STANDARD OPERATING PROCEDURE
MAINTENANCE/CALIBRATION CHECKS OF DISSOLVED OXYGEN PROBES

INTRODUCTION

The YSI-85 multimeter is a hand-held field meter that measures oxygen, conductivity, salinity and temperature of the water. There is one YSI-85 meter in each field kit. Sometimes there are additional dissolved oxygen meters from partner programs which we also maintain and calibrate. When measuring dissolved oxygen, we also use a barometer to measure atmospheric pressure. The meters need to be maintained and calibrated per the following chart:

Instrument	Maintenance activity	Calibration interval	Calibration check interval
YSI-85	Clean electrode & replace membrane—beginning of each sampling period*	Calibrate SOP or per Streamkeeper protocol, in the field prior to each reading	Validate membrane integrity before & after replacing, and at the beginning and end of each sampling period*
Other DO meters	Maintain probe per manufacturer instructions	Calibrate per SOP or manufacturer instructions (Hydrolab Quanta is done indoors prior to each sampling run)	Validate membrane integrity before & after replacing, and at the beginning and end of each sampling period*
Barometer	Handle with care	Calibrate before each DO calibration check	Check before recalibrating

*"Sampling period" refers to any period of time during which the meter is used without further maintenance or calibration. Normally, this period is the month-long Streamkeepers quarterly monitoring session (see below); however, in some cases maintenance/calibration activity might occur in the middle of a Streamkeepers monitoring month (if a problem is noted), and in other cases the sampling period may be extended if monitoring is done for other projects that extend beyond Streamkeepers' normal monitoring sessions.

PRE-SEASON YSI-85 DO PROBE MAINTENANCE/MEMBRANE REPLACEMENT

Streamkeepers performs quarterly water-quality sampling during the following month-long sampling windows: January; April; August; and Sept. 15 - Oct. 15. (There is some leeway on either side of these periods, depending on weather conditions.) In addition, the meters are used for other monitoring projects throughout the year. Prior to each quarterly monitoring session and before and after any field data collection, the YSI-85 meters need to be maintained as follows:

***NOTE: Prior to removing any DO membrane, determine if any sampling has been performed subsequent to the last DO calibration check. If so, you must first perform a complete calibration check to confirm that the membrane passes QC criteria. (See later section in this SOP.) Otherwise the prior sampling data will be flagged.**

First, gather the equipment you will need:

1. "DO/Barometer Calibration Protocol & Data Sheets" notebook
2. YSI -85 meters located in each field kit, and any other meters as requested
3. YSI 5906 Membrane Cap Kit containing:
    a. new plastic DO membranes
    b. small nylon scrub brush
    c. quarter-sized sanding disk
    d. oxygen probe electrolyte solution
4. parts for other DO meters as needed
5. purified water
6. bucket
7. lint-free tissues
8. commercial ammonia cleaner
9. protective gloves and splash-proof eyewear

Cleaning Procedure:

1. Clean the DO probe first.

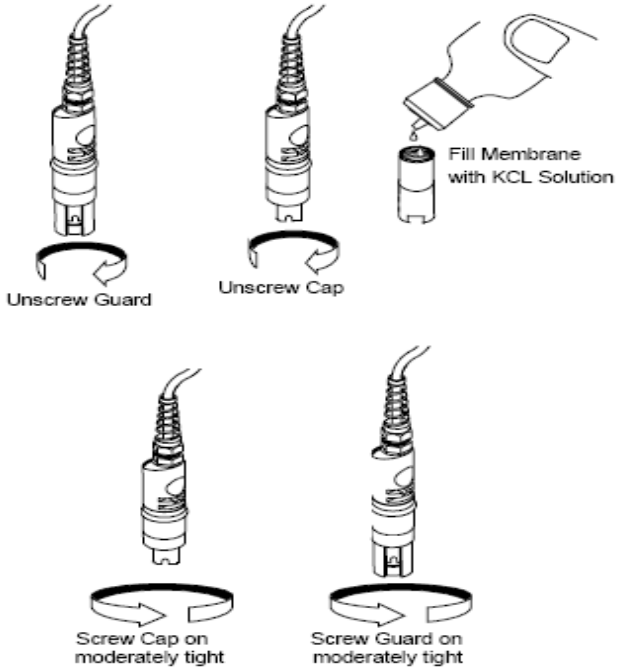
a. Unscrew the sensor guard at the end of the probe.
b. Unscrew and discard the old DO membrane cap.
c. Gently wet-sand the silver anode sides and gold cathode top, using the two different marked sanding disks in the Membrane Cap kit. Avoid intermingling the metals. Stop when darkening deposits have been wiped off – don't overdo it. Rinse with purified water and pat dry using lint-free tissues.
d. In the event the probe is stubbornly dirty and unshiny, you can soak it in ammonia overnight with the meter off and the membrane removed. The next day, rinse for 5 minutes in running water and repeat the sanding procedure.

2. Installing the new DO membrane cap:

a. Prepare a bottle of electrolyte solution according to the instructions on the bottle in the Membrane Cap Kit.
b. Rinse the inside of the new cap with the electrolyte solution, to get rid of any foreign material.
c. Add 15 drops of electrolyte solution into the new membrane cap.

d. Insert the cleaned electrode end of the probe into the membrane cap and screw the cap onto the probe until it is snug but not over tight. Some solution may leak out, indicating the membrane cap is indeed filled.
e. Examine the new membrane. It should not be loose, wrinkled, damaged or dirty. <u>There should be NO bubbles under it</u>. If there are problems, rinse, refill and reattach the membrane, or install a new one.
f. Check the sponge inside the meter's calibration chamber. If it's in tatters or seriously discolored, replace it. It should be wet but not too wet. Dampen with a few drops of purified water, or tip chamber to drain off excess water, as needed.
g. Store the probe back inside the chamber.
h. Record the date, your initials and maintenance information on the YSI Maintenance form in the maintenance/calibration notebook.

DRAWING OF YSI-85 PROBE FOR CLARIFICATION



DO METER ZERO-CHECK:

Before each quarter, the following procedure should be performed on the YSI-85 meters to assure that they are reading accurately in near-zero dissolved oxygen conditions, so that their internal "zero-dissolved-oxygen" point is being set properly:

1. Make a solution using 2 gm sodium sulfite/1000 mL DI water. (the sodium sulfite is in the lab) Stir to dissolve and allow to sit for at least 15 min.
2. Calibrate the DO instrument
3. Place DO probe in the sodium sulfite solution.
4. DO% reading should be 10% or less within 28 seconds and 2% or less within 5 minutes (the faster the better).
5. Record results on the data sheet.
6. If the reading fails to get to 2%, recondition electrodes and retest after allowing for a 1 hour warm up period.
7. Rinse the probe thoroughly in tap water before placing it back in the calibration chamber - this is important or it could mess up future calibrations.

***From Tim Grooms, Product Development Manager, YSI, 7/29/08**

DISSOLVED OXYGEN CALIBRATION CHECK

Performed at beginning and end of each sampling period

Streamkeepers' protocol calls for calibration of the YSI-85 DO meter in the field just prior to each measurement and for calibration of the Hydrolab Quanta meter indoors prior to each sampling run. If the meters are properly maintained and calibrated, they should provide readings within the manufacturers' stated accuracy ranges. However, whereas electronic field meters for other parameters such as turbidity and pH can be calibrated and checked using NIST-traceable standard solutions, in the case of dissolved oxygen, no such standard exists. Therefore, an alternative approach is often used whereby the calibrated meter is tested side-by-side in a uniform body of water against a chemical (azide-modified Winkler) titration which directly reads the amount of oxygen dissolved in the water.

First gather the equipment you will need to take with you in the field:

1. "DO/Barometer Calibration Protocol & Data Sheets" notebook
2. Clipboard and pencils
3. DO meters (you can use a field kit bag to transport them); Hydrolabs (and possibly other meters) need to be calibrated indoors before leaving for the field
4. Purified water, lint-free tissues
5. Spare batteries for meters
6. Calibrated barometer
7. Calibration foam block for each YSI-85 meter

If also doing the Winkler, bring with you:

1. The Winkler Sample box (big black toolbox) which includes:
    - **a.** 3 BOD bottles and glass stoppers (if missing, they are in the lab)
    - b. Plastic caps for each bottle
    - **c.** Purified water
    - **d.** Manganous sulfate solution with its eyedropper (2 mL pipette)
    - **e.** Alkali-iodate-azide reagent with its eyedropper (2 mL pipette)
    - **f.** Protective gloves
    - **g.** Splash proof goggles and eye wash solution
    - **h.** Square plastic Winkler Sample jar
    - **i.** Round Winkler Sample bottle with the long hose.
2. Long, heavy-duty sampling gloves
3. Footwear (preferably chest waders) for sampling in the stream
4. Tarp to cover the ground. An umbrella can also help when raining

Steps to calibrate (YSI-85) or stabilize (Hydrolab) the meters:

1. Turn on meters. Erase previous data. (YSI-85: Depress the **MODE** button repeatedly until the 85 displays **ErAS**. Then depress and hold the **DOWN** arrow and **ENTER** buttons simultaneously for ~5 sec. **DONE** will flash on the display for 1-2 sec. The instrument will automatically change to normal operation after completion.) (Hydrolabs: Press the left arrow button which moves to Review at the bottom of the screen, press Enter, press Enter and you will see "Clear" and "Clear All" at the bottom, choose one and press Enter to erase.
2. Soak the calibration foam blocks in tap water and lightly ring out, should be a little drippy
3. Take the probes out of the meter chambers, check for bubbles under or dirt on the membranes, clean if dirty.
   i) YSI-85:
      (1) Place probes in the stream to stabilize temperature
      (2) Once the temperature stabilizes, shake off probes and remove any large water droplets from membrane
      (3) Place probe in foam block leaving space between end of probe and bottom of foam to prevent the foam from touching the membrane
   ii) Hydrolab:
      (1) Install calibration cup and fill with water up to the bottom of the DO membrane O-ring. Set upright in the meter tote box.
      (2) Place black chamber cover loosely upside down over calibration chamber
4. While soaking the YSI-85s, check the sponges inside the chambers; if dry, add a few drops of purified water. If soaking wet, take and wring out.
5. Get barometer and data sheet and begin to record information (date, samplers, site, estimated speed of water current, barometric pressure, membranes replaced, etc.).
6. Wait for the DO and temperature readings to stabilize on all meters, approximately 15-20 min.:
   (a) YSI-85: for 2 minutes, both DO% and Temp. (°C) remain within ± 0.1.
   (b) Hydrolab: Temp. & DO mg/L as stable as possible; note how long the mg/L remain stable within ± 0.01.
7. Calibrate the YSI-85s:
   (a) Use two fingers to press and release both the UP and DOWN arrow buttons simultaneously.
   (b) The LCD will blink with "ALT X100". Adjust to ZERO if it's not already there, then press ENTER once. (We don't use altitude since we use barometric pressure.)
   (c) You should now see CAL in the lower left, the calibration value should be displayed in the lower right and the current % (before calibration) should be on the main display. Press ENTER. The display should read SAVE and then should return to the normal operation mode.

8. Calibration Check for the Hydrolabs:
    a. Turn on meter. It will take about 30 seconds for the meter to run through self-checks, then the screen will change to one with "Temp" at upper-left and "Screen" flashing at bottom-center.
    b. Hit ENTER key (↵) Check and record voltage. Generally, you should replace batteries if <3.5 V, or if <3.2 V if you won't be using the stirrer. The machine should take readings properly if the working voltage is ≥3 V and does not show the low-battery icon in the lower right-hand corner. However, operating the stirrer reduces the working voltage by about 0.3 V, and at working voltages <3.5 V, it's possible that the display will show dashes instead of digits or be missing parts of the display; if you notice these things happening you should replace the batteries, though calibrations should be fine if they were performed at ≥3 V.
    c. Remove the storage cup so that it will hold the water when removed. Set aside with the water still in it.
    d. Rotate the black turbidity sensor ring out so you can see the sensors beneath. The DO membrane is the stretched plastic membrane with a black O-ring around the sides. Gently shake all droplets off this membrane.
    e. Check membrane for wrinkles, bubbles, etc. and note as needed on data sheet. (If membrane needs replacement, make sure that a post-sampling Winkler test does not have to be performed to verify the data already gathered with that membrane.)
    f. Rotate black turbidity ring back to center position. Attach the calibration cup, the one with an open top. Turn upside down, pour in the water from the storage cup and top off as needed with room-temp de-ionized water or tap water (conductivity <0.5 mS/cm) to bring the water level up to the O-ring.
    g. Re-check for droplets on membrane and carefully remove with tissue or by blowing.
    h. Turn the black calibration cup cover upside down (concave upward) and lay it over the top of the calibration cup. Set probe upright in a secure spot, without kinking the cable.
    i. Hit ENTER key (↵) to go to screen with DO mg/L (Screen 1), and wait for stabilization:
       *** ± 0.01 mg/L for 2 minutes (similar to criterion for stabilization of YSI-85) ***
    j. When stabilization has been achieved, record the mg/L reading.
    k. Record the temperature reading at stabilization.
    l. Navigate to CALIB screen using the left/right arrow key, and then hit ENTER
    m. Choose "DO %" (down arrows + ENTER).
    n. Record barometric pressure in mmHg from a calibrated barometer.
        i. If barometer reads inHg, convert to mmHg by multiplying by 25.4. If barometer reads in mbar, convert to mmHg by multiplying by 0.75.

o. On the data sheet, record barometric pressure and information about the barometer you're using.
p. On the Hydrolab DO% calibration screen, adjust barometric pressure as needed using up or down arrows, then hit ENTER.
q. Hit "ESC" to get to Screen 1; record the post-calibration DO mg/L reading.
r. Record the expected DO mg/L reading from the DO solubility chart (attached). Your post-cal DO should be within 2% of the expected reading. If it's not, allow to sit and stabilize a while longer, then recheck. Record the DO mg/l and temperature on the field sheet.

Side-by-side meter vs. Winkler trials

Basic procedure is meter samples, Meter sample, Winkler samples, Meter Sample, and Drift Checks

Meter Sampling Trial 1: Pre Winkler meter readings

1. Select the sampling site. It should be in a place with adequate depth to collect Winkler samples (see below), good mixing, no surface turbulence, and, if possible, flow velocity a minimum of 1 foot per second.
2. Record the time and take water temp, DO, and conductivity readings from all meters in the stream as follows:
    a. Set the probe screens to DO% saturation.
    b. Take the probes out of their foam sleeves, and wearing the big gloves, hold the probes as far down in the water as the top of the Winkler-sampler will be when you collect that sample (see instructions below), with the probes facing slightly upstream from perpendicular. You will feel a little extra pressure against the probes at this point. This is the target angle to hold the probes in the water.
    c. If estimated water flow is < 1 fps, YSI-85s must be waved back and forth horizontally in the water column; Hydrolabs can have the stirrers turned on.
    d. Hold until stabilization: DO sat ± .5% & Temp ± 0.1° for 30 sec. For the YSI-85, then press **ENTER** and hold for 2 seconds. This will save the readings under "Site 01."
    e. For the Hydrolabs, hold probes as described above and allow to stabilize: ± 0.01 mg/L for 30 sec
    f. Use the arrow keys and select STORE along bottom of screen and hit ENTER to save your readings
3. Place the probes back into a safe, clean place in the stream.
4. Retrieve and record saved readings on field sheet.

Winkler sampling steps:

If water is > 1 ft deep, use the square Winkler collection bottle:

1. Open the Winkler Sampling box.
2. Take out BOD bottle #1, remove the stopper, place it in safe location, and insert BOD bottle into the Square Winkler Sampling jar.
3. Replace the Winkler jar lid by inserting the long tube into the BOD Bottle; tighten.
4. Stand d/s from the Winkler jar and immerse it mid-stream and mid-depth with the exhaust (high) tube d/s.
5. Once the bubbles stop, agitate the jar a bit to force any small bubbles out, then remove the jar from the water without squeezing it, and hand it to the person near the shore. Write the sample time next to Bottle 1 on the data sheet.
6. Person on the shore removes BOD bottle from collection jar; taps the BOD bottle on the sides near the neck using the glass top to release any extra air bubbles in the sample; puts the glass top on and places it in the sample box.
7. Stabilize the DO—procedure follows.
8. Empty sampling jar and install next BOD bottle into it using previous procedure.

9. Hand sampling jar to person in the water so they can start collecting the next sample. Record time on data sheet for each sample.
10. Repeat the sampling step for the last BOD bottle.

Low Water Collection: If water < 1 ft deep, you must use the 1 liter bottle with the tubing:

1. Pinch off the flexible tubing above the black plastic tube so water will not leak.
2. Submerge and fill the collection bottle with open end facing upstream.
3. Keeping hose pinched, lift collection bottle out of water keeping it filled to top.
4. Insert the black tube into a BOD bottle.
5. Release the water and let it fill and spill out over the top of the BOD bottle until the collection bottle is nearly empty.
6. Pinch off the hose before the collection bottle empties and remove hose from BOD bottle.
7. Stabilize sample as follows.

Stabilizing the samples:

1. The BOD bottles need to have the DO stabilized immediately after collection by adding two chemicals as follows; wear gloves and goggles and have eye-wash at hand:
    a. Take the 1st pipette out of the manganous sulfate solution (marked #1 on red top). Check and make sure it is filled with approximately 2 mL of solution and then add it to the BOD #1 bottle by immersing the tip of the pipette into the sample before injecting the solution. Make sure when you add solution you do not squeeze any air bubbles into the sample. Keep squeezing the top of the pipette when you replace it in the sulfate solution so that it will be filled for the next time.
    b. Take the 2nd pipette out of the alkaline-azide solution, (marked #2, green top) check and make sure it has approximately 2 mL of solution and add it to the BOD #1 bottle using the same procedure as before.
    c. Adding these solutions turns the water brown and chemically converts the free oxygen into a manganese precipitate which falls to the bottom of the bottle. Put the glass stopper in the BOD bottle and invert slowly a couple of times to mix the contents. The solution is now stable to take to the lab.
    d. Add a few milliliters of DI water around the stopper to form a water seal and then cover the bottle top with a plastic cap.
    e. Put the BOD bottle back into the Winkler box.
2. Repeat all the sampling steps for the other two BOD bottles and secure the samples in the Winkler box for transportation to the lab.

Meter Sampling Trial 2: Post Winkler meter readings

1. Record the time and take a second round of readings from all meters, following the "Pre Winkler meter readings" procedure above. If you haven't erased data from the first round, remember that this time the readings will be saved as #02.
2. Place YSI probes in foam sleeve in a safe location for next step. For the Hydrolabs, replace calibration cup and set up as you did for calibration.

Post Winkler Meter Drift Check

1. Record time on data sheet under "Meter Drift Check," plus the Post-sampling pressure.
2. Repeat stabilization procedure:
    a. YSI-85: for 2 minutes, both DO% and Temp. (°C) remain within ± 0.1. Then record the DO%; it should be within ±2% of 100%.
    b. Hydrolab: Temp. & DO mg/L as stable as possible; note how long the mg/L remain stable within ± 0.01. The stabilized mg/L reading should be within ±0.2 of what it was when first stabilized at the beginning of the field visit.
    c. Record the stabilized DO % or mg/L and temperatures as called for on the data sheet.
3. You can now pack everything up.

Recording meter data from sampling trials

1. Record Pre-Winkler and Post-Winkler meter sampling trials from stored data:
    a. On the YSI-85, you do this by pressing MODE repeatedly until "rcl" is displayed on the screen. The number below "rcl" should read site 1 first, then site 2. (Use the last two sites if previous info was not erased.) Once on the right site, press ENTER successively to get and record the readings in the following order:
        i. Temperature - record to the nearest 0.1% C
        ii. DO Saturation %
        iii. DO Concentration – record to the nearest 0.1 mg/L
        iv. Conductivity – use the temperature-compensated conductivity (2nd screen)
    b. On the Hydrolab, use the arrow keys to move to REVIEW on the bottom line of the screen
        i. Press ENTER, the different screens will flash showing the information you need, there is no way to keep the screens from changing so you need to write your results as they come up.
2. Record this on the data sheet for both Pre- and Post-Winkler meter sampling trials.
3. Note the range in the conductivity readings. We don't record these in the database, but a disagreement of >5% should be cause for concern.
4. After recording data, erase the readings from the meter:
    a. YSI-85s: Press **MODE** button until "**ErAS**" appears on the screen; Press **DOWN** arrow and **ENTER** simultaneously for approximately 5 seconds; When "**DONE**" flashes on the screen for 1-2 seconds, the data has been erased and the meter will return to normal operation.
    b. Hydrolabs: Use the arrow keys to move to REVIEW at the bottom of the screen and select either CLEAR or CLEAR ALL and press enter.

WINKLER TITRATIONS

Equipment (either above refrigerator or elsewhere in lab; ask lab manager for assistance):

1. Graduated cylinder burette with stopcock at bottom, 25 mL/ with 3-way stopcock
2. 3 Erlenmeyer flasks, 250 mL (number them 1, 2, & 3)
3. Volumetric pipette 10 mL stored in "Streamkeepers" cardboard tube at back of counter
4. Pipette suction/dispenser gadget
5. Magnetic stirrer
6. Stirring bars (one for each sample)
7. 203 mL Volumetric flask (plastic flask cut to hold exactly 203 mL when completely filled above the top; a rubber gasket around the top helps to deliver this flask's contents into the Erlenmeyer flasks)
8. Concentrated sulfuric acid
9. 2 mL disposable pipette stored in glass jar, for acid transfer
10. Squirt bottle (250 mL) with starch solution
11. Sodium thiosulfate, 0.025 M (Check pull date – shelf life critical)
12. Potassium bi-iodate, 0.025 M (Check date – good 18 months from mfr. expiration date)
13. Rubber apron
14. Nitrile gloves
15. Acid face shield

Ensure all chemicals are within the expiration date and there is enough quantity to complete all 3 samples.

If current Sodium Thiosulfate and/or Potassium Bi-iodate will be past their expiration date or in insufficient quantity for the next calibration session and if new solution is available, you need to do a chemical drift check as explained later.

Titration Steps:

*NOTE: dilute the chemicals going into the sink during the process with a continuous stream of tap water to prevent damage to plumbing.

1. Put on the plastic apron and Nitrile gloves.
2. Remove the plastic caps from the BOD bottles.
3. Pour off the water seal and invert the bottle several times to mix the floc.
4. Allow the floc to settle into the lower half of the bottle while rinsing needed flasks and stirrers.
5. Put on the face shield and wear until finished with sulfuric acid.
6. Remove the glass stoppers and put sample bottles in sink.
7. Using a pipette, draw and add 2 mL of sulfuric acid to each sample bottle. Keep the tap water running.
8. Rinse the pipette and put the cap securely on the acid bottle.
9. Put the stopper back on the bottles and invert them several times over the sink until the precipitate has completely dissolved.

10. Fill the 203 mL volumetric flask to the top with the DO sample #1 and transfer the sample to the #1 Erlenmeyer flask. Repeat for samples # 2 and 3.
11. Carefully uncover the sodium thiosulfate burette (a purple bag sits over it for protection from light and dust).
12. Ensure there is enough thiosulfate solution in the reservoir to complete the three trials in the burette. Add solution to the reservoir if necessary.
13. Empty any of the sodium thiosulfate left in the burette.
14. Turn the stopcock valve so the handle faces the burette body (directly away from you toward the wall).
15. Tighten the valve on the rubber bulb and pressurize the reservoir. Pump the rubber bulb gently to raise the solution, drain, refill and drain twice more to rinse, then fill the burette until the sodium thiosulfate escapes from the top nipple.
16. Turn the stopcock 90 degrees and loosen the valve on the bulb to allow the excess solution to return to the reservoir.
17. Drop a stir bar in the first sample flask and place it centered on the magnetic stirrer. Place the stirrer and flask centered under the burette valve to ensure drips fall cleanly into flask.
18. Turn the stirrer to the lowest setting.
19. Turn the stopcock valve handle toward you (there is a guide mark) and begin adding the sodium thiosulfate drops. You can add drops somewhat quickly at first but slow down when the sample **starts** turning a pale yellow.
20. Now, SLOWLY add one drop at a time until the sample turns very pale yellow and stop titrating. (It helps to place white paper between the burette and sample bottle.)
21. Add 1 to 2 mL of the starch solution into the flask using the squirt bottle until the sample turns a dark purple.
22. Continue to titrate the sample, adding drops VERY SLOWLY until the purple color just disappears and the sample is clear. Record the volume of solution used for each sample, to the nearest 0.1 mL. (For values halfway between the 0.1 mL marks, round down even numbers and round up odd numbers.)
23. If you have ANY doubt that you went past the end point, you can check by adding a drop of potassium bi-iodate into the flask with a dropper that delivers 20 drops per mL, identical to the burette. If the end point is correct, the purple color should reappear. If more than one drop is required, then the end point was overrun.
24. If the end point was overrun and you back-titrated the sample with the bi-iodate standard, correct the final value (1 drop = 0.05 mg/L using a disposable 2 mL pipette) and record on the data sheet.
25. **Sodium Thiosulfate Normality Check:** When the sample has been titrated to its end point, add 10 mL of the bi-iodate standard to the sample using the volumetric pipette in the cardboard tube. Record this "nominal volume" on the data sheet. Refill the burette with sodium thiosulfate and re-titrate back to clear. Record this "thiosulfate normality check" volume.
26. Titrate the other two samples following the same steps as the first. Make sure you refill the burette and dab any excess fluid from the burette tip between each sample.

27. Wash the glassware and put away all liquids and equipment. Drain the thiosulfate burette into its reservoir and cover with the bag. **Check the dates and amounts of all solutions used to ensure there will be adequate quantities of unexpired liquids for the next calibration activity. If not, inform the office staff immediately.**

Chemical Drift Check Procedure

Perform this step if current Sodium Thiosulfate and/or Potassiumium Biiodate will be past their expiration date or in insufficient quantity for the next calibration session, and new solution is available.

1. As each of the Winkler titration samples is completed, **do not discard**. Set aside and complete all the titrations.
2. Discard the chemical being replaced with the new chemical. In the case of the Sodium Thiosulfate, rinse the burette with the new solution at least three times as before. Put information about the new chemical being used on the data sheet, in the first row labeled "Drift ✓".
3. Perform Sodium Thiosulfate normality checks on the samples as before.
4. Record results from these normality checks on the data sheet.

Once you have finished this DO calibration check procedure, YOU are responsible for entering the new data into the SK database. Once the data have been entered (see below), you will run a database report whereby the database will tell you if the instruments have passed their quality control criteria. If not, you will need to troubleshoot problems and then re-run the procedures. (Usually, failed meters are a result of a bad stabilization at the stream.) Once the database report is finalized, print it, staple it to the front of the data sheet, 3-hole punch these pages, and place them in the calibration notebook behind the "completed data sheets" tab, with the most recent data sheets on top.