

Fort Gordon Ground-Water Assessment

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 Year Started 1998



Problem

Fort Gordon military installation near Augusta, Georgia, is experiencing increasing water-supply demands for ground-water sources. Development of ground-water supplies requires data on ground-water conditions. Training Area 25 is being considered to meet future water-supply demands on the base. The Georgia Department of Natural Resources (GaDNR), Environmental Protection Division (GaEPD), Georgia Geologic Survey, has water-use permitting authority in the State of Georgia to monitor large ground-water withdrawal and manage ground-water resources.

The Georgia Department of Human Resources, Environmental Health Division, requires an understanding of water-quality conditions to ensure that possible contamination of the water supply from industrial and commercial users near Training Area 25 does not exceed the U.S. Environmental Protection Agency (USEPA), National Primary Drinking Water Standards (U.S. Environmental Protection Agency, 2000). The U.S. Geological Survey (USGS), in cooperation with Fort Gordon, is providing an assessment of hydrogeology and ground-water conditions by collecting and evaluating borehole geophysical logs from wells near Training Area 25. Also, the USGS is conducting GaEPD annual compliance sampling at Fort Gordon.

Objectives

- Assist Fort Gordon in meeting water-supply demands by describing the hydrogeology of Training Area 25; and

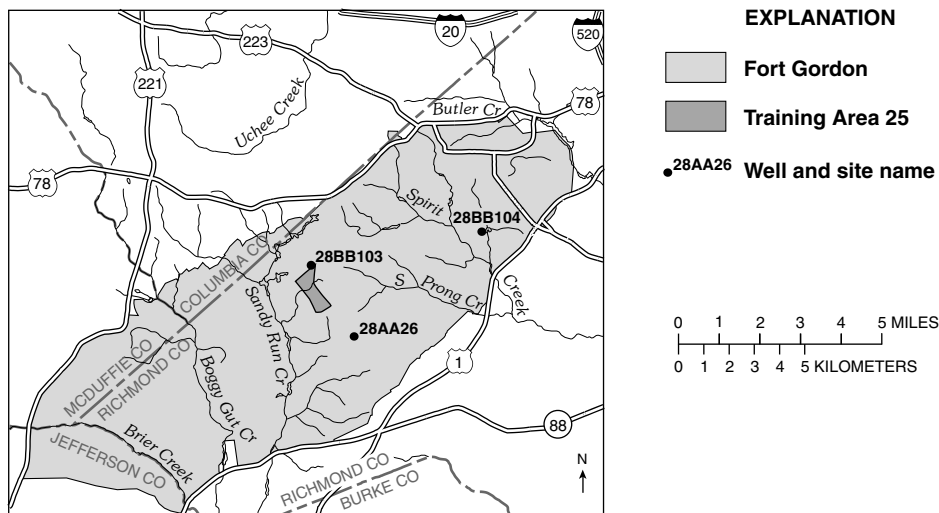
- Assist Fort Gordon in meeting GaEPD permitting requirement to monitor water-quality conditions at Fort Gordon. The permit requires that Fort Gordon annually sample ground water for selected volatile organic compounds.

Progress and Significant Results, 2001

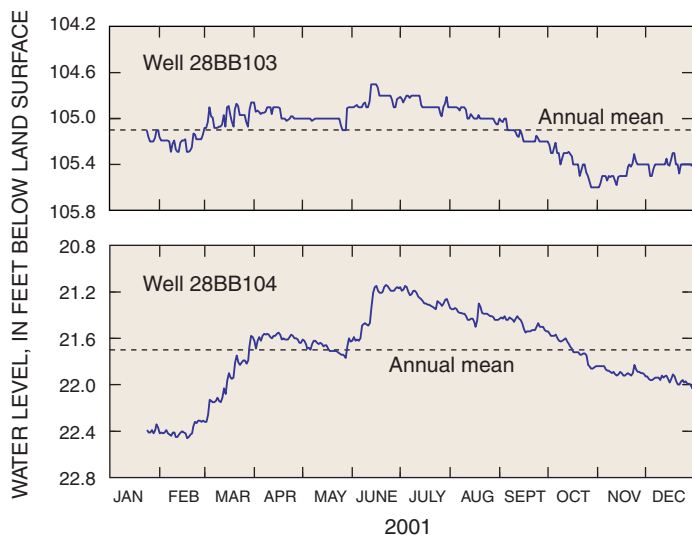
- Lithologic logs from five wells and geophysical logs from three wells are being used to construct a geologic cross section of Training Area 25 and vicinity. The geologic cross section will show water-bearing zones and confining units in the study area. Also, the USGS continued ground-water-level monitoring in wells equipped with continuous water-level recorders.
- USGS constructed a water-table well about 2 feet downgradient of a drain field. Water collected from the well was sent to a USEPA-approved laboratory and tested for benzene, toluene, ethyl benzene, xylene, and ethylene glycol.

Reference Cited

U.S. Environmental Protection Agency, 2000, Maximum contaminant levels (Subpart B of Part 141, National Primary Drinking Water Regulations): U.S. Code of Federal Regulations, Title 40, Parts 100–149, revised as of July 1, 2000, p. 334–560.

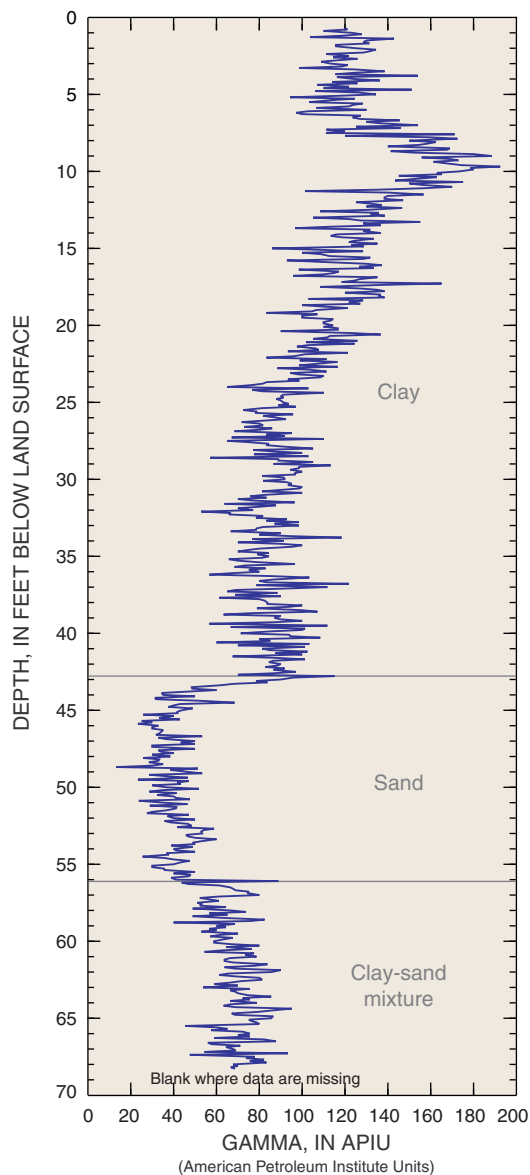


Base from U.S. Geological Survey 1:100,000-scale digital data



Water-level measurements from two monitoring wells at Fort Gordon, Georgia, indicate a rise in water level from mid-winter to early summer, then a gradual decline. During the course of calendar year 2001, the water level at well 28BB103 declined about 0.2 foot, and the water level at well 28BB104 rose about 0.4 foot.

A test well was completed near Training Area 25 at Fort Gordon, Georgia. The 260-foot-deep well was completed with a screened interval between 198 and 238 feet. Geologic and hydrologic data are being evaluated to assess the viability of ground water as a source of water supply to support increasing demands. Photo by Sherlyn Priest, USGS.



Natural gamma radiation log of well 28AA26 indicates the presence of clay from the surface to a depth of about 43 feet, where the strata becomes more sandy. At a depth of about 56 feet, the strata grades back into a clay-sand mixture.

Location, construction, and water-level data for wells used in this study [NAVD 88, National Vertical Datum of 1988]

| Site name | Other identifier | Latitude | Longitude | Depth, in feet below land surface | | Altitude, in feet above NAVD 88 | 2001 annual-mean water level, in feet below land surface |
|-----------|-----------------------|-----------|-----------|-----------------------------------|-----------------------------------|---------------------------------|--|
| | | | | Top of screen or open interval | Bottom of screen or open interval | | |
| 28AA26 | Wash Rack-Forestry Rd | 33°20'53" | 82°12'42" | 51 | 71 | 457 | 57.0 |
| 28BB103 | Range Control | 33°22'41" | 82°14'01" | 198 | 238 | 500 | 105.1 |
| 28BB104 | Mirror Lake | 33°23'30" | 82°08'39" | 60 | 80 | 315 | 21.7 |