

Carswell/Plant 4



FINAL GROUNDWATER SAMPLING AND ANALYSIS PLAN, MONITORING WELL ABANDONMENT AND REPAIR WORK PLAN, QUALITY ASSURANCE PROJECT PLAN, AND 1999 ANNUAL REPORT

Restoration Advisory Board Executive Summary #15 • May 11, 2000

INTRODUCTION

Naval Air Station Fort Worth Joint Reserve Base (NAS Fort Worth JRB), formerly Carswell Air Force Base (AFB), is in the process of planning and conducting activities for the identification, remediation, and closure of contaminated sites at the base through the Installation Restoration Program (IRP). The IRP is the primary mechanism of the Department of Defense for environmental response actions on U.S. Air Force installations. IRP activities are governed by provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and other applicable Federal and state regulations. The IRP at NAS Fort Worth JRB is being conducted through the combined efforts of the Air Force Center for Environmental Excellence (AFCEE) and the Air Force Base Conversion Agency (AFBCA).

WORK PLANS

Final Work Plans have been developed for the Basewide Groundwater Sampling and Analysis Plan (GSAP), Monitoring Well Abandonment and Repair, and the Quality Assurance Project Plan (QAPP). Figure 1

illustrates the approximate locations (depicted in green) of the wells sampled as part of the quarterly groundwater sampling program. Wells denoted in red will be abandoned or repaired.

GROUNDWATER SAMPLING AND ANALYSIS PLAN

This report sets forth the GSAP for groundwater monitoring activities to be conducted in 2000 at the NAS Fort Worth JRB. As part of the IRP, this GSAP fulfills both short-term and long-term groundwater monitoring objectives. The fulfillment of these objectives, except for the units that currently have long-term monitoring (LTM) requirements as part of the approved or proposed closure plans, is not presently a regulatory requirement. Consequently, the proposed GSAP is a voluntary action on the part of the U.S. Air Force to conduct a basewide monitoring of the groundwater flow and quality. A basewide groundwater sampling and analysis program was initiated for NAS Fort Worth JRB in April 1995 to address groundwater contamination associated with various Solid Waste Management Units (SWMU) and Area of Concerns (AOC) identified on the base. Sixteen rounds of quarterly sampling have been implemented to date. The 2000 GSAP

was developed based on the results of the four quarterly sampling rounds conducted as part of the 1999 program, as well as other available data. Monitoring objectives for the 2000 program have been established to ensure that adequate data are collected for the evaluation of the critical exposure pathways involving groundwater.

The GSAP monitoring objectives are as follows.

- **Critical Groundwater Exposure Pathways Evaluation** - collect data to investigate: (1) off-site exposure to groundwater sources used for drinking water, and (2) on-site and off-site exposure to surface water bodies;
- **Additional Source and Plume Delineation** - define horizontal or vertical migration of contamination associated with miscellaneous hot spots and potential source areas where data are not currently available; and
- **Natural Attenuation Monitoring** - collect data to demonstrate whether natural attenuation of trichloroethene (TCE) is occurring.

MONITORING WELL ABANDONMENT AND REPAIR WORK PLAN

Fourteen wells are scheduled for abandonment under the Final Monitoring Well Abandonment and Repair Work Plan. The wells scheduled for abandonment (depicted in red on Figure 1) were selected if they were not involved in or proposed for the GSAP or other sampling events and if the well required a significant effort to repair. Proper abandonment of a monitoring well ensures that any pathway to the groundwater is properly protected. Three wells are scheduled for repair as they are key to a monitoring program. The work currently is scheduled for May 2000.

QUALITY ASSURANCE PROJECT PLAN

In support of the ongoing IRP activities and to meet one of the objectives of the program, a basewide QAPP was developed to provide a framework for obtaining analytical data of measurable quality and defensibility.

The QAPP presents, in specific terms, the policies, organization, functions, and quality assurance (QA)/quality control (QC) activities associated with the generation and assessment of analytical data. It encompasses a wide variety of investigation, design, construction, operation, and monitoring activities to be undertaken at NAS Fort Worth JRB.

Use of the basewide QAPP is required for all contractors and laboratories participating in these types of projects at the base. The QAPP is sufficiently flexible and provides for modification through task-specific Work Plans and Field Sampling Plans that provide detailed methods and sampling locations for each field sampling event.

Methods and Specifications

The QAPP includes the following elements to ensure that data meet the project data quality objectives:

- A definition of the program responsibilities for each of the signatory agencies who work cooperatively to direct decisions related to site investigations and cleanup.
- A definition of the Quality Program Objectives for the project, including methods of ensuring precision, accuracy, and comparability of project data. It also specifies detection limits, instrument calibration requirements, laboratory and field sample handling requirements, analytical methods, and QC procedures.
- A summary of field sampling procedures to be used for the project.
- Descriptions for the review, validation, and reporting of analytical data generated for the project, including the frequencies of these procedures. Electronic reporting requirements to be followed by the contractor and recordkeeping requirements to be used by the laboratory.

Basewide QAPP Advantages

A basewide QAPP saves time and money by ensuring that data from multiple contractors is consistent and by eliminating the need for developing individual QAPPs for each specific project.

ANNUAL REPORT

The 1999 Annual Report was submitted in March 2000. The purpose of the Annual Report is to summarize and interpret the results of the 1999 quarterly groundwater sampling program at NAS Fort Worth JRB. The interpretation includes evaluating the data for any trends and determining whether or not the objectives of the 1999 GSAP were met.

The first monitoring objective was to collect data to investigate (1) off-site exposure to groundwater sources used for drinking water, and (2) on-site and off-site exposure to surface water bodies.

Four wells were designated as perimeter wells to monitor potential impacts to off-site receptors. The data collected from perimeter wells along with the newly-installed wells at Landfills 1 and 9 and at the southeastern border of the site provided adequate basewide coverage to fulfill the objective.

The second monitoring objective for the 1999 GSAP was to conduct sampling to fulfill current LTM requirements associated with the closure of SWMUs and AOCs. All 1999 regulatory requirements for AOC 4 and SWMUs 64, 67, and 68 and AOC 7 were carried out simultaneously with the GSAP.

The third monitoring objective for the 1999 GSAP was to define horizontal or vertical migration of contamination associated with miscellaneous hot spots and potential source areas where data are not currently available. Thirty-four monitoring wells located within and around the TCE plume were selected to provide additional source and plume delineation. Many of these wells

provided additional characterization of the TCE and cis-1,2-DCE plumes. The data collected in 1999 provided the most complete picture of the contamination at the site to date. A comparison of TCE data over time indicates a stabilized plume, with virtually no difference in the downgradient extent of the TCE over time. The extent of TCE is depicted in Figure 1.

The fourth monitoring objective was to collect data to demonstrate that natural

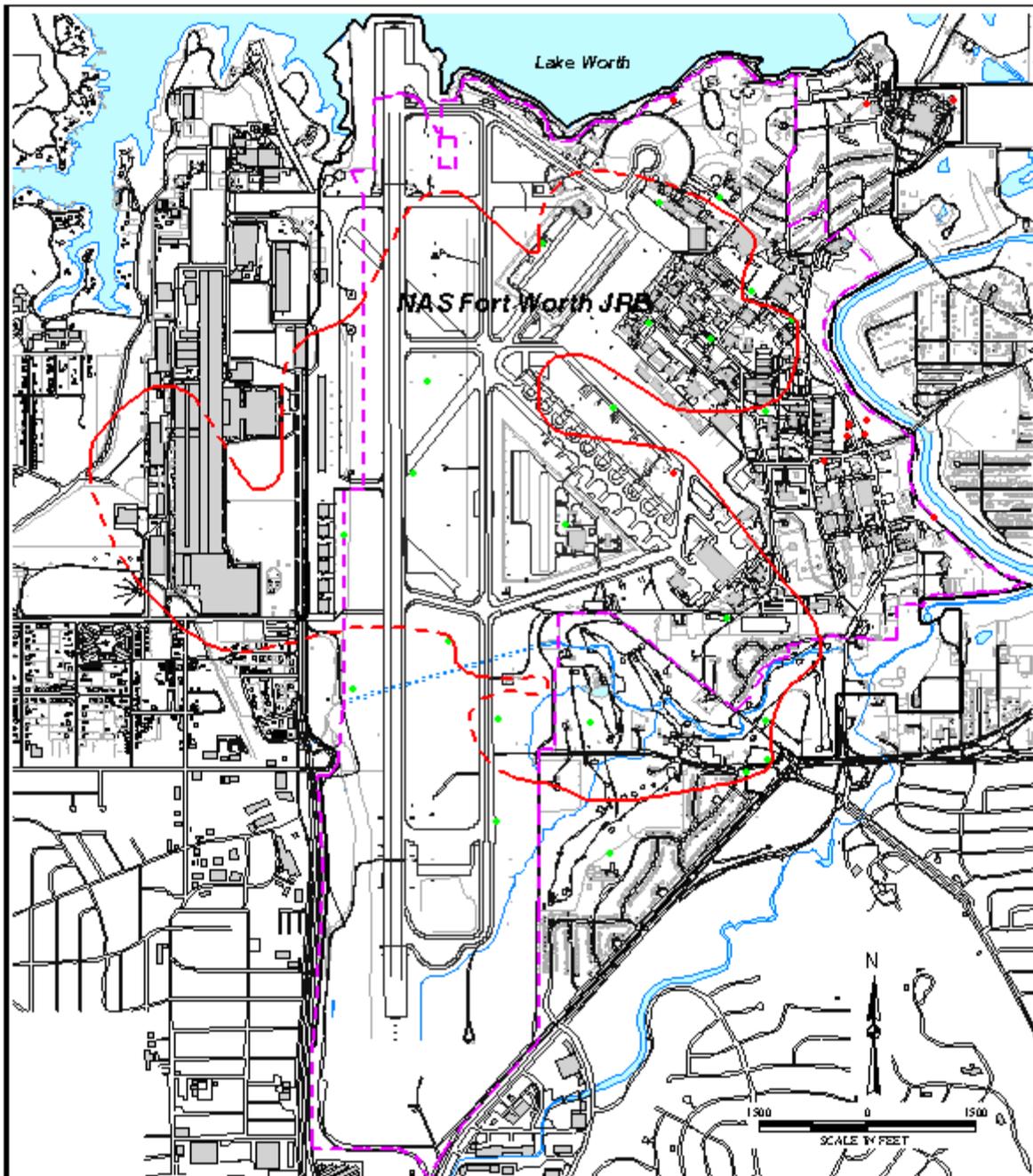
attenuation of TCE is occurring.

The evidence to support natural attenuation of TCE is minimal. While some degradation of TCE is occurring as evidenced by the concentrations of cis-1,2-DCE at the base, other natural attenuation data collected, including dissolved oxygen, ethane, ethene, sulfate, nitrate, total organic carbon, and vinyl chloride, do not indicate that conditions are favorable for complete dechlorination.

For More Information:

If you would like more information, please see our website at <http://www.afcee.brooks.af.mil/er/carswell/nasfw/> or contact Michael Dodyk, HQ AFCEE, at (817) 782-7167 or via e-mail at Mike.Dodyk@fwh.afres.af.mil.

See figure on reverse side.



Filename: X:\AFC001126135\LA\Report\Location_map.dwg
 Project: AFC001-26LA
 Created: 04/21/00 TJK
 Revised: 01/26/00 TJK
 Source: HydroGeologic, Inc. - GIS Database



Legend

- NAS Fort Worth JRB Boundary
- Fort Cavell AFB Boundary
- GSAP Well
- Abandoned Well
- Extent of TCE Plume (1999)

Figure 1

GSAP and Abandoned Wells