NEW YORK HARBOR SEALS

Standard Operating Procedures

Project Name	New York Harbor SEALs HRE Water/Air Quality Monitoring Program (Lower Manhattan + Governors Island)
Agency	NY Harbor Foundation + Urban Assembly New York Harbor School
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Project Website	www.harborseals.org
Agency Website	www.nyharborschool.org

Wednesday Sampling Schedule:

3:00p 8th period CTE class (12th grade SEALs) will prepare gear for the whole group;
Senior SEALs get outerwear and pick up snack from school aide;
Enterolert gear is placed on table ready for when samples arrive

3:35p 10 + 11th grade SEALs pick up outerwear, pack for the night, and go to room 320 at 3:45.
Sam Janis picks up golf cart and drives it to the front of the building; get outerwear and meet back in room in 320 by 3:45
Lunch – 10th grade take bag lunches with them to Manhattan; 11-12th grades leave lunch in room 320
1 push cart must be left empty in front of the HF room.
Volunteers convene at 320.

3:45 SEALs bring gear down in 3 push carts;
GI gear (G1 + G2 teams) is left in front of the Harbor Foundation (HF) room;
M1 + M2 teams walk Manhattan gear to ferry;
1 push cart will remain empty in front of HF;
Seniors eat lunch in cafeteria and make sure to wash hands when finished;
Sam drives Mr. G and/or volunteers to ferry on golf cart;

3:55 Volunteers and Team Manhattan arrive at ferry;
Sam drives back to Harbor School (NYHS) to depart with Team GI;
Seniors leave to GI sampling stations;
Team Manhattan can eat snack on ferry but must wash hands when finished

4:15 Ferry arrives at Manhattan and 2 teams disperse to sampling stations

4:25 Water samples must be taken by all 4 groups simultaneously;
Measure Temperature + Dissolved Oxygen on site;
Get three sample vials (triplicates) per station;
Add sample vials to cooler right away;
Follow Sampling Protocols below

4:50 Manhattan team (10th grade, Mr. G, Volunteers) heads to ferry and drops off gear at BMB;
GI team (11 + 12th grades) head to NYHS rm. 320

5:15 GI team is dismissed;
Manhattan team leaders or 2 volunteers return with Mr. G to NYHS with gear;
Sam drives golf cart to Soissons dock to pick up crew + gear;
GI team prepare Enterolert for own duplicate samples;
*Make sure not to leave the samples out of the cooler longer than it takes to get the 10 ml for Enterolert

5:25 Ferry arrives at GI;
G2 meets heads down to HF to get empty push cart and take it to the front of basketball court by 5:30

5:30 G2 gets gear from golf cart, get elevator key, and take gear to room 320 to sample for Enterolert;
G1 starts to put Manhattan gear away and clean alpha bottles;
Once Enterolert sample has been processed, sample vials are taken immediately to the freezer with ice packs;
Clean up

5:45 Stop work, put up chairs, grab personal gear, and head to ferry

Teams

M1 – Manhattan West side

M2 – Manhattan East side

G1 – Governors Island West side

G2 – Governors Island East side

Permission slips

10th grade – Should run from 3:35 – 5:15 and dismissal from BMB
11 + 12th grade – Should run from 3:35 – 5:45 and dismissal is from NYHS

Field Work Gear

DO kits
Nutrient Test Strips
Sample Vials
Thermometers
Refractometer
Rolling Cart
Beta Bottles
Bucket with string
Squirt Bottles
Clip Board
Data sheet
Sheet protector
Pencils
Stop watches
Sharpie
Orange

Lab Work Gear

Nutrient Test Strips
Enterolert kit (iron, media, trays, tray saddle, pipette, tips, etc.)
Squirt bottle
Chronometer
Incubator
Sharpie

Enterococcus (MPN) with IDEXX Enterolert:

***** Notes: After incubation, the Enterolert trays must be handled as Medical (Infectious) Waste and disposed of properly. *****

Consumables:
Sterile 100 ml sampling bottles, Enterolert media & trays, sterile water.

Reusable Equipment:
Sealer system for Enterolert trays, incubator capable of holding 41˚C, UV light for assessing positives. A sealer and microbiological incubators exist at LDEO. The trays also can be sealed using a standard laundry iron and assessed for positives with a hand-held UV source.

Procedure: (More detailed instructions are available on the manufacturer's website: http://www.idexx.com/view/xhtml/en_us/water/enterolert.jsf#5 There also is a YouTube video available: http://www.youtube.com/watch?v=B5w_zPduf8U)

1. Collect sample using microbiologically uncontaminated sampling equipment. Gloves should be worn when handling sample. Periodically, collect a sample of sterile water only to check background levels of technique.
2. Dilute sample 1:10 with sterile water (e.g. put 10 ml of original sample in sampling bottle and fill to 100 ml with sterile water).
3. Add pre-measured media from Enterolert kit & dissolve.
4. Pour sample into open end of Enterolert tray. Put tray into waffle grid and seal tray.
5. Incubate at 41˚C for 24 hrs.
6. Examine wells with UV light source & count positives in both large and small wells.
7. Look up MPN on chart and multiply by dilution factor to get final MPN.

IDEXX
51-Well Quanti-Tray®
MPN Table

No. of wells giving positive reaction	MPN per 100 ml sample	95% Confidence Limits	
		Lower	Upper
0	<1.0	0.0	3.7
1	1.0	0.3	5.6
2	2.0	0.6	7.3
3	3.1	1.1	9.0
4	4.2	1.7	10.7
5	5.3	2.3	12.3
6	6.4	3.0	13.9
7	7.5	3.7	15.5
8	8.7	4.5	17.1
9	9.9	5.3	18.8
10	11.1	6.1	20.5
11	12.4	7.0	22.1
12	13.7	7.9	23.9
13	15.0	8.8	25.7
14	16.4	9.8	27.5
15	17.8	10.8	29.4
16	19.2	11.9	31.3
17	20.7	13.0	33.3
18	22.2	14.1	35.2
19	23.8	15.3	37.3
20	25.4	16.5	39.4
21	27.1	17.7	41.6
22	28.8	19.0	43.9
23	30.6	20.4	46.3
24	32.4	21.8	48.7
25	34.4	23.3	51.2
26	36.4	24.7	53.9
27	38.4	26.4	56.6
28	40.6	28.0	59.5
29	42.9	29.7	62.5
30	45.3	31.5	65.6
31	47.8	33.4	69.0
32	50.4	35.4	72.5
33	53.1	37.5	76.2
34	56.0	39.7	80.1
35	59.1	42.0	84.4
36	62.4	44.6	88.8
37	65.9	47.2	93.7
38	69.7	50.0	99.0
39	73.8	53.1	104.8
40	78.2	56.4	111.2
41	83.1	59.9	118.3
42	88.5	63.9	126.2
43	94.5	68.2	135.4
44	101.3	73.1	146.0
45	109.1	78.6	158.7
46	118.4	85.0	174.5
47	129.8	92.7	195.0
48	144.5	102.3	224.1
49	165.2	115.2	272.2
50	200.5	135.8	387.6
51	> 200.5	146.1	infinite

IDEXX Sales and Technical Support
1-800-321-0207 or 1-207-856-0496
www.idexx.com/water

09-63234-00

Salinity (ppt) with Vital Sine Refractometer:

VITALSINE Calibration

1. Calibration of ATC refractometers should only be conducted when the previous calibration setting has shifted and is noticeably affecting measurements. **DO NOT PERFORM CALIBRATIONS IN THE FIELD!** Calibration must take place in a controlled environment of 20°C (68°F) using distilled water of the same temperature. It's recommended to allow the refractometer and the distilled water to reach temperature equilibrium with the controlled environment before calibration takes place.
2. Open the daylight plate and apply one or two drops of distilled water on to the surface of the prism. Hold the prism at an angle close to parallel with the floor so the distilled water will not run off of the prism.
3. Gently close the daylight plate over the prism. The distilled water should spread as a thin, even layer in between the daylight plate and the prism. By looking through the daylight plate, ensure that the distilled water covers the ENTIRE surface of the prism. If there are bubbles and gaps or if the distilled water is only on one portion of the prism, the distilled water must be reapplied (Figure 1). Inaccurate calibrations will result if the prism is not covered correctly.
4. Looking through the eyepiece, hold the refractometer and direct the daylight plate upwards towards light. If the scale is not in focus, adjust it by gently turning the eyepiece (rubber hood) either clockwise or counterclockwise. Be careful not to overturn the focusing mechanism.
5. When the refractometer scale is viewed through the eyepiece, the upper field of view will be seen as blue and the lower field will be seen as white (Figure 2). Confirm that the boundary line crosses the scale at "0" (Figure 3).
6. If the boundary line falls above or below zero, gently loosen the set screw on the calibration ring with the supplied screwdriver. While looking through the eyepiece, gently turn the calibration ring clockwise or counterclockwise until the boundary line is at zero. Once this is achieved gently tighten down the set screw with the supplied screwdriver. (NOTE: Do not over-tighten. If the set screw is over-tightened, the boundary line may shift slightly).
7. When calibration is complete, gently wipe the prism using tissue paper.

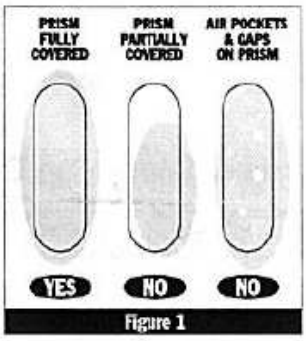

Figure 1

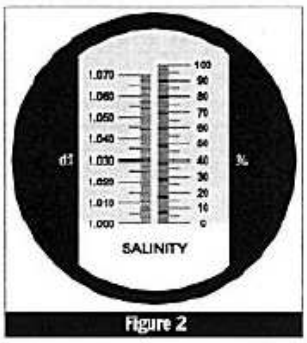

Figure 2

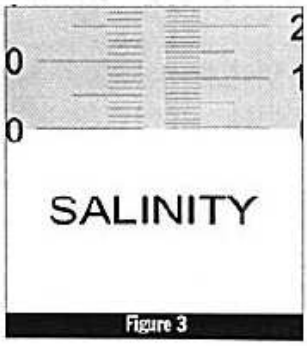

Figure 3

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Continued

VITALSINE General Use

1. Open the daylight plate and apply one or two drops of the sample solution to the surface of the prism. Hold the prism at an angle close to parallel with the floor so the sample will not run off of the prism.
2. Gently close the daylight plate over the prism. The sample solution should spread as a thin, even layer in between the daylight plate and the prism. By looking through the daylight plate, ensure that the sample solution covers the ENTIRE surface of the prism. If there are bubbles and gaps or if the sample is only on one portion of the prism, the sample solution must be reapplied (Figure 1). Inaccurate readings will result if the prism is not covered correctly.
3. Looking through the eyepiece, hold the refractometer and direct the daylight plate upwards towards light. If the scale is not in focus, adjust it by gently turning the eyepiece (rubber hood) either clockwise or counterclockwise. Be careful not to overturn the focusing mechanism.
4. When the refractometer scale is viewed through the eyepiece, the upper field of view will be seen as blue and the lower field will be seen as white (Figure 4). The reading is taken at the point where the boundary line of the blue and white fields crosses the scale (Figure 5). The value (either permillage or specific gravity) is the salinity level of water.
5. When each measurement is complete, the sample must be cleaned from the prism using tissue paper and water.

Figure 4

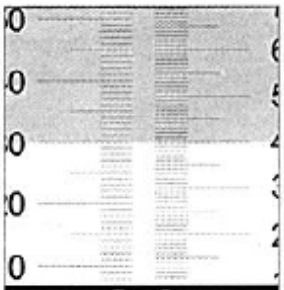


Figure 5

VITALSINE Conversion Table

Salinity (‰)	NaCl (w/w)	$MgCl_2$ (w/w)	$MgSO_4$ (w/w)	K_2SO_4 (w/w)	$CaCl_2$ (w/w)	Brix%
0	0.0	0.0	0.0	0.0	0.0	0.0
10	1.0	0.7	0.9	1.4	0.8	1.3
20	2.1	1.4	1.8	2.9	1.5	2.5
30	3.1	2.1	2.7	4.3	2.3	3.7
40	4.1	2.8	3.6	5.8	3.0	4.9
50	5.1	3.5	4.5	7.3	3.8	6.2
60	6.2	4.2	5.4	8.8	4.5	7.4
70	7.2	5.0	6.3	10.3	5.3	8.6
80	8.3	5.7	7.2	11.8	6.0	9.8
90	9.4	6.4	8.2	13.4	6.8	11.0
100	10.5	7.2	9.1	15.0	7.6	12.3

VITALSINE Specifications

Range:	0-100‰ / 1.000-1.070 Specific Gravity
Resolution:	1.0‰ / 0.001 Specific Gravity
Accuracy:	±1.0‰ / ±0.001 Specific Gravity
ATC Range:	10-30°C
Dimensions:	40 x 40 x 185mm (1.6 x 1.6 x 7.3")
Weight:	285g (10.0 oz.)
Supplied With:	Vinyl Carrying Case (1), Plastic Transfer Pipet (1), Calibration Screwdriver (1)

Temperature (C) with calibrated thermometer:

Using a calibrated thermometer, temperature in Degrees Celsius will be measured.

Once the sample is brought up, place thermometer with protective cylinder in bucket.

Wait approximately 1 minute before taking the thermometer out of the water.

Unscrew the cylinder and take reading.

Add data to data table.

Rinse off the thermometer completely with RO/DI water and re-screw the cylinder.

Dissolved Oxygen (ppm) with the modified Winkler method:

KIT CONTENTS

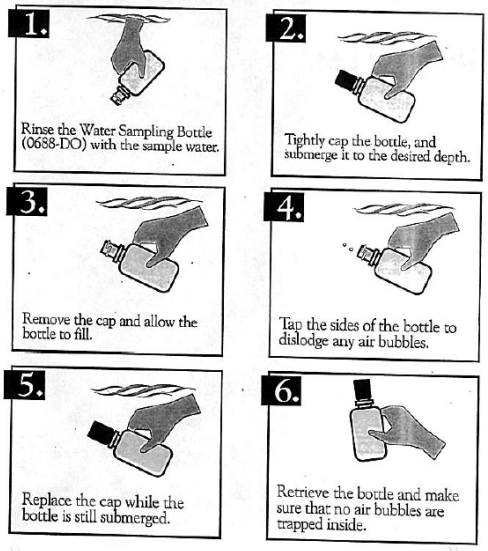
QUANTITY	CONTENTS	CODE
30 mL	*Manganous Sulfate Solution	*4167-G
30 mL	*Alkaline Potassium Iodide Azide	*7166-G
50 g	*Sulfamic Acid Powder (7414 Kit)	*6286-H
30 mL	*Sulfuric Acid, 1:1 (5860 Kit)	*6141WT-G
60 mL	*Sodium Thiosulfate, 0.025N	*4169-H
30 mL	Starch Indicator Solution	4170WT-G
1	Spoon, 1.0 g, plastic (7414 Kit)	0697
1	Direct Reading Titrator	0377
1	Test Tube, 5-10-12.9-15-20-25 mL, glass, w/cap	0608
1	Water Sampling Bottle, 60 mL, glass	0688-DO

*WARNING: Reagents marked with a * are considered to be potential health hazards. To view or print a Material Safety Data Sheet (MSDS) for these reagents go to www.lamotte.com. To obtain a printed copy, contact LaMotte by email, phone or fax.

To order individual reagents or test kit components, use the specified code numbers.

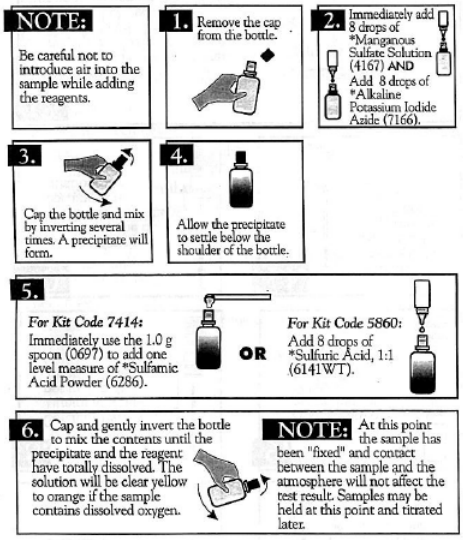
TEST PROCEDURE

PART 1 - COLLECTING THE WATER SAMPLE



TEST PROCEDURE

PART 2 - ADDING THE REAGENTS



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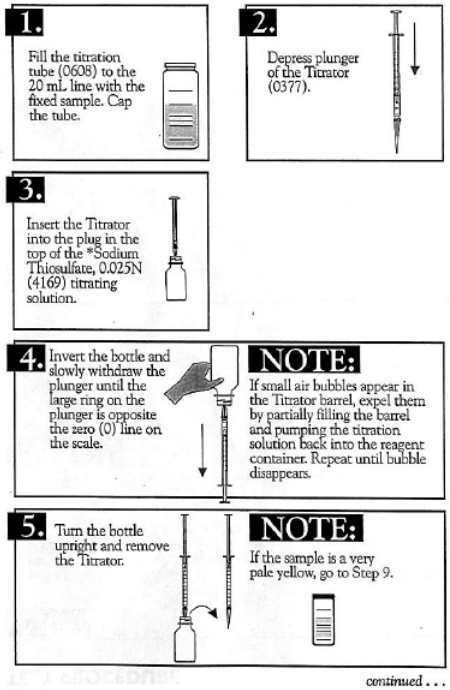
TEST PROCEDURE

PART 3 - THE TITRATION



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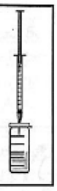
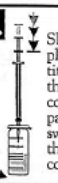
Continued

TEST PROCEDURE

6. Insert the tip of the Titrator into the opening of the titration tube cap.



7. Slowly depress the plunger to dispense the titrating solution until the yellow-brown color changes to a very pale yellow. Gently swirl the tube during the titration to mix the contents.



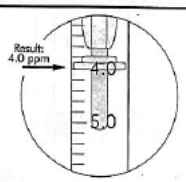
8. Carefully remove the Titrator and cap. Do not to disturb the Titrator plunger.

9. Add 8 drops of Starch Indicator Solution (4170WT). The sample should turn blue.

10. Cap the titration tube. Insert the tip of the Titrator into the opening of the titration tube cap.

11. Continue titrating until the blue color disappears and the solution becomes colorless.

12. Read the test result directly from the scale where the large ring on the Titrator meets the Titrator barrel. Record as ppm Dissolved Oxygen. Each minor division on the Titrator scale equals 0.2 ppm.



TEST PROCEDURE

NOTE:

If the plunger ring reaches the bottom line on the scale (10 ppm) before the endpoint color change occurs, refill the Titrator and continue the titration. Include the value of the original amount of reagent dispensed (10 ppm) when recording the test result.

NOTE:

When testing is complete, discard titrating solution in Titrator. Rinse Titrator and titration tube thoroughly. DO NOT remove plunger or adapter tip.

Dissolved Oxygen (ppm), pH, Salinity (ppt), Temperature (C) with the YSI ProPlus galvanic probe method:

INSTALLING THE DO MEMBRANE (3.4)

Note: The DO sensor is shipped with a dry shipping membrane to protect the electrode. **A new membrane cap must be installed before the first use.**

1. Prepare the O_2 probe solution according to the instructions on the bottle. After mixing, allow the solution to sit for 1 hour. This will help prevent air bubbles from later developing under the membrane.
2. Unscrew and remove the probe sensor guard.
3. Unscrew, remove, and discard the old membrane cap.
4. Thoroughly rinse the sensor tip with distilled or deionized water.
5. Fill a new membrane cap with O2 probe solution. Be very careful not to touch the membrane surface.
6. Thread the membrane cap onto the sensor, moderately tight. A small amount of electrolyte should overflow.
7. Screw the probe sensor guard on moderately tight.

MENU FUNCTIONS (2.9 – 2.11)

The Model 556 is set up with a menu-based interface. To navigate through the menus, use the up and down arrow keys to highlight a desired menu option, then press the **Enter** key to open the menu feature. Press the **Esc** key to return to a previous screen. The 556 will automatically power on to the Run screen. Press the **Esc** key to display the main menu screen.

SETTING THE DATE AND TIME (10.2)

1. Select **System Setup** from the main menu and then select **Date & Time**.
2. Highlight **Date** and press **Enter**.
3. Use the keypad to enter the correct date and press **Enter**.
4. Highlight **Time** and press **Enter**.
5. Use the keypad to enter the correct military time and press **Enter**.
6. Press **Esc** several times to return to the main menu.

Continued

SETTING UP SENSORS & REPORTING PARAMETERS (4 - 5)

Although a sensor may be installed on the probe of the 556, it must be enabled in the Sensor menu for it to operate. Once a sensor is enabled, the parameters and units to display for that sensor must then be selected in the Report menu.

1. From the main menu, select **Sensor.**
2. Sensors which are enabled will appear with a black dot. If a sensor is disabled, it will appear with an empty circle. Use the arrow keys to highlight the sensor you want to change. Press the **Enter** key to enable or disable it.
3. When Dissolved Oxygen is selected, a submenu will appear with a selection of membranes. Each membrane type is also identified by the color of the membrane cap. Highlight the desired membrane choice and press **Enter** to activate the selection. Press **Esc** to return to the Sensor menu.
4. Once changes to the Sensor menu have been completed, press **Esc** to return to the main menu.
5. Select the **Report** menu option.
6. Parameters which are enabled will appear with a black dot. If a parameter is disabled, it will appear with an empty circle. Use the arrow keys to highlight the parameter you want to change. Press the **Enter** key to enable or disable it.
7. For some parameters, a new submenu will appear to allow a selection of units for the parameter. Make a selection from the submenu and then press **Esc** to return to the Report menu.
8. Once all changes are complete, press **Esc** to return to the main menu.

BAROMETER CALIBRATION (10.9 – 10.10)

Note: The following information is only for 556 Instruments equipped with the optional internal barometer.

1. Determine your local barometric pressure (**BP**) in mmHg from a mercury barometer, an independent laboratory or from a local weather service. If the BP reading has been corrected to sea level, use the following equation to determine the true BP in mmHg for your altitude:

   True BP = (Corrected BP) – {2.5 * (Local Altitude/100)}

2. Select **System Setup** from the main menu and then select **Calibrate Barometer.**
3. Use the keypad to input the known barometric pressure as determined in steps 1 and 2. Press **Enter** to confirm the value.
4. Press **Esc** to return to the main menu.

CONDUCTIVITY, pH, ORP CALIBRATION (6)

1. From the main menu, select **Calibrate.**
2. Place the correct amount of calibration standard into a clean, dry or pre-rinsed calibration cup.
3. Immerse the probe into the solution, making sure the sensor to be calibrated is adequately covered.
4. Allow at least one minute for temperature to stabilize.
5. Select the sensor to be calibrated. For conductivity, a second menu will offer the option of calibrating in **specific conductance, conductivity**, or **salinity.** Calibration of any one option automatically calibrates the other two. For pH, a second menu will appear offering the choice of a 1-, 2-, or 3-point calibration.
6. Enter the value of the standard being used. (For pH, always calibrate in the 7 buffer first.) Be certain that the units are correct and press **Enter.** The current values of all enabled sensors will appear.
7. Observe the readings and when they show no significant change for approximately 30 seconds, press **Enter.** The screen will indicate if the calibration has been accepted.
8. Press **Enter** again to return to the Calibrate screen, or, for pH, to continue with the second point of the calibration.

DO CALIBRATION (6)

The Model 556 offers two options for calibration of dissolved oxygen. The first is an air calibration method in % saturation. The second is calibrating in mg/L to a solution with a known DO concentration (usually determined by a Winkler Titration). Calibration of either option (% or mg/L) will automatically calibrate the other. The procedure outlined here is the % saturation calibration, the easier of the two methods to perform.

1. Place approximately 3 mm (1/8 inch) of water in the bottom of the transport/calibration cup. Screw the transport/calibration cup onto the probe, engaging only 1 or 2 threads to ensure venting to the atmosphere.
   Note: Make sure the DO and temperature sensors are <u>not</u> immersed in the water.
2. Turn the instrument on to the Run mode and wait 10 minutes for the DO sensor to stabilize.
3. From the main menu, select **Calibrate**, then **Dissolved Oxygen**, then **DO %.**
4. Use the keypad to enter the current local barometric pressure and press **Enter.** The current values of all enabled sensors will appear.
5. Observe the readings and when they show no significant change for approximately 30 seconds, press **Enter.** The screen will indicate if the calibration has been accepted.
6. Press **Enter** again to return to the DO Calibration screen.

Continued

TAKING MEASUREMENTS AND STORING DATA (7 - 9)

1. Power the instrument on, or select **Run** from the Main Menu.
2. Insert the probe into the sample to be measured. Continuously stir, or move the probe, through the sample until the readings on the screen stabilize.
3. Use the arrow keys to highlight **Log one sample**, or select **Start logging** to record a series of data. Press **Enter**. The Enter Information screen should appear.
4. Use the keypad to enter a filename for the measurement. If no file name is entered, the instrument will assign a default of NONAME. Press **Enter**.
5. If you would like to enter an optional site description, highlight that field and use the keypad to enter the information. Press **Enter**.
6. Highlight **OK** and press **Enter**. If logging one sample, the instrument will confirm the data point was successfully logged.
7. If a series of points is being logged, the Start logging entry in the run screen will change to Stop logging. At the end of the logging interval, press **Enter** to stop logging.

UPLOADING DATA TO A PC (8.4)

1. Make sure EcoWatch for Windows is installed on the PC.
2. Disconnect the probe assembly from the 556 instrument and use the 655173 PC interface cable to connect the meter to the serial port of the PC.
3. Open EcoWatch for Windows on the PC.
4. Click on the sonde/probe icon in the upper toolbar. 
5. Set the com port number to match the serial port the 556 is connected to and choose OK. A terminal window should appear with a flashing cursor.
6. Power on the 556. From the Main menu select **File**, then **Upload to PC**.
7. From the File List, highlight the file you wish to transfer and press **Enter**. The file transfer should begin with a progress shown on both the 556 and PC. **Note: The file will automatically upload to C:\ECOWIN\DATA.**
8. After the file transfer is complete, close the terminal window in EcoWatch.
9. Press Esc on the 556 until you have returned to the main menu.

CONTACT INFORMATION

Contact YSI Environmental if you need assistance or have questions regarding any YSI Environmental Product. Business hours are Monday through Friday, 8AM to 5PM ET.

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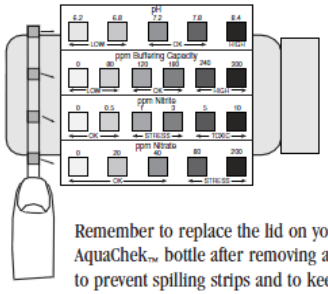
Item # 600009 • Drawing # A600009
Revision A • July 2003

pH and Nitrate with Aquacheck colorimetry:

1851 R11-98.Pond-4way.ps - 1/27/2006 11:19 AM

AquaChek™ POND TEST STRIPS

AquaChek™ is a test for pH, Buffering Capacity, Nitrite and Nitrate levels in your pond. The test pads on the strip will change color to indicate the levels in your pond.



Remember to replace the lid on your AquaChek™ bottle after removing a strip to prevent spilling strips and to keep them fresh. **Keep the strips in a cool, dry place,** and leave the packet of drying agent in the bottle — it will help keep the test strips at their best.

Follow these easy, step-by-step instructions

Step 1

Remove an AquaChek™ Pond Test Strip from the bottle and replace the cap tightly. Dip test strip into your pond water for 1 second and remove. Do not shake excess water from strip.

Step 2

Hold strip level for 30 seconds.

Step 3

pH

Compare the end pad of the strip to the pH color chart on the label. The pH pad should turn a shade of red-orange, between 7.2 and 7.8.

Buffering Capacity

Compare the second pad from the end of the strip to the Buffering Capacity color chart on the label. The Buffering Capacity pad should turn a shade of green. The correct range is 120 ppm (parts per million) to 180 ppm.

Nitrite

Compare the third pad from the end of the strip to the Nitrite color chart on the label. The Nitrite pad should remain white or turn a shade of pink. The safe range is between 0 ppm and 0.5 ppm.

Step 4

Nitrate

At 60 seconds after dipping strip, compare the pad nearest the handle to the Nitrate color chart on the label. The pad should remain tan or turn a shade of pink. The safe range is between 0 ppm and 40 ppm.

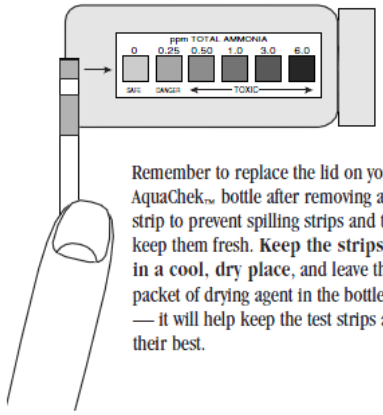
For recommendations on the importance of maintaining proper water conditions, see the reverse side of this instruction sheet.

Ammonia with Aquacheck colorimetry:

1850IN R11-98.Pond Ammonia 5/26/06 2:16 PM Page 1

AquaChek™ POND TEST STRIPS

AquaChek™ Ammonia tests for Total Ammonia in your pond. The test pad on the strip will change color to indicate the Total Ammonia level in your pond.

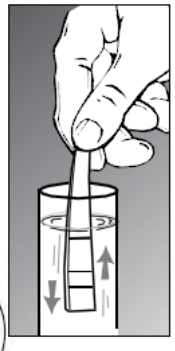


Remember to replace the lid on your AquaChek™ bottle after removing a strip to prevent spilling strips and to keep them fresh. **Keep the strips in a cool, dry place**, and leave the packet of drying agent in the bottle — it will help keep the test strips at their best.

Follow these easy, step-by-step instructions

Step 1

Remove an AquaChek™ Ammonia Pond Test Strip from the bottle and replace the cap tightly. Fill the sample vial to top line with pond water. Dip the test strip into water sample. Move strip vigorously up and down in the water sample for 30 seconds. Make sure both pads are always submerged.



Step 2

Remove test strip and shake off excess water. Hold strip level (pad side up) for 30 seconds.

Step 3

To read results, **turn strip over** so that both pads are facing away from you. Compare the color of the **small pad** to the color chart on the label. Be sure you are reading the results through the clear plastic of the strip.

Step 4

Rinse sample vial and store for next use. Do not place vial inside bottle of test strips.

For recommendations on the importance of maintaining proper water conditions, see Basic Pond Chemistry on the reverse side of this instruction sheet.

Ammonia (ppm) with Palintest Colorimetry based on the indophenol method:

Test Instructions

1 Fill test tube with sample to the 10 ml mark.
2 Add one Ammonia No 1 tablet and one Ammonia No 2 tablet, crush and mix to dissolve.
3 Stand for ten minutes to allow colour development.
4 Select Phot 4 on Photometer to measure Ammonia mg/l N or select Phot 62 on Photometer to measure Ammonium mg/l NH_4.
5 Take Photometer reading in usual manner (see Photometer instructions).

Sea Water Samples

Palintest Ammonia Conditioning Reagent is required when testing sea water or brackish water samples to prevent precipitation of salts. The reagent is supplied in a special 'spoon pack' to aid measuring out the powder.

Fill the test tube with sample to the 10 ml mark, and add one level spoonful of conditioning reagent. Mix to dissolve reagent then continue the test as described in the above test instructions. If turbidity still forms in the test, repeat using two level spoonfuls of conditioning reagent.

Notes

1 At low temperatures the rate of colour development in the test may be slower. If the sample temperature is below 20°C allow 15 minutes for the colour to develop.
2 Ammonia concentrations can be expressed in a number of different ways. The following factors may be used for the conversion of readings :-

To convert from N to NH_4 multiply by 1.3.
To convert from N to NH_3 multiply by 1.2.

Palintest®
TEST INSTRUCTIONS

PHOT.4.AUTO

Photometer Method

AMMONIA

TEST FOR AMMONIA IN NATURAL, DRINKING AND WASTE WATERS

AUTOMATIC WAVELENGTH SELECTION

0 – 1.0 mg/l N

Ammonia occurs as a breakdown product of nitrogenous material in natural waters. It is also found in domestic effluents and certain industrial waste waters. Ammonia is harmful to fish and other forms of aquatic life, and the ammonia level must be carefully controlled in water used for fish farms and aquariums. Ammonia tests are routinely applied for pollution control on effluents and waste waters, and for the monitoring of drinking water supplies.

The Palintest Ammonia Test provides a simple method of measuring ammonia (ammoniacal nitrogen) over the range 0 - 1.0 mg/l N.

Method

The Palintest Ammonia test is based on an indophenol method. Ammonia reacts with alkaline salicylate in the presence of chlorine to form a green-blue indophenol complex. Catalysts are incorporated to ensure complete and rapid colour development. The reagents are provided in the form of two tablets for maximum convenience. The test is simply carried out by adding one of each tablet to a sample of the water.

The intensity of the colour produced in the test is proportional to the ammonia concentration and is measured using a Palintest Photometer.

Reagents and Equipment

Palintest Ammonia No 1 Tablets
Palintest Ammonia No 2 Tablets
Palintest Automatic Wavelength Selection Photometer
Round Test Tubes, 10 ml glass (PT 595)

Phosphate (ppm) with Palintest Colorimetry based on vanadomolybdate method:

114

Palintest®

PHOSPHATE HR

PHOSPHATE PHOSPHAT FOSFAAT FOSFAT FOSFATOS FOSFATI

Reagents/Réactifs/Reagenzien/Reactivos:

Palintest Phosphate HR
Palintest Phosphate SR

mg/l PO_4	PHOSPHATE FOSFAAT FOSFAT FOSFATOS									490 nm
%T	9	8	7	6	5	4	3	2	1	0
90	-	-	-	0.0	0.7	1.8	2.9	4.1	5.2	6.4
80	7.5	8.7	9.9	11	12	14	15	16	18	19
70	20	21	23	24	26	27	28	30	31	33
60	34	36	38	39	41	42	44	46	47	49
50	51	53	55	56	58	60	62	64	66	68
40	71	73	75	77	80	82	84	87	89	92
30	95	97	100	-	-	-	-	-	-	-

Test Instructions **ENGLISH**

These instructions apply with the following test equipment. Use correct grade of tablets for test equipment in use - see packet.

Comparator - Disc CD 114
Pocket Kit - TestCard CC 114
Direct-reading Photometer
- select Program Phot 29
Transmittance-display Photometer (490 nm)
- use Calibration Chart

1 Fill test tube to 10 ml mark.

2 ONLY FOR SILICA CONTAINING SAMPLES (>20 mg/l):
Add one Phosphate SR tablet, crush and mix to dissolve.

3 Add one Phosphate HR, crush and mix to dissolve.

4 Stand for 10 minutes.

5 Take the test reading (see instrument instructions).

Instructions de Test **FRANÇAIS**

Les instructions s'appliquent aux équipment suivants: (Utiliser les pastilles adéquates au type de matérial - voir emballage).

Comparateur - Disque CD 114
Kit de Poche - TestCard CC 114
Photomètre à lecture directe
- sélectionner le programme Phot 29
Photometre en % de transmission (490 nm)
- utiliser la table de calibration

1 Remplir le tube jusqu'au 10 ml.

2 UNIQUEMENT POUR LES ECHANTILLONS CONTENANT DU SILICE (>20 mg/l):
Ajouter une pastille 'Phosphate SR', écraser et remuer pour dissoudre.

3 Ajouter une pastille 'Phosphate HR', écraser et remuer pour dissoudre.

4 Attendre 10 minutes.

5 Lire le résultat (voir mode d'emploi de l'instrument).

Nitrate (ppm) with the Palintest Nitratest Colorimetry method:

Test Procedure

1 Fill the Nitratest Tube with sample to the 20 ml mark.

2 Add one level spoonful of Nitratest Powder and one Nitratest tablet. Do not crush the tablet. Replace screw cap and shake tube well for one minute.

3 Allow tube to stand for about one minute then gently invert three or four times to aid flocculation. Allow tube to stand for two minutes or longer to ensure complete settlement.

4 Remove screw cap and wipe around the top of the tube with a clean tissue. Carefully decant the clear solution into a round test tube, filling to the 10 ml mark.

5 Add one Nitricol tablet, crush and mix to dissolve.

6 Stand for 10 minutes to allow full colour development.

7 Select Phot 23 on Photometer for result as mg/l N, or Phot 63 for result as mg/l NO_3.

8 Take Photometer reading in usual manner (see Photometer instructions).

Note

To convert mg/l N to mg/l NO_3 multiply result by 4.4.

Concentrations of nitrate greater than 1.0 mg/l may be determined by diluting the original sample with deionised water. The test can be conveniently carried out over a range 0 - 20 mg/l N as follows :-

Take a clean Nitratest Tube. Add 1 ml of sample using a pipette or graduated dropper. Fill the Nitratest Tube to the 20 ml mark with deionised water. Continue the test procedure as given in steps 2 to 9 above. Multiply the chart reading obtained by 20 to obtain the nitrate concentration in the original sample.

Nitrite Correction

The Nitratest method will also respond to any nitrite present in the sample. In most natural and drinking waters the amount of nitrite will be small in comparison to the nitrate concentration. If it is desired to correct for nitrite, determine nitrite concentration (as mg/l N) in the prescribed manner (see PHOT.24.) and deduct from the nitrate concentration (as mg/l N) obtained from the Nitratest procedure.

V1-10/05

Palintest®

TEST INSTRUCTIONS

PHOT.23.AUTO

Photometer Method

NITRATE (NITRATEST)

AUTOMATIC WAVELENGTH SELECTION

TEST FOR NITRATE IN NATURAL, DRINKING AND WASTE WATERS

0 – 1 mg/l N
0 – 20 mg/l N

Nitrates are normally present in natural, drinking and waste waters. Nitrates enter water supplies from the breakdown of natural vegetation, the use of chemical fertilisers in modern agriculture and from the oxidation of nitrogen compounds in sewage effluents and industrial wastes.

Nitrate is an important control test for water supplies. Drinking waters containing excessive amounts of nitrates can cause methaemoglobinaemia in bottle-fed infants (blue babies). The EEC has set a recommended maximum of 5.7 mg/l N (25 mg/l NO_3) and an absolute maximum of 11.3 mg/l N (50 mg/l NO_3) for nitrate in drinking water.

The Palintest Nitratest method provides a simple test for nitrate nitrogen over the range 0 - 1 mg/l N. The test can however be extended to cover the range 0 - 20 mg/l by a simple dilution technique.

Method

In the Palintest Nitratest method nitrate is first reduced to nitrite, the resulting nitrite is then determined by a diazonium reaction to form a reddish dye.

The reduction stage is carried out using the unique zinc-based Nitratest Powder, and Nitratest Tablet which aids rapid flocculation after the one minute contact period. The test is conducted in a special Nitratest Tube - a graduated sample container with hopper bottom to facilitate settlement and decanting of the sample.

The nitrite resulting from the reduction stage, is determined by reaction with sulphanilic acid in the presence of N-(1-naphthyl)-ethylene diamine to form a reddish dye. The reagents are provided in a single Nitricol tablet which is simply added to the test solution.

The intensity of the colour produced in the test is proportional to the nitrate concentration and is measured using a Palintest Photometer.

Reagents and Equipment

Palintest Nitratest Powder (Spoon Pack)
Palintest Nitratest Tablets
Palintest Nitricol Tablets
Palintest Nitratest Tube, 20 ml (PT 526)
Palintest Automatic Wavelength Selection Photometer
Round Test Tubes, 10 ml (PT 595)

PM 163 AUTO

Specific Comments:

Date:_____Title:_____

Date:_____Title:_____

Date:_____Title:_____

Date:_____Title:_____

Date:_____Title:_____

Project name _***EPA Citizen Science Water Quality Monitoring of Governors Island and Lower Manhattan***_ *page* _____ *of* _____

Initial date __02/06/2013___ **Final Date** _____ **Location** _____

Station _____

Sampling Day #	Date (mmddyy)	Time	Sample Vial #	T °C	D.O. mg/L	pH units	NO_2 ppm	NO_3 ppm	NH_3 ppm	pH* units	T* °C	Sal ppt	Current (ebb or flood)	Entero. MPN	Rain Same day (in)	Rain (Prior day)	Rain (2 days prior)	Rain (3 days prior)	Rain (5 days prior)	Air T °C	Wind Direction (use GPS)
	Initials																				
DAY																					
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Use pencil only please. Make sure all required cells are completed including time + initials. ***pH and Temperature with Hanna Combo Sensor**

General Comments:

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Ask your group leader if you have any questions.