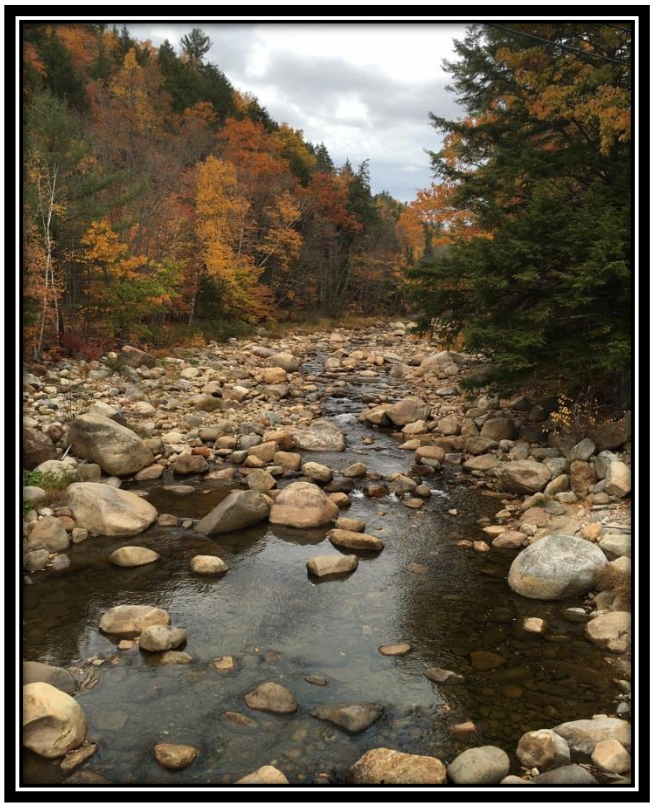
NH Volunteer River Assessment Program
(VRAP)

Water Quality Monitoring
Sampling Protocols



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INTRODUCTION

The Volunteer River Assessment Program (VRAP) is a program administered by the New Hampshire Department of Environmental Services (NHDES) that partners with volunteers to conduct water quality monitoring of New Hampshire's rivers and streams. Our rivers and streams receive drainage from watersheds that vary greatly in size, land-cover type, and levels of human activity. This creates diverse ambient surface water quality conditions throughout the state. These varying conditions have implications for the support of designated uses such as primary contact recreation (swimming) and the health of aquatic life. The ability of rivers and streams to support designated uses is measured through the VRAP relative to New Hampshire's surface water quality standards.

VRAP volunteers assess the physical, chemical and biological characteristics of the rivers and streams throughout the state. The data collected by volunteers is reported to NHDES and is evaluated by making comparisons to water quality standards and by making comparisons to established means and ranges of water quality throughout the state. The data collected by VRAP is used by NHDES for water quality assessment, education, and reporting purposes. The data are used by volunteer monitors for educational purposes, for guiding management and restoration efforts, and also for local watershed management.

New Hampshire has over 16,000 miles of rivers and streams and it is far beyond the capacity of NHDES to monitoring all of these waterbodies. VRAP was initiated in 1998 as a collaboration between NHDES and citizen scientists who are trained in water quality monitoring procedures to collect high quality data. Over 40% of the surface water quality assessments of riverine assessment units NHDES included in its 2015 Clean Water Act assessments were provided by the VRAP program!

These water quality monitoring protocols are intended as a guide to VRAP volunteers for all of the activities associated with water quality monitoring including how to operate water quality monitoring equipment, proper QA/QC procedures, processing of laboratory samples, sampling techniques, and safety in the field.

SAFETY IN THE FIELD

Safety is the first priority while conducting river and stream field monitoring. Please take note of the following safety precautions and if at any point, you feel uncomfortable, please terminate monitoring immediately.

- Always monitor with at least one other person. Never sample in the field without a partner.
- Look at the weather forecast before sampling, making sure no storms are approaching or flood warnings are in effect.
- Avoid wading into a river if the water is high or fast moving. In these conditions, sample from a bridge or from the shore.

In- Stream Safety

When it is necessary to wade into a stream to collect water samples:

1. Do not enter flowing water that is above your waist and be sure someone on shore knows where you are.
2. Always wear waders or waterproof wading boots.
3. Secure your footing with each step. River bottoms accumulate slippery algae on the rocks.
4. If you find that you're in fast flowing water up to your hips, turn sideways into the flow and move to a shallower area if it is difficult to maintain your balance.
5. You can use a long stick to help balance yourself while you wade to your desired location.
6. Check yourself for ticks when you get back to the car.

Bridge Sampling Safety

1. Do not lean on any unstable railings on the bridge.
2. While lowering the bucket down, or while pulling it up, make sure your feet are not caught in the rope!
3. Never put yourself in a dangerous situation. Use your best judgment while on the bridge. If you feel in danger, consider wading in to take a sample.
4. If there is guardrail check it for hornet nests on the backside before leaning over it.

Poison Ivy

Poison ivy is a common plant along the shores of New Hampshire's rivers and streams and along the embankments of bridges. The best way to avoid contact with poison ivy is to wear your waders when moving through an area where the plant is present.

Poison ivy typically has three leaflets (but it can be found with more) with an oily sheen on their surface. It grows as a climbing or low crawling vine, or independently (one stem with three leaves).

Spring Summer Fall

Poison Sumac

Poison sumac is actually related to the poison ivies not to the other sumacs. It is relatively rare in New Hampshire but is still out there. The rash-causing agent, urushiol, is the same, and it causes the same rashes as to poison ivy. Poison sumac is typically abundant in wetland habitat but can be found near ponds as well. The best way to avoid contact with poison sumac is to wear your waders when moving through an area where the plant is present.

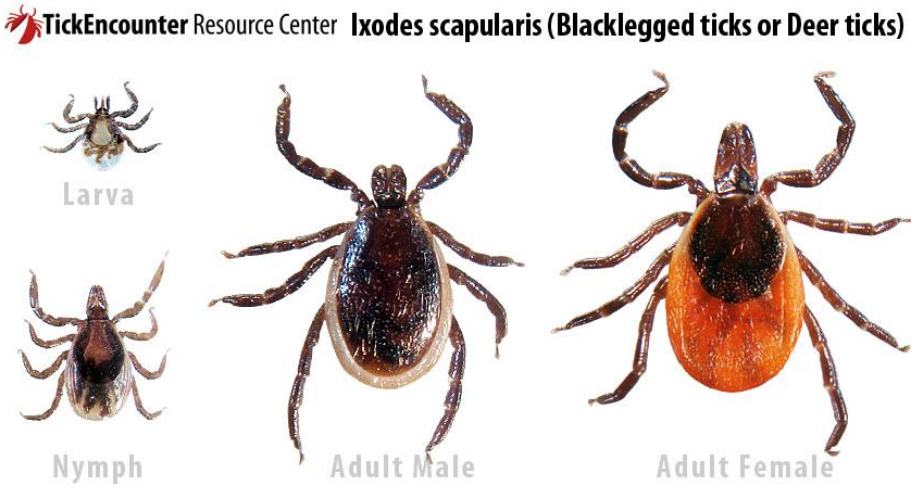
Poison sumac leaves are NOT saw-toothed and the stems are red.

If you know you walked through poison ivy or sumac:
Avoid touching your clothing/waders from the knee down to the boots. If necessary, use gloves to remove your waders. If you suspect you have contacted poison ivy/sumac with your bare skin, use Technu to minimize the risk of developing a rash. Another solution is using blue Dawn dish detergent and a face cloth to scrub skin using COLD water.

Deer Ticks

Ticks, which can carry the Lyme disease bacterium, prefer wooded and bushy areas with high grass and abundant leaf litter. Deer ticks can be present from May through November but are more common during the warmer summer months. During spring and early summer deer ticks can be very small.

Deer ticks can transmit Lyme disease if they are attached to your body for 24 hours or more. If you find a tick latched onto you, you should remove the tick as soon as possible by using tweezers or a tick removing tool. Grab the tick by the head as close to your skin as possible and pull it up slowly and firmly. If you have a tick latched on to you it is advisable to seek counsel from your doctor as to any additional treatments that might be needed.



To avoid ticks, avoid walking in tall grasses or shrubby areas. If you must travel through these areas, wear long pants with tall socks (preferably light colored clothing to better detect the ticks) or waders. Check yourself after every trip through the tall grass.

Quality Assurance & Quality Control

In order for VRAP data to be used to assess NH's surface water quality, the data must meet quality control guidelines. The VRAP Quality Assurance/Quality Control (QA/QC) measures include a four tiered approach to ensuring the accuracy of the equipment and consistency in sampling efforts.

1. Calibration:

- ✓ Calibrate the pH and dissolved oxygen meters prior to each measurement.
- ✓ Check the conductivity and turbidity meter against a known standard prior to the first measurement of the day.

2. Replicate Analysis

- ✓ Measure and record a second measurement by each meter from the same bucket of water at one of the stations during the sampling day.
- ✓ Replicates should be measured within 15 minutes of the original measurements. If more than one team is out sampling each team should complete a replicate analysis.
- ✓ The dissolved oxygen and pH meters should be recalibrated prior to measuring the replicate

3. Meter Precision Checks

At one station during the sampling day, perform meter precision checks. These measurements serve to ensure the accuracy of each meter. Meter checks include:

- ✓ **6.0 pH Standard:** Measure and record a reading of the 6.0 pH buffer. Do not calibrate the meter prior to this measurement as it is intended to detect drift in the meter. The acceptable range is 5.7 – 6.3 pH units.
- ✓ **DI (De-Ionized) Turbidity Blank**: Measure and record a reading of the DI turbidity blank (0 NTU). The acceptable range is 0 – 0.25 NTU.

4. End of the Day Conductivity & Turbidity Meter Checks

- ✓ Re-check and record a reading of the conductivity and turbidity meters against known standards at the conclusion of each sampling day.

If the same sampling schedule is used throughout the monitoring season, the Replicate and Meter Precision Checks should be conducted at **different stations** over the sampling season.

Sample Collection Protocols

Sampling From a Bridge

The sample should be collected from the upstream side of the bridge in the center of the river or where moving. The exception to this is if the upstream side of the bridge has no safe place to walk but the downstream side has a sidewalk/bike path. In that case you should sample on the safer downstream side and note on datasheet.

What you'll need:

- Bucket with rock or weight taped on one side
- Rope attached to a bucket

Collecting the water sample from a bridge:

- Attach the end of the rope to the handle of the bucket. Lower bucket into the river from the upstream side of the bridge (water flowing toward you).
- Fill ¼ of the bucket with water.
- Pull the bucket up, swish the water around to thoroughly rinse the bucket and discard the rinsed water on the opposite side of the bridge – do not release the water to the area where you will be taking the final sample. Repeat this process 2 more times (total of **3** rinses).
- Return the bucket into the river from the upstream side of the bridge and slowly fill the bucket with water. Allow the water to flow into the bucket as slowly as possible.
- Slowly pull up the bucket with sample water. Do not bump the bucket against the bridge or otherwise agitate the sample water in the bucket as this may introduce additional oxygen and sediment thereby yielding inaccurate readings. If sample does become altered in some way, you need to dump the bucket and refill it.
- Carefully carry the sample back a safe location. Place the bucket in the shade and out of the rain if possible.

Sampling Via Wading

For wadeable streams, samples can be collected by wading directly into the river. Do not wade into water that is more than waist deep. Be sure that your partner on shore knows that you are entering the water and is available to assist you if need be.

What you'll need:

- A pair of waders or water shoes
- Bucket
- *E. coli* bottle (as needed)

Collect *E. coli* Sample

- Carefully wade into the river as close as possible to the center as can be done safely.
- Carefully remove the lid of the *E. coli* bottle making sure not to touch the sterile inside of the lid or the bottle. Hold the lid in one hand without touching the inside.
- Facing upstream, use a "U"-shaped motion and thrust the bottle under the water's surface and fill in one continuous upstream motion away from you, turning the bottle right side-up at the bottom of the "U". In this fashion, the water will flow into the bottle, then over your hand. Fill to the neck of the bottle.
- Put the cap on tight and place the bottle somewhere safe on the shore or in your pocket. If this is a replicate site be sure to fill a second bottle that has been labeled with "-REP" at the end of the station ID (i.e. 01-HOB-REP).

Collect Sample with a Bucket

- Wade back out to same spot where *E. coli* was taken. Try to minimize the amount of sediment stirred up from the bottom and chose a sampling location near the center of the stream that has not been disturbed by agitated sediment.
- Facing upstream, dip the bucket into the water and fill ¼ of the bucket. Rinse the water in the bucket and return the water to the stream behind you (downstream) with minimal disturbance of the surface of the river. Repeat this process 2 more times (total of **3** rinses).
- Facing upstream, dip the bucket into the water and fill it as slowly as possible until the bucket is ¾ full.
- Carefully carry the sample back to a safe location. Place the bucket in the shade and out of the rain if possible.

Pre-sample collection: Labeling Bottle

It is important that the bottles be labeled before the sample is poured into the bottle while the sample bottle is still completely dry. It is very difficult to properly write on a wet sample bottle. Be sure to use neat and legible writing on the bottles.

Information to include on labels:

- Test(s) required (e.g. TP/TKN)
- Station ID (e.g. 01-CTC, 02-ISG-REP)
- Date (mm/dd/yy) and time (hh:mm in military time) of collection (e.g 7/12/17 14:45)
- Collectors' initials

Fill Bottles for Laboratory Analysis

- Fill all labeled sample bottles completely with the water contained in the bucket. The brown nutrient bottles contain a small amount of acid to preserve the sample – do not pour this acid out. Use caution when opening the acid preserved sample bottles, as pressure may have built-up in the empty bottles during travel.

- Be careful not to overtop bottles when filling them, particularly the brown nutrient bottles, as overflowing them could flush out the acid preservative.
- Place all filled water sample bottles on ice in the cooler as soon as possible after collection, and ensure the top of the cooler is tightly closed.

Once the sample bottles have been filled for laboratory analysis the handheld meters should be used to measure the parameters below by following the protocols in the next section.

- Dissolved Oxygen (% Saturation and mg/L)
- pH
- Specific Conductance
- Turbidity
- Water Temperature

LABORATORY SAMPLES

It is important to submit laboratory samples as soon as possible to ensure they do not expire before analysis. **Table 1** below provides information regarding the storage of samples and the maximum hold times.

It is helpful to remind VRAP staff when you are bringing in samples. This is also helpful to the laboratory staff especially when a large number of samples are expected.

The Public Health Laboratory Hours:
8am - 3pm Monday through Thursday
8am - 1pm on Friday.

Table 1. VRAP Laboratory Parameters

Analytical parameter	Sample Volume	Container Size and Type	Preservation Requirements	Maximum Holding Time	Lab Cost
E. coli	100 mL	120 mL sterile clear polyethylene	chilled to ≤ 10ºC	**8 hours**	$30
Total Phosphorus (TP)	50 mL	250 mL brown polyethylene	acidified, light protected, chilled to 4°C	28 days	$20
Chloride (Cl)	40 mL	40 mL or 250 mL white polyethylene	chilled to 4°C	28 days	Free @ JCLC
Nitrate+nitrite (NO_3+NO_2)	40 mL	40 mL or 250 mL white polyethylene	chilled to 4°C	48 hours	
Total Kjeldahl Nitrogen (TKN)	40 mL	250 mL light protected polyethylene	acidified, light protected, chilled to 4°C	28 days	$37
Ammonia (NH_3)	40 mL	250 mL light protected polyethylene	acidified, light protected, chilled to 4°C	28 days	
Chlorophyll *a*[b]	500 mL	500 mL light protected polyethylene	light protected, chilled to 4°C	24 hours	Free @ JCLC
Hardness	500 mL	500 mL LDPE or HDPE	acidified, light protected, chilled to 4°C	14 days	
Metals	500 mL	500 mL LDPE or HDPE	acidified, light protected, chilled to 4°C	14 days	

Completing the NHDES Laboratory Services Login & Custody Sheet

The following is a guideline for completing the Laboratory Services Login & Custody Sheet which is required to be submitted along with your laboratory samples. If you can let a VRAP staff member know ahead of time we may be able to meet you at the lab and provide assistance with laboratory login if it would be helpful.

If you are bringing in chloride samples those should be dropped off at the Jody Connor Limnology Center (JCLC). When you arrive at the JCLC tell the staff person who greets you that they are VRAP chloride samples. They will place them in the refrigerator and alert a VRAP staff person that they have arrived.

All other laboratory samples need to be brought to the New Hampshire Public Health Laboratory window. Let the lab staff member know they are VRAP samples and they will assist you with the login and chain of custody form.

Below are the key pieces of information that you need to fill out on the login form. At the end of this section is an example of a filled out lab login and custody form.

Lab Account (Billing): Use the VRAP lab account number (**05-0022518**) or your group's unique laboratory account number.

One Stop Project: VRAP

Description: River or VRAP group name

Collected By: The name and phone number of the person who should be contacted if there are any questions about the samples.

Contact & Phone Number: Ted Walsh ext. 2083 if you use the VRAP account number. Please record your name and phone number if you use your own lab account number.

Station ID: Please use the NHDES VRAP Station IDs (i.e. 02-CLD). If you have collected a replicate sample put "-REP" at the end of the station ID (i.e. 02-CLD-REP). If this is a new station without a VRAP ID use WSHEDTBD. If you have multiple new stations use the ID's WSHEDTBD1, WSHEDTBD2 for as many as needed. For these new stations it is important to write something in the Sampler Comments field that provides a unique brief description of the location (i.e. Oak St Bridge Concord, Upstream of Big Creek, Nice Pond outlet, ect.

Date/Time Sampled: Date and time of each sample collected. Use military time (i.e. 14:30)

Number of Containers: Number of sample bottles per station.

Matrix: For all water samples write "AQ" for aqueous.

Parameters Sampled: In the columns to the right of the Matrix column, please fill in a box of each sample bottle. In most cases you would write one parameter per bottle. If you are sampling for Total Phosphorus and Total Nitrogen the lab can analyze both parameters from the brown nutrient bottle. In this case you would write TP/TKN as the parameter.

Sampler Comments: Leave blank unless this is a new station without a station ID. In that case, use "WSHEDTBD" in the Station ID column and write a brief description in this box.

Lab Login #: Leave blank

Relinquished By: Sign your name

Date & Time: Date and time you signed your name

Received By: Leave blank. This will be completed by Laboratory Services personnel.

Please fill in the number of pages (Example: Page 1 of 1) at the bottom of the sheet.

NHDES LABORATORY SERVICES LOGIN AND CUSTODY SHEET

(Laboratory Policy: Samples not meeting method requirements will be analyzed at the discretion of the NHDES Laboratory.)

Samples must be delivered in a cooler with ice or ice packs.

LAB ACCOUNT (Billing) 05-0022518 One Stop Project: VRAP NHDES Site Number_____

Description: Bellamy River Town: _____ Temp. ⁰ C. 23

Collected By: Volunteer's name & # Contact & Phone # Ted Walsh 271- 2083

Station ID	Date & Time Sampled	# of Containers	Matrix	Total Phosphorus (TP)	E. coli					Sampler Comments	Lab Login #
05-BLM	6/11/18 9:25	2	AQ	X	X						
06-BLM	6/11/18 10:12	1	AQ	X	X						
12-BLM	6/11/18 12:45	2	AQ	X	X						
12-BLM-REP	6/11/18 13:00	2	AQ	X	X						

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Date:4-8-10
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Relinquished By: VRAP Volunteer Date and Time: 6/11/18 15:00 Received By:_____

Relinquished By: _____Date and Time:_____ ____ **Received For Laboratory By:_____**

Matrix: A= Air S= Soil AQ= Aqueous (Ground Water, Surface Water, Drinking Water, Waste Water) π Other:

Page 1 of 1 Data Reviewed By:_____ Date:____

VRAP FIELD DATA SHEET

The VRAP Field Data Sheet is intended to record all of your water quality measurements, QA/QC activities and other information you think would be helpful in interpreting the results and documenting the conditions you encountered.

Some items to note when filling out the field data sheet:

- Please write neatly. If you make a mistake neatly cross out the incorrect information and make edits as needed.
- Be sure to do a replicate sample for each sampling day (even if you only sample one station).
- Complete all of the needed QA/QC checks including pre-sampling checks, calibrations, meter precision checks and end of the day meter checks.
- On the back of the data sheet there is space to provide weather and any information that would be helpful to us as we review that data and interpret the results.
- On the back of the form please fill in the appropriate information regarding laboratory samples you have collected.
- Complete end of day check list on back of data sheet

A blank datasheet is provided at the end of this document for your use. It is helpful to VRAP staff to receive the data sheets soon after the data is collected. This allows us to review the data and assist with any problems you may have had with the meters. It also allows DES to detect any water quality concerns that need immediate attention.

VRAP Field Data Sheets can be mailed to:

NH Volunteer River Assessment Program
NH Department of Environmental Services
Watershed Management Bureau
29 Hazen Drive PO Box 95
Concord, NH 03302-0095

They can also be e-mailed as PDF to ted.walsh@des.nh.gov or andrea.bejtlich@des.nh.gov

VRAP FIELD SAMPLING SELF-ASSESSMENT FORM

During each sampling day VRAP volunteers should fill out and submit the VRAP Field Sampling Self-Assessment Form with the Field Data Sheet. This self-assessment is a check list to assist volunteers in ensuring that high quality data is collected and that the water quality meters are used correctly. Volunteers should check off the necessary tasks as they are completed throughout the sampling day. There is space available for comments if you want to alert DES staff of any issues you encountered while sampling. A copy of the Field Sampling Self-Assessment From is available on the NHDES VRAP webpage.

https://www.des.nh.gov/organization/divisions/water/wmb/vrap/index.htm

WATER QUALITY MONITORING EQUIPMENT STANDARD OPERATING PROCEDURES (SOPs)

This section of the VRAP protocols is intended to be a step-by-step guide to properly operate the water quality monitoring equipment and conduct all of the necessary QA/QC procedures. NHDES provides equipment to some VRAP groups and in some cases groups have purchased their own equipment. These SOPs include all of the types of equipment NHDES provides and almost all of the meters used by VRAP groups with their own equipment. If your group uses a meter that is not included in these protocols VRAP staff can assist you in developing a SOP.

Regardless of the type of meter that is being used the QA/QC procedures should be followed for each parameter and each meter used.

General Tips

- Be sure to store the meters in a location that is dry and safe from extreme temperatures. The meters cannot be stored long-term in an unheated location in the winter.
- It is helpful to use a toolbox or similar waterproof container to store meters that do not come with their own cases, and all of the solutions and supplies needed to conduct VRAP monitoring.
- Always carry a set of spare batteries for each meter.
- When sampling is completed be sure to dry off the meters before putting them back in their storage cases.

If during your sampling day one of the meters malfunctions and you are not able to get it working properly, you can still continue monitoring!
Make a note on the Field Data Sheet that you were not able to measure a given parameter because of a malfunctioning meter and continue using the other meters.

Important Guidelines:

- Each parameter must be measured AT THE SITE. Samples should not be collected and then transported to be measured at a later time.
- Once the sample has been collected with the bucket, you should not wait more than fifteen minutes to begin taking readings with the meters as this allows time for the sample conditions to change (Temperature, DO and pH).
- Place the sample bucket in the shade, if possible, while taking the readings with the meters.
- Dissolved Oxygen must be calibrated at EACH site <u>before</u> any measurements from the sample bucket are obtained.

YSI 85 Meter
Water Temperature, Dissolved Oxygen & Specific Conductance

Check the Dissolved Oxygen Membrane and Calibration Chamber

Before sampling begins for the day, ensure the sponge inside the storage chamber is moist by adding a few drops of DI water. Turn the meter on its side to allow any excess water to drain out of the chamber. Return the probe to the storage chamber.

WAIT! Before calibrating the dissolved oxygen, make sure the meter has been turned on for at least 15 minutes with the probe INSIDE of the chamber.

Calibrate the Meter for Dissolved Oxygen

Calibration must be completed at each station prior to sampling including the replicate.

1. Record the time the meter was turned on the upper left section of VRAP Field Data Sheet.

2. Press the MODE button until the meter is in the dissolved oxygen percent saturation mode, as indicated by a small '%' on the right side of the screen.

3. Press and release both the DOWN and UP arrow buttons simultaneously. You will see a small 'CAL' in the lower left hand corner when you have successfully entered calibration mode.

4. The screen will prompt you to enter the local altitude in hundreds of feet. Use the UP and DOWN arrows to adjust the value appropriately (for example, entering a 12 indicates 1200 feet above sea level). *If you are unsure of the altitudes of your monitoring station contact your group's monitoring coordinator or VRAP staff.*

5. Press ENTER. On the VRAP Field Data Sheet, under the column "Dissolved Oxygen **Calibration Value**," record the dissolved oxygen calibration value that is displayed on the bottom of the screen. *The calibration value will vary with altitude and thus may be different at each station.*

6. Press ENTER again. The screen should briefly display SAVE and then automatically return to dissolved oxygen % measurement mode.

7. Wait approximately one minute for the Dissolved Oxygen % saturation to stabilize. On the VRAP Field Data Sheet in the column "Dissolved Oxygen % Saturation **Chamber Reading**" record the DO % saturation reading displayed on the screen. If drift occurs (goes up or down by more than 5%) ensure you have waited long enough for the reading to stabilize. If drift still occurs, recalibrate the DO.

Perform & Record the Initial Conductivity Check Value

This check is done at the FIRST station of the day.

1. Press the MODE button until the flashing **°C** appears on the lower right side of the screen and the units uS/cm are displayed. This is the temperature compensated specific conductance mode.

2. Remove the probe from the chamber and rinse it with DI water. Gently shake the probe to remove water from holes on top of probe and wipe dry with a Kimwipe.

3. Submerge the entire probe in the 2,000µS/cm conductivity standard solution.

4. Record the Specific Conductance reading at the top left of the VRAP Field Data Sheet "**Initial Conductivity Meter Check Value**". *A 20% error regardless of the standard used (e.g. 1,600 – 2,400µS) is acceptable. If the reading is outside of this range, please contact VRAP staff as soon as possible. You can continue to use the meter as the incorrect reading is most likely due to contaminated standard.*

5. Rinse the probe with DI water and gently shake the probe to remove water. Wipe dry with a Kimwipe and return it to the storage chamber.

Measuring Water Temperature, Dissolved Oxygen, and Specific Conductance

Note: This meter should remain on until the last station has been sampled. If the meter is turned off prior to the end of the sampling day, the meter must be turned on and allowed a 15-minute warm-up period, with the probe in its chamber, prior to calibration and additional sampling. Remember, the dissolved oxygen/temperature meter must be **calibrated prior to each dissolved oxygen measurement including the replicate**.

1. Remove the probe from the calibration chamber and rinse the probe with DI water. Shake the probe and wipe dry with a Kimwipe. Press the MODE button until a small % symbol appears in the upper right corner of the display screen.

2. Immerse the probe into the sample bucket ensuring the two black holes at the top of the probe are fully submerged. **Slowly** move the probe back and forth in the sample until the water temperature stabilizes. *Do not allow the probe to touch the side or bottom of the bucket while you are taking readings*.

3. Wait approximately 15 seconds then record the water temperature (°C) on the VRAP Field Data Sheet once it has stabilized.

4. Wait for the dissolved oxygen (% saturation) to stabilize. Once it is stable, record the value on the VRAP Field Data Sheet.

5. Press the MODE button ONCE and **immediately** record the value for dissolved oxygen concentration (mg/L) on the VRAP Field Data Sheet.

It is imperative that you are patient and wait for the Temp and DO% Saturation readings to stabilize before recording the other values.

6. Press the MODE button twice until the **flashing °C** appears on the lower right side of the screen. This is the Specific Conductance mode. Record the value displayed on the screen on the Data Sheet under the column "Specific Conductance uS/cm".

Note: If you are sampling under very cold conditions (<2°C.) you will get an error message. Press the MODE button until the display screen shows uS/cm with a non-flashing °C for the units. This is actual conductance. It can be converted to specific conductance by DES staff as long as water temperature is also measured. Please make a note on the Field Data Sheet if you measure **actual conductance**.

Perform & Record the End of the Day Conductivity Value

This check is done at the last station of the day.

1. Press MODE until the non-flashing uS/cm units and the **flashing °C** appears on the lower right side of the screen.

2. Rinse the probe with DI water. Gently shake the probe then wipe dry with a Kimwipe.

3. Submerge the entire probe in the 2,000µS/cm conductivity standard solution.

4. Record the specific conductance value at the bottom the Field Data Sheet in the section "End of Day Meter Checks".

5. Rinse the probe with DI water and gently shake the probe to remove excess water. Wipe dry with a Kimwipe before returning it to the storage chamber.

At the LAST STATION of the day, once all sample readings and checks are finished, you can shut the meter OFF.

YSI Pro 2030
Water Temperature, Dissolved Oxygen & Specific Conductance

Check the Dissolved Oxygen Membrane and Calibration Chamber

Before sampling begins for the day, ensure the sponge inside the grey, rubber storage chamber is moist by adding a few drops of DI water. Pour out any excess water. Return the probe to the rubber storage chamber. **Wait at least 15 minutes with the probe in the storage chamber before calibrating dissolved oxygen!**

Calibrate the Meter for Dissolved Oxygen

Calibration must be completed at each station prior to sampling including the replicate.

1. Record the time the meter was turned on the upper left section of VRAP Field Data Sheet.

2. Once the meter is turned on wait 15 minutes before proceeding with calibration.

3. Press and hold the Cal button for 3 seconds.

4. Scroll up or down to highlight "Dissolved Oxygen" and then press ENTER.

5. Highlight the "%" option and then press ENTER.

6. On the Field Data Sheet under the column "Dissolved Oxygen **Calibration Value**" record the calibration value 'Cal Value' from the display screen. This is the small number in the lower portion of the screen. The calibration value will vary with altitude and may be different at each station.

7. Wait about 15 seconds for the meter to stabilize and then press ENTER.

8. 'Calibration Successful' will be displayed briefly and then the instrument will return to the main screen. If 'Unsuccessful Calibration' is displayed, wait two minutes then repeat the calibration.

9. Wait approximately one minute for the DO % saturation value to stabilize on the display screen.

10. Record the DO% saturation value on the Field Data Sheet in the column "Dissolved Oxygen **% Saturation Chamber Reading**".

11. If drift occurs (DO value goes up or down by more than 5%) ensure you have waited long enough for the reading to stabilize. If drift still occurs, follow steps 3-10 to re-calibrate.

Perform & Record Initial Specific Conductance Verification

1. Unscrew and remove the protective metal cage around the probe as well as the rubber storage chamber.

2. Rinse the probe with DI water and gently shake the probe to remove water from the conductivity sensors then wipe dry with a Kimwipe.

3. Pour 50 ml of the 2000 µS/cm conductivity standard solution into a 100 ml plastic graduated cylinder. Place the probe in the graduated cylinder. The solution should cover the entire probe without overflowing the graduated cylinder.

4. Record the specific conductance value from the display screen on the top left of the Field Data Sheet '**Initial Conductivity Meter Check Value**'. A 20% error is acceptable: (1,600 – 2,400µS). If the reading is outside of this range; ensure the two black holes at the top of the probe are completely submerged and standard is fresh. Contact VRAP staff if is still out of range for the meter to be calibrated.

5. Rinse the probe with DI water and gently shake the probe to remove water from the conductivity sensors then wipe dry with a Kimwipe.

6. Replace the protective metal cage around the probe and rubber storage chamber.

7. Discard the 2000 µS/cm conductivity standard solution.

Measuring Water Temperature, Dissolved Oxygen, and Specific Conductance

Note: This meter should remain on until the last station has been sampled. If the meter is turned off prior to the end of the sampling day, the meter must be turned on and allowed a 15-minute warm-up period, with the probe in its chamber, prior to calibration and additional sampling. Remember, the dissolved oxygen/temperature meter must be **calibrated prior to each dissolved oxygen measurement including the replicate**.

1. Remove the probe from the rubber calibration chamber and rinse the probe with DI water. Gently shake to remove excess water then wipe dry with a Kimwipe.

2. Immerse the probe into the bucket ensuring the two black holes at the top of the probe are underwater. Slowly move the probe back and forth in the sample until the water temperature stabilizes. Avoid having the probe touch the side or bottom of the bucket.

3. Wait approximately one minute then record the temperature (°C) once it stabilizes.

4. Once the temperature is stable, watch the DO % Saturation value and wait to record this value until it is also fairly stable.

5. When the values are stable, record DO (%), DO (mg/L), and specific conductance (uS/cm) values on the Field Data Sheet under the appropriate column.

It is imperative that you are patient and wait for the Temp and DO% saturation readings to stabilize before recording any values.

Perform End of Day Meter Check at Last Station of Sampling Day

1. Unscrew and remove the protective metal cage around the probe as well as the rubber storage chamber.

2. Rinse the probe with DI water and gently shake the probe to remove water from the conductivity sensors then wipe dry with a Kimwipe.

3. Pour 50 ml of the 2000 µS/cm conductivity standard solution into a 100 ml plastic graduated cylinder. Place the probe in the graduated cylinder. The solution should cover the entire probe without overflowing the graduated cylinder.

4. Record the specific conductance value at the bottom the Field Data Sheet in the section "**End of Day Meter Checks**". A 20% error is acceptable: (1,600 – 2,400µS). If the reading is outside of this range; ensure the top holes are completely submerged and standard is fresh. Contact VRAP if is still out of range for the meter to be calibrated.

5. Screw the protective metal cage back on to the probe and rinse with DI water. Place the rubber storage chamber back on the probe.

6. Discard the 2000 µS/cm conductivity standard solution.

At the last station of the sampling day, once all sample readings and checks are finished, you can shut the meter **OFF.**

pH

Oakton pH 11 Meter

The pH meter must be calibrated prior to each measurement (at each station) including the **replicate**.

Remember:

! Be sure to never touch the glass bulb at the end of the probe, even with a Kimwipe.

! Only submerge the electrode probe a few inches. Do not allow the area above the clear plastic probe to be submerged.

! Never store the pH probe in DI water. *(If you run out of pH electrode storage solution you may temporarily store the pH probe in pH 4.0 buffer solution).*

<u>pH Calibration</u>

1. Unscrew the cap of the electrode storage container and remove the bottle at the end of the pH probe. Slide the screw cap a few inches up the probe. Rinse the probe with DI water including the glass bulb at the end. Wipe dry with a Kimwipe without touching the glass bulb at the end!

2. Press the ON/OFF button to turn the meter on. The MEAS (measure mode) indicator should be displayed in the top portion of the screen.

3. Press the CAL/MEAS button to enter pH calibration mode. The CAL (calibration mode) indicator should be displayed on the screen. *The primary display will show the measured reading while the smaller secondary display will indicate the pH standard buffer solution that the electrode is submerged in.*

4. Immerse the probe into the 7.0 pH buffer (yellow solution).

5. Wait for the measured pH value to stabilize and the READY indicator to appear on the display. The READY indicator may flash on and off so wait until it is steady to achieve an accurate calibration.

6. Press the HOLD/ENTER key to confirm calibration.

7. Remove the probe from the 7.0 buffer, rinse with DI water and wipe dry with a Kimwipe.

8. Place the electrode in the 4.0 pH buffer (pink solution).

9. Wait for the measured pH value to stabilize and the READY indicator to appear on the display. The READY indicator may flash on and off so wait until it is steady to achieve an accurate calibration.

10. Press the HOLD/ENTER button to confirm calibration.

11. Remove the probe from the 4.0 buffer, rinse it with DI water and wipe dry with a Kim wipe. The meter should automatically switch to the MEAS mode. If not, press the CAL/MEAS button to enter pH measure mode.

12. View pH Electrode Slope:
    a. Press the SETUP button.
    b. Press the UP button **twice** until you view "ELE P3.0"
    c. Press the HOLD/ENTER button **twice**. The display will show the electrode slope in %.

13. Record the slope on the VRAP Field Data Sheet under the column "**pH Calibration Slope**". The slope should be between 95 – 105%.

If the slope is out of range you should try to re-calibrate the meter first. If the slope is still out of range you should replace the pH buffer solutions 4.0 and 7.0 with unused solutions. If the slope continues to be out of range you can continue measuring pH for the sampling day but please let DES staff know as soon as possible.

14. To return to measurement mode press the CAL/MEAS button **twice**. The MEAS (measure mode) indicator should be displayed on the screen.

Measuring pH

1. Rinse the probe with DI water and wipe the plastic areas dry with a Kimwipe.

2. Immerse the pH probe into the sample container and let it sit for a few minutes. **Do not submerge above the clear probe!** Slowly move the probe back and forth in the sample.

3. When a stable reading is achieved the READY indicator to be displayed for 10 seconds. It is common for the READY indicated to blink on and off while the reading stabilizes. Wait until the reading has stopped drifting for greater than **30 seconds**. Record the value on the VRAP Field Data Sheet.

4. Rinse the probe with DI water, wipe dry with a Kimwipe and return it to the electrode solution storage container. Ensure the electrode storage container is filled at least halfway with pH storage solution.

5. Turn the meter off and return the meter and the probe to its carrying case.

QA/QC Meter Check

At one of the stations during the sampling day measure and record a reading of the 6.0 pH buffer. DO NOT calibrate the meter before you take this reading.

1. Rinse the probe with DI water and wipe the plastic areas dry with a Kimwipe.

2. While in **measure mode**, immerse the pH probe into the 6.0 buffer solution and wait for the number to stabilize.

3. When a stable reading is achieved the READY indicator will appear. Record the value, station ID, and time in the data sheets "**QA/QC Meter Check**" box.

pH

Oakton pH 150 Meter

The pH meter must be calibrated prior to each measurement (at each station) including the **replicate**.

Remember:

! Be sure to never touch the glass bulb at the end of the probe, even with a Kimwipe.

! Only submerge the electrode probe a few inches. Do not allow the area above the clear plastic probe to be submerged.

! Never store the pH probe in DI water. *(If you run out of pH electrode storage solution you may temporarily store the pH probe in pH 4.0 buffer solution).*

<u>pH Calibration</u>

1. Unscrew the cap of the electrode storage container and remove the bottle at the end of the pH probe. Rinse the probe with DI water including the glass bulb at the end. Blot dry with a Kimwipe without touching the glass bulb at the end!

2. Press the POWER button to turn the meter on. The MEAS (measure mode) indicator should be displayed in the top portion of the screen.

3. Press the CAL/MEAS/BACK button to enter pH calibration mode. The CAL (calibration mode) indicator should be displayed on the screen. *The primary display will show the measured reading while the smaller secondary display will indicate the pH standard buffer solution that the electrode is submerged in. (You will not have to record these numbers)*

4. Immerse the probe into the 7.0 pH buffer (yellow solution) and swirl probe.

5. Wait for the measured pH value to stabilize and the READY indicator to appear on the display. The READY indicator may flash on and off so wait until it is steady to achieve an accurate calibration. The value should not change for 30 seconds if it is stabilized.

6. While still immersed in the pH 7 buffer, press the ENTER/HOLD key to confirm calibration. The primary value will flash DONE.

7. Remove the electrode from the 7.0 buffer, rinse with DI water and dry with a Kimwipe.

8. Place the electrode in the 4.0 pH buffer (pink solution) and swirl probe.

9. Wait for the measured pH value to stabilize and the READY indicator to appear on the display. The READY indicator may flash on and off so wait until it is steady to achieve an accurate calibration. The value should not change for 30 seconds if it is stabilized.

10. While still immersed in the pH 4 buffer, press the ENTER/HOLD button to confirm calibration. The primary reading will flash DONE.

11. Remove the electrode from the 4.0 buffer, rinse it with DI water and wipe dry with a Kimwipe. <u>The meter should automatically switch to the MEAS mode.</u>

12. Once on the measure screen the bottom right will have a percent value and that will be the pH Electrode Slope. If the number does not appear follow these steps:
    a. Press the SETUP button.
    b. Press the VIEW button three times until you view "ELE dAtA P5.0"
    c. Press the ENTER/HOLD button twice. Calibration slope in % is displayed.

13. Record the slope on the Field Data Sheet under the column "pH Calibration Slope". The slope should be between 95 – 105%.

If the slope is out of range you should try to re-calibrate the meter first. Try waiting in each sample longer. If the slope is still out of range you should replace the pH buffer solutions 4.0 and 7.0 with unused solutions. If the slope continues to be out of range you can continue measuring pH for the sampling day but <u>let the DES staff know as soon as possible.</u>

<u>Measuring pH</u>

1. Rinse the probe with DI water and blot dry with a Kimwipe.

2. Immerse the pH probe into the sample container and let it sit for a few minutes. **Do not submerge above the clear probe! Slowly** move the probe back and forth in the sample.

3. It is common for the READY indication to blink on and off while the reading stabilizes. Wait until the reading has stopped drifting; this is achieved when the value does not change for about 30 seconds. Record the value on the Field Data Sheet under the column "pH (Units)".

4. Rinse the probe with DI water, blot dry with a Kimwipe and return it to the electrode solution storage container. <u>Ensure the electrode storage container is filled at least halfway with pH storage solution.</u>

5. Hold the POWER button to turn the meter off and return the meter and the probe to its carrying case.

<u>QA/QC Meter Check</u>

At one of the stations during the sampling day measure and record a reading of the 6.0 pH buffer. DO NOT calibrate the meter before you take this reading.

1. Rinse the probe with DI water and wipe the plastic areas dry with a Kimwipe.

2. Immerse the pH probe into the 6.0 buffer solution and wait for the number to stabilize.

3. When a stable reading is achieved the READY indicator will appear. Record the value, station ID, and time in the data sheets “QA/QC Meter Check” box.

Turbidity
LaMotte 2020

Initial Turbidity Check Value

1. Turn the meter on by pressing the READ button. A triangle should be displayed in the upper left corner of the display screen.

2. Find the glass vial labeled "1.0 NTU" standard and carefully wipe off any water, dust and/or fingerprints from the vial with a Kimwipe only.

3. Open the lid of the meter and align the etched arrow on the glass vial with the arrow under the meter lid. Insert the vial into the chamber and close the lid.
4. Press the READ button.

5. Record the value displayed at the top left of the VRAP Field Data Sheet as the "Initial Turbidity Meter Check Value". If the displayed value does not read "1.00" follow the steps for calibration below.

Turbidity Calibration

The turbidity meter needs to be calibrated using the 1.0 NTU standard once prior to the first measurement and checked once after the last measurement at the end of the day.

1. If the displayed reading of the 1.0 NTU standard is not exactly 1.00 then press and hold the CAL button until you see CAL displayed on the screen then release the button. The display value will flash.

2. Adjust the value with the up and down arrows until "1.00" is displayed.

3. Press the CAL button again to complete calibration.

Measuring Turbidity

1. Rinse the vial labeled "Sample" or "S" three times with DI water.

2. Fill the Sample vial with water from the bucket by carefully and slowly pouring the water down the side of the sample vial to avoid introducing any bubbles.

3. Wipe water, dust and/or fingerprints off the sample vial with a Kimwipe.

4. Open the lid of the turbidimeter and align the etched arrow on the sample vial with the arrow under the turbidimeter lid.

5. Close the lid. Press READ.

7. Record the displayed turbidity reading on the VRAP Field Data Sheet.

8. Turn the meter off by pressing/holding the READ button down until the display screen reads "OFF" then release the button.

QA/QC Meter Check

At one of the stations during the sampling day, measure and record a reading of the DI Turbidity Blank (0.0 NTU) standard. If the same sampling schedule is used throughout the monitoring season, the DI turbidity blank check should be conducted at different stations. Record the value, station ID, and time in the data sheets "QA/QC Meter Check" box.

Perform End of Day Meter Check at Last Station of Sampling Day

At the last site of the day, before you calibrate the meter, follow steps 1-4 from the **Initial Turbidity Meter Check Value** section above to read the 1.00 standard and record the value under the "End of Day Meter Check" on the VRAP Field Data Sheet.

Turbidity
LaMotte 2020e

Initial Turbidity Check Value

1. Press the ON button to turn the meter on.

2. The asterisk should be to the left of "Measure". Press the OK button.

3. The asterisk will now be to the left of "Scan Blank". Locate the DI/Blank glass vial and carefully wipe off any water, dust and/or fingerprints from the vial with a Kimwipe.

4. Open the lid of the meter. Place the DI/Blank glass vial in the meter by aligning the arrow on the vial with the etched arrow under the lid of the meter. Close the lid. Press OK.

5. Remove the DI/Blank glass vial from the meter.

6. Locate the 1.0 NTU vial. Carefully wipe off any water, dust and/or fingerprints from the vial with a Kimwipe.

7. Open the lid of the meter and insert the 1.0 NTU vial into the chamber by aligning the etched arrow on the 1.0 NTU vial with the arrow under the lid of the meter then close the lid.

8. The asterisk will now be to the left of "Scan Sample". Press OK.

9. Record the reading on the top left of the VRAP Field Data Sheet as the "Initial Turbidity Meter Check Value". If the displayed value does not read "1.00" the meter needs to be calibrated. (See instructions below).

Turbidity Calibration

The turbidimeter needs to be calibrated checked once after the last measurement at the end of the day.

1. Press the down arrow once and you will see the asterisk displayed to the left of "Calibrate". Press the OK button.

2. The number on the left will be highlighted. You can use the up and down arrows to make adjustments to the number that is highlighted. Once the highlighted number is correct press OK and the highlight will move to the next number on the right. If you are calibrating to a 1.0 NTU standard the display should read "01.00".

3. You will see the asterisk to the left of "Set". If the displayed calibration value is correct, press OK. The asterisk will now be to the left of "Measure".

Measuring Turbidity

1. The asterisk should be to the left of "Measure". Press the OK button.

2. The asterisk will now be to the left of "Scan Blank". Locate the DI/Blank glass vial and carefully wipe off any water, dust and/or fingerprints from the vial with a Kimwipe.

3. Place the DI/Blank glass vial in the turbidimeter so that the arrow on the vial is aligned with the etched arrow under the lid of the meter. Press OK.

4. Remove the DI/Blank vial from the meter.

5. Rinse the vial labeled "Sample" or "S" three times with DI water.

6. Fill the sample vial with river water by carefully and slowly pouring the water down the side of the Sample vial to avoid introducing any bubbles.

7. Wipe any water, dust and/or fingerprints off the sample vial with a Kimwipe. Place the Sample vial in the meter by aligning the arrows and close the lid.

8. The asterisk should be to the left of "Scan Sample". Press the OK button.

9. Record the displayed turbidity reading on the VRAP Field Data Sheet under the "Turbidity (NTU)" column.

10. Press the OFF button to turn the meter off.

QA/QC Meter Check

At one of the stations during the sampling day measure and record a reading of the DI Turbidity Blank (0.0 NTU) standard. If the same sampling schedule is used throughout the monitoring season, the DI turbidity blank check should be conducted at different stations. Record the value, station ID, and time in the data sheets "QA/QC Meter Check" box. You do not need to "Scan Blank" when doing this step. You can press the down arrow to move straight to "Scan Sample".

End of the Day Meter Check

At the last site of the day, follow steps 1-8 in the **Initial Turbidity Check Value** section to read the 1.0 NTU standard and record the value under the "End of Day Meter Check" on the VRAP Field Data Sheet.

Turbidity
LaMotte 2020we

Initial Turbidity Check Value

1. Press and briefly hold the power button to turn the meter on.

2. In main menu select "Measure" by pressing the ENTER button.

3. Scroll down using the down arrow to the setting that reads "Turbidity-With Blank" and press ENTER.

4. Carefully wipe off any water, dust and/or fingerprints from the "DI Blank" (0.0 NTU) vial with a Kimwipe only.

5. Open the lid of the meter and align the vertical white line located on the glass vial with the arrow under the meter lid.

6. Close the lid. Select 'Scan Blank' by pressing ENTER. This sets the meter to zero. *There will not be a numerical value displayed on the screen at this time.*

7. Remove the DI Blank vial and return it to the meter case.

8. Carefully wipe off any water, dust and/or fingerprints from the 1.0 NTU vial with a Kimwipe.

9. Open the lid of the meter and align the vertical white line located on the 1.0 NTU vial with the arrow under the meter lid.

10. Insert the vial into the chamber. Close lid. Select 'Scan Sample' by pressing ENTER.

11. Record the value at the top of the VRAP Field Data Sheet where it reads: "Initial Turbidity Meter Check Value". If the value is not 0.75 and 1.25 NTU, you need to calibrate (see calibration section below).

Turbidity Calibration

The turbidimeter only needs to be calibrated if the initial turbidity meter check is outside the range of 0.75-1.25 NTU.

1. If the reading for the 1.0 NTU standard is not reading "1.00" press (down arrow) until "Calibrate" appears on the LCD screen, and then press ENTER to select "Calibrate".

2. Use the up arrow or down arrow to change the highlighted digits on the display to read “1.00”.

3. Press ENTER to select “Calibrate”.

4. Press ENTER again to select “Set Calibration”.

5. Recheck the 1.0 NTU standard to ensure the calibration was successful by pressing ENTER again to select “Scan Sample”.

6. Remove the 1.0 NTU standard from the meter and return it to the case.

Measuring Turbidity

1. Rinse the vial labeled “Sample” or “S” with DI or sample water three times.

2. Fill the sample vial with river water by carefully and slowly pouring the water down the side of the sample vial to avoid introducing any bubbles.

3. Wipe any water, dust and/or fingerprints off the sample vial with a Kimwipe.

4. Open the lid of the turbidimeter and align the etched arrow on the cleaned Sample vial with the arrow under the meter lid.

5. Close the lid. Press ENTER to select “Scan Sample”.

6. Record the displayed turbidity reading on the VRAP Field Data Sheet in the column labeled “Turbidity (NTU)”.

7. If the turbidity value is greater than 10 NTU you should recalibrate the meter with the 10 NTU standard and take another reading. This will give a more accurate measurement of how high the turbidity level is. If you do recalibrate with the 10 NTU standard, be sure to indicate this under the “Comments” section on the back the VRAP Field Data Sheet. **Recalibrate with the 1.0 NTU at the next station to prevent the readings from being artificially elevated.**

8. Turn the meter **OFF** by pressing the power button

QA/QC Meter Check

At one of the stations during the sampling day measure and record a reading of the DI Turbidity Blank (0.0 NTU) standard. If the same sampling schedule is used throughout the monitoring season, the DI turbidity blank check should be conducted at different stations. Record the value, station, and time on the VRAP Field Data Sheet under the section that reads “QA/QC Meter Check” at the bottom of the page.

End of the Day Meter Check

At the last site of the day, follow steps 8-11 in the **Initial Turbidity Check Value** section to read the 1.0 NTU standard and record the turbidity value under the "End of Day Meter Check" on the VRAP Field Data Sheet.

NHDES-W-07-023

2019 Field Data Sheet
NH Volunteer River Assessment Program

RSA487:38 VRAP Group: _____ Date: _____/_____/ **2019** Start Time: _____

Volunteer Monitors *(First & Last Name):* _____

Time Dissolved Oxygen Meter Turned On: _____

Time of 1st Dissolved Oxygen Calibration: _____

Initial 1.0 NTU Turbidity Meter Check Value (+/- 0.25NTU): _____

Initial Conductivity Meter Check Value (2,000 std: 1,600–2,400 µS) :_____

NHDES Station ID	**Station Name Or Description**	**Time Sampled** (HHMM)	**Turbidity** (NTU)	pH Calibration Slope (95-105%)	**pH** (Units)	Dissolved Oxygen (Calibration Value)	Dissolved Oxygen (% saturation chamber reading)	**Water Temp** (ºC)	**Dissolved Oxygen** (% Sat)	**Dissolved Oxygen** (mg/L)	**Specific Conductance** (µS)
REPLICATE (REQUIRED DAILY)											

QA/QC METER CHECK : Station:_____ Time:_____

6.0 pH Check(5.7 – 6.3): _____ Turbidity Blank(0.0NTU) Check: _____

END OF DAY METER CHECK

Conductivity (2,000 µS std.): _____ Turbidity (1.0 std.):_____

Please complete backside…

Weather: ☐ Clear ☐ Cloudy w/o Rain ☐ Intermittent Rain ☐ Cloudy w/Rain ☐ Snow ☐ Snow-melt

Wind: ☐ Calm ☐ Breeze ☐ Wind **Rain Past 3 Days?** ☐ Yes ☐ No ☐ Unknown

Air Temperature (ºF): ☐ Below 30 ☐ 30s ☐ 40s ☐ 50s ☐ 60s ☐ 70s ☐ 80s ☐ 90s ☐ Above 90s

Water Level: ☐ Dry ☐ Very Low ☐ Below Average ☐ Average ☐ Above Average ☐High

Comments: (ie: swimmers, water color, algae, etc.) Please indicate NHDES Station ID.

Laboratory Samples: *(Please check parameters taken (if any) at each station. If the same parameter was taken at each location indicate 'all' in the station ID)*

Lab where the samples were relinquished to? ☐ **NHDES** ☐ PSU ☐ UNH ☐ Other:_____

Station ID	# of Bottles	Parameter 1	Parameter 2	Parameter 3	Parameter 4	Parameter 5
		Chloride	E.coli	Total Phosphorous (TP)	Other:	Other:

OFFICE USE ONLY:

Activity Date: _____

Date Entered: _____ By: _____

Date Proofed: _____ By: _____

Date QA/QC: _____ By: _____

End of Day Checklist: *(Check if Completed)*

All Meters:

Dry and powered off _____

Turbidity:

Rinse sample vial and fill with DI water _____

pH:

Rinse probe with DI water and blot dry _____

Return probe to storage solution _____

Dissolved Oxygen:

Rinse probe with DI water _____

Return probe in chamber w/ wet sponge _____

Specific Conductance:

Rinse probe with DI water _____

Return probe to chamber _____

Equipment Kit:

Remove used Kimwipes _____

Clean off dirt, dust and moisture _____

Please return data sheets to:

Ted Walsh
NH Volunteer River Assessment Program
29 Hazen Drive – PO Box 95
Concord, NH 03302-0095
p - (603) 271-2083 f – (603) 271-7894
ted.walsh@des.nh.gov

Use free **CamScanner** app on IPhone/Android to send in data sheets.