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GEOHYDROLOGIC ASSESSMENT OF SHALLOW GROUND WATER IN THE VICINITY OF  
AIR FORCE PLANT 4 NAS FORT WORTH TX  
1/1/1994  
U S GEOLOGICAL SURVEY

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**NAVAL AIR STATION  
FORT WORTH JRB  
CARSWELL FIELD  
TEXAS**

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**ADMINISTRATIVE RECORD  
COVER SHEET**

AR File Number 178

**GEOHYDROLOGIC ASSESSMENT OF THE SHALLOW GROUND WATER  
IN THE VICINITY OF AIR FORCE PLANT 4, FORT WORTH, TEXAS  
PROGRESS THROUGH JANUARY 1994**

**178 01**

**U.S. GEOLOGICAL SURVEY, WRD  
TEXAS DISTRICT, AUSTIN  
J.R. BARTOLINO  
JANUARY 1994**

The U.S. Geological Survey (USGS) is currently in the second fiscal year of project work for the U.S. Air Force (USAF) Installation Restoration Program (IRP) at the Air Force Plant 4 site in Fort Worth, Texas. Air Force Plant 4 (AFP4) is adjacent to Carswell Air Force Base (CAFB) and is owned by the USAF but operated by Lockheed to construct F-16 fighter jets as well as portions of the F-22 fighter. Releases of organic chemicals and metals into ground water during plant operation (1942-present) have caused the site to require environmental remediation under the IRP, administered at AFP4 by the Restoration Branch of the Aeronautical System Center (ASC). In addition to the USGS, a number of other contractors are involved at the site, including both government agencies and private companies.

The USGS originally proposed a series of discrete projects at AFP4 in a proposal dated March 12, 1993. The USGS project consisted of five phases: (1) ground-water sampling of residential wells in the Lake Worth area, (2) ground-water sampling of wells on CAFB, (3) construction of seasonal potentiometric surface maps of the shallow alluvial and Paluxy aquifers, (4) construction of a ground-water flow model of the shallow alluvial aquifer, and (5) construction of a solute transport model representing the shallow alluvial and Paluxy aquifers.

**I. Lake Worth area ground-water sampling:**

The Lake Worth area sampling was completed in the spring of 1993 as originally scheduled. Ten residential wells were sampled through existing pumps and plumbing. The samples were analyzed in the field with a portable gas chromatograph for organic chemicals and a "wet" chemical procedure for hexavalent chromium. Five samples were sent to a laboratory for confirmation. Though no detectable levels of chromium were found, one well contained chloromethane and a second well contained chloromethane and bromomethane. Both compounds occur naturally as well as degradation products of trihalomethanes (THM's) which result from the reaction of chlorine with organic material in water. Due to the less-than-ideal sampling conditions and the presence of chloromethane and bromomethane, the scope of this phase has been expanded to include the installation and sampling of monitoring wells. Six monitoring wells were installed in January 1994 and will be sampled in late-winter or early-spring 1994.

**II. Carswell AFB ground-water sampling:**

In the spring of 1993 samples were collected from 26 monitoring wells on CAFB and analyzed for volatile organic compounds (VOC's), semi-volatile organic compounds (SOC's), oil and grease compounds, total petroleum hydrocarbons (TPH's), and metals. The lab results have been provided to ASC and other interested parties, thus finishing this task.

**III. Water-level maps:**

This task requires the compilation of water-level maps for the shallow terrace alluvium aquifer and the underlying Paluxy aquifer. A map of each aquifer is to be compiled with data collected during two synoptic sampling periods. After a period of well inventory, the first set of measurements were made in May and June of 1993. Maps have been compiled for this data, and data for the remaining maps will be collected as part of the activities for the ground-water flow modeling in the winter of 1994.

**IV. Ground-water flow modeling:**

Flow modeling of the shallow terrace alluvium aquifer is currently underway. Monitoring wells were installed in late fall 1993-early winter 1994 and plans are being made for geophysical surveys to fill existing data gaps. Additional time-series water-level data are being collected concurrently with hydrogeologic interpretation of the system. Delays in obtaining funding for this task as well as installation of the required monitoring wells has resulted in the completion date for the draft report to be revised from December 1994 to March 1995.

**V. Solute transport model:**

The solute transport model, has not yet been funded by ASC.

Reports planned for the study include a USGS Water-Resources Investigations Report for phase I, a map report for phase III, and a Water-Resources Investigations Report for phase IV. All reports will be reviewed and approved by ASC prior to release as USGS publications.

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