

## **PROTOCOL**

# **GROUNDWATER MONITORING REPORTS**

### Introduction

This protocol has been developed in order to support the Savannah River Site Environmental Restoration Division. This protocol applies to the preparation of quarterly, semi-annual and annual groundwater monitoring reports.

### Details

Groundwater Monitoring Reports are reports that document groundwater-monitoring activities, summarize data results, and discuss interpretations of the data. Reports are issued for individual groundwater management units and the contents and schedules for each unit vary. The report for a particular unit will be prepared in accordance with the specific governing regulatory document (i.e., permit IIIB.H11.b or c, or other regulatory document) for a specific unit.

### Requirements

The following basic requirements shall be defined within each unit report. (There may be additional/special requirements defined in each unit's permit or regulatory document).

1. Current and historical water elevation and water quality data in table form for all constituents detected (include data from at least the previous three (3) sampling events);
2. Hydrographs for all wells depicting groundwater elevations through time (clustered wells should be shown on a single graph);

3. Time versus concentration plots for each point of compliance and plume definition well identified per unit permit and depicting the unit constituents of concern (data from clustered wells should be shown on a single plot);
4. Isoconcentration maps depicting the constituents of the unit for each hydrologic unit, except for wells abandoned for greater than one (1) year. Maps for each hydrologic unit shall include the location of all POC, plume definition, and background wells identified by the unit permit which are screened within the hydrologic unit depicted. The locations of recovery wells in the vicinity are to be included on all isoconcentration maps;
5. Potentiometric maps depicting groundwater flow direction of the unit for each hydrologic unit. Maps for each hydrologic unit shall include the location of all POC, plume definition, and background wells identified by the unit permit and which are screened within the hydrologic unit depicted. The locations of recovery wells and production wells in the vicinity are to be included on all potentiometric maps;
6. Recharge data (inches of rainfall during the reporting period);
7. Discussion of proposed and/or implemented modification to the groundwater monitoring system.

#### Report Content

- A. Introduction – As directed by the RCRA Permit/FFA (SCDHEC), the introduction shall provide a description of the facilities and shall include information on groundwater monitoring and corrective action for the facilities.
- B. Executive Summary – This section depicts the sampling to determine groundwater constituents and point-of-compliance (POC), background, and plume definition wells, as well as the time period (quarter) that sampling was performed. The constituents that exceeded the Groundwater Protection Standards (GWPS) or Monitoring Constituent Standard (MCS) are identified in the Executive Summary. In addition wells which contained elevated constituents and wells that were not sampled (and the reason) are identified.

- C. Analytical Results- Analytical results are usually submitted in tabular form and include sample or batch specific quality assurance/quality control information defined by data modifiers (also to as qualifiers) which can be a key component assessing data usability. The lettered modifiers are bas3edibn EPA's Storet codes and are provided to the primary laboratories by EPD/EMS. The modifiers appear in the data tables under the column Mod.
- D. Figures – Figures typically depict the location of the monitoring wells with their corresponding well number. Cross-sections, when require, provide geologic information relative to soil layers surrounding a particular well. Plume maps show the known area of extent of a contaminant.
- E. Tables – Tables may be used to display analytical data as well as other types of data including average water elevation, flow rate, rainfall and recharge for a facility.
- F. Appendixes – Supporting information is included in the appendixes and may include Groundwater Protection Standards, time series plots depicting concentrations over a period of time, and hydrographs depicting water elevations over a period of time.