

**Nebraska Department of Water, Energy, and Environment  
Standard Operating Procedure (SOP)**

**Groundwater Division - GW**

**SOP Number: GW-030**

**Title: Groundwater Sampling Equipment and Supplies**

**Written Date: July 2025**

**Purpose:** To provide a standard listing of groundwater sampling equipment and supplies, and to describe proper maintenance activities.

**Equipment/Materials Needed:**

See Appendix A: Groundwater Sampling Equipment/Materials list.

**Procedures:**

1. Obtaining equipment
  - 1.1. Equipment and supplies as listed will be maintained either on hand within the Groundwater Section or obtained through the DHHS lab or other supplier.
  - 1.2. To access equipment on hand, go to the DWEE Bio Lab located at 245 Fallbrook Blvd.
  - 1.3. If you are utilizing any equipment for an extended period of time or if it is not for a normally scheduled monitoring action (e.g. GWMA study, etc.), inform the Section Supervisor and other Section members of your equipment use, so there is some general knowledge of who is in possession of what equipment.
  - 1.4. In some cases, equipment not on hand within the Section is available from other Sections. Before purchasing equipment, consult with other appropriate Sections or Divisions (e.g. Petroleum Remediation Section, Land Monitoring Section, etc.) to see if they have appropriate equipment for loan.
  - 1.5. If necessary equipment is not on hand within the agency, consult with Section Supervisors regarding purchase or rental.
2. Obtaining supplies
  - 2.1. For ordinary groundwater sampling supplies (e.g. bottles, preservatives, deionized water, etc.), contact the DHHS lab or outside supplier far enough in advance to ensure adequate time for delivery.
  - 2.2. For specialized sampling supplies (e.g. refills for field test kits, etc.), coordinate with Section Supervisor and specific project manager to order/purchase the necessary items.

3. Instrument/equipment maintenance
  - 3.1. pH meter--separate probe
    - 3.1.1. Calibrate instrument regularly as per GW-070.
    - 3.1.2. When not in use, store probe with tip immersed in deionized water or 7.0 pH buffer solution.
    - 3.1.3. For long periods of storage (greater than a few days/weeks), remove batteries and disconnect probe lead.
  - 3.2. pH meter--wand type
    - 3.2.1. Calibrate instrument regularly as per GW-070.
    - 3.2.2. When not in use, store meter with probe cap firmly in place.
    - 3.2.3. For long periods of storage (greater than a few days/weeks), remove batteries.
  - 3.3. Conductivity meter--separate probe
    - 3.3.1. Calibrate instrument regularly as per GW-070.
    - 3.3.2. For long periods of storage (greater than a few days/weeks), remove batteries and disconnect probe.
  - 3.4. Conductivity meter--wand type
    - 3.4.1. Calibrate instrument regularly as per GW-070.
    - 3.4.2. When not in use, store meter with probe cap firmly in place.
    - 3.4.3. For long periods of storage (greater than a few days/weeks), remove batteries.
  - 3.5. Global Positioning System (GPS) unit
    - 3.5.1. Due to the value of these units, they will not be kept in the storage area. The GPS units will be retained by individual project personnel. Check with the Section Supervisor and/or GWMA staff to locate the units.
  - 3.6. Nitrate field test kit (Hach kit)
    - 3.6.1. Periodically ensure that test tubes are not cracked or chipped; if so, replace them.
    - 3.6.2. Periodically check expiration date on reagent packets; if out of date, replace them.
    - 3.6.3. For long periods of storage, store kit in dark, dry, cool place.

3.7. Triazine field test kit

- 3.7.1. Periodically check expiration date on kit. If they are out of date but have been stored in refrigerator, they are still usable. Schedule the oldest kits for first field use.
- 3.7.2. For opened kits, periodically check test tube pouch to ensure that it is sealed.
- 3.7.3. For long periods of storage, store kit in refrigerator. Clearly mark each kit as belonging to the Groundwater Section.
  - 3.7.3.1. Conversation with the manufacturer indicates that the triazine test kits have an indefinite shelf life if they are kept refrigerated. Use your best judgement as to whether out-of-date test kits should be used on your project.
  - 3.7.3.2. Test kits may be stored in a refrigerator in the Bio Lab.

3.8. Miscellaneous equipment/materials

- 3.8.1. Store miscellaneous equipment and materials in the Section's storage area at DWEE. Ensure that all equipment is clean and in working order, and that materials are properly secured with regard to light, moisture, temperature, etc.

## APPENDIX A. Equipment/materials checklist for groundwater sampling

### INSTRUMENTS

- \_\_\_\_\_ Thermometers, alcohol filled (2 min.)
- \_\_\_\_\_ pH meter (wand or probe)
- \_\_\_\_\_ Spare battery--9 volt alkaline or appropriate
- \_\_\_\_\_ Calibration standards
- \_\_\_\_\_ Conductivity meter
- \_\_\_\_\_ Spare batteries--(2) "D" cells, alkaline or appropriate
- \_\_\_\_\_ Calibration standard(s)
- \_\_\_\_\_ GPS unit
- \_\_\_\_\_ Spare batteries
- \_\_\_\_\_ Nitrate test kit (Hach)
- \_\_\_\_\_ Reagent pillows
- \_\_\_\_\_ Spare test tubes
- \_\_\_\_\_ Spare color wheel
- \_\_\_\_\_ Triazine test kit
- \_\_\_\_\_ Disposable pipettes

### EQUIPMENT

- \_\_\_\_\_ Coolers (4 or more)
- \_\_\_\_\_ Squirt bottle
- \_\_\_\_\_ Wide-mouth glass jar, 500 ml min., w/ lid (conductivity)
- \_\_\_\_\_ Wide-mouth glass jar, 1 l min., w/ lid (ampule waste; from lab)
- \_\_\_\_\_ Filtering equipment
- \_\_\_\_\_ Flask
- \_\_\_\_\_ Filter holder/funnel
- \_\_\_\_\_ Vacuum pump w/ tubing
- \_\_\_\_\_ Filter tongs
- \_\_\_\_\_ Clipboard
- \_\_\_\_\_ Tools
- \_\_\_\_\_ Phillips screwdriver
- \_\_\_\_\_ Standard screwdriver
- \_\_\_\_\_ Pliers
- \_\_\_\_\_ Shovel
- \_\_\_\_\_ Buckets, 5-gallon (2)
- \_\_\_\_\_ Rubber boots
- \_\_\_\_\_ Garden hose
- \_\_\_\_\_ Deionized water container(s), 3-5 gallons each
- \_\_\_\_\_ Scissors
- \_\_\_\_\_ Bungee cords
- \_\_\_\_\_ Peristaltic pump
- \_\_\_\_\_ Tubing
- \_\_\_\_\_ Submersible pump

\_\_\_\_\_ Generator

\_\_\_\_\_ Fuel for generator

### MATERIALS

- \_\_\_\_\_ Sample bottles, plastic w/ lids
- \_\_\_\_\_ Labels
- \_\_\_\_\_ Pesticide jars, brown glass, 1 l w/ lids & Teflon septa (from lab)
- \_\_\_\_\_ Deionized water to fill containers (from lab)
- \_\_\_\_\_ Pen(s)
- \_\_\_\_\_ Pencil(s)
- \_\_\_\_\_ Markers, Berol Prismacolor Art--Nile Green or comparable (2 min.)
- \_\_\_\_\_ Markers, Berol Prismacolor Art--Canary Yellow or comparable (2 min.)
- \_\_\_\_\_ Markers, Sharpie indelible or comparable (2 min. in various colors)
- \_\_\_\_\_ Sulfuric acid ampules, 2 ml conc.
- \_\_\_\_\_ Nitric acid ampules, 2 ml conc.
- \_\_\_\_\_ Filters, 0.45 um X 47 mm
- \_\_\_\_\_ Lab/chain-of-custody sheets
- \_\_\_\_\_ Field inventory sheets
- \_\_\_\_\_ Zip lock bags
- \_\_\_\_\_ Gloves, disposable
- \_\_\_\_\_ Rubber bands
- \_\_\_\_\_ Paper tags, manila/yellow/etc.
- \_\_\_\_\_ Labelling tape
- \_\_\_\_\_ Paper towels

### INCIDENTALS

- \_\_\_\_\_ Maps
- \_\_\_\_\_ Well list(s)
- \_\_\_\_\_ QAPP copy
- \_\_\_\_\_ SOPs copy
- \_\_\_\_\_ Project contact list/phone #s
- \_\_\_\_\_ Travel authorization
- \_\_\_\_\_ Lodging authorization/direct bill
- \_\_\_\_\_ Field book
- \_\_\_\_\_ Camera
- \_\_\_\_\_ Binoculars
- \_\_\_\_\_ First aid kit
- \_\_\_\_\_ Cellular phone
- \_\_\_\_\_ List of hospitals for study area

### MAILING

- \_\_\_\_\_ Strapping tape
- \_\_\_\_\_ Envelopes