7.03

STANDARD OPERATING PROCEDURES FOR THE MEASUREMENT OF DISSOLVED OXYGEN AND TEMPERATURE IN WADABLE WETLANDS USING HAND HELD METER(S).

Summary

Temperature and dissolved oxygen measurements can provide some of the most important limnological information of a water body. Temperature and dissolved oxygen measurements provide valuable information about the biological and biochemical reactions going on in a water body.

Generally, one temperature and dissolved oxygen measurement is collected at fifty percent total water column depth from the wetlands deepest most open area in the largest aquatic zone present. Shallow wetlands are waded or canoed for sample collection. Care must be taken to sample undisturbed water not influenced by bottom sediments stirred up by mucking about. This often requires collecting a mobile sample where the sampler continues to move in a forward direction away from the sediment plume.

Interferences

The electrode membrane is permeable to other gases besides oxygen, such as hydrogen sulfide (H_2S). Caution should be taken when using the membrane electrode in low dissolved oxygen waters since the presence of H_2S may lower the cell sensitivity. This interference can be reduced by frequently changing and calibrating the membrane electrode.

Equipment and Supplies

- Personal flotation device
- Waders
- Temperature/Dissolved Oxygen meter.
- Maintenance kit (KCl solution, spare membranes, batteries, battery charger).
- Project area map depicting monitoring stations.
- Field report form.
- Pen.
- Power ice auger (winter sampling).
- Ice skimmer (winter sampling).
- Meter stick (winter sampling).
- Sled (winter sampling).

Procedure

1. Locate the main aquatic zone and wade or paddle out to its center. If winter sampling make every attempt not to disturb the water column with undue agitation when drilling ice hole.

2. Fill out the field log including ambient weather information and water depth (Figure 7.03.1). Measure and record ice thickness and snow depth (winter sampling).

3. Calibrate the meter following the manufacturer's recommended procedures for field calibration.

4. Lower the probe to that depth which is approximately fifty percent the total water depth below the surface. For example, if the column is two feet deep, take the measurement one foot below the surface.

5. Switch the display to read temperature, wait for the temperature reading to stabilize (30 seconds minimum), record the temperature reading on the field report form, switch the display to read dissolved oxygen, allow the dissolved oxygen reading to stabilize and record the dissolved oxygen concentration on the field report form. Note: To achieve an accurate reading some units require a stirring unit or for the sampler to gently move the probe up and down two to three inches to circulate water across the membrane.

North Dakota Department of Health
Division of Water Quality
Lake and Wetland Profile Field Log
Telephone: 701.328.5210
Fax: 701.328.5200

Project Code:		**Project Name:**	
Site Identification:		**Site Description:**	
Date: / /	**Time: :**	**Ambient Temp:**	**Wind Speed:**
Wind Direction:	**%Cloud Cover:**	**Secchi Disk: (m)**	**Baro: (mm/Hg)**
Chlorophyll-a:	**Phytoplankton:**	**Initial DO:**	**Final DO:**
Sample Depths:_____ Meters _____		**Meters _____ Meters _____**	
Sampler(s):			
Comments:			

Depth (m)	Temp (c)	DO (Mg/L)	pH	Specific Conduct.	Comments

Figure 7.03.1 Wadable wetland field log.