

## Directions for Performing Physical/Chemical Tests at Euclid Creek

### APPROACHING THE CREEK

- Safety is the primary concern. Never sample if it cannot be done safely
- On cold or rainy days refer to INCLEMENT WEATHER instructions in this manual for procedure modifications. Do not attempt to break through ice to collect water!
- Sites at bridge crossings allow easy sampling of creek water from above and good visibility of the creek and surroundings

### COLLECTING A SAMPLE

- The water sampler is located in the green supply box
- Lower the sampling cup into a free flowing area of the creek deep enough to fill the cup, try not to trap bottom sediments, reel in the cup
- Collect enough water to fill Sediment Stick (procedure follows), complete tests or fill optional 1 liter Nalgene® bottle
- Water sample remaining in sampling cup is used for completing Ammonia, Phosphate, pH, and Conductivity measurements (procedures follow)

### SEDIMENT STICK (TURBIDITY OR SUSPENDED SOLIDS)

- Fill the stick with stream water (keep adding water from the plastic beaker or other sample holding device until it is full)
- Empty water from the stick until you can just see the black dot at the bottom of the stick
- Record the height of the water in the stick on the data sheet to the nearest  $\frac{1}{2}$  inch
- Dump out all of the water and repeat the process
- Record the second height on the data sheet
- Record the turbidity measurements from the attached chart (yellow sheet located in manual titled *Estimating Total Suspended Solids: TSS*)
- Empty the water from the stick

*Measure turbidity again using the method on the next page*

## **TURBIDITY using HACH DR/850 Colorimeter**

- Turn on the colorimeter by pressing the **EXIT/ 0** button
- Remove the cover from colorimeter
- Obtain the two sample cells marked ***DI WATER*** and ***TURB/PO<sub>4</sub> SAMPLE***; the DI water sample cell will already have distilled water in it
- **Wipe** the outside of the ***DI WATER CELL*** with a lint-free paper towel (provided in kit) to remove any fingerprints and water droplets
- Place the ***DI WATER CELL*** into the hole in the colorimeter and place the cover on top of the sample to block out all of the light
- Press **PRGM 9 4 ENTER**
- The colorimeter should show **SUSLD** at the bottom of the screen
- Press **ZERO**
- The colorimeter should read 0 in a couple of seconds
- Remove the ***DI WATER CELL*** from the colorimeter
- Rinse the ***TURB/PO<sub>4</sub> SAMPLE CELL*** three times with creek water then fill to the 10 ml mark with creek water, using a clean plastic pipet if necessary
- **Wipe** the outside of the cell with a lint-free paper towel
- Place the ***TURB/PO<sub>4</sub> SAMPLE CELL*** in colorimeter and place cover on top
- Press **READ**
- Record the value on the data sheet
- Remove the ***TURB/PO<sub>4</sub> SAMPLE CELL*** from the colorimeter; set it aside, it will be used again later

*Proceed immediately to the AMMONIA procedure on the next page*

## AMMONIA TEST PROCEDURE using HACH DR/850 Colorimeter

- Remove the cover of the colorimeter
- Turn the colorimeter on by pressing the **EXIT/ 0** button
- Press **PRGM 6 4 ENTER**; the colorimeter should show NH<sub>4</sub>, NH<sub>3</sub>-N, OR NH<sub>3</sub> on the bottom of the screen (these are the units of measure)
- Use two clean cells, they are marked **NH<sub>4</sub> BLANK** and **NH<sub>4</sub> SAMPLE**
- Rinse the **NH<sub>4</sub> BLANK CELL** three times with distilled water from the squirt bottle then fill to the 10 ml mark with distilled water from the squirt bottle, use clean plastic pipet if necessary
- Rinse the **NH<sub>4</sub> SAMPLE CELL** three times with creek water then fill to the 10 ml mark with creek water, using a clean plastic pipet if necessary
- Add the contents of 1 **AMMONIUM SALICYLATE** powder packet to each cell
- Cap each vial and shake each for 30 seconds
- Press **TIMER** and **ENTER**
- The first reaction will take 3 minutes, all of the solid will dissolve and the solutions will turn yellow
- After the 3 minute period has elapsed, add the contents of 1 **AMMONIUM CYANURATE** powder packet to each cell and cap and shake vigorously for 30 seconds. All of the powder will dissolve
- Press **ENTER**
- The second reaction will take 15 minutes and the **NH<sub>4</sub> SAMPLE** solution will turn green if ammonia is present

NOTICE: Tests for **Dissolved Oxygen, pH, and Conductivity** may be completed during the 15-minute waiting period. When working with other instruments, **listen for the beep** of the timer and complete the ammonia test immediately.

*The remainder of the AMMONIA procedure is on the next page*

### AMMONIA TEST PROCEDURE using HACH DR/850 Colorimeter

- After the 15-minute period has passed, wipe the outside of both cells with a lint-free paper towel
- Place the ***NH<sub>4</sub> BLANK CELL*** into the colorimeter, place the cover over it and press **ZERO**; The colorimeter will now read 0
- Remove the ***NH<sub>4</sub> BLANK CELL*** and place the ***NH<sub>4</sub> SAMPLE CELL*** into the colorimeter, replace the cover and press **READ**
- Record the value and units of measure (NH<sub>4</sub>, NH<sub>3</sub>-N, OR NH<sub>3</sub>) on the data sheet

Should the reading be **UNDERRANGE!** - record the value as **UNDERRANGE**

If the reading is **OVERRANGE!** - record it as **OVERRANGE** on the data sheet

*Complete remaining tests.*







### DISSOLVED OXYGEN (DO) using HACH HQ 40d

- Attach the probe to the unit and secure the connection
- Turn on the meter by pressing the **⓪** button
- Lower or place the probe directly into the creek - if cord not long enough, immerse probe into collected sample
- Press the GREEN ("Read") button; when the meter has stabilized, the reading will be displayed in mg/L
- Write the dissolved oxygen concentration (mg/L O<sub>2</sub>), %, temperature (°C) and atmospheric pressure (mmHg) values on the data sheet after the meter stabilizes
- Shut off the meter by pressing the **⓪** button

*Disconnect the probe; store probe and meter in case*

## MEASUREMENTS using HACH Pocket Pro+ (black & blue meter)



- Obtain a fresh creek water sample.
- Remove the clear plastic cap from the bottom of the Hach Pocket Pro+ meter
- Press  to turn the tester on
- Rinse the sensor on the bottom of the meter with distilled water from the squirt bottle
- Pour enough creek water sample into the small sample cup to reach the "FILL" line
- Immerse the sensor of the meter into the sample cup
- Record Conductivity reading after the meter stabilizes (variation of +0.1 units is normal) on the data sheet. Circle units.
- Keeping the meter in the creek sample, use  to go to the next reading.
- Record TDS reading. Circle units.
- Keeping the meter in the creek sample, use  to go to the next reading
- Record Salinity reading. Circle units.
- Keeping the meter in the creek sample, use  to go to the next reading
- Record pH reading.
- Keeping the meter in the creek sample, use  to go to the next reading
- Record Temperature reading. (should be °C)
- Pour out creek sample. Rinse the sample cup with distilled water.
- Rinse the probe with distilled water from the squirt bottle
- Shake off excess water from the probe and pat it dry with a lint-free paper towel
- Replace the clear plastic cap on the bottom of the probe
- Hold  until power turns off.

## REACTIVE OR MONO PHOSPHATE using HACH DR/850 Colorimeter

- Locate the **TURB/PO<sub>4</sub> SAMPLE CELL** used in the Turbidity procedure; **wipe** the outside of the cell with a lint-free paper towel, and place it in the colorimeter
- Turn the colorimeter on, if it is not still on (**EXIT/ 0** button)
- Press **PRGM 7 9 ENTER**; the colorimeter should read **P, P<sub>2</sub>O<sub>5</sub>, OR PO<sub>4</sub>** at the bottom of the screen (these are the units of measure)
- Place the cover over the cell
- Press **ZERO**
- Remove the cover and **TURB/PO<sub>4</sub> SAMPLE CELL**
- Remove the **TURB/PO<sub>4</sub> SAMPLE CELL** cap and add the contents of 1 foil Phosphate RGT (or PHOSVER 3) powder packet
- Recap the cell and shake vigorously for 30 seconds
- Note: not all of the powder will dissolve
- Press **TIMER** and **ENTER**
- The reaction will take 2 minutes and the solution will turn blue if phosphate is present
- After the 2 minute period wipe the outside of the cell with a lint-free paper towel
- Place the **TURB/PO<sub>4</sub> SAMPLE CELL** in the colorimeter, place the cover on top
- Press **READ**
- Record the value and the units of the measurement (listed as either **P, PO<sub>4</sub> OR P<sub>2</sub>O<sub>5</sub>** at the bottom of the screen) on the data sheet

*Should the reading be **UNDERRANGE!** - record the value as **UNDERRANGE***

*If the reading is **OVERRANGE!** - record it as **OVERRANGE** on the data sheet  
Continue on to next page*

## AFTER YOU HAVE COMPLETED ALL OF THE TESTS

- Make sure that all of the solutions in the sample cells (except the DI water cell) have been emptied to soil away from the stream.
- Rinse each cell with distilled water from the squirt bottle. Rinse each cell at least three times
- Complete the data sheets or fill out the google form: <https://forms.gle/nZMBowrU5vL9hvqb9>
- Scan or take a photo and email data sheet (front and back) to [euclidcreekmonitors@gmail.com](mailto:euclidcreekmonitors@gmail.com)
- Place completed sheet back in kit
- Place all trash into the trash.
- Turn off all meters and the colorimeter

Place all equipment and materials into their containers; you should have the following:

1. *Plano* brand 'tackle box' with the colorimeter, Pocket Pro pH multi meter, vials, chemical packets and lint-free paper towels
2. light blue case with the dissolved oxygen meter/probe cable
3. green case ('dry box') with the waste bottle and distilled water and squirt bottle, sample bottle and plastic sampler (on a string)
4. turbidity stick and cap
5. the Instruction Manual you are currently reading!

**Thank You for Participating!**