2. Seal the empty port with the provided port plug.

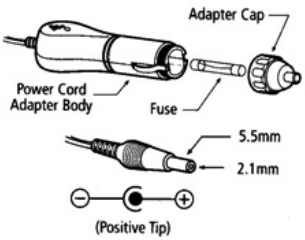
3. Place the sensor in the storage vessel (plastic boot or bottle) which was on the sensor at delivery. The vessel should contain a solution which is 2 molar in potassium chloride.

   **NOTE**: Make certain that the vessel is sealed to prevent evaporation of the storage solution.

# 13. Troubleshooting

The following sections describe problems you may encounter when using the YSI 556 MPS and provides suggestions to overcome the symptom.

| PROBLEM | POSSIBLE SOLUTION |
|---|---|
| **Display Problems** | |
| No display is visible after pressing the on/off key. | If C cells are used, make certain that they are installed properly with regard to polarity and that good batteries are used. If a rechargeable battery pack is used, place the pack in the instrument and charge for 30 minutes. |
| Instrument software appears to be locked up as evidenced by no response to keypad entries or display not changing. | First, attempt to reset the instrument by simply turning off and then on again. If this fails, remove battery power from the instrument for 30 seconds and then reapply power. When using C cells, remove the battery lid and one of the batteries; when using the rechargeable battery pack, remove the pack completely from the instrument. After 30 seconds replace the battery or battery pack and check for instrument function. |
| The 556 display flashes and the instrument speaker makes a continuous clicking sound. | The battery voltage is low. Change to new C cells or recharge the 6117 battery pack. |
| **Water Damage to Instrument** | |
| Leakage detected in battery compartment when using C cells. | Dispose of batteries properly. Dry the battery compartment using compressed air if possible. If corrosion is present on battery terminals, contact YSI Customer Service. |
| Water has contacted rechargeable battery pack. | Remove battery pack immediately. Send battery pack to YSI Product Service for evaluation. **CAUTION**: DO NOT REUSE BATTERY PACK UNTIL YSI PRODUCT SERVICE HAS EVALUATED IT. |
| Leakage suspected into the main cavity of the instrument case. | Remove the batteries immediately.<br>Return the instrument to YSI Product Service. |

| PROBLEM | POSSIBLE SOLUTIONS |
|---|---|
| **Optional Cigarette Lighten Charger** | |
| Power cord fuse blown.   | 1. Unscrew adapter's cap, remove tip and pull out fuse.<br>2. Replace fuse with a new 2-amp fast-blow fuse from an electronics store such as Radio Shack.<br>3. Reassemble the adapter and securely screw the cap back onto the adapter body. |
| **File Problems** | |
| Upload of files from YSI 556 MPS to PC fails | 1. Make sure that cable is connected properly to both 556 and PC.<br>2. Make certain that the proper Comm port is selected in EcoWatch for Windows. |
| Barometer data is not stored with sensor data file. | Make sure **Store barometer** is active in the 556 **Logging setup** menu. |
| **Site Descriptions** in the **Site List** are "grayed-out" and not available for appending files with additional data. | There is a parameter mismatch between the current 556 setup and that initially used. Change the current logging and sensor setup to match the setup that was initially used to create the file. |
| **Sensor Problems** | |
| Dissolved Oxygen reading is unstable or inaccurate. Out of Range message appears during calibration. | Sensor not properly calibrated. Follow DO cal procedures. |
| | Membrane not properly installed or may be punctured. Replace membrane cap. |
| | DO sensor electrodes require cleaning. Follow DO cleaning procedure. Use 5511 Maintenance kit. |
| | Water in sensor connector. Dry connector; reinstall sensor. |
| | Algae or other contaminant clinging to DO sensor. Rinse DO sensor with clean water. |
| | Barometric pressure entry is incorrect. Repeat DO cal procedure. |
| | Calibrated at extreme temperature. Recalibrate at (or near) sample temperature. |
| | DO sensor has been damaged. Replace sensor. |
| | Internal failure. Return probe module for service. |

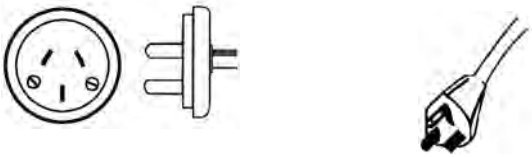
| PROBLEM | POSSIBLE SOLUTIONS |
|---|---|
| **Sensor Problems** | |
| pH or ORP readings are unstable or inaccurate. Out of Range message appears during calibration. | Sensor requires cleaning. Follow sensor cleaning procedure. |
| | Sensor requires calibration. Follow cal procedures. |
| | pH sensor reference junction has dried out from improper storage. Soak sensor in tap water or buffer 4 until readings become stable. |
| | Water in sensor connector. Dry connector; reinstall sensor. |
| | Sensor has been damaged. Replace sensor. |
| | Calibration solutions out of spec or contaminated with other solution. Use new calibration solutions |
| | ORP fails Zobell check. Take into account temperature dependence of Zobell solution readings. |
| | Internal failure. Return probe module for service. |
| Conductivity unstable or inaccurate. Out of Range message appears during calibration | Conductivity improperly calibrated. Follow calibration procedure. |
| | Conductivity sensor requires cleaning. Follow cleaning procedure. |
| | Conductivity sensor damaged. Replace sensor. |
| | Calibration solution out of spec or contaminated. Use new calibration solution. |
| | Internal failure. Return probe module for service. |
| | Calibration solution or sample does not cover entire sensor. Immerse sensor fully. |
| Temperature, unstable or inaccurate | Water in connector. Dry connector; reinstall sensor. |
| | Sensor has been damaged. Replace the 5560 sensor. |
| Installed sensor has no reading | The sensor has been disabled. Enable sensor. |
| | Water in sensor connector. Dry connector; reinstall sensor. |
| | Sensor has been damaged. Replace sensor. |
| | Report output improperly set up. Set up report output. |
| | Internal failure. Return probe module for service. |

If these guidelines and tips fail to correct your problem or if any other symptoms occur, contact YSI Customer Service for Advice. Refer to *Appendix E Customer Service*.

# 14. Appendix A YSI 556 MPS Specifications

For the most recent product specifications, please visit the YSI website: www.ysi.com

# 15. Appendix B Instrument Accessories

| ITEM # | ACCESSORY |
|---|---|
| 5563-4 | 4m Cable with DO/temp/conductivity |
| 5563-10 | 10m Cable with DO/temp/conductivity |
| 5563-20 | 20m Cable with DO/temp/conductivity |
| 5564 | pH Kit |
| 5565 | pH/ORP Kit |
| 6118 | Rechargeable Battery Pack Kit for use in US |
| 5094 | Rechargeable Battery Pack Kit with universal charger and three adapter cables for use in international applications |
| 5095 | Rechargeable Battery Pack Kit with universal charger and two adapter cables for use in international applications  |
| 5083 | Flow Cell – probe module is secured in the flow cell and groundwater is pumped through it. Displaced volume approx. 475 ml |
| 3059 | Flow Cell, low volume. Displaced volume approx. 200 ml |
| 116505 | Battery Lid |
| 616 | Charger, Cigarette Lighter – used to power up the instrument from a car's cigarette lighter |
| 4654 | Tripod |
| 614 | Ultra Clamp, C Clamp –used to clamp the instrument to a table top or car dashboard |
| 6081 | Large Carrying Case, Hard-sided |
| 5085 | Hands-free Harness |
| 5065 | Carrying Case, Form-fitted, for use in the field – has a clear vinyl window, shoulder strap, belt loop strap and hand strap |

# 16. Appendix C Required Federal Communications Notice

The Federal Communications Commission defines this product as a computing device and requires the following notice.

This equipment generates and uses radio frequency energy and if not installed and used properly, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class A or Class B computing device in accordance with the specification in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No.0004-000-00345-4.

# 17. Appendix D Health Safety

**YSI Conductivity Solutions: 3161, 3163, 3165, 3167, 3168, 3169**

INGREDIENTS:
- Iodine
- Potassium Chloride
- Water

**WARNING: INHALATION MAY BE FATAL**

⚠ ***CAUTION:*** **AVOID INHALATION, SKIN CONTACT, EYE CONTACT OR INGESTION. MAY EVOLVE TOXIC FUMES IN FIRE.**

Harmful if ingested or inhaled. Skin or eye contact may cause irritation. Has a corrosive effect on the gastro-intestinal tract, causing abdominal pain, vomiting, and diarrhea. Hyper-sensitivity may cause conjunctivitis, bronchitis, skin rashes etc. Evidence of reproductive effects.

**FIRST AID:**
INHALATION: Remove victim from exposure area. Keep warm and rest. In severe cases seek medical attention.
SKIN CONTACT: Remove contaminated cloth immediately. Wash affected area thoroughly with large amounts of water. In severe cases seek medical attention.
EYE CONTACT: Wash eyes immediately with large amounts of water, (approx. 10 minutes). Seek medical attention immediately.
INGESTION: Wash out mouth thoroughly with large amounts of water. Seek medical attention immediately.

## YSI pH 4.00, 7.00, y 10.00: 3821, 3822, 3823

**pH 4** INGREDIENTS:

- Potassium Hydrogen Phthalate
- Formaldehyde
- Water

**pH 7** INGREDIENTS:

- Sodium Phosphate, Dibasic
- Potassium Phosphate, Monobasic
- Water

**pH 10** INGREDIENTS:

- Potassium Borate, Tetra
- Potassium Carbonate
- Potassium Hydroxide
- Sodium (di) Ethylenediamine Tetraacetate
- Water

⚠ **CAUTION -AVOID INHALATION, SKIN CONTACT, EYE CONTACT OR INGESTION. MAY AFFECT MUCOUS MEMBRANES.**

Inhalation may cause severe irritation and be harmful. Skin contact may cause irritation; prolonged or repeated exposure may cause Dermatitis. Eye contact may cause irritation or conjunctivitis. Ingestion may cause nausea, vomiting and diarrhea.

**FIRST AID:**
INHALATION – Remove victim from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Keep victim warm and at rest. Seek medical attention immediately.
SKIN CONTACT – Remove contaminated clothing immediately. Wash affected area with soap or mild detergent and large amounts of water (approx. 15-20 minutes). Seek medical attention immediately.
EYE CONTACT - Wash eyes immediately with large amounts of water (approx. 15-20 minutes), occasionally lifting upper and lower lids. Seek medical attention immediately.

INGESTION – If victim is conscious, immediately give 2 to 4 glasses of water and induce vomiting by touching finger to back of throat. Seek medical attention immediately.

## YSI Zobell Solution: 3682

INGREDIENTS:

- Potassium Chloride
- Potassium Ferrocyanide Trihydrate
- Potassium Ferricyanide

⚠ **CAUTION -AVOID INHALATION, SKIN CONTACT, EYE CONTACT OR INGESTION. MAY AFFECT MUCOUS MEMBRANES.**

May be harmful by inhalation, ingestion, or skin absorption. Causes eye and skin irritation. Material is irritating to mucous membranes and upper respiratory tract. The chemical, physical, and toxicological properties have not been thoroughly investigated.

Ingestion of large quantities can cause weakness, gastrointestinal irritation and circulatory disturbances.

**FIRST AID:**
INHALATION – Remove victim from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Keep victim warm and at rest. Seek medical attention immediately.
SKIN CONTACT – Remove contaminated clothing immediately. Wash affected area with soap or mild detergent and large amounts of water (approx. 15-20 minutes). Seek medical attention immediately.
EYE CONTACT - Wash eyes immediately with large amounts of water (approx. 15-20 minutes), occasionally lifting upper and lower lids. Seek medical attention immediately.
INGESTION – If victim is conscious, immediately give 2 to 4 glasses of water and induce vomiting by touching finger to back of throat. Seek medical attention immediately.

# 18. Appendix E Customer Service

## 18.1 Ordering and Technical Support

| | |
|---|---|
| Telephone: | 800 897 4151 (US) |
| | +1 937 767 7241 (Globally) |
| | Monday through Friday, 8:00 AM to 5:00 ET |
| Fax: | +1 937 767 9353 (orders) |
| | +1 937 767 1058 (technical support) |
| Email: | environmental@ysi.com or proseries@ysi.com |
| Mail: | YSI Incorporated |
| | 1725 Brannum Lane |
| | Yellow Springs, OH 45387 USA |
| Website: | www.ysi.com |

## 18.2 YSI Authorized Service Centers

YSI has authorized service centers throughout the United States and Internationally. For the nearest service center information, please visit www.ysi.com and click ‘Support’ or contact YSI Technical Support directly at 800-897-4151.

When returning a product for service, include the Product Return form with cleaning certification. The form must be completely filled out for a YSI Service Center to accept the instrument for service. The form may be downloaded from www.ysi.com by clicking on the ‘Support” tab, then the Product Return Form button.

## 18.3 Cleaning Instructions

Equipment exposed to biological, radioactive, or toxic materials must be cleaned and disinfected before being serviced. Biological contamination is presumed for any instrument, probe, or other device that has been used with body fluids or tissues, or with wastewater. Radioactive contamination is presumed for any instrument, probe or other device that has been used near any radioactive source.

If an instrument, probe, or other part is returned or presented for service without a Cleaning Certificate, and if in our opinion it represents a potential

biological or radioactive hazard, our service personnel reserve the right to withhold service until appropriate cleaning, decontamination, and certification has been completed. We will contact the sender for instructions as to the disposition of the equipment. Disposition costs will be the responsibility of the sender.

When service is required, either at the user's facility or at a YSI Service Center, the following steps must be taken to ensure the safety of service personnel.

- In a manner appropriate to each device, decontaminate all exposed surfaces, including any containers. 70% isopropyl alcohol or a solution of 1/4-cup bleach to 1-gallon tap water is suitable for most disinfecting. Instruments used with wastewater may be disinfected with .5% Lysol if this is more convenient to the user.
- The user shall take normal precautions to prevent radioactive contamination and must use appropriate decontamination procedures should exposure occur.
- If exposure has occurred, the customer must certify that decontamination has been accomplished and that no radioactivity is detectable by survey equipment.
- Any product being returned to the YSI Repair Center should be packed securely to prevent damage.
- Cleaning must be completed and certified on any product before returning it to YSI.

## 18.4 Packing Procedure

- Clean and decontaminate items to ensure the safety of the handler.
- Complete and include the Cleaning Certificate.
- Place the product in a plastic bag to keep out dirt and packing material.
- Use a large carton, preferably the original, and surround the product completely with packing material.
- Insure for the replacement value of the product.

## 18.5 Warranty

The instrument is warranted for three years against defects in workmanship and materials when used for its intended purposes and maintained according to instructions. The probe module and cables are warranted for one year. The dissolved oxygen, temperature/conductivity, pH, and pH/ORP combination sensors are warranted for one year. Damage due to accidents, misuse, tampering, or failure to perform prescribed maintenance is not covered. The warranty period for chemicals and reagents is determined by the expiration date printed on their labels. Within the warranty period, YSI will repair or replace, at its sole discretion, free of charge, any product that YSI determines to be covered by this warranty.

To exercise this warranty, write or call your local YSI representative, or contact YSI Customer Service in Yellow Springs, Ohio. Send the product and proof of purchase, transportation prepaid, to the Authorized Service Center selected by YSI. Repair or replacement will be made and the product returned transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days from date of repair or replacement.

### Limitation of Warranty

This Warranty does not apply to any YSI product damage or failure caused by (i) failure to install, operate or use the product in accordance with YSI's written instructions, (ii) abuse or misuse of the product, (iii) failure to maintain the product in accordance with YSI's written instructions or standard industry procedure, (iv) any improper repairs to the product, (v) use by you of defective or improper components or parts in servicing or repairing the product, or (vi) modification of the product in any way not expressly authorized by YSI.

**THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. YSI'S LIABILITY UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AND THIS SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY. IN NO EVENT SHALL YSI BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY.**

# 19. Appendix F Ferrite Bead Installation

⚠ **WARNING:** If you are using your YSI 556 in a European Community (CE) country or in Australia or New Zealand, you must attach a ferrite bead to the 655173 PC Interface Cable and the YSI 6117 Charger Adapter Cable in order to comply with the Residential, Commercial and Light Industrial Class B Limits for radio-frequency emissions specified in EN55011 (CISPR11) for Industrial, Scientific and Medical laboratory equipment. These ferrite assemblies are supplied as part of cable kits.

1. Make a small loop (approximately 5 cm in diameter) in the cable near the YSI 556 MS-19 connector.

2. Lay the open ferrite bead assembly under the loop with the cable cross-over position within the cylinder of the ferrite bead.

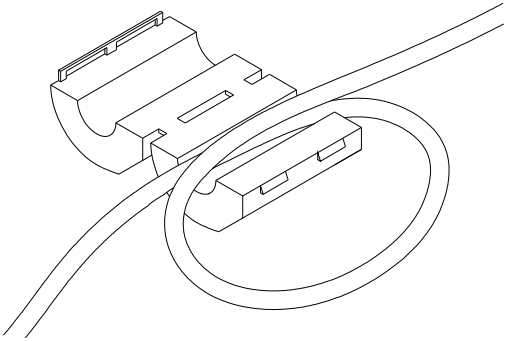


**Figure 19.1 Ferrite Bead Installation**

3. Snap the two pieces of the bead together making certain that the tabs lock securely.

4. When the installation is complete, the 655173 and 6117 cables should resemble the following drawings.

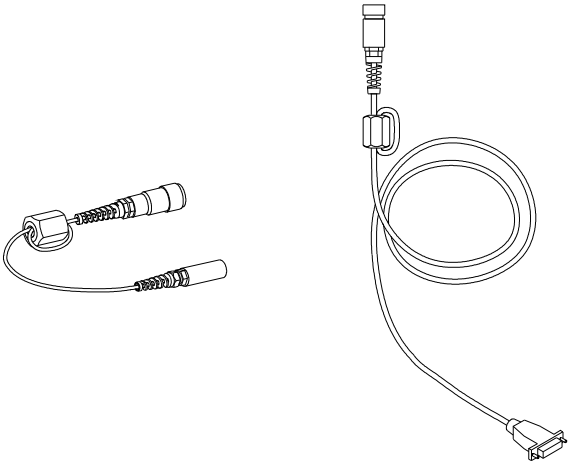


**Figure 19.2 Cables with Ferrite Beads**

# 20. Appendix G EcoWatch

EcoWatch™ for Windows™ must be used as the PC software interface to the YSI 556 MPS. EcoWatch is a powerful tool that can also be used with YSI 6-series sondes. Many features of the software will only be utilized by advanced users or are not relevant to the 556 MPS at all. This section is designed in tutorial format to familiarize you with the commonly used features of EcoWatch so that it will be possible to:

- Upload data from a 556 MPS to a PC
- Assemble plots and reports of your data
- Zoom in on certain segments of the plots of your data to facilitate analysis
- Show statistical data for your studies
- Export data in spreadsheet-compatible formats
- Print plots and reports

The advanced features of EcoWatch can be explored by downloading a 6-series manual from the YSI Web Site (www.ysi.com), purchasing a hard copy of the manual through YSI Customer Service (Item # 069300), or utilizing the on-line help feature of the software.

## 20.1 Installing EcoWatch for Windows

EcoWatch for Windows is available at no cost via a download from the YSI Web Site – www.ysi.com

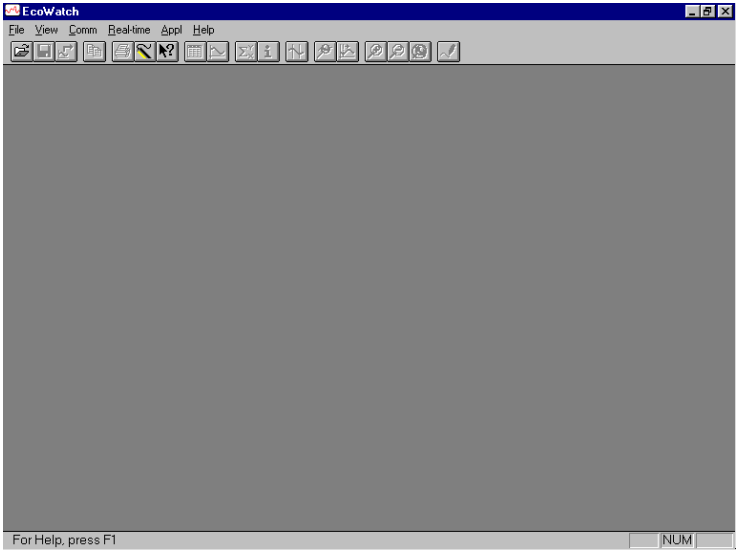
## 20.2 EcoWatch Tutorial

This EcoWatch tutorial is designed to teach you the commonly used operations associated with the software when used with your 556 MPS.

After you have uploaded a file, Refer to Section 8.4 Upload to PC, you will see two files in the C:\ECOWWIN\DATA directory; the file you transferred and a file supplied by YSI designated SAMPLE.DAT. This SAMPLE.DAT file is referred to in the remainder of this tutorial section. After following the instructions below for the analysis of SAMPLE.DAT, you apply the same analysis to the data file which was uploaded from your 556 MPS to assure that you are familiar with the basic features and capabilities of EcoWatch for Windows.

To start the analysis of the SAMPLE.DAT file, note that a shortened menu

bar is visible and many of the tools in the toolbar appear dimmed or “grayed out” before any file is opened (see below).

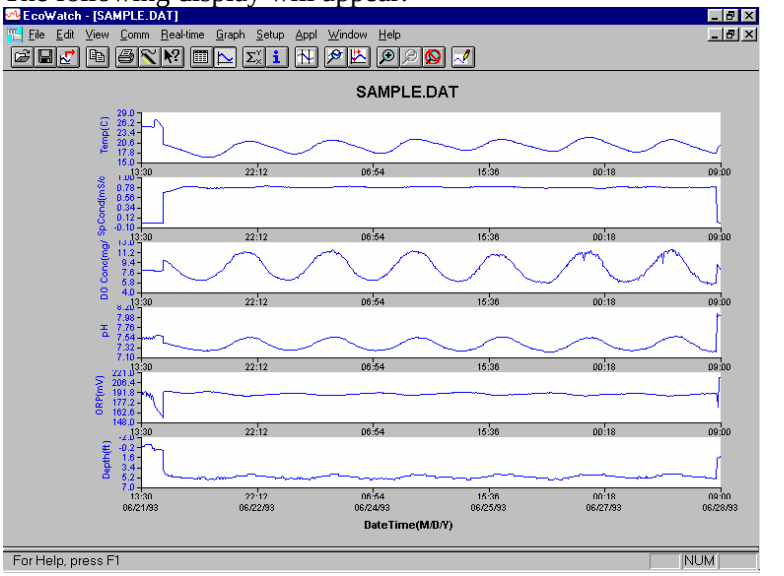



Full activation of EcoWatch features will be realized after a file is opened.

To open the sample data file:

1. Click the **File** menu button in the toolbar.
2. Select the **SAMPLE.DAT** file.
3. Click **OK** to open the file.

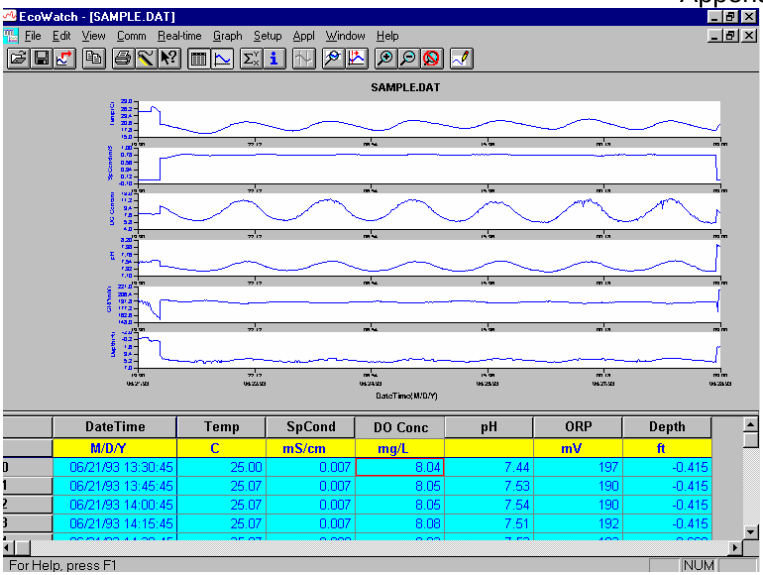
The following display will appear:




Note that the data in this file appears as a graph of temperature, specific conductance, dissolved oxygen, pH, ORP, and depth, all versus time. The graphs are scaled automatically so that all data fits comfortably on the computer screen. Note also that this data file was obtained with a 6-series sonde for which a depth sensor is available. Depth is NOT a current parameter for the 556 MPS.

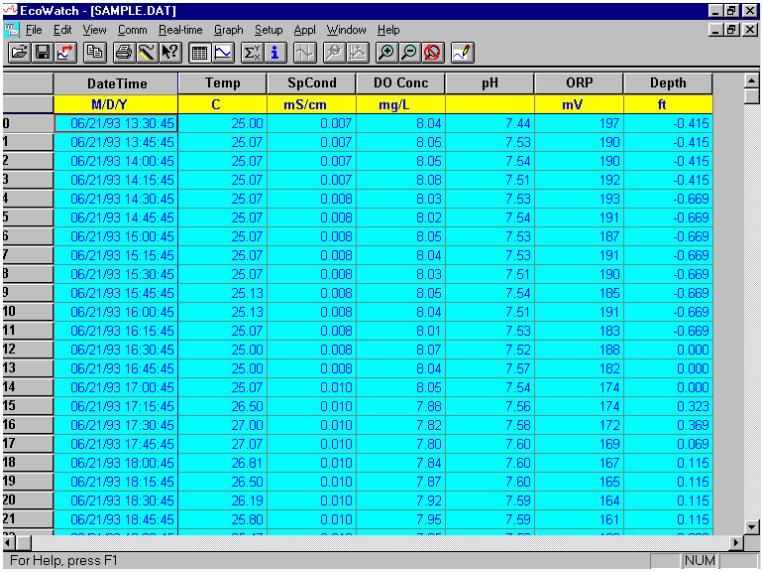
The **Table** and **Graph** buttons on the toolbar are on/off switches that are used to display or hide the graph and table pages respectively. When displaying a graph and a table at the same time, you can control the relative size of the two pages by placing the cursor over the small bar that separates them and

then dragging it to the desired location. Click the **Table** button to generate the following dual display of data.



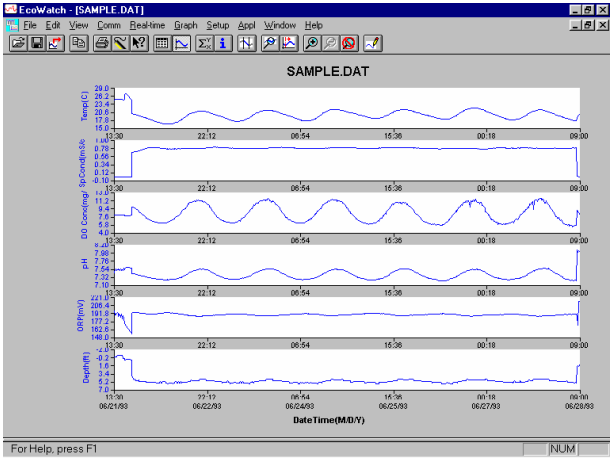

| | DateTime | Temp | SpCond | DO Conc | pH | ORP | Depth |
|---|---|---|---|---|---|---|---|
| | M/D/Y | C | mS/cm | mg/L | | mV | ft |
| 0 | 06/21/93 13:30:45 | 25.00 | 0.007 | 8.04 | 7.44 | 197 | -0.415 |
| 1 | 06/21/93 13:45:45 | 25.07 | 0.007 | 8.05 | 7.53 | 190 | -0.415 |
| 2 | 06/21/93 14:00:45 | 25.07 | 0.007 | 8.05 | 7.54 | 190 | -0.415 |
| 3 | 06/21/93 14:15:45 | 25.07 | 0.007 | 8.08 | 7.51 | 192 | -0.415 |

Now click the **Graph** button (turn it off) to display only a report of your data as shown below. Note that the size of the report can be varied by clicking on the and buttons in the Toolbar.

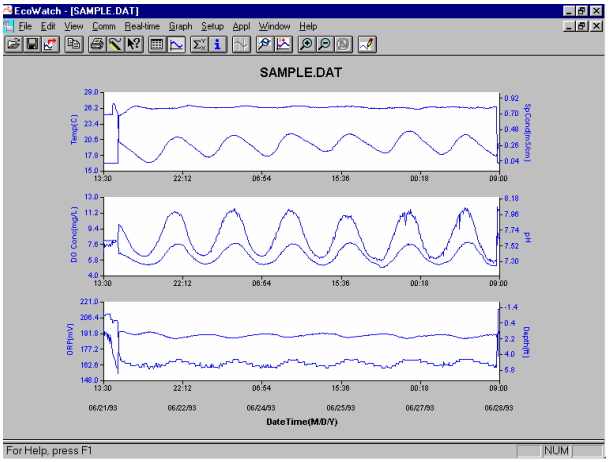



| | DateTime | Temp | SpCond | DO Conc | pH | ORP | Depth |
|---|---|---|---|---|---|---|---|
| | M/D/Y | C | mS/cm | mg/L | | mV | ft |
| 0 | 06/21/93 13:30:45 | 25.00 | 0.007 | 8.04 | 7.44 | 197 | -0.415 |
| 1 | 06/21/93 13:45:45 | 25.07 | 0.007 | 8.05 | 7.53 | 190 | -0.415 |
| 2 | 06/21/93 14:00:45 | 25.07 | 0.007 | 8.05 | 7.54 | 190 | -0.415 |
| 3 | 06/21/93 14:15:45 | 25.07 | 0.007 | 8.08 | 7.51 | 192 | -0.415 |
| 4 | 06/21/93 14:30:45 | 25.07 | 0.008 | 8.03 | 7.53 | 193 | -0.669 |
| 5 | 06/21/93 14:45:45 | 25.07 | 0.008 | 8.02 | 7.54 | 191 | -0.669 |
| 6 | 06/21/93 15:00:45 | 25.07 | 0.008 | 8.05 | 7.53 | 187 | -0.669 |
| 7 | 06/21/93 15:15:45 | 25.07 | 0.008 | 8.04 | 7.53 | 191 | -0.669 |
| 8 | 06/21/93 15:30:45 | 25.07 | 0.008 | 8.03 | 7.51 | 190 | -0.669 |
| 9 | 06/21/93 15:45:45 | 25.13 | 0.008 | 8.05 | 7.54 | 185 | -0.669 |
| 10 | 06/21/93 16:00:45 | 25.13 | 0.008 | 8.04 | 7.51 | 191 | -0.669 |
| 11 | 06/21/93 16:15:45 | 25.07 | 0.008 | 8.01 | 7.53 | 183 | -0.669 |
| 12 | 06/21/93 16:30:45 | 25.00 | 0.008 | 8.07 | 7.52 | 188 | 0.000 |
| 13 | 06/21/93 16:45:45 | 25.00 | 0.008 | 8.04 | 7.57 | 182 | 0.000 |
| 14 | 06/21/93 17:00:45 | 25.07 | 0.010 | 8.05 | 7.54 | 174 | 0.000 |
| 15 | 06/21/93 17:15:45 | 26.50 | 0.010 | 7.88 | 7.56 | 174 | 0.323 |
| 16 | 06/21/93 17:30:45 | 27.00 | 0.010 | 7.82 | 7.58 | 172 | 0.369 |
| 17 | 06/21/93 17:45:45 | 27.07 | 0.010 | 7.80 | 7.60 | 169 | 0.069 |
| 18 | 06/21/93 18:00:45 | 26.81 | 0.010 | 7.84 | 7.60 | 167 | 0.115 |
| 19 | 06/21/93 18:15:45 | 26.50 | 0.010 | 7.87 | 7.60 | 165 | 0.115 |
| 20 | 06/21/93 18:30:45 | 26.19 | 0.010 | 7.92 | 7.59 | 164 | 0.115 |
| 21 | 06/21/93 18:45:45 | 25.80 | 0.010 | 7.95 | 7.59 | 161 | 0.115 |

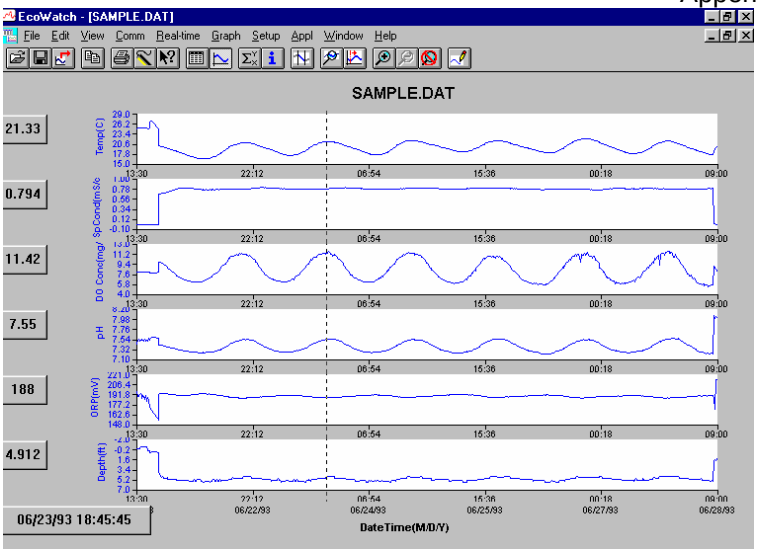
Now return to the original graphic display by toggling the **Table** button “off” and **Graph** button “on”.




From the **Setup** menu, click **Graph**. Click **2 Traces per Graph** and notice that the parameters are now graphed in pairs for easy comparison of parameters.

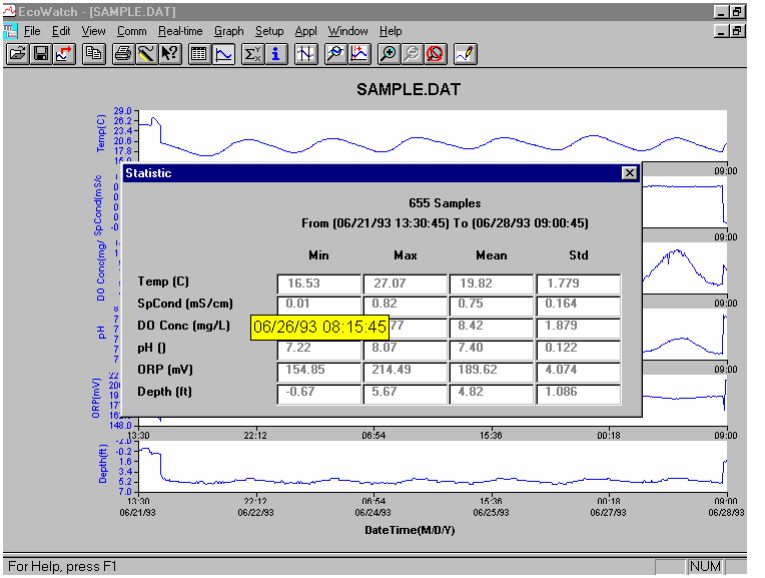



Click **1 Trace per Graph** to return the display to the original setting. Move the cursor to any position in the graph, then click and hold the right mouse button.



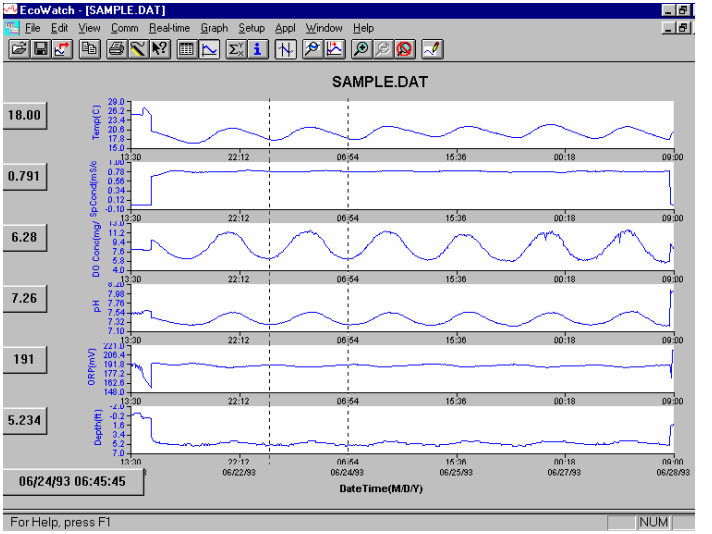

Note that the exact measurements for this point in time are displayed to the left of the graph. While holding down the right mouse button, move to another area on the graph. Notice how the measurements change as you move. When you release the mouse button, the display returns to normal.

To view statistical information for the study, click the **Statistics** button on the toolbar. On the statistics window, click on any min or max value to display the time when it occurred.

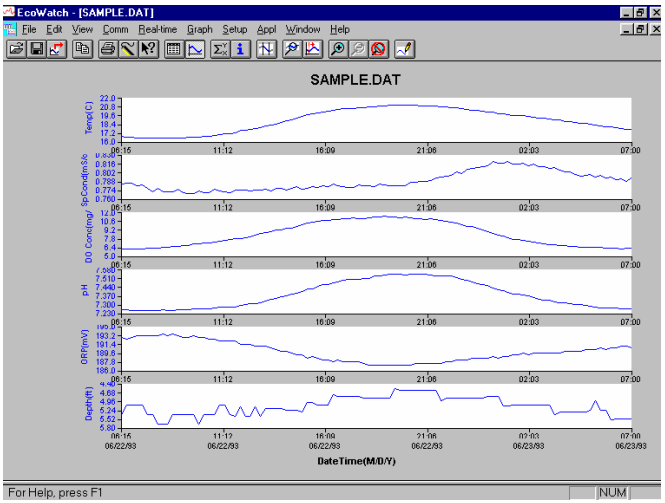



After viewing statistics, click the “x” at the upper right to close the window and return to the normal display.

Now click on the delimiter icon in the toolbar and then move the displayed icon to the graph. Click at the two points shown by dotted lines in the display below, being sure that the first click is to the left of the second.

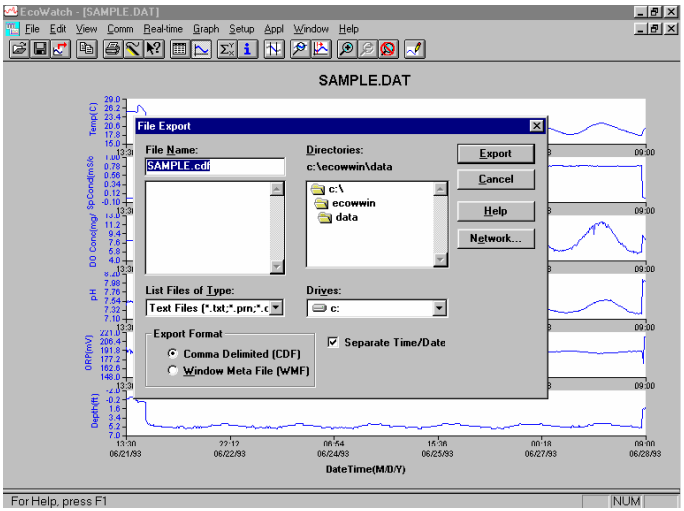



The data between the two selected points will then be graphed in higher resolution as shown below.

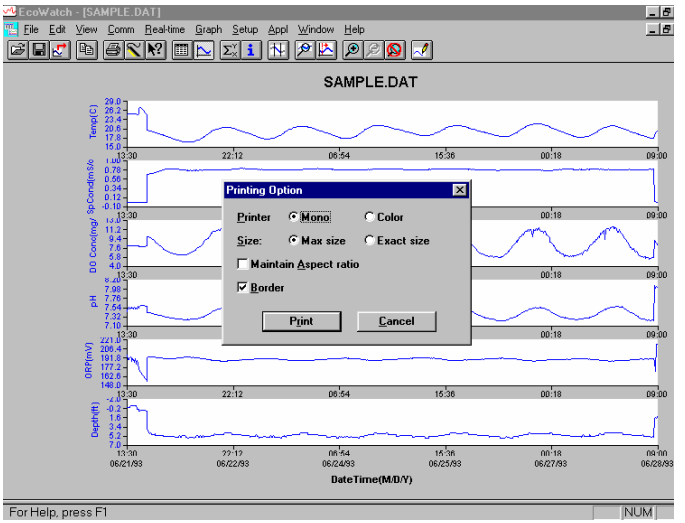



To return to the complete data set, select **Graph** from the toolbar and then click **Cancel Limits**.

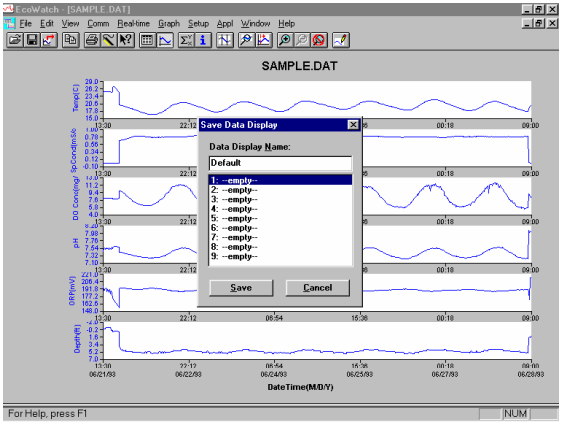
Now select the icon from the Toolbar to create a new data file which will allow your data to be imported into spreadsheets. Select the default export settings for a Comma Delimited File (.CDF) and click OK. A new spreadsheet-importable file (SAMPLE.CDF) is now present in the same folder as the SAMPLE.DAT file.




Now select the icon from the toolbar to print the plot. Accept the default settings and click OK to complete the printing operation.




Finally, end the tutorial by saving the **Data Display** in the format shown. From the File menu, click **Save Data Display**.




Then type “Default” for the file name and click **Save**. The parameters, colors, format, and x-axis time interval associated with the current display are now saved and can be accessed any time in the future. Nine different data displays may be saved for any data file. You can easily switch between various displays of the data. The data files can be accessed by clicking **Load Data Display** from the file menu and then selecting the desired presentation.

### 20.2.1 Summary of Toolbar Capability

The EcoWatch toolbar includes buttons for some of the most common commands in EcoWatch, such as **File Open**. To display or hide the toolbar,

open the **View** menu and click on the **Toolbar** command. A check mark appears next to the menu item when the toolbar is displayed.

The toolbar is displayed across the top of the application window, below the menu bar.

**Click to:**

Open an existing data file (.DAT). EcoWatch displays the **Open** dialog box, in which you can locate and open the desired file.

Save the working Data Display of the active data file. EcoWatch displays the **Save Data Display** dialog box in which you can overwrite existing Data Display or save to a new one.

Export data as a graph in Window Meta File (.WMF) format or as data in Comma Delimited (.CDF) format.

Copy the whole graph page or data from the selection on the table to the clipboard.

Print the active graph page or table page depending on which one is currently active.

Open a new terminal window to communicate with the sonde.

Access context sensitive help (Shift+F1).

Toggle table window during file processing.

Toggle graph window during file processing.

Display study statistics.

Display study info.

Limit the data to be processed.

Enlarge a selective portion of graph.

Center the graph under the cursor.

Enlarge graph of table 20%.

Reduce graph of table 20%.

Return graph or table to its normal size (unzoom).

Redraw the graph.

### 20.2.2 Other capabilities

The above tutorial and function list for the toolbar provide basic information to allow you to view and analyze the field data which was stored in your 556 MPS. Some of the other commonly used capabilities of EcoWatch which the user may want to explore are listed below:

- Customize the units for each parameter, e.g., report uS/cm instead of mS/cm for conductivity.
- Customize the order of parameters in each plot or report.
- Customize the colors and fonts of each data display.
- Manually scale the y-axis sensitivity for each parameter.
- Merging of two or more data files with compatible parameter formats
- View information about the study such as number of points, instrument serial number, etc. which was stored in the 556 with the data.
- Print data reports in different statistical formats.
- Create plots of parameter vs. parameter rather than parameter vs. time.

These additional features of EcoWatch for Windows are explained in detail in the YSI 6-series manual (which can be downloaded at no cost from the YSI Web Site as described above) and the Help selection in the EcoWatch menu bar. To purchase a hard copy of the 6-series manual, contact YSI Customer Service using the contact information in *Appendix E Customer Service*.

# 21. Appendix H Calibration Record Information

When your YSI 556 MPS sensors are initially calibrated, relevant information about the sensors will be stored in a separate file in the YSI 556 MPS memory.

**NOTE:** This file, by default, will have the name "556 Circuit Board Serial Number.glp." The circuit board serial number is assigned at the factory and has a hexadecimal format such as 000080A4. Thus the default calibration record file would be designated 00080A4.glp. Refer to Section *10.7 GLP Filename* to change the filename.

The information in the calibration record will track the sensor performance of your instrument and should be particularly useful for programs operating under Good Laboratory Practices (GLP) protocols.

## 21.1 Viewing the Calibration Record (.glp) File

**NOTE:** Make certain that you have performed a calibration on at least one of the sensors associated with your YSI 556 MPS.

Follow the procedures outlined in Section *8.3 View File*.

## 21.2 Uploading the Calibration Record (.glp) File

**NOTE:** Make certain that you have performed a calibration on at least one of the sensors associated with your YSI 556 MPS.

Follow the procedures outlined in Section *8.4 Upload to PC*.

## 21.3 Understanding the Calibration Record (.glp) File

1. Open a calibration record file. Refer to Section 8.3 View File.
2. Use the arrow keys to scroll horizontally and/or vertically to view all the data.

00008003.glp

| m/d/y | hh:mm:ss | S/N |
|---|---|---|
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:17:51 | 00008003 |
| 01/24/2001 | 08:25:40 | 00008003 |
| 01/24/2001 | 08:25:40 | 00008003 |

735.9mmHg

01/24/2001 08:39:53

**Figure 21.1Calibration Record Screen 1**

00008003.glp

| Type | Value |
|---|---|
| Conductivity gain | 1.000000 |
| DO gain | 1.000000 |
| pH gain (pH-7)*K/mV | -5.05833 |
| pH offest (pH-7)*K | 0.000000 |
| ORP offset mV | 0.000000 |
| TDS constant | 0.650000 |
| Barometer offset PSI | 0.000000 |
| DO gain | 1.110250 |
| pH gain (pH-7)*K/mV | -5.05833 |
| pH offest (pH-7)*K | -12.2899 |

735.9mmHg

01/24/2001 08:39:19

**Figure 21.2 Calibration Record Screen 2**

**NOTE:** Each sensor (not parameter) is characterized by either 1 line (Conductivity, Dissolved Oxygen, ORP, TDS, or Barometer (Optional)) or 2 lines (pH) of calibration documentation.

The left hand portion of each calibration entry shows the date and time that a calibration of a particular sensor was performed. In addition, each calibration entry is characterized by the instrument serial number, as defined by YSI. See Figure 21.1 Calibration Record Screen 1. The right hand portion shows the YSI designation of the calibration constants and their values after their calibration has been performed. A more detailed description of the calibration constants is provided below:

- **Conductivity Gain** – A relative number which describes the sensitivity of the sensor. Basically, the value represents the calculated cell constant divided by the typical value of the cell constant (5 $cm^{-1}$).
- **DO Gain** – A relative number which describes the sensitivity of the sensor. Basically, the value represents the sensor current at the time of calibration divided by the typical value of the sensor current (15 uA).
- **pH Gain** – A number which basically represents the sensitivity of the pH sensor. To remove the effect of temperature on the slope of the relationship of probe output in mv versus pH, the value of pH/mv is multiplied by the temperature in degrees Kelvin (K).
- **pH Offset** – A number which basically represents the offset (or intercept) of the relationship of probe output in mv versus pH, the value of pH is multiplied by the temperature in degrees Kelvin (K).

Anytime you perform a calibration, information concerning the calibration constants will be logged to the Calibration Record file (.glp file). However, if the **Delete All Files** command is used, Refer to Section *8.6 Delete All Files*, the Calibration Record file will also be lost. It is critical that this file should be uploaded to your PC prior to issuing a **Delete All Files** command. Refer to Section *8.4 Upload to PC.*

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Yellow Springs, OH
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Item # 655279
Rev D
Drawing # A655279
August 2009
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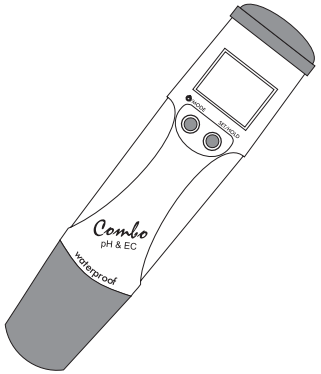
# Attachment 3
# Manufacturer's Manual for Hanna Multimeter HI 98130

# Instruction Manual

# HI 98129 - HI 98130

## Waterproof pH, EC/TDS & temperature meters




HANNA instruments

www.hannainst.com

This Instrument is in Compliance with CE Directives

## WARRANTY

HI 98129 and HI 98130 are warranted for one year against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. The electrode is warranted for a period of six months. This warranty is limited to repair or replacement free of charge.

Damages due to accident, misuse, tampering or lack of prescribed maintenance are not covered.

If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization Number from the Customer Service department and then send it with shipment costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

To validate your warranty, fill out and return the enclosed warranty card within 14 days from the date of purchase.

*All rights are reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner, Hanna Instruments Inc., Woonsocket, Rhode Island, 02895 , USA.*

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

Dear Customer,
Thank you for choosing a Hanna product. This manual will provide you with the necessary information for a correct operation. Please read it carefully before using the meter. If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.

These instruments are in compliance with the CE directives.

## PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it carefully. If any damage has occurred during shipment, immediately notify your Dealer or the nearest Hanna Customer Service Center.

The meters are supplied with:

- 4 x 1.5V batteries
- HI 73127 pH electrode
- HI 73128 Tool to remove the pH electrode

Note: Conserve all packing material until the instrument has been observed to function correctly. Any defective item must be returned in its original packing.

## GENERAL DESCRIPTION

HI 98129 and HI 98130 are waterproof pH, EC/TDS and temperature meters. The housing has been completely sealed against humidity and designed to float.

All pH and EC/TDS readings are automatically temperature compensated (ATC), and temperature values can be displayed in °C or °F units.

For EC/TDS readings, the EC/TDS conversion factor (CONV) is selectable by the user, as well as the temperature compensation coefficient β (BETA).

The meters can be calibrated at one or two points for pH (with auto-buffer recognition and against five memorized buffer values), and at one point for EC/TDS.

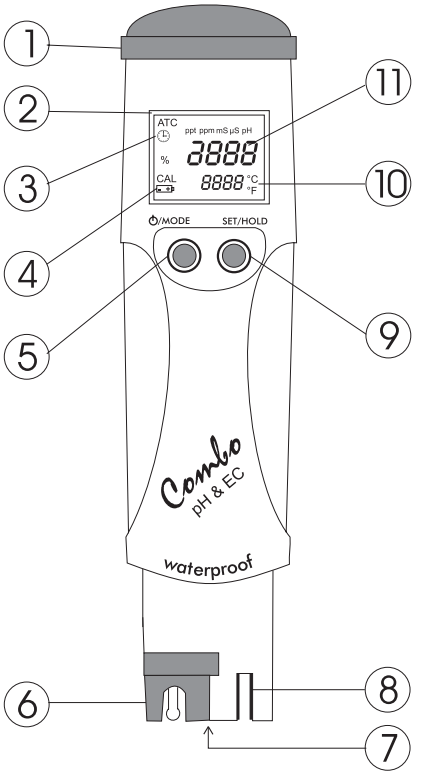
Measurements are highly accurate with a unique stability indicator right on the LCD.

A low battery symbol warns the user when the batteries are to be replaced. In addition the Battery Error Prevention System (BEPS) avoids erroneous reading caused by low voltage level by turning the meter off.

The HI 73127 pH electrode, supplied with the meters, is interchangeable and can be easily replaced by the user.

The stainless steel encapsulated temperature sensor facilitates faster and more accurate temperature measurement and compensation.

## FUNCTIONAL DESCRIPTION




1. Battery compartment
2. Liquid Crystal Display (LCD)
3. Stability indicator
4. Low battery indicator
5. ON/OFF/MODE button
6. HI 73127 pH electrode
7. Temperature sensor
8. EC/TDS probe
9. SET/HOLD button
10. Secondary LCD
11. Primary LCD

## SPECIFICATIONS

| | | |
|---|---|---|
| Range Temperature: | 0.0 to 60.0°C or 32.0 to 140.0°F | |
| HI 98129 | pH: 0.00 to 14.00 | |
| | EC: 0 to 3999 µS/cm | |
| | TDS: 0 to 2000 ppm | |
| HI 98130 | pH: 0.00 to 14.00 | |
| | EC: 0.00 to 20.00 mS/cm | |
| | TDS: 0.00 to 10.00 ppt | |
| Resolution | 0.1°C or 0.1°F | |
| HI 98129 | 0.01 pH; 1 µS/cm ; 1 ppm | |
| HI 98130 | 0.01 pH, 0.01 mS/cm ; 0.01 ppt | |
| Accuracy (@20°C/68°F) | Temperature | ±0.5°C or ±1°F |
| | EC/TDS | ±2% f.s. |
| | pH | ±0.01 |
| Typical EMC Deviation | Temperature | ±0.5°C or ±1°F |
| | pH | ±0.02 pH |
| | EC/TDS | ±2% f.s. |
| Temp.Compensation | pH: Automatic | |
| | EC/TDS: with β=0.0 to 2.4%/ºC | |
| Environment | 0 to 50°C (32 to 122°F); RH 100% | |
| EC/TDS Conversion Factor | 0.45 to 1.00 (CONV) | |
| Calibration | pH: at 1 or 2 points with 2 sets of memorized buffers (pH 4.01/7.01/10.01 or pH 4.01/6.86/9.18) | |
| | EC/TDS: automatic, at 1 point | |
| EC/TDS Calibration Solutions | | |
| HI 98129 | HI7031 (1413 µS/cm) | |
| | HI7032 (1382 ppm; CONV=0.5) | |
| | HI70442 (1500 ppm; CONV=0.7) | |
| HI 98130 | HI7030 (12.88 mS/cm) | |
| | HI70038 (6.44 ppt; CONV=0.5 or 9.02 ppt; CONV=0.7) | |
| Electrode | HI 73127 pH electrode (**included**) | |
| BatteryType/Life | 4 x 1.5V with BEPS / typical 100 hours | |
| Auto-off | After 8 min. | |
| Dimensions | 163 x 40 x 26 mm (6.4 x 1.6 x 1.0") | |
| Weight | 85 g (3.0 oz) | |

Recommendations for Users
Before using this product, make sure that it is entirely suitable for the environment in which it is used. Operation of this instrument in residential areas could cause unacceptable interferences to radio and TV equipment.
The glass bulb at the end of the electrode is sensitive to electrostatic discharges. Avoid touching this glass bulb at all times. During operation, ESD wrist straps should be worn to avoid possible damage to the electrode by electrostatic discharges. Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.
To avoid electrical shock, do not use this instrument when voltages at the measurement surface exceed 24 VAC or 60 VDC. To avoid damages or burns, do not perform any measurement in microwave ovens.

ISTR98129R2 01/02

# OPERATIONAL GUIDE

### To turn the meter on and to check battery status

Press and hold the MODE button for 2-3 seconds. All the used segments on the LCD will be visible for a few seconds, followed by a percent indication of the remaining battery life. Eg. % 100 BATT.

### To change the temperature unit

To change the temperature unit (from °C to °F), from measurement mode, press and hold the MODE button until TEMP and the current temperature unit are displayed on the lower LCD. Eg. TEMP °C.

Use the SET/HOLD button to change the temperature unit, and then press MODE button twice to return to normal measurement mode.

### To freeze the display

Press the SET/HOLD button for 2-3 seconds until HOLD appears on the secondary display.

Press either button to return to normal mode.

### To turn the meter off

Press the MODE button while in normal measurement mode. OFF will appear on the lower part of the display. Release the button.

**Notes**:

• Before taking any measurement make sure the meter has been calibrated.

• To clear a previous calibration, press the MODE button after entering the calibration mode. The lower LCD will display ESC for 1 second and the meter will return to normal measurement mode. The CAL symbol on the LCD will disappear. The meter will be reset to the default calibration.

• If measurements are taken in different samples successively, rinse the probe thoroughly to eliminate cross-contamination; and after cleaning, rinse the probe with some of the sample to be measured.

# pH MEASUREMENTS & CALIBRATION

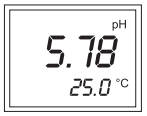
### Taking measurements

Select the pH mode with the SET/HOLD button.

Submerge the electrode in the solution to be tested.

The measurements should be taken when the stability symbol ◷ on the top left of the LCD disappears.

The pH value automatically compensated for temperature is shown on the primary LCD while the secondary LCD shows the temperature of the sample.




### Calibration buffer set

• From measurement mode, press and hold the MODE button until TEMP and the current temperature unit are displayed on the lower LCD. Eg. TEMP °C.

• Press the MODE button again to show the current buffer set: pH 7.01 BUFF (for 4.01/7.01/10.01 calibration) or pH 6.86 BUFF (for NIST 4.01/6.86/9.18 calibration).

• Press the SET/HOLD button to change the buffer value.

• Press the MODE button to return to normal measuring mode.

### Calibration procedure

From measurement mode, press and hold the MODE button until CAL is displayed on the lower LCD. Release the button. The LCD will display pH 7.01 USE or pH 6.86 USE (if you have selected the NIST buffer set). The CAL tag blinks on the LCD.

• For a single-point pH calibration, place the electrode in any buffer from the selected buffer set (eg. pH 7.01 or pH 4.01 or pH 10.01). The meter will recognize the buffer value automatically.

If using pH 4.01 or pH 10.01, the meter will display OK for 1 second and then return to measurement mode.

If using pH 7.01, after recognition of the buffer the meter will ask for pH 4.01 as second calibration point. Press the MODE button to return to measurement mode or, if desired, proceed with the 2-point calibration as explained below.

**Note**: It is always recommended to carry out a two-point calibration for better accuracy.

• For a two-point pH calibration, place the electrode in pH 7.01 (or 6.86 if you have selected the NIST buffer set). The meter will recognize the buffer value and then display pH 4.01 USE.

Rinse the electrode thoroughly to eliminate cross-contamination.

Place the electrode in the second buffer value (pH 4.01 or 10.01, or, if using NIST, pH 4.01 or 9.18). When the second buffer is recognized, the LCD will display OK for 1 second and the meter will return to normal measurement mode.

The CAL symbol on the LCD means that the meter is calibrated.

# EC/TDS MEASUREMENTS & CALIBRATION

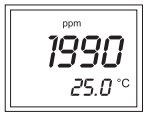
### Taking measurements

Select either EC or TDS mode with the SET/HOLD button.

Submerge the probe in the solution to be tested. Use plastic beakers to minimize any electromagnetic interferences.

The measurements should be taken when the stability symbol ◷ on the top left of the LCD disappears.

The EC (or TDS) value automatically compensated for temperature is shown on the primary LCD while the secondary LCD shows the temperature of the sample.




### To change the EC/TDS conversion factor (CONV) and the temperature compensation coefficient β (BETA)

• From measurement mode, press and hold the MODE button until TEMP and the current temperature unit are displayed on the lower LCD. Eg. TEMP °C.

• Press the MODE button again to show the current conversion factor. Eg. 0.50 CONV.

• Press the SET/HOLD button to change the conversion factor.

• Press the MODE button to show the current temperature compensation coefficient β. Eg. 2.1 BETA.

• Press the SET/HOLD button to change the temperature compensation coefficient β.

• Press the MODE button to return to normal measuring mode.

### Calibration procedure

• From measurement mode, press and hold the MODE button until CAL is displayed on the lower LCD.

• Release the button and immerse the probe in the proper calibration solution: HI7031 (1413 µS/cm) for HI98129 and HI7030 (12.88 mS/cm) for HI98130.

• Once the calibration has been automatically performed, the LCD will display OK for 1 second and the meter will return to normal measurement mode.

• Since there is a known relathionship between EC and TDS readings, it is not necessary to calibrate the meter in TDS

The CAL symbol on the LCD means that the meter is calibrated.

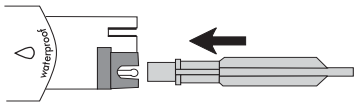
# pH ELECTRODE MAINTENANCE

• When not in use, rinse the electrode with water to minimize contamination and store it with a few drops of storage (HI 70300) or pH 7 (HI 7007) solution in the protective cap after use. DO NOT USE DISTILLED OR DEIONIZED WATER FOR STORAGE PURPOSES.

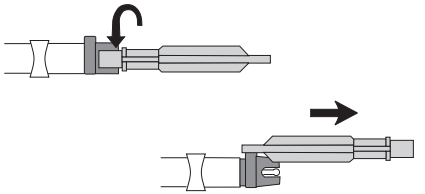
• If the electrode has been left dry, soak in a storage or pH 7 solution for at least one hour to reactivate it.

• To prolong the life of the pH electrode, it is recommended to clean it monthly by immersing it in the HI 7061 cleaning solution for half an hour. Afterwards, rinse it thoroughly with tap water and recalibrate the meter.

• The pH electrode can be easily replaced by using the supplied tool (HI 73128). Insert the tool into the probe cavity as shown below.




Remove the probe by rotating it counterclockwise and then pulling it out.

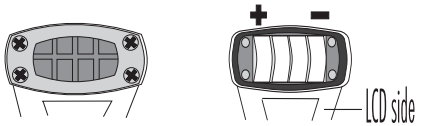


Insert a new pH electrode following the above instructions in reverse order.

# BATTERY REPLACEMENT

The meter displays the remaining battery percentage every time it is switched on. When the battery level is below 5%, the symbol on the bottom left of the LCD lights up to indicate a low battery condition. The batteries must be immediately replaced. If however the battery level is so low as to cause erroneous reading, the Battery Error Prevention System (BEPS) will automatically turn the meter off.

To change the batteries, remove the 4 screws located on the top of the meter.




Once the top has been removed, carefully replace the 4 batteries located in the compartment while paying attention to their polarity.

Replace the top, making sure that the gasket is properly seated in place, and tighten the screws.

# ACCESSORIES

| | |
|---|---|
| HI 73127 | Replaceable pH electrode |
| HI 73128 | Tool to remove the electrode |
| HI 70004P | pH 4.01 solution, 20 mL sachet (25 pcs) |
| HI 70006P | pH 6.86 solution, 20 mL sachet (25 pcs) |
| HI 70007P | pH 7.01 solution, 20 mL sachet (25 pcs) |
| HI 70009P | pH 9.18 solution, 20 mL sachet (25 pcs) |
| HI 70010P | pH 10.01 solution, 20 mL sachet (25 pcs) |
| HI 77400P | pH 4 & 7 solutions, 20 mL sachet (5 each) |
| HI 7004M | pH 4.01 solution, 230 mL bottle |
| HI 7006M | pH 6.86 solution, 230 mL bottle |
| HI 7007M | pH 7.01 solution, 230 mL bottle |
| HI 7009M | pH 9.18 solution, 230 mL bottle |
| HI 7010M | pH 10.01 solution, 230 mL bottle |
| HI 70030P | 12.88 mS/cm @25ºC calibration solution, 20 mL sachet (25 pcs) |
| HI 70031P | 1413 µS/cm @25ºC calibration solution, 20 mL sachet (25 pcs) |
| HI 70032P | 1382 ppm @25ºC calibration solution, 20 mL sachet (25 pcs) |
| HI 70038P | 6.44 ppt @25ºC calibration solution, 20 mL sachet (25 pcs) |
| HI 70442P | 1500 ppm @25ºC calibration solution, 20 mL sachet (25 pcs) |
| HI 7061M | Electrode cleaning solution, 230 mL bottle |
| HI 70300M | Electrode storage solution, 230 mL bottle |

# Attachment 4
# Field Record Form

**GROUNDWATER MONITORING FIELD FORM**
**MONTH: _____**

| Purging Phase | | | | | | | | | | Sampling Phase | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well ID | Date | Time (24 hrs.) | Top of Well Elevation (ft. MSL) | Depth to Water (ft.) | Groundwater Elevation (ft. MSL) | Total Depth (ft.) | Height of Water Col. (ft.) | Req. Gal to Purge (4 vol.) | Amount Purged (gal.) | Date | Time (24 hrs.) | pH (s.u.) | Spec. Cond. (25C) | Temp (deg.C) | Color Before Filter | Color After Filter | Odor | Turb Before Filter | Turb After Filter | Number of Filters Used |
| | | | | | | | | | | | | | | | | | | | | |
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**Casing I.D. (inches): Gallons per foot to get one well volume.**
**1.5" well : 0.092 gal. 2" well : 0.163 gal. 3" well : 0.377 gal. 4" well : 0.653 gal.**

**NOTES:**

**WEATHER** **Wind Speed:** **Direction:** **Temp. (deg.F):**
**Date:** **Overview:**
**Date Equipment Used:**
**pH Meter:** **pH 7.0:** **pH 4.0:** **Slope:**
**Spec. Cond. Meter:** **Standard:** **Reading:**
**Temperature (deg.C):**

**Facility Name:**
**Facility Address:**
**Personnel:**

**Client:** **Page:** **of**
**Project:**
**Prepared by:** **Date:**
**Checked by:** **Date:**

# Attachment 5
# Sample Preservation Methods

## Attachment 5
## Sample Containers, Preservatives, and Holding Times

| PARAMETER | BOTTLE MATERIAL | PRESERVATIVE[1] | HOLDING TIME |
|---|---|---|---|
| Alkalinity[1] | Polyethylene | Maintain at 4ºC | 14 days |
| Chemical oxygen demand | Glass | Sulfuric acid; maintain at 4ºC | 28 days |
| Fluoride, sulfate, chloride[1] | Polyethylene | Maintain at 4ºC | 28 days |
| Metals and hardness[1] | Polyethylene | Nitric acid; maintain at 4º | 6 months |
| Volatile organic compounds | Glass vial | Hydrochloric acid; maintain at 4ºC | 14 days |
| Nitrate+nitrite, ammonia as N, total Kjeldahl N | Polyethylene | Sulfuric acid; maintain at 4ºC | 28 days |
| $BOD_5$ | Polyethylene | Maintain at 4ºC | 48 hours |
| Total suspended solids | Polyethylene | Maintain at 4ºC | 7 days |
| Mercury | Polyethylene | Nitric acid; maintain at 4ºC | 28 days |
| Base/neutral/acid extractable compounds | Glass | Maintain at 4ºC | 7 days |
| Cyanide | Polyethylene | Sodium hydroxide; maintain at 4ºC | 14 days |
| PCBs | Glass | Maintain at 4ºC | 7 days |
| Phenols | Glass | Sulfuric acid; maintain at 4ºC | 28 days |

Notes:

(1) Only samples collected at groundwater monitoring wells for parameters indicated are to be field-filtered. Private wells, surface water, leachate, and gas condensate samples are not filtered.

Created by: JO

# Attachment 6
# Example Chain-of-Custody Record and Procedures

**UPPER MIDWEST REGION**
**MN:** 612-607-1700 **WI:** 920-469-2436

Pace Analytical®
www.pacelabs.com

# CHAIN OF CUSTODY

| (Please Print Clearly) | |
|---|---|
| Company Name: | |
| Branch/Location: | |
| Project Contact: | |
| Phone: | |
| Project Number: | |
| Project Name: | |
| Project State: | |
| Sampled By (Print): | |
| Sampled By (Sign): | |
| PO #: | Regulatory Program: |

***Preservation Codes**
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

| | |
|---|---|
| Quote #: | |
| Mail To Contact: | |
| Mail To Company: | |
| Mail To Address: | |
| Invoice To Contact: | |
| Invoice To Company: | |
| Invoice To Address: | |
| Invoice To Phone: | |

**Data Package Options** (billable)
- ☐ EPA Level III
- ☐ EPA Level IV

**MS/MSD**
- ☐ On your sample (billable)
- ☐ NOT needed on your sample

**Matrix Codes**

| | |
|---|---|
| A = Air | W = Water |
| B = Biota | DW = Drinking Water |
| C = Charcoal | GW = Ground Water |
| O = Oil | SW = Surface Water |
| S = Soil | WW = Waste Water |
| Sl = Sludge | WP = Wipe |

| PACE LAB # | CLIENT FIELD ID | COLLECTION DATE | COLLECTION TIME | MATRIX | FILTERED? (YES/NO) Y / N | PRESERVATION (CODE)* Pick Letter | Analyses Requested | | | | | | | | CLIENT COMMENTS | LAB COMMENTS (Lab Use Only) | Profile # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | |
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Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

| | |
|---|---|
| Email #1: | |
| Email #2: | |
| Telephone: | |
| Fax: | |

Samples on HOLD are subject to special pricing and release of liability

| Relinquished By: | Date/Time: | Received By: | Date/Time: |
|---|---|---|---|
| Relinquished By: | Date/Time: | Received By: | Date/Time: |
| Relinquished By: | Date/Time: | Received By: | Date/Time: |
| Relinquished By: | Date/Time: | Received By: | Date/Time: |
| Relinquished By: | Date/Time: | Received By: | Date/Time: |

PACE Project No.

Receipt Temp = °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

# Instructions for Completing the Chain-of-Custody Record Sample

# Shipment Methods

## Time Period

Upon completion of the sampling event, samples will be immediately transported to the laboratory to ensure that holding times of the analyses are met.

## Handling

1. Samples will be iced to 4°C and contained in coolers for transport to the laboratory as soon as possible.
2. Transport will be by trained personnel or licensed courier service.
3. The container in which the samples will be transported will be a sealed cooler.
4. Sample packaging will include the following:
    - Place several layers of cushioning (bubble pack or similar) in the bottom of the cooler.
    - Place cushioning material around all glass bottles.
    - Fill the cooler with ice.
    - Tape the drain on the cooler shut, and wrap the cooler completely with tape in two locations.
    - Place labels reading "This Side Up" and "Fragile" on the cooler.

## Sample Bottle Labels

Each sample bottle will be labeled so that the analytical laboratory has the following information:

1. Site identification
2. Sampling date and time
3. Sample identification or location
4. Sampler's name
5. Type of analysis to which the groundwater will be subjected
6. Whether the sample is filtered or unfiltered

Bottles with preservatives are color-coded by the laboratory.

## Transport Container Labels

Labels for the transport containers will be addressed to the laboratory selected for analysis.

# ATTACHMENT 5

## DRAWINGS

Plan Sheet 30 - Revised Environmental Monitoring Plan

Plan Sheet 31 -  Proposed Intermediate Waste Grades

Plan Sheet 32 - Proposed Final Waste Grades

# SECTOR 2 LANDFILL

## GROUNDWATER WELLS

| WELL ID | | | FREQUENCY | PARAMETERS | |
|---|---|---|---|---|---|
| DH-4R | DH-36 | DH-47 | Semiannual (April, October) | Field Temperature | |
| DH-18A | DH-38 | DH-47A | | Field Conductivity | |
| DH-18B | DH-39 | DH-48 | | Field pH | Odor |
| DH-22A | DH-39A | DH-49 | | Groundwater Elevation | Color |
| DH-22B | DH-40 (1) | DH-49A | | Chloride | Turbidity |
| DH-32 | DH-41 | DH-52 | | Hardness, Total, Dissolved | |
| DH-33 | DH-43 | DH-60 | | Alkalinity, Total, Dissolved | |
| DH-33A | DH-43A | DH-60A | Annual (April) | VOCs (8260 or 8021) | |
| DH-34 | DH-45 | DH-61 | | | |
| DH-35A | DH-46A | | | | |
| DH-62 (1) | DH-62A (1) | DH-63 (1) | Semiannual | Groundwater Elevation (until abandoned) | |
| (Subtitle D Wells) | | | Semiannual (April, October) | Field Temperature | Turbidity |
| DH-18 | | | | Field Conductivity | Odor |
| DH-22R | | | | Field pH | Color |
| DH-35 | | | | Groundwater Elevation | Chloride |
| DH-46 | | | | Hardness, Total, Dissolved | |
| (1) Wells to be abandoned during Phase 14A construction. | | | | Alkalinity, Total, Dissolved | VOCs (8260 or 8021) |

## PRIVATE WELLS

| WELL ID | FREQUENCY | PARAMETERS |
|---|---|---|
| Advanced Office Well (PW-28)<br>Advanced Shop Well (PW-30)<br>Thompson Dahlby Residence (PW-2)<br>Lee Residence (PW-26) | Semiannual (April, October) | Field Temperature<br>Field Conductivity<br>Field pH<br>Alkalinity, Total (unfiltered)<br>Hardness, Total (unfiltered)<br>Chloride, Total<br>VOC (SW2A method 524.2) |
| Up to 8 Additional Wells per Local Agreement and designated by SMCL | Annual (October) | VOC (EPA 524.2 extended list) |

## LEACHATE

| MONITORING POINT | | | FREQUENCY | PARAMETERS | |
|---|---|---|---|---|---|
| Sector 2 Leachate Lift Station (DNR Point ID 430) | | | Monthly (reported semiannually) | Leachate Volume Pumped/Removed (in 1000s of gallons) | |
| Sector 2 Leachate Tank (DNR Point ID 425) | | | Semiannual (April and October) | Odor, Color, Turbidity | Total Suspended Solids |
| | | | | Field Conductivity | Total Alkalinity |
| | | | | Field pH | Total Hardness |
| | | | | BOD5 | Total Ammonia Nitrogen |
| | | | | Total Sodium | Total Iron |
| | | | | Total Kjeldahl Nitrogen | Total Lead |
| | | | | Total Chloride | Total Manganese |
| | | | | Total Mercury | Total Sulfate |
| | | | | Total Cadmium | Field Temperature |
| | | | | VOCs (8260 or 8021) | |
| | | | | PCBs (See 40 CFR Part 761.358) | |
| | | | Annual (April) | SVOCs (See NR 507, Appendix IV) | |
| Monitoring requirements when leachate recirculation is active per NR 507.215 | | | | | |
| Sector 2 Leachate Tank (DNR Point ID 425) | | | Quarterly (January, April, July, October) | BOD5 | Total Alkalinity |
| | | | | COD | Total Hardness |
| | | | | Total Ammonia Nitrogen | Field conductivity |
| | | | | Field pH | Field Temperature |
| VLHW-1A | LHW-6A | LWH-10B | Monthly (reported semiannually) | Leachate Head Elevation (feet MSL) | |
| VLHW-2A (1) | LHW-6B | LHW-11 | | Leachate Depth (in feet) | |
| VLHW-3A | LHW-7A | LHW-12 | | | |
| LHW-4A | LHW-7B | LHW-13A | | | |
| LHW-4B | LHW-8 | LHW-13B | | | |
| LHW-5A | LHW-9 | LHW-14A (2) | | | |
| LHW-5B | LHW-10A | LHW-14B (2) | | | |
| (1) Proposed for abandonment per 5/29/2019 Plan Modification. | | | | | |
| (2) To be installed during Phase construction. | | | | | |

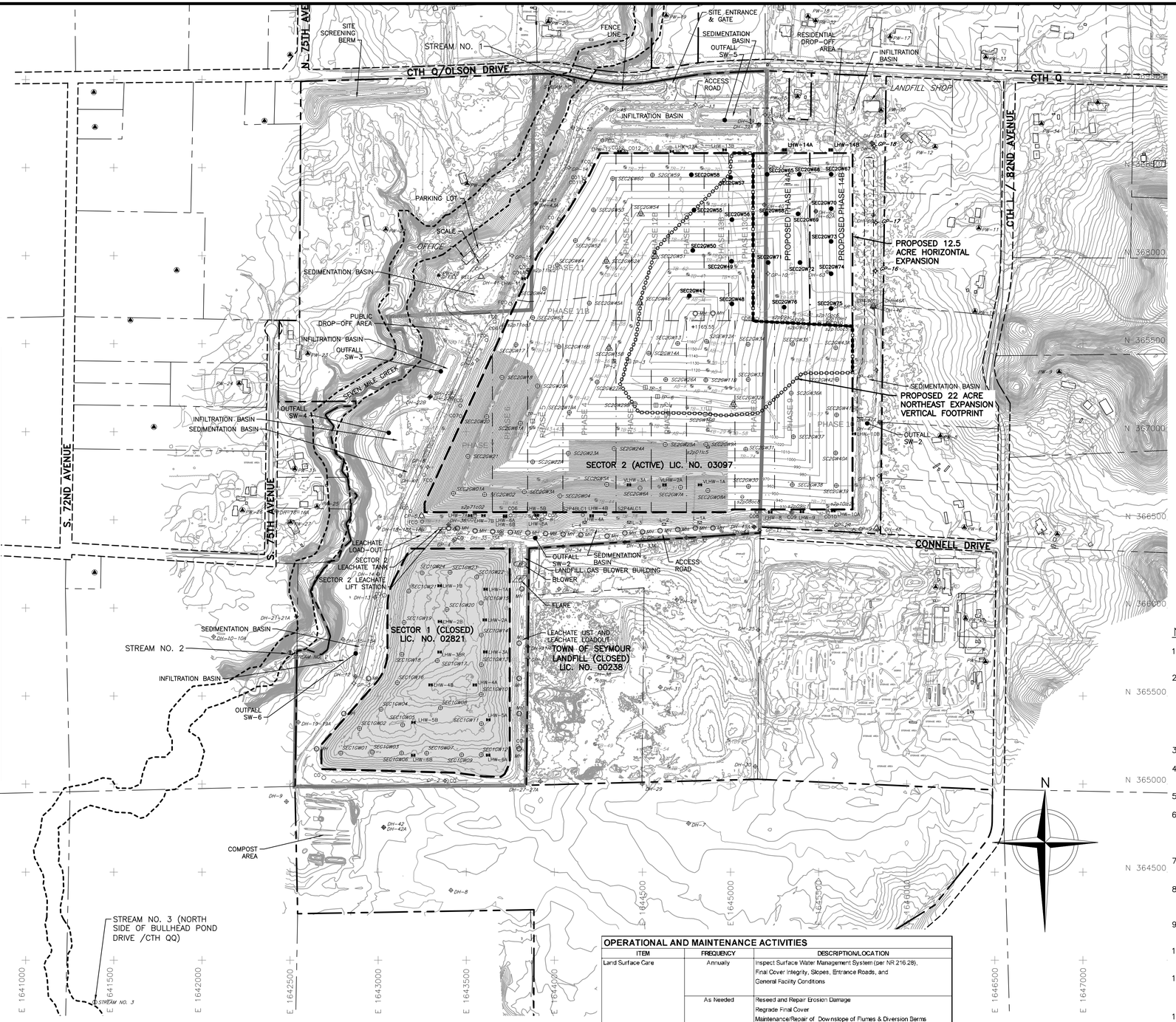
## LYSIMETERS

| MONITORING POINT | FREQUENCY | PARAMETERS | |
|---|---|---|---|
| L-1A | Monthly (reported semiannually) | Lysimeter Discharge (gallons) | |
| L-2 | | Depth to Liquid | |
| L-3 | Semiannual (April, October) | Field Conductivity | Total Kjeldahl Nitrogen |
| L-4 | | Field pH | Total Sulfate |
| | | Total Alkalinity | Elevation |
| | | Total Hardness | Odor |
| | | Total Sodium | Color |
| | | Total Chloride | Turbidity |
| | | Field Temperature | |
| | Annual (April) | VOCs (8260 or 8021) | |

## GAS SYSTEM

| MONITORING POINT | | | FREQUENCY | PARAMETERS |
|---|---|---|---|---|
| Gas Probes | | | | |
| GP-1 | GP-7 | GP-13 | Quarterly (January, April, July, October) | Ground Conditions |
| GP-2R | GP-8 | GP-14 | | Ambient Air Temperature |
| GP-3R | GP-9 | GP-15 | | Methane Gas (volume %) |
| GP-4R | GP-10 (1) | GP-16 (2) | | Oxygen Gas (volume %) |
| GP-5R * | GP-11 (1) | GP-17 (2) | | Barometric Pressure |
| GP-6 | GP-12 | GP-18 (2) | | Barometric Pressure Trend |
| (1) Probes to be abandoned during Phase 14A construction. | | | | |
| (2) Probes to be installed during Phase 14A construction. | | | | |
| Gas Wells | | | | |
| SEC2GW01A | SC2GW27A | SEC2GW53 | Monthly (submitted semiannually) | Wellhead pressure (inches) |
| SEC2GW02 | SC2GW28A | SEC2GW54 | | Gas Flow Rate (cfm) |
| SEC2GW3A | SC2GW29B | SEC2GW55 (1) | | Valve Opening (% open) |
| SEC2GW04 | SEC2GW30 | SEC2GW56 (1) | | Gas Temperature (F) |
| SEC2GW5A | SEC2GW31 | SEC2GW57 (1) | | Methane (volume %) |
| SEC2GW6A | SEC2GW32A | SEC2GW58 (1) | | Oxygen (volume %) |
| SEC2GW7A | SEC2GW33 | SEC2GW59 | | Carbon dioxide (volume %) |
| SEC2GW8A | SEC2GW34 | SEC2GW60 | | Balance Gas (volume %) |
| SEC2GW9A | SEC2GW35 | SC2GW61A | | |
| SC2GW10B | SC2GW36A | SC2GW62A | | |
| SC2GW11B | SEC2GW37 | SEC2GW63 | | |
| S2GEW12A | SEC2GW38 | SEC2GW64 | Annual (October) | Leachate depth |
| SEC2GW13 | SEC2GW39 | SEC2GW65 (1) | | Leachate head elevation |
| SC2GW14A | SC2GW40A | SEC2GW66 (1) | | |
| SEC2GW15B | SEC2GW41 | SEC2GW67 (1) | | |
| SC2GW16B | SEC2GW42 | SEC2GW68 (1) | | |
| SEC2GW17 | SC2GW43A | SEC2GW69 (1) | | |
| SEC2GW18 | SEC2GW44 | SEC2GW70 (1) | | |
| SEC2GW19A | SEC2GW45A | SEC2GW71 (1) | | |
| SEC2GW20 | SEC2GW46 | SEC2GW72 (1) | | |
| SEC2GW21 | SEC2GW47 | SEC2GW73 (1) | | |
| SC2GW22A | SEC2GW48 (1) | SEC2GW74 (1) | | |
| SC2GW23A | SEC2GW49 (1) | SEC2GW75 (1) | | |
| SE2GW24A | SEC2GW50 (1) | SEC2GW76 (1) | | |
| SE2GW25A | SEC2GW51 | | | |
| SC2GW26A | SEC2GW52 | | | |
| (1) Gas extraction wells to be installed. | | | | |
| And any other wells installed as needed. | | | | |

| | | |
|---|---|---|
| Misc. Gas Monitoring | | |
| Flare (DNR POINT ID 854) | Semi-monthly | Gas Flow Rate (cfm) |
| Blower Inlet (DNR POINT ID 850) | Semi-monthly | Header Pressure (inches) |
| Blower Outlet (DNR POINT ID 852) | Semi-monthly | Gas Volume Extracted (total monthly volume in 1000 cu. ft./month) |
| | | Gas temperature (F) |
| | | Header Pressure (inches) |
| | | Gas Flow Rate (cfm) |
| | | Carbon dioxide (volume %) |
| | | Methane (volume %) |
| | | Oxygen Gas (volume %) |
| | | Balance Gas (volume %) |
| | Annual (October) | Total Sulfur Compounds |
| | | VOCs per USEPA Method TO-15 or TO-14A |
| Note: data submitted semiannually | | |




## LEGEND

- MUNICIPAL BOUNDARY
- PROPERTY BOUNDARY
- ROAD RIGHT-OF-WAY
- PERMITTED SOLID WASTE BOUNDARY
- PHASE BOUNDARY
- FINAL COVER (CLOSED)
- APPROXIMATE 100-YEAR FLOODPLAIN DELINEATION
- PROPOSED NORTHEAST EXPANSION VERTICAL FOOTPRINT
- PROPOSED NORTHEAST EXPANSION HORIZONTAL FOOTPRINT
- EXISTING EDGE OF WOODS/SHRUBS
- 1000 EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- DH-33 EXISTING GROUNDWATER MONITORING WELL
- PW-8 EXISTING PRIVATE WELL
- GP-13 EXISTING GAS PROBE
- TB-68 EXISTING SOIL BORING LOCATION
- MH EXISTING MANHOLE
- LHW-1A EXISTING LEACHATE HEADWELL
- L-2 EXISTING LYSIMETER
- EXISTING STAFF GAUGE
- TP-4 EXISTING TEST PIT
- SEC2GW60 EXISTING LFG EXTRACTION WELL
- SEC2GW45 EXISTING CAISSON LFG EXTRACTION WELL
- S2P080C3 EXISTING SUPPLEMENTAL EXTRACTION WELL
- GP-16 PROPOSED GAS PROBE
- LHW-14B PROPOSED LEACHATE HEADWELL
- SEC2GW PROPOSED LFG EXTRACTION WELL
- PROPOSED SOLID WASTE BOUNDARY SETBACK
- PROPOSED STORM WATER BASIN
- PROPOSED ROAD

## NOTES:

1. DRONE SURVEY PERFORMED BY CQM ON APRIL 9, 2019 AND SUPPLEMENTED BY TOPOGRAPHIC SURVEY PERFORMED BY SRMC ON APRIL 6, 2017.
2. PROPERTY BOUNDARIES AND ROAD RIGHT-OF-WAYS ARE FROM DRAWINGS CREATED BY AYRES ASSOCIATES WITH SUPPLEMENTAL DATA FROM EAU CLAIRE COUNTY'S GIS DEPARTMENT. CTH Q/OLSON ROAD OVER SEVEN MILE CREEK WAS REDESIGNED AND REBUILT IN LATE 2018. THE ROAD WAS STRAIGHTENED AND RAISED. UPDATES TO THE ROAD CONFIGURATION ON DRAWINGS WILL BE PROVIDED ONCE ADDITIONAL SURVEY INFORMATION AND/OR AERIAL PHOTOGRAPHY IS PROVIDED.
3. LOCATION OF EXISTING SECTOR 2 GAS WELLS, CLEANOUTS AND LEACHATE HEADWELLS ARE FROM CQM SURVEY (AUGUST 5, 2014).
4. LOCATION OF EXISTING SECTOR 1 GAS WELLS ARE FROM AYRES AND ASSOCIATES HORIZONTAL AND VERTICAL EXPANSION FEASIBILITY REPORT (NOVEMBER 2003).
5. LOCATION OF EXISTING GAS PROBES ARE FROM AYRES 2006 AND 2013 SURVEYS, AND CQM SURVEY (AUGUST 2014).
6. MONITORING WELL AND BORING LOCATIONS, EXCEPT FOR DH-40, DH-51, DH-22R, DH-52, DH-53, DH-60, DH-60A, DH-61, DH-62, DH-62A, DH-63, TB-81, TB-82, TB-83 AND TB-83B ARE FROM AYRES ASSOCIATES HORIZONTAL AND VERTICAL EXPANSION FEASIBILITY REPORT (NOVEMBER 2003).
7. MONITORING WELL (DH-40 AND DH-51) LOCATIONS ARE FROM AYRES ASSOCIATES SECTOR 2-PLAN OF OPERATION-PLAN MODIFICATION (AUGUST 2011).
8. MONITORING WELL (DH-52 AND DH-53) LOCATIONS ARE BASED ON AYRES ASSOCIATES WELL INFORMATION FORM DATED SEPTEMBER 2006. MONITORING WELL DH-22R LOCATION BASED ON AYRES ASSOCIATES WELL INFORMATION FORM DATED OCTOBER 2011.
9. BORINGS TB-81 THROUGH TB-83B AND WELLS DH-60 THROUGH DH-63 INSTALLED IN DECEMBER 2018 FOR THE NORTHEAST EXPANSION AND SURVEYED BY CQM, INC. ON JANUARY 8, 2019.
10. EXISTING TEST PIT LOCATIONS ARE FROM AYRES AND ASSOCIATES HORIZONTAL AND VERTICAL EXPANSION FEASIBILITY REPORT (NOVEMBER 2003).
11. MONITORING WELLS THAT HAVE BEEN REPLACED ARE DESIGNATED WITH THE LETTER "R" IN WELL NAME (DH-4R). PIEZOMETER LOCATIONS ARE DESIGNATED WITH THE LETTERS "A, B OR C" (DH-22A/DH-22B).
12. GAS EXTRACTION WELLS ARE LABELED PER ADVANCED DISPOSAL NAMING SCHEME IN WHICH THE NUMBERS CORRELATE TO THE WDNR NAMING SCHEME.
13. FINAL COVER GRADES SHOWN IN SECTOR 2 PROVIDED ON PLAN SHEET 29 OF JULY 2019 FEASIBILITY REPORT PREPARED BY CORNERSTONE, A TETRATECH COMPANY.
14. MONITORING POINTS WITHIN PHASE 13 ARE FROM THE APPROVED 2016 PLAN OF OPERATION.
15. MONITORING POINTS FOR PHASE 14 WILL BE FURTHER EVALUATED AS PART OF THE PLAN OF OPERATION.

0 300 600
SCALE IN FEET

## OPERATIONAL AND MAINTENANCE ACTIVITIES

| ITEM | FREQUENCY | DESCRIPTION/LOCATION |
|---|---|---|
| Land Surface Care | Annually | Inspect Surface Water Management System (per NR 216.28), Final Cover Integrity, Slopes, Entrance Roads, and General Facility Conditions |
| | As Needed | Reseed and Repair Erosion Damage<br>Regrade Final Cover<br>Maintenance/Repair of Downslope of Flumes & Diversion Berms<br>Mow Vegetation<br>Plow Snow |
| Sedimentation Water Basins | Annually (or as needed) | Remove Sediment from Storm Water Basins |
| Leachate Collection System | Monthly | Visually inspect for Liquids in the Leachate Transfer Manholes, Perimeter Access Manholes, & Leachate Collection Tank Secondary Containment |
| | Annually | Jet Leachate Collection Lines |
| | | Inspect Integrity of the Leachate Collection Tank |
| | | Inspect the Leachate Collection Tank |
| | | Inspect/Repair/Replace Pumps, Transducers, etc. |
| Settlement Monitoring | Annually | Measure elevations relative to mean sea level |

## SURFACE WATER

| MONITORING POINT | FREQUENCY | PARAMETERS | |
|---|---|---|---|
| Stream No. 1 (upstream) | Semiannual (April, October) | Field Temperature | Total Alkalinity |
| Stream No. 2 (mid-upstream) | | Field Conductivity | Total Chloride |
| Stream No. 3 (downstream) | | Field pH | Total Hardness |
| | | Water Elevation | Nitrate (NO3-N) |
| | | Odor | Total Phosphorus |
| Note: Surface water elevation not required at Stream No. 2 | | Color | Total Iron |
| | | Turbidity | Dissolved Oxygen |

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| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| 1 | 11/14/19 | ADDED PROPOSED MONITORING LOCATIONS | SSW | TD | JCO | MJT |

DATE OF ISSUE 7/9/2019 — DRAWN BY SSW/SRC — DESIGNED BY SSW — CHECKED BY DJR — APPROVED BY JCO

TETRA TECH

ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

ADVANCED DISPOSAL
SEVEN MILE CREEK LANDFILL
EAU CLAIRE, WISCONSIN

**FEASIBILITY REPORT - ADDENDUM NO. 1**
**SECTOR 2-NORTHEAST EXPANSION**
**ENVIRONMENTAL MONITORING PLAN**

SHEET NO. **30**
PROJECT NO. 180720

File: X:\PROJECTS\SEVEN MILE CREEK\180720 - NE EXPANSION FEASIBILITY REPORT_Plan Set\30-SMC720-S-ENVMON.dwg Layout: 30 User: SCOTT.WILSON Nov 14, 2019 - 10:23am

CTH Q/OLSON DRIVE

SITE ENTRANCE & GATE

OFFICE

SCALE

PROPOSED 12.5 ACRE HORIZONTAL EXPANSION

PROPOSED 22 ACRE NORTHEAST EXPANSION VERTICAL FOOTPRINT

APPROVED LIMITS OF WASTE

SECTOR 2 (ACTIVE) LIC. NO. 03097

SECTOR 1 (CLOSED) LIC. NO. 02821

TOWN OF SEYMOUR LANDFILL (CLOSED) LIC. NO. 00238

CONNELL DRIVE

CTH L

## LEGEND

- PROPERTY BOUNDARY
- ROAD RIGHT-OF-WAY
- PERMITTED SOLID WASTE BOUNDARY
- FINAL COVER AREA
- 1030 PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- 1030 EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING FENCE
- DH-33 EXISTING GROUNDWATER MONITORING WELL
- PW-8 EXISTING PRIVATE WELL
- GP-13 EXISTING GAS PROBE
- B-68 SOIL BORING LOCATION
- DH-44 ABANDONED MONITORING WELL
- PW-5 ABANDONED PRIVATE WELL
- GP-3 ABANDONED GAS PROBE
- PROPOSED NORTHEAST EXPANSION HORIZONTAL FOOTPRINT
- PROPOSED NORTHEAST EXPANSION VERTICAL FOOTPRINT
- PROPOSED STORM WATER BASIN
- PROPOSED ROAD

## NOTES

1. DRONE SURVEY PERFORMED BY CQM ON APRIL 9, 2019 AND SUPPLEMENTED BY TOPOGRAPHIC SURVEY PERFORMED BY SRMC ON APRIL 6, 2017.
2. PROPERTY BOUNDARIES AND ROAD RIGHT-OF-WAYS ARE FROM DRAWINGS CREATED BY AYRES ASSOCIATES WITH SUPPLEMENTAL DATA FROM EAU CLAIRE COUNTY'S GIS DEPARTMENT. CTH Q/OLSON ROAD OVER SEVEN MILE CREEK WAS REDESIGNED AND REBUILT IN LATE 2018. THE ROAD WAS STRAIGHTENED AND RAISED. UPDATES TO THE ROAD CONFIGURATION ON DRAWINGS WILL BE PROVIDED ONCE ADDITIONAL SURVEY INFORMATION AND/OR AERIAL PHOTOGRAPHY IS PROVIDED.
3. THE CONTOURS WITHIN THE LIMITS OF WASTE ARE THE PROPOSED INTERMEDIATE WASTE GRADES. THE PROPOSED INTERMEDIATE WASTE GRADES REPRESENT GRADES 5% HIGHER THAN THE FINAL WASTE GRADES AS MEASURED FROM THE BOTTOM OF WASTE TO THE FINAL WASTE GRADES. THE 5% HIGHER INTERMEDIATE WASTE GRADES IS TO ACCOUNT FOR SETTLEMENT OF WASTE PRIOR TO FINAL COVER PLACEMENT.

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ADVANCED DISPOSAL
SEVEN MILE CREEK LANDFILL
EAU CLAIRE, WISCONSIN

**FEASIBILITY REPORT - ADDENDUM NO. 1**
**SECTOR 2-NORTHEAST EXPANSION**
**PROPOSED INTERMEDIATE WASTE GRADES**

SHEET NO. **31**

PROJECT NO. 180720

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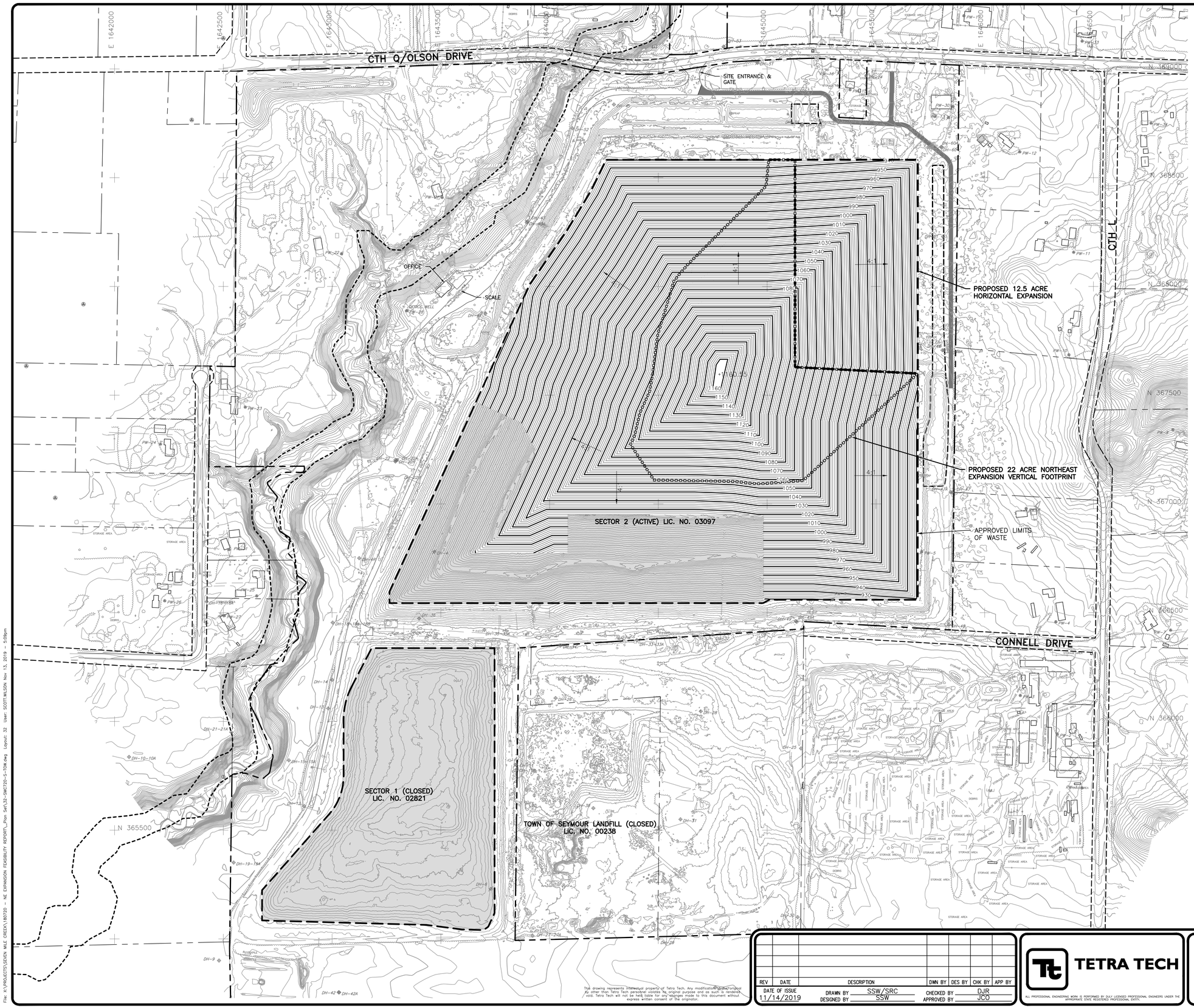


## LEGEND

- PROPERTY BOUNDARY
- ROAD RIGHT-OF-WAY
- PERMITTED SOLID WASTE BOUNDARY
- FINAL COVER AREA
- 1030 PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
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1" 1/2" 0" 1"

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**FEASIBILITY REPORT - ADDENDUM NO. 1**
**SECTOR 2-NORTHEAST EXPANSION**
**PROPOSED FINAL WASTE GRADES**

SHEET NO. **32**

PROJECT NO. 180720