23** and **27** do not get collected.*

*If there are two thermoclines present in the water column at a site, use the top thermocline as the "primary" thermocline and take the **23** and **27** samples around that thermocline.*

9.2 Photic Zone Sample Collection (Sample type 2)

1. Take a Secchi disk reading to establish the depth at which the surface water samples will be collected. Please refer to the document *SOP for Secchi Readings* for detailed instructions for taking Secchi readings. The sample depth is calculated as 2x the Secchi reading (e.g., if Secchi reading is 0.8 meters, the surface sample will be taken at 1.6 meters).

Note: If the Secchi reading is greater than 1 meter, the photic sample should be taken at a maximum depth of 2 meters (e.g., if Secchi reading = 3.8 meters, the photic sample will be taken at 2 meters). If the Secchi reading calculation results in a photic sample depth of ≤ 0.5 meter, a surface grab sample (a sample taken just below the surface holding the sample bottle) will be taken.

2. Label the appropriate sample bottles with current date/time, site description, DWQ site ID, and samplers' initials. Fill out lab sheets to match all information on the associated sample bottles. An example of a filled out sample bottle label is included in **Figure 2**.

*Note: Special label coding is used for lake water samples. For photic samples, label the bottle with type (**2**). Bottom samples are recorded as type (**29**). Thermocline samples are recorded as (**23**) for 1 meter above thermocline and (**27**) for 1 meter below thermocline.*

3. Triple rinse the Vertegrator sampler on the opposite side of the boat from where samples will be collected. For each rinse, dunk the sampler into the water until it is fully submerged, then raise it up out of the water.

4. On that same side, triple rinse a sample bucket, an amber, 2000 mL bottle, and a ½ gallon "transfer bottle."

5. Move to the side of the boat where sampling will occur. With the cork off the top of the Vertegrator, twist the valve on the bottom end until it is in the "open" position.

6. Hold the Vertegrator upright and slowly lower it to the determined photic sampling depth by lining up the graduated marks on the PVC pipe with the water surface. Cork the Vertegrator securely and then slowly raise it to the water surface. Before lifting the Vertegrator above the water surface, twist the valve to the "closed" position.

7. Tilt the Vertegrator sampler back and forth to thoroughly mix the water sample. Twist the valve back to the "open" position to fill the triple-rinsed sample bucket. Repeat steps 5-6 until enough water is collected to fill the appropriate sample bottles. Collect chlorophyll-*a* samples into a triple rinsed amber bottle until they can be field filtered. Refer to the trip sheet to identify which bottles to collect at this depth.

Note: When collecting samples with preservatives, do not overfill or rinse the sampling bottles. Refer to DWQ's SOP for Water Chemistry Sample Collection for more information.

8. Be sure to label these bottles as type 2. Securely tighten bottle caps and place the samples into the cooler with wet ice.

Note: It is important to place samples collected for chlorophyll-a and phytoplankton analyses on ice in the dark immediately.

9.3 Lake Depth Measurements (samples 23, 27, & 29)

Total lake depth is measured once surface samples have been collected. Lower the depth finder to just below the water's surface and allow time for the depth reading to stabilize. **If the waterbody depth is less than 3 meters, no further water sample collection is required** unless otherwise specified in the SAP. Record the total lake depth on the appropriate lab sheet.

*Note: Sometimes the photic zone sample overlaps with the above thermocline sample (**23**), if this occurs, only collect photic sample (**2**). Sometimes the bottom sample overlaps with the below thermocline sample (**27**), if this happens only collect the bottom sample (**29**).*

9.3.1 Depth Sample Collection (lake bottom samples, type 29)

1. Label bottles with the proper coding: type 29 for bottom samples. Record the exact sample depth on the trip sheet labeled type 29.

2. Triple rinse the Kemmerer sampler on the opposite side of the boat from where sample collection will occur. To rinse, lock the apparatus (two end stoppers locked in the "open" position) and lower the sampler into the water three times.

3. Next, close the discharge valve to prevent loss of sample.

4. Move to the side of the boat where sample collection will occur. Place the Kemmerer into the water in the upright position, and hold onto the messenger while slowly lowering the Kemmerer to the correct sample depth (**0.5 meters from the bottom**).

5. Once the Kemmerer is at the correct sample depth, drop the metal messenger. The messenger trips the Kemmerer's mechanism and seals water within its container.

6. Bring the Kemmerer back up to the boat, taking care to keep the Kemmerer in an upright position to avoid any loss of sample. Open the discharge valve and fill the appropriate sample bottles labeled with type 29. Securely tighten bottle caps and place the samples into the cooler with wet ice.

9.3.2 Depth Sample Collection (Thermocline Samples, type 23 & 27)

The presence of a thermocline (defined in **Section 3.0**) is assessed at the primary site using a Hydrolab® sonde and the temperature depth profiles are recorded electronically.

Exceptions thermocline sampling:

- **If there is no thermocline, no further samples need to be collected.**
- If there is a top to the thermocline but no distinct bottom, collect a type **23** sample only.

If there is a thermocline, the sonde operator will inform the sampler of the appropriate depths to sample. Refer to **Figure 3** for an overview of a lake sampling workflow.

1. Thermocline samples should be collected at 1 meter above the thermocline (type 23) and 1 meter below the thermocline (type 27). Record the exact sample depth on the trip sheets labeled type 23 and type 27.

2. Label sample bottles as type 23 and type 27.

3. Move to the side of the boat where sample collection will occur. Place the Kemmerer into the water in the upright position, and hold onto the messenger while slowly lowering the Kemmerer to the correct sample depth either 1 meter above (type 23) or 1 meter below (type 27) the determined thermocline.

4. Once the Kemmerer is at the correct sample depth, drop the metal messenger. The messenger trips the Kemmerer's mechanism and seals water within its container.

5. Bring the Kemmerer back up to the boat, taking care to keep the Kemmerer in an upright position to avoid any loss of sample. Open the discharge valve and fill the appropriate sample bottles labeled with either type 23 or type 27. Securely tighten bottle caps and place the samples into the cooler with wet ice.

9.4 Post Sample Processing

1. Return to the boat ramp and unload the boat.

2. Immediately perform any required sample filtering while still at the lake/reservoir in case additional water samples need to be collected.

*Note: Please refer to DWQ SOPs for processing water samples (see **Section 12.0**).*

3. For the phytoplankton samples, preserve with Glutaraldehyde solution. Add 1 mL Glutaraldehyde per 100mL of sample. Shake vigorously 5 times. Store these samples in a dark refrigerator at DWQ until they are sent to the lab.

4. Between sampling locations and at the end of the sampling trip, all equipment (sampling equipment, boats, and trailers, etc.) used in the collection of water samples must be cleaned according to DWR's AIS decontamination procedures.

10.0 DATA AND RECORDS MANAGEMENT

All data recorded on the Surveyor® should be reviewed for completeness before leaving the sample site. If a depth was missed, the operator should put the sonde back in the water at the appropriate depth and collect the missing data.

All readings associated with the depths where water samples were collected will be recorded on the trip sheet. This will aid in quality assurance of the data.

Upon returning from a sampling trip, the lake data file created should be downloaded from the Surveyor® to a computer and saved to the DWQ Monitor's shared hydrodata folder. Hydrolab® lake data must be edited before it can be uploaded into the database.

All lab sheets will be filled out completely and correctly. Date and time recorded on sample bottles must match the date and time recorded on lab sheets. Failure to record the correct sample type (type 2, 29, etc) on a sample bottle will result in invalidation of the water sample.

11.0 QUALITY ASSURANCE AND QUALITY CONTROL

Hydrolabs® must be calibrated each day of the sample trip prior to data collection. Calibration sheets must be properly filled out and turned in with other sample trip documents. See DWQ's

SOP for Multiparameter Sonde calibration and maintenance for specific quality assurance and quality control procedures associated with Hydrolab® calibration, maintenance, and use.

Quality control (QC) samples (equipment blanks and replicates) should be collected at the frequency given in the project-specific SAP. Minimum collection frequency and performance requirements for QC samples are given in DWQ's Quality Assurance Program Plan.

To collect an equipment blank for lake sampling, triple rinse the Vertegrator and Kemmerer with deionized water. Fill the sampler a 4th time with DI water and pour this water into the appropriately labeled sample bottles to be analyzed as the equipment blank. All sample types taken throughout the lake sampling trip must have an equipment blank except for phytoplankton. If transfer bottles are used for filtered constituents, they should also be rinsed with DI water and then filled with the blank water from the Vertegrator or Kemmerer prior to filtering. It is important that every piece of equipment that normally touches a sample is incorporated into the equipment blank sampling process.

Replicate samples are taken at the 01 site using the same procedure as the initial sample, and sample type 2 is the only sample collected. Water quality measurements will also be taken. These sites are predetermined and will be included on the sampling lab sheets. Phytoplankton samples do not need to be replicated.

12.0 REFERENCES

USEPA. 2017. National Lakes Assessment 2017. Field Operations Manual. EPA 841-B-16-002. U.S. Environmental Protection Agency, Washington, DC.

Hydrolab DS5X, DS5, and MS5 Water Quality Multiprobes; User Manual. 3rd Edition. February 2006. Hach Company. Online at http://www.campbellsci.ca/Catalogue/ Series_5_Man.pdf.

Related DWQ SOPs:

Standard Operating Procedure for Collection of Water Chemistry Samples in Streams

Standard Operating Procedure for Decontamination of Monitoring Equipment

Standard Operating Procedure for Calibration, Maintenance, and Use of Multiparameter Water Quality Sondes

Standard Operating Procedure for Secchi Disk Depth Measurements

13.0 FIGURES

Figure 1: Example trip sheet.

Monitoring Run Sample Summary

Trip ID :

Samplers:

Please note that some bottles come in sets

Sampler Contact Information (name and phone number):

Trip Comments:

Seq. #	Project/ Cost Code	Monitoring Location ID	Station Desc.	Date	Time	Sample Type	Depth Sampled	Surface Only	Secchi	Chlorophyll Volume	Comments/Hydro-Readings
						2, 4, 23, 27, 29	meters	(y/n)	meters	mL	If Type 4, record field readings and flow here
1											
2											
3											
4											
5											
6											

Figure 2. Sample bottle label.

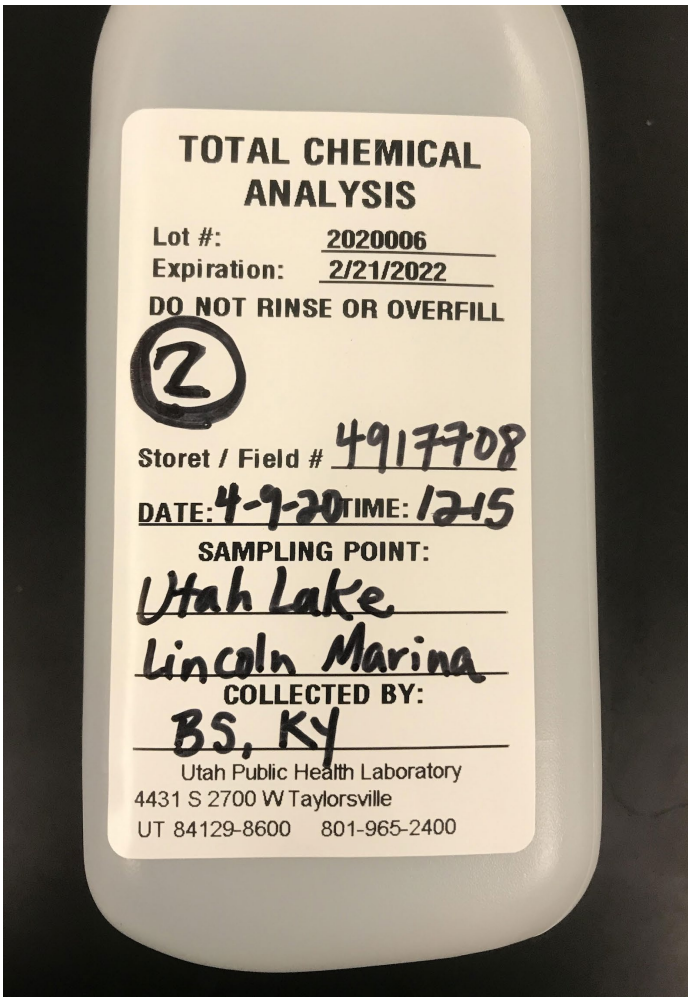
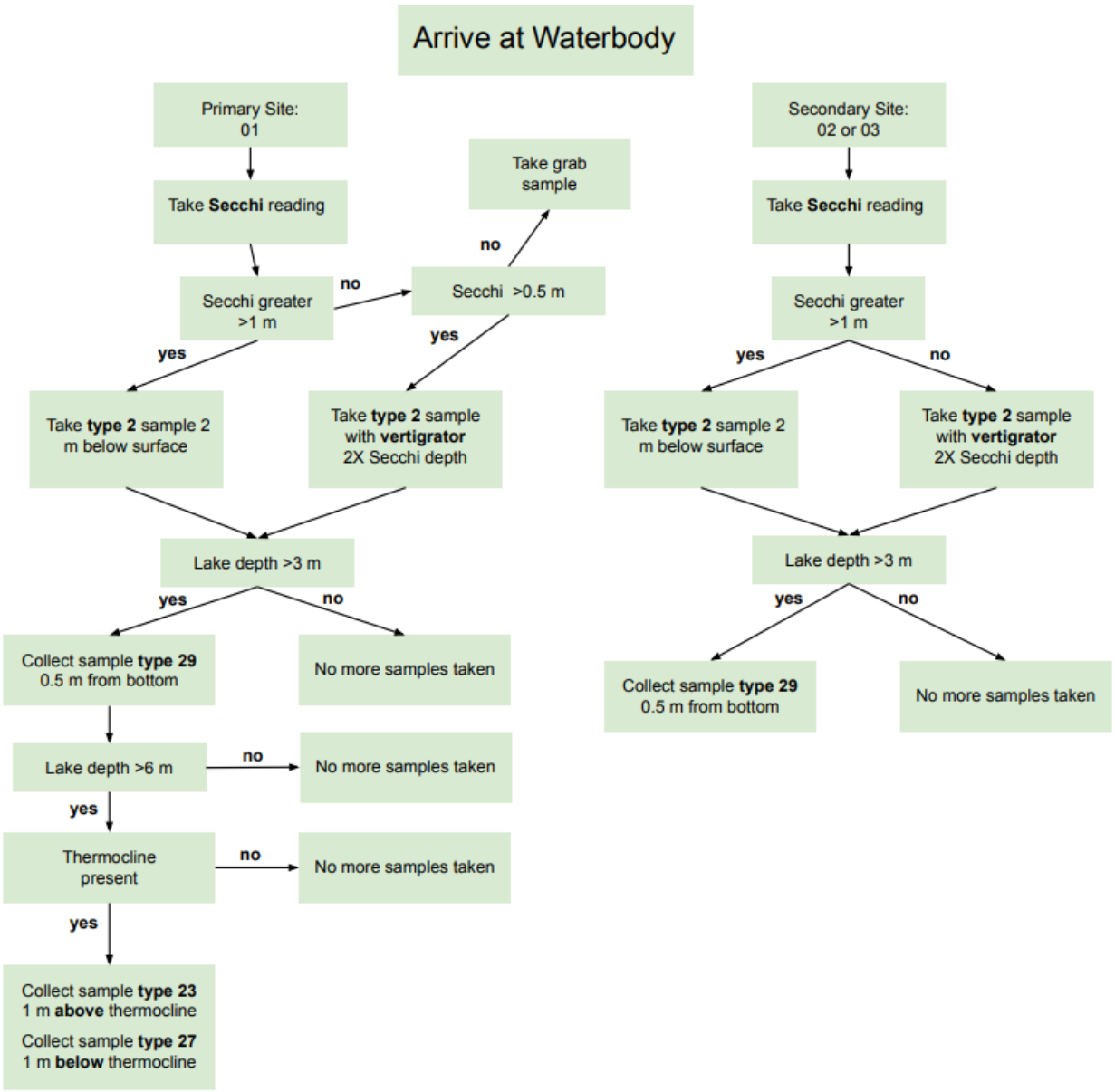


Figure 3. Lake sampling workflow.



14.0 APPENDIX

APPENDIX 1 - SOP ACKNOWLEDGMENT AND TRAINING FORM

SOP Acknowledgement Form

This SOP must be read and acknowledged annually, and this form must be kept on file at DWQ.

Document Title:	
Document Revision Number:	
Document Revision Date:	

Please sign below in accordance with the following statement:

"I have read and understood the above referenced document. I agree to perform the procedures described in this SOP in accordance with the document until such time that it is superseded by a more recent approved revision."

Date	Printed Name	Signature

SOP Training Form

Training is required for all new samplers and Refreshers are required annually.

Trainee: Sign below to acknowledge that training on this SOP was received, understood, and all questions/concerns were addressed by the trainer.

Trainer: Sign below to acknowledge that training on this SOP was completed for the individual listed and that trainee is competent to perform the procedures described within.

Date	Trainee Printed Name	Trainee Signature	Trainer Printed Name	Trainer Signature
Management Approval				
Printed Name:				
Signature:				
Date:				