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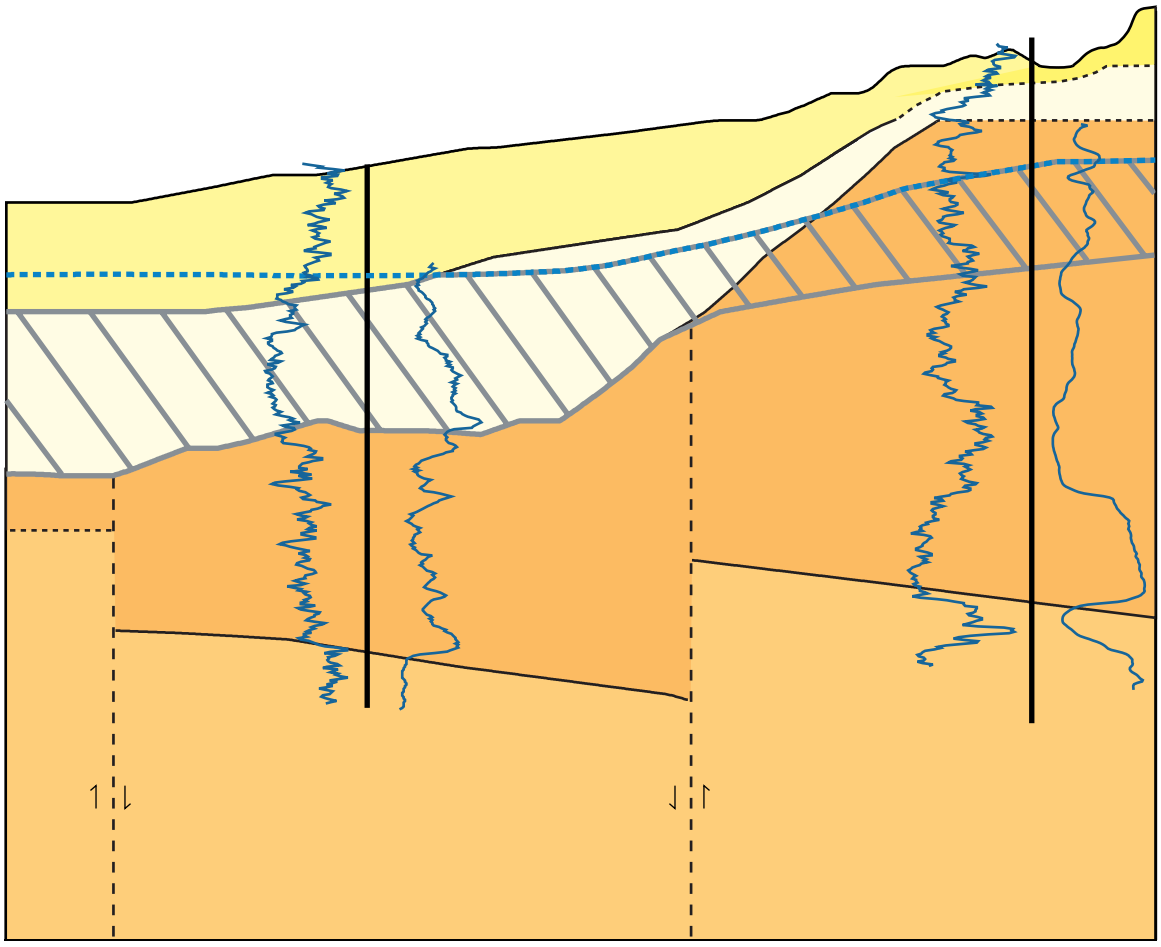
# Hydrogeology and Ground-Water-Flow Simulation in the Former Airfield Area of Naval Support Activity Mid-South, Millington, Tennessee



Scientific Investigations Report 2004-5040

U.S. Department of the Interior
U.S. Geological Survey

**Cover.** See figure 6b, page 13.

# Hydrogeology and Ground-Water-Flow Simulation in the Former Airfield Area of Naval Support Activity Mid-South, Millington, Tennessee

By Connor J. Haugh, John K. Carmichael, and David E. Ladd

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**U.S. Department of the Interior**
**U.S. Geological Survey**

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# Contents



# Figures

## Tables

# Conversion Factors, Datums, Well-Numbering Information, and Acronyms

| Multiply | By | To obtain |
|---|---|---|
| inch (in.) | 25.4 | millimeter (mm) |
| foot (ft) | 0.3048 | meter (m) |
| mile (mi) | 1.609 | kilometer (km) |
| acre | 4,047 | square meter ($m^2$) |
| acre | 0.4047 | hectare (ha) |
| square foot ($ft^2$) | 0.0929 | square meter ($m^2$) |
| square mile ($mi^2$) | 259.0 | hectare (ha) |
| square mile ($mi^2$) | 2.590 | square kilometer ($km^2$) |
| foot per day (ft/d) | 0.3048 | meter per day (m/d) |
| foot per year (ft/yr) | 0.3048 | meter per year (m/yr) |
| cubic foot per second ($ft^3/s$) | 0.02832 | cubic meter per second ($m^3/s$) |
| cubic foot per second per square mile [$(ft^3/s)/mi^2$] | 0.01093 | cubic meter per second per square kilometer [$(m^3/s)/km^2$] |
| gallon per minute (gal/min) | 0.06308 | liter per second (L/s) |
| million gallons per day (Mgal/d) | 0.04381 | cubic meters per second ($m^3/s$) |
| inch per year (in/yr) | 25.4 | millimeter per year (mm/yr) |
| gallon per minute per foot [(gal/min)/ft] | 0.2070 | liter per second per meter [(L/s)/m] |
| foot squared per day ($ft^2/d$) | 0.09290 | meter squared per day ($m^2/d$) |

Temperature in degrees Fahrenheit ($^oF$) can be converted to degrees Celsius ($^oC$) as follows:

$^oC = 5/9 \times (^oF-32)$

Transmissivity: In this report transmissivity is expressed as foot squared per day ($ft^2/d$)—The standard unit for transmissivity (T) is cubic foot per day per square foot times foot of aquifer thickness "[$(ft^3/d)/ft^2$]ft" or cubic meter per day per square meter times meter of aquifer thickness "[$(m^3/d)/m^2$]m." These mathematical expressions reduce to foot squared per day "($ft^2/d$)" or meter squared per day "($m^2/d$)."

Vertical coordinate information is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29). Horizontal coordinate information is referenced to the North American Datum of 1927 (NAD27).

Well-numbering system: The U.S. Geological Survey assigns each well in this report a local Tennessee well number. The local well number in Tennessee consists of three parts: (1) an abbreviation of the name of the county in which the well is located; (2) a letter designating the 7 1/2-minute topographic quadrangle on which the well is plotted; and (3) a number generally indicating the numerical order in which the well was inventoried. The symbol Sh:U-98, for example, indicates that the well is located in Shelby County on the "U" quadrangle and is identified as well 98 in the numerical sequence. Quadrangles are lettered from left to right, beginning in the southwest corner of the county.

**Acronyms**

| | |
|---|---|
| AOC | Area of Concern |
| BRAC | Base Closure and Realignment |
| DCE | Dichloroethene |
| IRP | Installation Restoration Program |
| NAS | Naval Air Station |
| NATTC | Naval Aviation Technical Training Center |
| NSA | Naval Support Activity |
| PCE | Tetrachloroethene |
| RCRA | Resource Conservation and Recovery Act |
| RFI | RCRA Facility Investigation |
| RMSE | Root mean square error |
| TCE | Trichloroethene |
| USGS | U.S. Geological Survey |