FIELD Standard Operating Procedure – pH
Volunteer Monitoring Program
Revised: 11/19/2014

PH Calibration Check and Field Measurement
(Orion Star A329 Portable meter)

FIELD CALIBRATION CHECK

1. Remove the pH probe from the storage solution bottle, loosening cap first.

2. Rinse the probe with deionized (DI) water then blot it dry with the soft Kim wipes provided in the sampling kit. Rinse the conductivity probe with deionized (DI) water and blot dry with Kim wipes.

3. Open the field pH 6.00 CCS bottle and place the pH probe AND Conductivity probe into the bottle. Make sure the probe is properly submerged. Stir the probe gently to dislodge air bubbles, if any.

-OR-
Keep conductivity solution and pH calibration check solutions together (rubberbanded or otherwise) to maintain consistent temperatures. Put each probe in it’s respective solution and the calibration checks can be done simultaneously.

NOTE: Make sure you are using fresh Calibration Check Standard (CCS) for each sampling date.

4. Press the (power/light) key to turn the Orion A329 meter on. This will automatically bring you to the measurement screen:

- Note: Press F3 (Channel) to toggle screen options (you can complete just the pH field calibration check using either the measurement screen that shows all three (3) parameters as shown above or you can complete the pH field calibration check using the measurement screen that shows both pH and Conductivity)

5. Press the measure key. Wait for the reading to stabilize (Stabilizing.... Ready AR) will begin flashing on the screen. When the reading has stabilized, Ready AR will stop flashing.
6. Record the reading in the appropriate field on the Field data sheet.* Repeat twice more for a total of three (3) readings and record these readings on the Field data sheet.

   - NOTE: If the calibration measurement is found to be outside of the acceptance range (5.9-6.1), agitate the probe to see if the reading changes and falls within the range. If it is still not within acceptance range, record the reading, make a note in the comments section on the Field data sheet and report the problem to the Volunteer Monitoring Coordinator.

**pH SAMPLE MEASUREMENT**

**Important Notes:**
Prior to taking pH sample measurements, ensure that the probe has had sufficient time (usually 5-10 minutes at a minimum) to acclimate to water temperature. This is usually accomplished by obtaining a sample and letting the probes rest in the sample water for 5-10 minutes then replacing the sample water prior to taking sample measurements.

Since the temperature for pH is tied to the conductivity probe, during sample measurement both the pH probe and the Conductivity probe must be in the sample to be measured.

1. Remove the probe from the storage solution bottle by slightly unscrewing the top to reduce the suction and pull the probe out.
2. Rinse the probe thoroughly with DI water, blot dry and put the probe into the collected water sample. Gently swirl the probe for about 20 seconds to ensure that no air bubbles are trapped on the probe.
   a. Most likely the probe is already in the water sample, as it is the last parameter measure during sampling.
3. Press the (power/light) on the meter to turn it on if it is not already powered on. If you don’t see pH on the screen, press the f3 key to toggle through to a screen that reads the pH measurements.
4. Press the **measure** key. **Stabilizing....** will appear on the screen. pH value may fluctuate while the reading is stabilizing. Allow the reading to stabilize, as indicated by the display lock icon and a beep. Once stabilized, record the pH reading and temperature on the field data sheet. Watch for drift in the readings, should be < 0.10 and Temp (°C) must be < 0.10 to meet data quality assurance requirements.
**NOTE:** When the sample’s conductivity is less than 100 μS/cm, the pH meter will take 10-15 minutes to fully stabilize in your sample. As the drift rate slows, the meter will lock onto a reading, so keep pushing the READ button to reactivate the meter. Once 10 minutes has passed, you can try taking your first measurement. The meter should lock onto a stable pH reading quickly. Check for drift using the criteria on your field datasheet. If you are not meeting the drift criteria, let the sensor equilibrate for another 5 minutes by pushing the READ button to reactivate the meter. If the pH measurements are still drifting after a total of 15 minutes, call the Volunteer Water Quality Monitoring Coordinator to discuss.

5. Three readings are required so press READ/enter again, let it stabilize, and record the reading on the data sheet two more times for a minimum of three readings.

6. After completing a minimum of three pH readings, turn the meter off. Remove the probe from the sample, rinse the electrode with DI water and gently blot dry. Place the probe back in the bottle containing the storage solution. Make sure the cap is tight.

7. Check to make sure that you have recorded three Calibration readings and at least three Sample readings. If you have had any problems, note those in the Comments section.

8. You have now completed all pH readings.