# Land Application Self-Monitoring Program

**MONITORING OBJECTIVE:**
To monitor permit compliance and evaluate program effectiveness at facilities permitted to discharge wastewaters and wastewater residuals to the land surface.

**WATERBODY TYPES MONITORED:**
- Groundwater (all classes)

**WATER QUALITY INDICATORS:**

| **Monitoring Indicators**<br>(Depending on study objectives, some or all of the following are used): | | |
|---|---|---|
| • pH<br>• Water Level<br>• Alkalinity<br>• Temperature<br>• Fecal Coliform<br>• Turbidity<br>• Carbonate<br>• Bicarbonate<br>• Chloride<br>• Color | • Cyanide<br>• Fluoride<br>• Hardness<br>• Sulfate<br>• Silica<br>• $NH_3$<br>• TKN<br>• Se<br>• Pesticides<br>• $NO_2$+$NO_3$ | • Chemical Oxygen Demand<br>• Total Phosphorus<br>• Total Organic Carbon<br>• Total Suspended Solids<br>• Total Dissolved Solids<br>• Specific Conductance<br>• Volatile Organic Compounds<br>• Semi-Volatile Organic Compounds<br>Metals *(Ag, Al, As, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Zn)* |

**MONITORING DESIGN:**
DWQ's Land Application Program regulates the land-based disposal of wastewater and residuals generated by Concentrated Animal Feeding Operations, single family residences, industrial processes, municipalities, groundwater remediation, and certain other activities. At each permitted facility where groundwater quality monitoring is required, a network of monitoring wells is installed at the review and compliance boundaries. A single monitoring well is also installed in the up-gradient direction of groundwater flow that serves as a background quality well.

**QUALITY ASSURANCE:**
The following QA/QC requirements apply:
- Laboratory analyses must be conducted by a laboratory certified under 15A NCAC 2H 0800.
- Operators must follow *Groundwater Section QA/QC and Standard Operating Procedures Manual for Sample Collection*.
- DWQ's *QAPP for Regulated Facility Inspections* (approved by EPA on August 14, 2007).
- Internal guidance for data entry by DWQ staff.

**DATA MANAGEMENT:**
The certified operator of the permitted facility or a contracted consultant collects samples and submits them to a certified laboratory for analysis. The permitee then submits analytical data to the DWQ. Data are stored in the BIMS permitting database (a relational database).

**DATA ANALYSIS AND ASSESSMENT:**
Land application self-monitoring data are primarily used to evaluate compliance with groundwater quality standards or permit conditions. Other analyses and assessments of the data depend on the particular question at hand. DWQ has initiated an internal analysis of land application site groundwater quality data by Resource Evaluation Program hydrogeologists to evaluate how existing data is collected and stored, and will be performing detailed on-site hydrogeologic assessments at select facilities to determine if existing land application policies and rules are effective.

**REPORTING:**
DWQ generates reports on Land Application Self-Monitoring data as-needed to support compliance and enforcement activities, evaluation of program effectiveness, public inquiries, classification and standards reviews, and other needs.

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