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Air Force Real Property Agency
McClellan Environmental

Final

Five-Year Review Report

Davis Global Communications Site
Davis, California
Contract F41624-00-D-8022
Task Order 77

August 2004

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1. Attached please find the signed Protectiveness Determination signature page for the Final, Davis Global Communications Site Five-Year Review Report dated August 2004. The Air Force and the Central Valley Regional Water Quality Control Board representing the California Environmental Protection Agency, signed the Protectiveness Determination. Please replace the signed page (attached to this letter) with the one in the copy of the final Report that was provided to you on 12 August 2004.

2. The overall purpose of the Five-Year Review is to determine if selected remedies are protective of human health and the environment. Methods, findings and conclusions are documented in the Five-Year Review Report, which also identified remaining issues and made recommendations to maintain protectiveness. The Five-Year Review process began with the submittal of the Draft Davis Five-Year Review Work Plan, which officially notified the Remedial Program Managers (RPMs) of the proposed scope and schedule of the Davis Five-Year Review Report.

3. If you have any questions or comments, please contact Mr. Mike Zabaneh, P.E., at (916) 643-6420, extension 258.

FOR PAUL G. BRUNNER
BRAC Environmental Coordinator

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26 August 2004

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ATTN: Al Weilbacher
AFCEE Project Manager

SUBJECT: Final, Davis Five-Year Review Report
Former McClellan Air Force Base, California
Contract F41624-00-D-8022, Task Order 77

Dear Mr. Weilbacher:

In accordance with our contract, MWH is submitting one copy of the subject report in pdf format, as requested by AFCEE. Sixteen copies of the Final Five-Year Review Report for Davis have been distributed to the Air Force and regulatory agencies on 12 August 2004. The final signature from the Regional Water Quality Control Board was received on 25 August 2004.

The final pdf contains the following changes to the report issued on 12 August 2004:

a) Air Force Cover Letter
b) MWH Cover Letter
c) Signature Page (Pages 1 and 2 of the Protectiveness Determination)

These pages are also being sent in hard-copy to the regulatory agencies with the request to add them to the Final Five-Year Review Report binder.

Please contact Conny Mitterhofer at (916) 418-8387 or me at (916) 418-8251 if you have any questions or comments.

3321 Power Inn Road
Suite 300
Sacramento, California
95826

Tel: 916 924 8844
Fax: 916 924 9102

Sincerely,

MWH

John Scott, R.G., C.E.G.
Program Manager

cc: M. Zabaneh (AFRPA/DD) (16 copies)
AFCEE/MSCD (without encl.)

FINAL
FIVE-YEAR REVIEW REPORT
DAVIS GLOBAL COMMUNICATIONS SITE

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ACRONYMS AND ABBREVIATIONS

ACCS	Hazardous Waste Accumulation Site
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFRPA	Air Force Real Property Agency
AQMD	Air Quality Management District
ARAR	Applicable or Relevant and Appropriate Requirement
AST	above-ground storage tank
BCT	Base Realignment and Closure Cleanup Team
bgs	below ground surface
BRAC	Base Realignment and Closure
BTAG	Biological Technical Assistance Group
BTEX	benzene, toluene, ethylbenzene, and xylenes
Cal/EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	contaminant of concern
COPC	contaminant of potential concern
CSF	cancer slope factor
DCA	dichloroethane
DCE	dichloroethene
DGCS	Davis Global Communications Site
DTSC	Department of Toxic Substances Control
EDB	ethylene dibromide
FFSRA	Federal Facility Site Remediation Agreement
FS	Feasibility Study
FUDS	Formerly Used Defense Site
GAC	Granular Activated Carbon
gpm	gallons per minute
GWTP	groundwater treatment plant
HI	hazard index
IC	institutional control
IROD	Interim Record of Decision
IRP	Installation Restoration Program
IT	International Technology Corporation
LTO/LTM	Long-Term Operation/Long-Term Monitoring
LUC	land use control
MCL	Maximum Contaminant Level
MWH	MWH Americas, Inc
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/L	milligram per Liter
NCP	National Contingency Plan
NDMA	n-nitrosodimethylamine

ACRONYMS AND ABBREVIATIONS
(continued)

NFA	No Further Action
NOAA	National Oceanic and Atmospheric Agency
OEHHA	Office of Environmental Health Hazard Assessment
O&M	operations and maintenance
OSWER	Office of Solid Waste and Emergency Response
PCE	perchloroethene, tetrachloroethene
PHG	Public Health Goal
ppbv	parts per billion by volume
ppmv	parts per million by volume
PVC	polyvinylchloride
RAO	remedial action objective
RfD	reference dose
RI	Remedial Investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SFOSL	Supplemental Finding of Suitability for Lease
SSSEBS	Site-Specific Supplemental Environmental Baseline Survey
SVE	soil vapor extraction
TCE	trichloroethene, trichloroethylene
TCP	trichloropropane
TO	Task Order
TOC	Table of Contents
TPH-d	Total Petroleum Hydrocarbons as Diesel
USEPA	United States Environmental Protection Agency
UST	underground storage tank
UV/OX	Ultraviolet/Oxidation
VOC	volatile organic compound

PROTECTIVENESS DETERMINATION

The final site remedy at the Davis Global Communications Site (DGCS) is expected to be protective upon completion; and, in the interim, potential exposure pathways that could result in unacceptable risks are being controlled.

The review of the documents, Applicable or Relevant and Appropriate Requirements (ARARs), cleanup toxicity levels, monitoring data, and the results of the site inspections and interviews indicate that the remedy is functioning as intended in the Interim Record of Decision (IROD). The DGCS Soil Vapor Extraction (SVE) system has successfully reduced soil gas concentrations to levels that are no longer expected to significantly contribute to groundwater contamination, and the system has been decommissioned with regulatory approval. Based on conservative screening evaluations of residual concentrations of BTEX and VOC compounds in the soil gas and using the available data, the risks to indoor air are within acceptable ranges. However, more detailed site-specific evaluations would be appropriate prior to property transfer to ensure no changes have occurred.

The DGCS Groundwater Treatment Plant (GWTP) has 1) contained groundwater contamination (at and above the Maximum Contaminant Levels [MCLs]) in the B and C groundwater aquifer zones, 2) reduced subsurface contamination that poses a potential threat to human health or the environment, and 3) prevented further spread of groundwater contamination beneath the site to regional aquifers.

Additional groundwater samples are being collected periodically as part of the groundwater monitoring program to monitor containment of the contaminant plume and to detect signs of plume migration towards potential receptors that could result in unacceptable risks to human health and/or the environment.

It is currently planned that future programs at DGCS, including site closeout, will be developed by a performance-based contractor and will be carried out in coordination with regulatory agencies.

AUTHORIZING SIGNATURES:

Albert F. Lowas, Jr.
Director, Air Force Real Property Agency
U.S. Air Force

August 5, 2004
Date

Thomas R. Pinkos
Executive Officer
Regional Water Quality Control Board, Central Valley Region

August 25, 2004
Date

EXECUTIVE SUMMARY

This is the first Five-Year Review Report of the environmental cleanup projects at the Davis Global Communications Site (DGCS). The DGCS has been placed on the State Priority Ranking List as provided in §25356 of the California Health and Safety Code (California Environmental Protection Agency [Cal/EPA], 1992, p. 2). The DGCS is being cleaned up under a Federal Facility Site Remediation Agreement (FFSRA) among the Air Force, Department of Toxic Substances Control (DTSC), and the Regional Water Quality Control Board (RWQCB) (Cal/EPA, 1992). The remedial actions at DGCS conform to the remedies outlined in the Interim Record of Decision (IROD), which was signed in January 1995 (CH2M Hill, 1994c). This Five-Year Review Report evaluates the remedial actions selected in the IROD in terms of system effectiveness to meet the remedial objectives, general changes in standards that may have occurred since the IROD was signed, and overall protectiveness of public health and the environment from the continuing remedial action.

The remedies selected by the IROD address the volatile organic compound (VOC) contaminated soil and groundwater from prior DGCS operations. The following remedial action objectives (RAOs) (CH2M Hill, 1994c, p. 1-2) were established for the DGCS cleanup:

- Contain groundwater contamination at and above the maximum contaminant levels (MCLs) in the B and C groundwater zones.
- Reduce or eliminate levels of subsurface contamination that pose a potential threat to human health or the environment.
- Prevent the spread of groundwater contamination beneath the site, especially to regional aquifers.

Development of the DGCS transmitter facility, located at 44960 Yolo County Road 36, began in the early 1950s as an annex of the former McClellan Air Force Base (AFB). Approximately eight acres, near the center of the parcel, were fenced for construction of five buildings (Buildings 4708, 4709, 4710, 4711, and 4712), a radio-communication tower, three aboveground storage tanks (ASTs), four underground storage tanks (USTs), and a production well used for non-potable fire suppression and irrigation purposes. On the remainder of the property, the Air

Force constructed numerous large antennas and a network of unpaved roads that connect them with the main compound. The main development occurred in 1952, and the facility continued to function as a staffed, transmitter facility until 1999. Since the original construction, Building 4711 and three 20,000-gallon USTs were removed in 1988. The fourth UST, a 7,000-gallon tank, was removed in 1995. The antennas were removed in 2000, but some of the support structures were left in place due to their proximity to environmentally sensitive areas. Approximately half of the Davis site is occupied by vernal pools and their adjacent upland watershed areas. These vernal pools are habitat for a number of federally and/or State-listed species and are subject to regulation under the federal Endangered Species Act and California Endangered Species Act. In 2001, the Air Force transferred a 5.74-acre parcel of the facility for use by the National Oceanographic and Atmospheric Agency (NOAA) as a National Weather Service doppler radar station. Land use of private and public property surrounding DGCS includes the following:

- The land north, south and east is primarily used for agricultural purposes.
- A portion of the land south of the DGCS boundary was used for migrant farm worker housing and a day care center. The drinking water supply came from an on-site groundwater well. The housing facility is currently closed for reconstruction and is expected to re-open in 2004.
- All of the land west of the DGCS is utilized by the Yolo County as a park facility.

Prior operations at DGCS resulted in contamination of soil and groundwater beneath the site. The sources of contamination include leaking underground fuel tanks and the storage, handling, and disposal of solvents at two locations within the main compound. One location is in the northeast corner of the compound and the other is south of Building 4710. Between 1985 and 1993, five remedial investigations were performed by the Air Force (Tetra Tech, 2002b). These studies culminated with the signature of the IROD that identified the selected remedies as being a groundwater treatment plant (GWTP) and a soil vapor extraction (SVE) system. Both VOC and hydrocarbon contamination was detected in the vadose zone and the groundwater beneath the site (CH2M Hill, 1994b). The primary contaminants of concern (COCs) at DGCS are tetrachloroethene (PCE) and trichloroethene (TCE), which reached maximum concentrations of

541 and 50 micrograms per kilogram (µg/kg), respectively, in soils and 1,400 and 3,000 micrograms per liter (µg/L), respectively, in groundwater.

In the mid 1990s, two remedial systems (a GWTP and an SVE system) were constructed. Long-term operation, maintenance and monitoring varied according to the design life and performance of the particular remedial systems (i.e., the SVE system operated from 1996 to 1999, when it was decommissioned, and the groundwater system started in 1995 and continues to operate). In 1993, a biovent pilot test was installed to remediate diesel contamination. The bioventing unit has been shut down since May 30, 2003 until further notice.

The hydrogeologic conditions beneath the DGCS consist of interbedded, horizontally discontinuous lenses of fine and coarse-grained sediments. Based on past hydrogeologic evaluations, the site has been divided into five hydrogeologic zones: A, B, C, D, and E. These zones extend to a depth of approximately 245 below ground surface (bgs) (Tetra Tech, 2002b, p. 1-7). The water table has a seasonal fluctuation between 15 and 85 feet bgs and the groundwater gradient and flow direction vary depending on the pumping from agricultural wells in the vicinity. There are approximately 23 water supply and agricultural wells within one mile of the 8-acre main compound.

Groundwater contamination at the DGCS has historically affected three aquifers (B, C, and D) to a maximum depth of 180 feet bgs. Currently, groundwater contamination detected above the MCL resides only in the B and C aquifers directly surrounding or down-gradient from the suspected source area where hazardous substances were previously stored. The contaminant plume in the B aquifer, primarily consisting of PCE and TCE contamination, has spread out vertically and laterally as a direct result of the regional groundwater flow and the seasonal agricultural pumping activities in the vicinity. While the contaminant concentrations have decreased, the MCL boundary defining the plume size in the B aquifer has not changed significantly since the initial start-up of the GWTP. The MCL boundary in aquifer zone C is based on a detection of TCE in one extraction well that is slightly above the MCL.

The SVE system was effective in removing 54 of the estimated 99 pounds of VOC contamination from the vadose zone in the first five months of operation between July and November 1996. However, over the next three years of operation, only an additional six pounds of VOC contaminants were removed. It was determined by the long-term operation/long-term monitoring (LTO/LTM) contractor, Tetra Tech, in September 1999 that the SVE system had achieved the appropriate cleanup levels and was no longer cost-effective at removing the remaining contamination in the vadose zone. The system was shut down and removed following approval from the RWQCB. This decision was made before the START/STOP procedures were adopted by McClellan. The START/STOP process uses qualitative and quantitative decision criteria to evaluate the need to implement, optimize, and/or curtail SVE remedial systems.

The GWTP started operation in October 1995 to remove an estimated 617 pounds of VOC contaminants present in the groundwater beneath the site. The system was estimated to require 20 years to accomplish this. As of the Third Quarter 2003, over 286 pounds of the total estimated 617 pounds of VOC contaminants have been removed by the GWTP. The estimated VOC mass removal has decreased over the years from 40 pounds removed during the fourth quarter 1995 to less than one pound removed during the Third Quarter 2003. At the current VOC mass removal rates of about 11 pounds per year, the system would have to operate for an additional 30 years to remove the total estimated mass from the groundwater, assuming those mass removal rates are sustained.

Since the last risk assessment was completed for the DGCS, there has been a significant change in the methodology for the assessment of soil, soil gas and groundwater vapor migration to indoor air. The new USEPA guidance prescribes a tiered assessment process that may lead to modeling of soil vapor intrusion into indoor air utilizing the Johnson and Ettinger model (USEPA, 2002). Although application of this new methodology to the 1994 risk assessment would likely produce a more conservative result, the SVE remediation of soil gas has likely offset any increase in calculated risk. To confirm this assumption, the Five-Year Review evaluated the most recent maximum measured vapor concentrations of TCE, PCE, chloroform, 1,1-DCE, Freon 113, and benzene, toluene, ethylbenzene, and xylenes (BTEX) in the DTSC-modified Johnson and Ettinger model. This evaluation is described in more detail in Section

4.3.3. The total theoretical upper-bound incremental lifetime cancer risk estimates associated with these COCs is 5 x 10^{-5}, which is well within USEPA acceptable cancer risk ranges of 10^{-6} to 10^{-4}. However, these screening level evaluations should be confirmed with up-to-date site-specific vapor data, prior to property transfer.

Reference doses and cancer slope factors have also changed or have been developed for a number of COCs for which toxicity criteria were not formerly available. For example, the oral cancer slope factor for PCE has increased; however, the estimated risks from groundwater ingestion originally exceeded the USEPA acceptable cancer risk range in 1994; therefore, any further increase is not likely to change the conclusions that a groundwater treatment remedy is appropriate. The Applicable or Relevant and Appropriate Requirements (ARARs) for aquifer water quality objectives identified in the IROD are MCLs. There have been no changes in the groundwater COCs at DGCS that would affect the protectiveness of the remedy. Attainment of the IROD RAOs for soil gas and groundwater will meet the protectiveness goal of the remedy. A more thorough analysis of ARARs will be conducted in the future for the DGCS ROD.

A site inspection revealed that DGCS is generally secure from unauthorized entry by the public, and that the remedial systems are functioning as intended. The condition of the site is regularly and frequently monitored by the Air Force and its contractors responsible for system operation.

The land use controls (LUCs) employed by the Air Force at DGCS primarily involve security (i.e., site fencing and monitoring) to prevent unauthorized entry, and an encroachment permit process to control authorized activities on the site. Since the site is currently under Air Force control, these measures are considered appropriate and effective. The Air Force has begun the process of transfer of DGCS to Yolo County through a site-specific supplemental environmental baseline survey (SSSEBS) (URS, 2001) and a Supplemental Finding of Suitability to Lease (SFOSL). The SSSEBS found no environmental data gaps to preclude conveyance of the DGCS. However, future investigations may be necessary at several of the UST sites where tanks had previously been removed to confirm that all issues were addressed sufficiently to meet program requirements. It is anticipated that the associated SFOSL and lease documents will identify all

LUCs that are appropriate to the future use of the property to ensure protectiveness of public health and the environment.

Site interviews, which were held with ten members of the public, revealed few specific concerns about the cleanup program at DGCS. The issue of most interest seemed to address the future use of the site.

Recommendations based on this Five-Year Review would be to:

- Improve the operating efficiency of the groundwater treatment system in accordance with recent evaluations by the LTO/LTM contractor at DGCS.
- Continue with least three quarters of groundwater samples, as part of the 2003 and first quarter 2004 sampling program, for 1,4-dioxane and evaluate the need for addressing 1,4-dioxane in the groundwater monitoring and treatment program.
- Confirm the shutdown of the SVE system with a START/STOP evaluation to prepare the site for closure, lease, or transfer and perform a long-term, comprehensive respiration test of the petroleum contaminated area where a bioventing system has previously operated.
- Sample the water quality at selected agricultural and water supply wells (particularly at the migrant farm worker facility) adjacent to the DGCS.
- Add signage to clearly mark environmentally sensitive areas within the DGCS, and add emergency telephone numbers and points of contact to the current warning signs at the DGCS perimeter.

These recommendations are intended to address general operational issues or to fill identified data gaps that could potentially affect public health or the environment. Since it is currently planned that future remedial actions and site close-out at DGCS will be conducted under a performance-based contract in 2005, the selected contractor will be responsible for developing future planning documents, with concurrence from the regulatory agencies, that will implement the intent of these recommendations.

The final site remedy at DGCS is expected to be protective upon completion; and, in the interim, potential exposure pathways that could result in unacceptable risks are being controlled.

1.0 INTRODUCTION

1.1 STATEMENT OF AUTHORITY AND PURPOSE

The Air Force Real Property Agency (AFRPA) at McClellan has initiated a Five-Year Review at the Davis Global Communications Site (DGCS), Davis, California. The review was conducted under the Air Force Center for Environmental Excellence (AFCEE) Contract No. F41624-00-D-8022, Task Order (TO) 77 and represents the first Five-Year Review for Davis.

The overall purpose of this Five-Year Review Report is to determine if selected remedies are functioning as intended and are protective of human health and the environment. Methods, findings and conclusions are documented in this Five-Year Review Report, which also identifies any issues and makes recommendations to attain or maintain protectiveness.

The Five-Year Review Report has been prepared pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan (NCP). Section §121 (c) of CERCLA requires that remedial actions that result in any hazardous substances, pollutants, or contaminants remaining at the site are subject to a Five-Year Review. The NCP further provides that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure protection of human health and the environment.

1.2 REQUIREMENTS AND GUIDANCE FOR FIVE-YEAR REVIEWS

The requirement for the DGCS Five-Year Review is outlined in the Federal Facility Site Remediation Agreement (FFSRA) (California Environmental Protection Agency [Cal/EPA], 1992, p. 36) and in the Interim Record of Decision (IROD) for DGCS (CH2M Hill, 1994c, p. 1-3). As noted in the FFSRA, the timing of the Five-Year Review is determined by the initiation of the final remedial action program, which has not been developed for DGCS yet. As further noted in the IROD, the intent of the Air Force and State regulators was to develop the final remedial action goals and the final remedial action alternatives for DGCS within five years

of the IROD signature. This schedule forecast did not envision the dispute over water quality goals between the State and the Air Force, which resulted in delays to the final ROD schedule for DGCS. Since the final ROD for the DGCS has yet to be developed, the Air Force has elected to synchronize the submittal of the DGCS Five-Year Review with the McClellan Five-Year Review.

The *Comprehensive Five-Year Review Guidance* (United States Environmental Protection Agency [USEPA], 2001) was the primary document used in preparing the Five-Year Review Report for the DGCS. The review guidance provides an overview of the evaluation process, describes the roles and responsibilities of the lead and support agencies, and outlines the components of the Five-Year Review and procedures for assessing the protectiveness of the remedy. In addition, other relevant Federal Regulatory Codes and Guidances to be considered during the Five-Year Review are the NCP in 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) as well as the Office of Solid Waste and Emergency Response (OSWER) Directive No. 9355.4-28 *Guidance for Monitoring at Hazardous Waste Sites*.

Under the new USEPA guidance, Five-Year Reviews are typically conducted either to meet the statutory mandate required by CERCLA §121 (c) or as a matter of USEPA policy. Therefore, Five-Year Reviews are classified as either "statutory" or "policy". A statutory review requires that both of the following conditions are true: 1) Upon completion of the remedial action, hazardous substances, pollutants, or contaminants will remain above levels that allow for unlimited use and unrestricted exposure; and 2) the ROD was signed on or after the effective date of Superfund Amendments and Reauthorization Act (SARA) (October 17, 1986) and the remedial action was selected under CERCLA §121. Since the final ROD for DGCS has not been developed, this DGCS study was carried out as a policy review. As a result, an analysis for applicable or relevant and appropriate requirements (ARARs) was not conducted as part of this Five-Year Review. An ARAR analysis was completed for DGCS in 1993 for the Remedial Investigation/Feasibility Study (RI/FS) Report (CH2M Hill, 1994b, Appendix G). A more thorough analysis of ARARs will be conducted as part of the ROD that has yet to be completed.

1.3 SCOPE AND NATURE OF THE CURRENT FIVE-YEAR REVIEW

This Five-Year Review follows the intent of the USEPA guidance document, as specified in the *Final Davis Five-Year Review Work Plan* (MWH Americas, Inc. [MWH], 2003, p. 1-2). The Five-Year Review has evaluated the status and performance of interim remedial actions taken to date, and has determined if those actions meet or demonstrate progress consistent with the specific goals and objectives stated in the IROD.

This Five-Year Review provides a snapshot in time and has incorporated all data and information that was available by the submittal date of the draft version of this report (12 March 2004); any information that has become or will become available after this date will not be incorporated in future revisions of this document.

The approach has been to review the changes in standards, methods, exposure, and toxicity criteria since the IROD was issued for the primary list of contaminants of concern (COCs) occurring at DGCS and identify those remedial actions where the changes could call into question the protectiveness of human health and the environment. Where required, preliminary risk screening assessments have been performed for those sites where exposures, toxicity criteria, cleanup levels, or standards have changed to determine if more detailed studies should be recommended. This process is consistent with the approaches outlined in the Comprehensive Five-Year Review Guidance (USEPA, 2001) and the Final Five-Year Review Work Plan (MWH, 2003, p. 2-6).

For each of the interim remedial actions implemented to date, this Five-Year Review assessed the protectiveness of the remedy, and evaluated the old standard against the new toxicity criteria, methods, or exposures. For example, standards such as maximum contaminant levels (MCLs) are developed considering a risk-based approach, which incorporates toxicity criteria (i.e., cancer slope factor [CSF], non-cancer reference dose). If the toxicity criteria become more stringent, then the old standard may no longer be protective. Protectiveness can be evaluated using the same risk-based equation substituting the new toxicity criteria. The results can then be compared to the acceptable cancer risk range of 10^{-6} to 10^{-4}, or a non-cancer hazard index (HI) of 1.0 (USEPA, 1990, USEPA, 1991a, and USEPA, 1991b). If the result is within these levels,

then the old standard can still be considered protective. If not, i.e., the result exceeds 10^{-4} cancer risk or a non-cancer HI of 1, then adoption of a new standard should be considered and the remedy should be evaluated. This Five-Year Review has also identified those interim remedial actions where state action levels differ from the federal levels for the significant COCs.

For the Five-Year Review, the acceptable risk range (i.e., 10^{-6} to 10^{-4}) has been used to assess the potential impact to public health or the environment from ongoing remedial activities at DGCS. As such, the use of this risk range is not intended to imply that a site-specific cleanup level has been achieved, or that the screening evaluation is establishing a risk-based cleanup level. The AFRPA at McClellan intends that all cleanup levels will be developed according to the appropriate CERCLA decision document process and with concurrence of the state and federal Remedial Project Managers.

The following sources were the primary focus of the Five-Year Review:

- A comprehensive review of the decision document, baseline surveys, operational data, monitoring reports, performance assessments, institutional procedures, toxicity data, risk assumptions, and feasibility studies;
- Interviews with selected Davis residents, landowners, employees, City and Yolo County representatives, site managers, contractors, and Air Force personnel; and
- Site inspections of the facilities and adjacent areas.

The Five-Year Review Process included the following components:

- Document Review
- Data Review
- Site Inspection – this section details the results of the site inspections.
- Site Interviews – this section lists the people interviewed during the Five-Year Review.
- Technical Assessment – this section answers the three questions from the USEPA Guidance (USEPA, 2001b):
    1. Question A: Is the remedy functioning as intended by the decision documents?

2. Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?
3. Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

- Technical Assessment Summary – this section provides a summary of the results of the assessment and a determination of whether the remedy remains protective.
- Issues

1.4 ORGANIZATION OF THE FIVE-YEAR REVIEW REPORT

This Five-Year Review Report is organized as follows: A protectiveness determination and executive summary are contained to the front of the text. Section 1 provides an introduction and overview and Section 2 contains background information on the DGCS. Section 3 contains information on the administrative components. The Five-Year Review Evaluation is presented in Section 4, and recommendations resulting from the review are contained in Section 5. Section 7 contains details for the next Five-Year Review. References, Figures and Tables are located at the end of the main text in special tab sections.

Appendices A, B, and C follow the Tables section. Details on the Community Interviews are presented in Appendix A and information regarding the site inspection and site interviews is presented in Appendix B. Appendix C contains photos of the DGCS and Appendix D presents responses to regulatory comments on the Draft Five-Year Review Report.

2.0 BACKGROUND

The following section provides site history and background information on the DGCS, including a summary of previous investigations and the basis for remedial actions.

2.1 SITE HISTORY AND BACKGROUND

In the late 1940s, the former McClellan Air Force Base (AFB) annexed 636 acres about four miles south of Davis, California, 44960 Yolo County Road 36 (northwest corner of Roads 105 and 36), to build the DGCS transmitter facility for the 2049th Communication Squadron (Figure 2-1). The transmitter facility was constructed in the early 1950s on 316 acres and was staffed 24 hours a day by squadron personnel, who operated out of McClellan AFB about 20 miles to the northeast. Since only 316 acres of the original parcel were utilized for the transmitter facility, the remaining 320 acres west of the DGCS were deeded in 1973 to Yolo County for development of Grasslands Park (formerly Wilson Park) (URS, 2001, p. 1-2). Currently, part of Grasslands Park is leased for various public activities (e.g., dog training club, archery range, and horseshoe club). The remainder of the DGCS is open grassland with interspersed vernal pools, and is surrounded to the north, east and south by cultivated fields. The nearest residential development to DGCS is near Mace Boulevard and US 80 about 4 miles to the north, and the nearest commercial operation to the DGCS is the migrant farm workers housing facility about one half mile to the southeast. The migrant farm workers housing facility contains living quarters as well as a day care center. The facility has been closed since 2000 for reconstruction, and the day care center has been closed since summer of 2001. Both are scheduled to reopen in 2004. A water supply well located on the grounds of the migrant farm workers facility was used for drinking water supply while the center was open.

In July 1999, the transmitter facility was decommissioned in coordination with the closing of McClellan AFB. Currently all facilities within the original transmitter facility footprint are vacant. However, Air Force and contractor personnel continue to monitor and maintain the base production well at Building 4709 and the remediation systems operating within the DGCS. In

addition, the National Weather Service currently operates a radar system on a five-acre parcel in the northwest corner of the DGCS (URS, 2001, p. 1-2).

The operational facilities and controls for the DGCS occupied approximately eight acres (main compound area) near the center of the 316-acre parcel (Figure 2-2). This main compound area was fenced and contained five buildings (Buildings 4708, 4709, 4710, 4711, and 4712), a radio-communication tower, three aboveground storage tanks (ASTs), four underground storage tanks (USTs), and a water supply well. The key facilities and features of the property are shown on Figure 2-3. The water supply wells within and surrounding the site are shown on Figure 2-4. The aboveground storage tanks and underground storage tanks contained diesel fuel. The water supply well was used as a non-potable water source for toilets and irrigation. The drinking water for DGCS was from commercial bottled sources.

As noted above, the DGCS beyond the Main Compound Area is generally open grassland and vernal pools. The site still shows evidence of the original 26 antenna arrays that once supported the main compound area. The pads for the antenna foundations are still evident as well as the network of unpaved roads that connected them with the main compound area. Near the northeastern corner of the DGCS is an area identified as the former North Aircraft Repair Area (Figure 2-5). The North Aircraft Repair Area was established in 1983 for mobility and Aircraft Battle Damage Repair training. The actual training site was a fenced square area, 250 feet on a side, that housed two decommissioned F-105 fighters. As part of the training, the planes were subjected to small explosive charges to simulate battle damage, and technical crews were dispatched to implement repairs. Although this training was not known to result in any contamination, a soil gas survey was conducted during the Remedial Investigation of the DGCS. The results of field survey showed several locations with low soil gas measurements; however, the more accurate follow up testing with the gas chromatograph did not identify any detectable levels of target compounds (IT, 1991, p. 2-4).

Reportedly, the Grasslands Park property was the prior location of an old trash disposal and burn pit (Figure 2-5) that was used in the 1950s and 1960s. The site was identified by the Air Force as an Installation Restoration Program (IRP) site (Wilson Park Site LF-176) and, in accordance

with Air Force policy, referred to the Army Corps of Engineers for further investigation as a Formerly Used Defense Site (FUDS). A No Further Action (NFA) Decision Document was issued by the Air Force for the Wilson Park site in September 1992 (URS, 2001, p. 4-1).

According to the Site-Specific Supplemental Environmental Baseline Survey (SSSEBS) conducted in 2001 (URS, 2001, p. 1-2 and 1-3), the Yolo County Parks and Recreation District is seeking opportunities to use the Davis property and its facilities for compatible recreational and educational activities for the region. Five acres of the property footprint will be federally retained for use by the U.S. Department of Commerce, National Oceanic and Atmospheric Agency (NOAA), and the National Weather Service.

2.2 HISTORY OF CONTAMINATION AND REMEDIAL INVESTIGATIONS

The former operations at the DGCS resulted in contamination of soil and groundwater by petroleum products and chlorinated solvents. The petroleum hydrocarbon contamination source was a result of four diesel USTs and their associated piping leaks. The volatile organic compound (VOC) contamination sources are suspected to be associated with the hazardous waste storage areas and a hazardous waste accumulation site (ACCS) (URS, 2001, p. 3-9 and 3-10).

Former activities within Buildings 4708 and 4710 previously generated waste coolant, waste oil, waste fuel filters, wastewater contaminated with fuels and solvents, and rags contaminated with fuels and solvents. The contaminated wastewater was collected in a 600-gallon bowser that was located outside the western wall of Building 4710. An ACCS was previously located outside the southeastern corner of Building 4710. According to the Department of Toxic Substances Control (DTSC) and former McClellan personnel, another hazardous waste storage area was located in the northeastern corner of the fenced compound. This area was used from 1963 until the 1980s to store 55-gallon drums containing waste fuels, engine oil, solvents, and gasoline. According to McClellan personnel, minor hazardous substance leaks did occur at the site. After the area was no longer used to store hazardous substances, the ground surface was properly cleaned and is currently covered by grass. All hazardous wastes associated with these buildings (4708 and

4710) and the bowser have been removed from the property and the ACCS outside of Building 4710 has been formally closed (URS, 2001, p. 3-6).

The Air Force initially investigated the site in 1985 when Kleinfelder & Associates drilled ten borings in the vicinity of three of the four underground diesel fuel tanks. The sampling results were inconclusive for VOCs; however, petroleum hydrocarbon contamination was confirmed to be present. In February 1985, approximately 52 cubic yards of soil were removed from above three underground diesel fuel tanks and the soil near the tanks was saturated with diesel fuel. The tanks as well as the associated pipelines were found to be leaking (Tetra Tech, 2002b, p. 1-5).

The Air Force conducted a second investigation in 1987 when International Technology Corporation (IT) drilled seven soil borings and installed eight monitoring wells. This investigation confirmed hydrocarbon contamination of soil in the vicinity of the storage tanks to a depth of 55 feet below ground surface (bgs). This investigation also identified the presence of VOCs in the groundwater (Tetra Tech, 2002b, p. 1-5).

In 1988, the three leaking USTs (investigated in 1985) were removed, and sidewall samples collected during the excavation confirmed that significant hydrocarbon contamination was present (Tetra Tech, 2002b, p. 1-5).

The Air Force continued their investigations in 1989 by collecting soil, soil vapor, and groundwater samples. This investigation included: a soil vapor survey, 19 cone penetrometer tests with grab groundwater samples, 11 soil borings, and 17 additional groundwater monitoring wells (Tetra Tech, 2002b, p. 1-5).

Between 1992 and 1993 a series of additional investigations were conducted by CH2M Hill for the Air Force. These investigations included installing five soil vapor monitoring points, 12 soil vapor piezometers, 12 groundwater monitoring wells, and six groundwater extraction wells; conducting six aquifer and three permeability tests; and collecting 71 soil vapor samples (Tetra Tech, 2002b, p. 1-5).

A bioventing treatability study was implemented in 1993 to address the diesel-contaminated soils beneath the three 20,000-gallon diesel USTs. The diesel contamination has been addressed separately from the VOC remedial actions and will only be described briefly in this report. Since the bioventing system was set up as a pilot study for petroleum-only contamination not covered under CERCLA, it was not evaluated as part of this Five-Year Review (Parsons, 1999).

In early 1994, the Remedial Investigation and Feasibility Study (RI/FS) was developed from data collected during these investigations. The IROD was completed and signed February 1995 from the data provided in the RI/FS (CH2M Hill, 1994c).

In 1995, a fourth UST, a 7,000-gallon diesel fuel tank, formerly located in the area of the current 7,000-gallon AST south of Building 4708, and all associated piping were removed. During the tank excavation, visual signs of contaminated soils were encountered. Approximately 200 cubic yards of contaminated soil were removed and the excavation was backfilled with clean soil. Confirmation soil samples were collected from the excavation, and the tank site was approved for no further investigation by the Regional Water Quality Control Board (RWQCB) in 2000 (URS, 2001, p. 3-10).

In June 2002, a conveyance pipe from groundwater extraction well DEW-1D leaked an estimated 33,250 gallons over the period of a week prior to the discovery and shutdown of the system. Three water samples were collected from the pooled water on the nearby ground surface, and one was collected from within the DEW-1D extraction line. In addition, two soil samples were collected from the area affected by the uncontrolled groundwater release (Tetra Tech, 2002c). All samples were analyzed by the USEPA Method 8260B for VOCs. No analytes were detected in the standing water and the soil samples. The water sample collected from the broken DEW-1D pipeline was found to contain only trichloroethene (TCE) and tetrachloroethene (PCE), both at a concentration of 2.1 micrograms per liter (µg/L). The total mass released at the site, calculated using a total VOC concentration of 4.2 µg/L and an estimated release of 33,250 gallons of groundwater, was 0.53 grams or 0.0012 pound of VOCs.

2.3 BASIS FOR REMEDIAL ACTION

The basis for remedial action at DGCS was established in the IROD (CH2M Hill, 1994c), which selected a remedy with two main components; one addressing vadose zone contamination and the other addressing groundwater contamination. Section 4.0 provides more detail about the design and performance of both systems as well as the hydrogeologic characteristics of the DGCS relevant to the patterns of contamination.

The IROD did not establish cleanup levels for groundwater or soils; however, the IROD did outline cleanup objectives. All stakeholders agreed that appropriate cleanup levels would be established in the final ROD. For the vadose zone remediation, the objective was to remove the VOC contamination to a level where it no longer acts as a continuing source of contamination for the groundwater. To meet this objective, the IROD established a cleanup goal for soil gas at 500 parts per billion by volume (ppbv) of PCE. For the saturated zone contamination, the objective of the remedy was the containment of the B and C zone groundwater that is contaminated at or above the Maximum Contaminant Levels (MCLs). That containment was to be originally implemented using groundwater extraction wells, an ultraviolet/oxidation (UV/OX) treatment system, and reinjection of treated groundwater (CH2M Hill, 1994c, p. 1-2).

Recently, the RWQCB has indicated that that they will be proposing more stringent cleanup levels than MCLs as Applicable or Relevant and Appropriate Requirements (ARARs) for remediation of groundwater. These proposed levels are significantly lower than MCLs for the two primary groundwater contaminants at the DGCS, namely TCE and PCE. For example, the public heath goals (PHGs) are 0.06 µg/L for PCE (compared to 5.0 µg/L MCL) and 0.8 µg/L for TCE (compared to 5.0 µg/L MCL) (Table 2-1). The RWQCB considers the PHGs for PCE and TCE protective for potable use of groundwater. The evaluation of lower cleanup levels is beyond the scope of this Five-Year Review. However, the Air Force agrees that the protectiveness of the remedies will be evaluated in the future decision documents, and that any new cleanup levels established before 2009 should be evaluated in the next Five-Year Review. In the meantime, the Air Force considers use of MCLs protective of human health and the environment.

3.0 ADMINISTRATIVE COMPONENTS

This section outlines the administrative components of this Five-Year Review, including the Five-Year Review Team, as well as community notification and involvement.

3.1 FIVE-YEAR REVIEW TEAM

The Administrative Components requirement identifies the lead agency for the review and the key members of the Five-Year Review team. The members include representatives of the Air Force (Environmental Management, Community Relations, and Technical Contractors), and the regulatory project managers assigned to DGCS (DTSC and RWQCB). Additionally, the Yolo-Solano Air Quality Management District, the U.S. Fish and Wildlife Service, the California Department of Fish and Game, Yolo County Planning and Public Works Department, and the Yolo County Department of Environmental Health have been added to the list of key team members (Table 3-1).

3.2 COMMUNITY NOTIFICATION AND INVOLVEMENT

The community involvement coordinators of the Air Force and the regulatory agencies determined the appropriate level of community involvement. The community involvement activities conducted during the Five-Year Review have included:

- Notifying the community that the Five-Year Review will be conducted, and
- Conducting interviews of selected individuals from the community.

To fulfill the notification requirements for the Five-Year Review at DGCS, a public notice was placed in the Sacramento Bee, identifying the following:

- The site name, location and web address,
- The lead agency conducting the review,
- A contact name and telephone number for further information, and
- The scheduled completion date of the Five-Year Review.

Originally, a decision was made that no community interviews would be required for either the McClellan or the Davis sites. Pursuant to a comment made by the RWQCB, the Air Force has decided to conduct interviews of community members and public officials at the Davis site to get their views about current site conditions, problems, or related concerns. These interviews were coordinated with DTSC and the RWQCB. To date, ten interviews have been conducted for the DGCS, including a local landowner, local employees, the Mayor of the City of Davis, a professor and a student at UC Davis as well as a local real estate agent. Interviews were also conducted with a representative of Yolo County Parks and Resources and Yolo County Department of Environmental Health.

For the DGCS, interviews revealed few issues of public concern or knowledge about the site in general. The representatives of Yolo County were aware of the site, with varying degrees of knowledge about ongoing cleanup efforts. One community member was somewhat aware of environmental contamination of the groundwater, but was relatively unconcerned. Each community member expressed a fair amount of confidence that the Air Force, in coordination with various regulatory agencies, would take necessary steps to clean up any contamination that may be found at the site. The student was fairly skeptical that the federal government would do everything necessary in regards to cleanup efforts. There were concerns about the future reuse of the site, with some community members expressing a desire for the site to be used as a wildlife refuge. The ultimate concern of the Yolo County Parks and Resources representative was whether the Air Force would turn a clean facility over for reuse in a timely fashion. Several of the interviewees expressed a desire and/or need for a fact sheet from the Air Force about the DGCS. The representative of Yolo County Department of Environmental Health mentioned that a couple of community members had expressed concern about a potential “disposal pit” near the site, on what is now County property. However, after investigation, the representative also expressed confidence that such a site does not exist. Two of the community members' primary source of drinking water came from private wells, but the interviewees were unconcerned about possible contamination from the Davis Site. Interview notes from the community interviews are included in Appendix A.

A public notice will also be prepared once the Five-Year Review is complete, including the following:

- Location(s) where a copy of the Five-Year Review can be obtained or viewed (including site repositories),
- A contact name and telephone number where community members can obtain more information or ask questions about the results, and
- The date of the next Five-Year Review or a statement and supporting rationale that Five-Year Reviews will no longer be required.

In addition to the public notices, an article describing the Five-Year Review in more detail has been placed in the McClellan Newsletter, the *Environmental Action Update*. Periodic updates may be included in the quarterly newsletters, as applicable, to keep the public informed of the progress of the review. Once the review is completed, the main points of the Five-Year Review will be summarized in another newsletter article.

4.0 FIVE-YEAR REVIEW EVALUATION

In accordance with the IROD, the accepted remedial action included both Soil Vapor Extraction (SVE) from the vadose zone and groundwater extraction from the saturated zone, with separate treatment of impacted materials from each extraction system (Tetra Tech, 2002b, p. 1-6).

The selected remedies have addressed the VOC contaminated soil and are addressing groundwater at the DGCS. The following are the RAOs (CH2M Hill, 1994b, p. 1-2):

- Contain groundwater contamination at and above the MCLs in the B and C groundwater zones.
- Reduce or eliminate levels of subsurface contamination that pose a potential threat to human health or the environment.
- Prevent the spread of groundwater contamination beneath the site, especially to regional aquifers.

The accepted remedial action under the IROD began with the design phase in the spring of 1995. The Groundwater Treatment Plant (GWTP) began operation in October 1995 and the SVE treatment system began operation in June 1996. In January 1999, the Air Force installed additional extraction wells for the GWTP (Tetra Tech, 2002b, p. 1-6).

4.1 GROUNDWATER REMEDIAL ACTIONS

4.1.1 Description and Background

The groundwater treatment system, with a capacity of about 400 gallons per minute (gpm), consists of six extraction wells (DEW-1B, DEW-1D, DEW-2B, DEW-2C, DEW-3C, and DEW-4C), screened in three vertically discrete aquifer zones, that are pumped through below-ground piping into an influent tank. The untreated groundwater is pumped through two parallel sand filters, three 10,000-pound liquid phase granular activated carbon (GAC) vessels in series and into an effluent tank. The treated groundwater is then pumped into two injection wells (IW-1, IW-2), screened in a lower groundwater aquifer zone, downgradient of the contaminated

plume (Figure 4-1). The treatment system and groundwater contamination are monitored by 43 monitoring wells.

Extracted groundwater is currently being treated by GAC filtration to remove VOCs. Prior to 19 July 1999, UV/OX was the primary treatment method; the GAC was used as a polishing unit for the treated water and as an emergency backup to the UV/OX system. The UV/OX system was eliminated on 19 July 1999 and groundwater is now treated entirely by GAC filtration. The UV/OX system is in standby mode and the hydrogen peroxide pump and the six UV/OX lamps are off. Power to the UV/OX train is maintained to provide leak detection capabilities and to monitor the volume of water flow through the system. If the UV/OX system is needed in the future, it can be restarted.

4.1.2 Hydrogeology at DGCS

The geologic setting under the DGCS consists of interbedded, horizontally discontinuous lenses of fine and coarse grain sediments. Based on past hydrogeologic evaluations, the DGCS has been divided into five hydrogeologic zones: A, B, C, D, and E (Figure 4-2). These zones extend to a depth of 245 feet bgs and include both permeable aquifer materials (sand and gravel) separated by low-permeability aquitard materials (silt and clay). The low permeability aquitards have been designated as A-B, B-C, C-D, and D-E. The stratigraphic sequence and depths include the following (Tetra Tech, 2002b, p. 1-7):

- The A-zone (vadose zone) ranges in depth from the ground surface to 65 feet bgs and includes the A-B aquitard.
- The B-zone ranges from 65 to 95 feet bgs and contains the B aquifer.
- The C-zone ranges from 95 to 145 feet bgs and contains the B-C aquitard and the C aquifer.
- The D-zone ranges from 145 to 195 feet bgs and contains the C-D aquitard and the D aquifer.
- The E-zone ranges from 195 to 245 feet bgs and contains the D-E aquitard and the E aquifer.

Groundwater elevations in each zone (B, C, and D) at DGCS fluctuate seasonally due to nearby groundwater extraction for agricultural irrigation. Groundwater pumped by the adjacent agricultural wells is from the E-zone and deeper aquifers. This pumping creates a regional cone of depression in the vicinity of DGCS and results in downward vertical gradients. During summer, agricultural pumping lowers the piezometric surface to about 85 feet bgs and during the winter, it rises to about 15 feet bgs. Horizontal and vertical gradients vary by season and local pumping demands. Generally, winter will produce upward vertical gradients with much smaller horizontal gradients. The more pronounced pumping during summer will produce horizontal gradients (usually to the south and southwest) with a strong downward vertical component (Tetra Tech, 2002b, p. 1-7).

Contaminant concentrations detected in the Second Quarter 2003 Groundwater Monitoring and Operations Report (Tetra Tech, 2003a) are shown on Table 4-1. In addition, supplemental sampling for 1,4-dioxane has been added to the site operation compliance program for the 2003 operations period and the first quarter 2004. This compound has been recognized as a potential contaminant of concern due to its use an additive in TCE and PCE solvent mixtures to extend shelf life. Although 1,4-dioxane was detected in six monitoring well samples collected during the fourth quarter 2003, no concentrations of 1,4-dioxane were detected in extraction system compliance monitoring samples (Tetra Tech, 2004, p. 2-5 and 3-2).

4.1.3 Groundwater Treatment System Operation

The operation of the groundwater treatment system is being monitored monthly and reported quarterly according to the final Operations and Maintenance (O&M) Manual (EA, 1996). The treatment system influent and effluent concentrations are being sampled and tested monthly for VOCs (SW8260B), total petroleum hydrocarbons as diesel (TPH-d) (SW8015B) and annually for barium (6010), chromium (6010), selenium (7740), and zinc (6010). In addition, the mid-fluent concentrations between the second and third carbon canister are being monitored for VOCs to determine break through and carbon changeout. The extraction wells are being sampled and tested quarterly for VOCs (SW8260B) and selected extraction wells are tested for TPH-d (SW8015B).

The contaminants that are being detected and reported from the groundwater monitoring program during the Second Quarter 2003 are shown on Table 4-1. Analytical results from the DGCS groundwater monitoring program are reported semi-annually, in the Second and Fourth Quarter Monitoring Reports. The Second Quarter 2003 represents the latest validated data available at the time of the draft version of this Five-Year Review Report (Tetra Tech, 2003a). The primary COCs in groundwater have continued to be PCE and TCE, with lesser amounts of cis-1,2-dichloroethene (cis-1,2-DCE); vinyl chloride; benzene, 1,1-dichloroethane (1,1-DCA); 1,1-dichloroethene (1,1-DCE); and 1,2-dichloroethane (1,2-DCA). The effluent discharged to the injection system has continued to be below the VOC detection limits. The analytical reporting limit for TPH-d in the effluent (i.e., 96 µg/L) is currently above the effluent discharge limit identified in the IROD (i.e., 50 µg/L). However, the RWQCB has stated in a letter to the Air Force dated 7 February 2003 that the laboratory only needs to achieve a detection limit for TPH-d of less than 100 µg/L since the taste and odor threshold for TPH-d is 100 µg/L (RWQCB, 2003a).

As reported in the *Third Quarter 2003 Groundwater Monitoring and Operations Report, Interim Groundwater Treatment Plant* (Tetra Tech, 2003b), the DGCS groundwater treatment system has been in compliance with the IROD and RWQCB requirements and, during the Third Quarter 2003, the GWTP has had a 94.7% run time efficiency and operated at an average flow of 188 gpm (Tetra Tech, 2003b, p. 2-2). Although this flow rate is lower than the target extraction rate of 340 gpm based on the monitoring results, the system has been successful in 1) controlling the VOC MCL plume boundary in the B and C zones (Figures 4-3 and 4-4) and 2) eliminating the VOC MCL plume in the D zone (Figure 4-5). As depicted in Figure 4-4, the MCL boundary is maintaining a similar footprint compared to 1994 interpretations; however, the mass has been reduced significantly. Table 4-2 shows the VOC mass removed by quarter since the start of the groundwater treatment system (i.e., Fourth Quarter 1995). Total mass removed since the start of operations is 45% or about 286 pounds, with a rate of removal ranging from a maximum of 40.01 pounds (Fourth Quarter 1995) to a minimum of 0.79 pounds (Third Quarter 2003). The largest drop in contaminants treated by the system occurred between the Second and Third Quarter 1997 (i.e., roughly 50% reduction) and the removal rate has not significantly improved since then.

As noted in Section 2.3, the RWQCB has indicated that PHGs for PCE (0.06 µg/L) and TCE (0.8 µg/L) may be proposed as groundwater cleanup ARARs for the final ROD at DGCS compared to the current MCL (5.0 µg/L for both PCE and TCE). A comparison of MCLs to PHGs is provided in Table 2-1.

In August 1999, Tetra Tech recommended removing the UV/OX treatment system from the groundwater treatment system. The RWQCB approved this recommendation and the UV/OX was taken off-line in September 1999 and the groundwater is now treated entirely by GAC filtration. If the UV/OX system is needed in the future, it can be restarted (Tetra Tech, 2002b, p. 1-6).

Currently, the total O&M cost to maintain the GWTP, including sampling, reporting, utilities, and consumables is approximately $350,000/year (Tetra Tech, 2002b, Table 2-4). At the extraction rate of 15 pounds removed during 2002, the average price per pound of VOC removed is approximately $23,333 (Tetra Tech, 2002b, Table 2-4). An approximation for remaining time of operation is 30 years, assuming the current mass removal rate does not decrease (approximately 11 pounds per year for the last four quarters of operation).

Recently, the RWQCB has proposed five additional chemical compounds (emergent chemicals) as potential contaminants of concern in groundwater at past military facilities (including the former McClellan AFB). These five compounds are perchlorate, hexavalent chromium, 1,4-dioxane, n-nitrosodimethylamine (NDMA), and 1,2,3-trichloropropane (TCP). At the DGCS, perchlorate, hexavalent chromium, NDMA, and 1,2,3-TCP have not been sampled due to the nature of site development and past use of the property. Historically, 1,4-dioxane has been used as an additive in TCE and PCE. The compound 1,4-dioxane was sampled for in 2003 and the first quarter of 2004. Although no concentrations of 1,4-dioxane were detected in extraction system compliance monitoring samples, the constituent was detected in up to six monitoring well samples collected for groundwater compliance monitoring. In wells DMW-7 and DMWC-14, 1,4-dioxane was detected at concentrations of 3 and 0.7(J) µg/L, respectively (Table 4-1). The AFRPA has continued to monitor the treatment system compliance samples for

1,4-dioxane throughout the remainder of the 2003 operational period, and will provide a summary of findings and recommendations in 2004.

4.2 VADOSE ZONE REMEDIAL ACTIONS

4.2.1 Description and Background

The IROD selected SVE as the best method to remediate contaminated vadose zone soil at the DGCS (CH2M Hill, 1994c, p. 1-2). The SVE system began operation in June 1996 and consisted of six soil vapor extraction wells, 17 vapor monitoring points or piezometers, a blower unit with minimum flow rate of 200 standard cubic feet per minute (scfm), and a granular activated carbon system to treat the contaminated air stream (Figure 4-6). The extraction wells were installed to extract soil vapor from three distinct levels within the vadose zone. These include the shallow zone (0 to 20 feet bgs); middle zone (21 to 40 feet bgs) and the deep zone (41 to 65 feet bgs). One extraction well (CH-2) was installed in the shallow zone, and four were installed in the middle zone (CH-1, CH-4, CH-5, and CH-7). No extraction wells were specifically installed or operated in the deep layer because of seasonal saturation and the predominance of fine grain sediments. However, a dual–phase extraction well (EW-2B), which was screened across the middle and deep vadose zone layers, was installed during 1998. The dual phase operation began in June 1999 and was re-evaluated in August 1999 (CH2M Hill, 2000a, p. 2-1).

4.2.2 SVE Treatment System Operation

Prior to the installation of the SVE system, it was estimated that about 99 pounds of VOCs were present in the shallow and middle subsurface zones (CH2M Hill, 1994b, Table 2-4). During the first five months of operation, the SVE system removed approximately 54 pounds of VOC contamination from the vadose zone. Over the next three years until September 1999 only an additional six pounds of VOC contamination were removed for a cumulative total of 60 pounds. The low VOC concentrations present in the final rebound soil vapor samples collected in

October 1999 indicated that the shallow and middle vadose zone contamination had been remediated. The final closure report for the SVE system (CH2M Hill, 2000a, p. 3-1) summarized the closure criteria for DGCS as 1) treatment system influent concentrations at less than 100 ppbv total VOCs, 2) mass removal rate at less than 0.01 pound per day for total VOCs, and 3) soil gas concentrations in shallow and medium vadose zone wells as minimum rebound with less than 500 ppbv for PCE. The SVE system met these criteria and the final rebound samples were taken in October 1999.

The cost per pound of VOC contamination removal with the SVE system operation went from approximately $2,400 in 1996 to $50,000 in 1999 as a direct result of the decreasing VOC concentrations (CH2M Hill, 2000a, p. 2-9). In 1999, Tetra Tech produced the *Process Optimization Report Soil Vapor Extraction System* that recommended shutdown of the SVE system based on achieving the remedial goal set forth in the IROD (Tetra Tech, 1999c, p. 7). This recommendation was accepted by the RWQCB and the SVE system was removed from operation on September 23, 1999; however, the SVE wells were left in place and the SVE site was never formally closed. The acceptance to shut down the SVE system was made before the START/STOP procedures were adopted by McClellan.

4.3 FIVE-YEAR REVIEW PROCESS

This Five-Year Review consisted of a comprehensive review of relevant documents, analytical and field data, cleanup criteria, toxicological standards, site inspections and interviews with members of Air Force staff, contractors, and the public. All relevant documents reviewed to produce this Five-Year Review Report are presented in the section titled References, following Section 7.0.

4.3.1 Site Inspection

The site inspection was conducted on March 24, 2003 by MWH and an AFRPA representative. The purpose of the site inspection was to assess the protectiveness of the remedial systems to the surrounding environment and to inspect the fencing to restrict access to the site.

The GWTP was well maintained and all components were in good working condition and well labeled. It was noted where a previous pipeline break had occurred in July 2002, and that the polyvinylchloride (PVC) piping was replaced with galvanized steel piping.

The spill that occurred as a result of an extraction well pipeline breakage resulted in an estimated 33,250-gallons of contaminated groundwater to be released to the ground surface. Four water samples and two soil samples were collected from the affected area. One water sample was collected within the DEW-1D extraction well pipeline and the other three water samples were collected from standing water in the vicinity of the broken pipeline. One of the soil samples was collected adjacent from the broken pipeline and the second was collected from the outer perimeter of the spill area, as identified by the presence of saturated soil.

The analytical results of the sampling indicated that no contaminants were present in the soil or the surface standing water. The water collected from the extraction well had a detection of PCE and TCE, both at a concentration of 2.1 µg/L. With the contaminant concentrations and the estimated gallons released, the total mass of VOCs released to the environment was estimated at only 0.53 grams or 0.0012 pounds.

As part of the site inspection, all land use controls (LUCs) including fences, gates, and access roads were checked. The following summarizes the LUCs inspected at the site.

- The perimeter fencing is composed of a three-strand barb-wire fence with one site access gates. The barbwire fencing is in adequate condition to deter any general trespassing across the site. The main gate on the south side of the site is in excellent condition.
- The interior fencing and gate that surrounds the 8-acre main compound is in good condition and sufficient to deter trespassers.
- Gates that surround the GWTP and the extraction wells are in good condition and are providing adequate security to deter unauthorized entrance into the areas.
- All gates and monitoring wells across the site were adequately locked at the time of the inspection.
- Access roads to the main compound and the GWTP and the associated injection/extraction wells were in good condition and provided adequate access for the general O&M of the GWTP.

- An encroachment permitting process is in place to reduce the risk of exposure to contaminants, as well as to protect biologically sensitive habitats such as wetlands, vernal pools and threatened or endangered species.

The site inspection checklists are included in Appendix B. Photographs taken of part of the site inspection are included in Appendix C.

4.3.2 Site Interviews

Site interviews were conducted on March 17, 2003 with Doug Fortun, Doug Self, and Jim Lu from the AFRPA. The discussions were focused on the GWTP operation; however, the current biovent system and previously operated SVE system were also discussed briefly. An additional site interview was conducted on April 2, 2003 with Tom Naiman from Tetra Tech. A site interview was also conducted on June 25, 2003 with Molly Enloe from Parsons regarding vernal pools and biological habitat at the Davis site. There were no issues or concerns regarding the DGCS and the remedial activities that have and are taking place that came out of the discussions. It was noted in the discussion with Tetra Tech that several recommendations regarding optimization of the GWTP were presented in the recently submitted *Draft Remedial Systems and Environmental Equipment Informal Technical Information Review Report* (Tetra Tech, 2002b). Planning, funding, and implementation of these recommendations will be done in the near future. The site interview checklist is included in Appendix B along with the site inspection checklist.

In addition, ten interviews regarding the DGCS were conducted with individuals within the Davis community. The interviewees included a local landowner, local employees, the Mayor of the City of Davis, a professor and a student at UC Davis as well as a local real estate agent. Interviews were also conducted with a representative of Yolo County Parks and Resources and Yolo County Department of Environmental Health. A summary of the community interviews is presented in Section 3.0.

4.3.3 Technical Assessment

In accordance with the EPA Five-Year Review Guidance document, the technical assessment of the DGCS has been structured in terms of three questions (USEPA, 2001).

Question A: Is the remedy functioning as intended by the decision documents?

The review of the documents, ARARs, monitoring data, and the results of the site inspections and interviews indicates that the remedy is functioning as intended in the IROD. The GWTP has 1) contained groundwater contamination at and above the MCLs in the B and C groundwater zones, 2) reduced subsurface contamination that poses a potential threat to human health or the environment, and 3) prevented the spread of groundwater contamination beneath the site, especially to regional aquifers.

Containment has been demonstrated by 1) the groundwater gradients created by the GWTP, 2) lack of detections in the perimeter monitoring wells, and 3) the continued reductions in plume concentrations in zones B, C, and D.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

Toxicity Criteria. There have been numerous changes in toxicity criteria since the 1994 risk assessment was completed. Reference doses (Rfd) and CSFs have been developed for a number of chemicals assessed for which toxicity criteria were not formerly available. These values are denoted as "new" in Table 4-3. Furthermore, refinements have also been made to toxicity criteria for numerous chemicals as demonstrated in Table 4-3.

For those chemicals whose toxicity criteria have become more conservative, the notation "MC" is utilized in Table 4-3. For those chemicals whose toxicity criteria have become less conservative, the notation "LC" is utilized in Table 4-3. For those chemicals that result from previous Air Force operations at the DGCS and exhibit the greatest contribution to indoor air

cancer risk results (TCE, PCE), the inhalation CSFs remain unchanged. The oral CSF for PCE has also increased; however, estimated risks from groundwater ingestion already exceeded the USEPA acceptable cancer risk range; therefore, further increase is not likely to change the conclusions that a groundwater remedy is appropriate.

Other notable contaminants which exhibit contributions to indoor air cancer risk results but are not related to previous Air Force operations, include bromoform and EDB. Bromoform is a trihalomethane which is typically formed from the reaction of chlorine with dissolved organic matter. EDB has been detected in groundwater most likely because of its use as an agricultural fumigant (CH2M Hill, Final Risk Assessment Report, 1994, p. 3-13). The most notable change in toxicity criteria is the development of an inhalation RfD for EDB, which previously did not have an available RfD. Although this might increase the calculated hazard quotients for inhalation pathways, the reduction of source concentrations through the operation of the SVE and attainment of the ARARs for soil gas and groundwater MCLs should uphold the protectiveness of the remedy.

For ongoing groundwater treatment, ARARs for groundwater identified in the IROD are MCLs. There have been no changes in the groundwater ARARs for the contaminants of potential concern (COPCs) at the site that would affect the protectiveness of the remedy.

Exposure Assessment. The exposure assessment considered current and future potential receptors including on-site workers (outdoor, indoor, and excavation) and hypothetical future residents. There have been no changes in the site conditions (exposure pathways) or in exposure parameters that would affect the overall conclusions of the risk assessment.

Risk Assessment Methodology. Since the last risk assessment was completed for DGCS, a significant change has occurred in the methodology currently recommended for assessment of soil, soil gas and groundwater vapor migration to indoor air. The new guidance prescribes a tiered assessment process that may lead to modeling of soil vapor intrusion into indoor air utilizing the Johnson and Ettinger model (USEPA, 2002). The methodologies utilized in the 1994 risk assessment are not consistent with currently advocated methods (USEPA, 2002) and

are likely to be less conservative than the methods currently recommended. However, although the risk assessment demonstrated indoor air risks within the USEPA acceptable risk range, an SVE system was operated to reduce soil vapor as a source to groundwater, which concurrently reduced the source potential for indoor air. Therefore, although the recent guidance would potentially result in more conservative indoor air risk results, the source reduction and concurrent reduction in exposure potential is likely to offset this change in methodology.

To confirm this conclusion, a screening evaluation was performed as part of this Five-Year Review that considered potential risks to indoor air assuming very conservative soil gas concentrations occurring at very shallow depths. The approach to screening the potential risks included:

- Compiling the maximum concentrations of VOC and BTEX compounds from the shallow and intermediate vadose zone based on available monitoring data and rebound tests carried out since 1999.
- Performing risk and hazard index calculations using the maximum soil gas concentrations coupled with latest toxicity criteria and currently accepted indoor air model.
- Comparing the influence on risk or hazard index if maximum concentrations of VOCs or BTEX compounds are assumed to occur at five feet below ground surface regardless of the original depth of measurement.

This approach is both a conservative and appropriate screening tool for this Five-Year Review evaluation considering the limited shallow vadose zone data and the preponderance of high soil gas concentrations from the intermediate vadose zone. The concentrations were modeled using 1) the DTSC-modified Johnson and Ettinger Model (2003); 2) the 2002 Draft Indoor Air Guidance (USEPA, 2002); 3) site-specific soil type (sandy loam); and 4) default values for other soil parameters. In addition, the Cal/EPA (OEHHA) toxicity values were used (resident in the model) where available or appropriate for specific compounds.

Table 4-4 shows the maximum BTEX concentrations in the vadose zone (Parsons, 2003, June) and their associated risk and hazard index calculation assuming the concentrations are representative of ten feet and five feet below ground surface. At five feet depth, the risks from

all BTEX compounds are within the range of 10^{-6} to 10^{-4} with an HI of less than 1.0. Table 4-5 shows the maximum VOC concentrations in the vadose zone (CH2M Hill, 2000, October) and their associated risk and hazard index calculations assuming the concentrations are representative of their original screen depths (25 to 14 feet) and, conservatively, at five feet below ground surface. At five feet depth, the risks from all VOC compounds are within the range of 10^{-6} to 10^{-4} and the HI is less than 1.0. Table 4-6 shows the combined risk and hazard index assuming that the maximum BTEX and VOC concentrations evaluated in Tables 4-4 and 4-5 occur at their original screen depth and, conservatively, at a depth of five feet. At five feet depth, the combined risk from BTEX and VOC compounds is within the range of 10^{-6} to 10^{-4} (5×10^{-5}) and the combined hazard index is less than 1.0 (HI = 0.5).

The SSSEBS (URS, 2001) provided a qualitative evaluation of the risk associated with contamination reported within or beneath the DGCS, and that study identified potential risks associated with 1) the groundwater contamination above MCLs and 2) TPH soil contamination from leakage of the former fuel USTs. The identified exposure routes were identified as dermal contact with contaminated soils and ingestion of soil and/or groundwater. To manage the exposure from these potential routes, restrictions will be provided in the LUCs associated with the SFOSL and/or lease documents to control excavation and drilling activities as well as drinking or using groundwater. These exclusions would also include restrictions on the installation of water supply wells within 2,000 feet of groundwater contaminate plumes within the DGCS. In addition, these as well and any other intrusive activities will only be conducted with prior written approval of the Air Force, in consultation with the BRAC Realignment and Closure Cleanup Team (BCT) or other regulatory agencies. Additional actions to protect human health and the environment will also be addressed in the VOC ROD.

It should be noted that the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has established Preliminary Health Goals (PHGs). Although the IROD currently identifies MCLs as ARARs for groundwater, the RWQCB is currently proposing the implementation of PHGs rather than MCLs at the site. For at least two of the site groundwater COCs (TCE and PCE), the PHGs are substantially lower than the MCLs.

Question C: Has any other information come to light that would call into question the protectiveness of the remedy?

Contaminants at DGCS were found in groundwater and subsurface soil, which have limited exposure pathways, if any, to contact ecological receptors.

Ecological targets identified for the baseline ecological risk assessment were the Swainson's Hawk and the Burrowing Owl. The original risk assessment proposed that two remediation scenarios would have affected these special status species. A proposed effluent holding pond would physically decrease (albeit slightly) the Swainson's Hawk's range. Stockpiled soils could be used for nesting by Burrowing Owls. During the Five-Year Review, it was found that the proposed water treatment effluent holding pond was not built and that stockpiled soils were removed. Thus, monitoring of ecological targets is not necessary.

Since the initial baseline ecological risk assessment conducted in 1994, the SSSEBS (URS, 2001 citing Jacobs Engineering Group and RMI, 1995) identified additional biologically sensitive habitats at the DGCS, including seasonal wetlands and interspersed vernal pools. Some of the vernal pools contain Colusa grass (*Neostapfia colusana*), a federally listed threatened and state listed endangered species, and/or Crampton's tuctoria (*Tuctoria mucronata*), a federally and state listed endangered species. These habitats also provide foraging and feeding habitat for wildlife, including birds, amphibians, crustaceans, and insects. Some of the birds that have been observed in and around the vernal pools at the Davis site include the great egret, killdeer, northern shoveler, dowitcher, barn swallow, cliff swallow, violet-green swallow, black phoebe, mallard, snowy egret, and great blue heron. Mammals that may forage in and around wetlands habitat in the summer include the California ground squirrel, Botta's pocket gopher, and deer mice. Other than the Swainson's Hawk and Burrowing Owl identified during the baseline risk assessment, special-status wildlife species observed within the Davis site footprint include the white-tailed kite, northern harrier, and vernal tadpole shrimp. A loggerhead shrike nest has also been observed within the Davis site. Other special-status species with moderate potential for occurrence include the vernal pool fairy shrimp and ferruginous hawk (URS, 2001, p. 3-1 and 3-2).

There are currently no site conditions present that could affect the protection of these species as a result of the current operating remedial actions. There are no transport mechanisms for subsurface soil or groundwater to contact surface wetlands (water to the seasonal wetlands and vernal pools is from direct precipitation and surface runoff only). However, as stated in the SSSEBS, the Air Force is required to consult with U.S. Fish and Wildlife Service prior to transfer of the property (URS, 2001, p. 3-2).

There is no other information that has come to light that calls into question the protectiveness of the remedy.

4.3.4 Issues

The pending actions and recommendations for the Land Use Controls/Institutional Controls (LUC/ICs) are summarized below:

Pending Actions	Impact	Plan in Place to Address Issue? (Y/N)	Is Plan Protective Short-Term? (Y/N)	Is Plan Protective Long-Term? (Y/N)	Possible Issues that Could Affect Future Protectiveness? (Y/N)
Improve operational efficiency of the groundwater treatment system which has been steadily decreasing over the last five years.	Less than optimal efficiency of the groundwater treatment system to remove contaminants of concern.	**Y**	**Y**	**Y**	**N**
Conduct long-term comprehensive respiration test.	Confirm that the bioventing pilot study has been effective.	**Y**	**Y**	**Y**	**N**
Conduct confirmation sampling for fuels and VOCs in soil and soil gas.	Potential impact to groundwater.	**Y**	**Y**	**Y**	**N**
Conduct baseline sampling event for the on-site irrigation well and the two closest agricultural wells east and southeast of DGCS, as well as the migrant farm worker housing water supply well.	Confirm that DGCS contaminants have not impacted local water supply wells.	**N**	**NA**	**NA**	**N**

Pending Actions	Impact	Plan in Place to Address Issue? (Y/N)	Is Plan Protective Short-Term? (Y/N)	Is Plan Protective Long-Term? (Y/N)	Possible Issues that Could Affect Future Protectiveness? (Y/N)
Confirm shut-down of the SVE system with a START/STOP evaluation.	Confirm that SVE closure meets all current guidelines.	**Y**	**Y**	**Y**	**N**
Place a sign on the perimeter fencing providing current contact information.	Improve emergency response.	**Y**	**Y**	**Y**	**N**
Re-evaluate LUC/ICs, as necessary, to be consistent with the type and duration of the on-going remedial activities after land transfer.	Ensure protective-ness to public and the environment.	**Y**	**Y**	**Y**	**N**
Continue with three quarters of groundwater samples, as part of the 2003 and 2004 first quarter sampling program, for 1,4-dioxane.	Evaluate the need for further monitoring and/or treatment of 1,4-dioxane in ground-water.	**Y**	**Y**	**Y**	**N**

4.4 OTHER REMEDIAL ACTIONS

The biovent system has been operating on the site since 1993; however, it has not previously been considered to fall under the jurisdiction of the CERCLA regulation. The biovent system was not included in the IROD or any other decision document in part due to the temporary nature of the pilot test as well as the petroleum-only contamination of the soils directly related to the previous tank farm. There have been prior discussions about whether the petroleum-only vadose zone area is commingled with the VOC groundwater plume because of the pronounced seasonal fluctuations of the groundwater levels. Since the petroleum contamination in the vadose zone, extending down to 60 feet bgs, is co-located over the VOC groundwater plume, with seasonal groundwater elevation fluctuations of up to 70 beet (between 15 and 85 feet bgs), it is a reasonable assumption that the vadose zone and groundwater contaminants are commingling seasonally. However, it is not evident that this commingling is significant in terms of:

1.) continuing operation of the remediation systems, or
2.) increased risk to public health or the environment from vapor accumulations.

In terms of continuing operation of the groundwater treatment system, groundwater analytical testing for TPH compounds continues to be carried out in the influent of the GAC system. If TPH were to be encountered, the current groundwater treatment system would not be able to remediate petroleum hydrocarbons and it might result in costly fouling of the system. To date there has been only one trace estimated detection of TPH-d (0.2 milligrams per liter [mg/L]) in extraction well EW-1B, located approximately 80 feet downgradient of the tank excavation. Currently there has been no petroleum contamination detected in the influent samples collected at the groundwater treatment system (Tetra Tech, 2002a, p. 2-13).

In terms of risk from VOC soil vapors, an extensive soil gas survey in the vicinity of the UST excavation revealed contaminants including benzene, toluene, ethylbenzene, and xylenes (BTEX), TCE, and PCE. Maximum concentrations within the last five years were evaluated in Section 4.3.3 and indicated that risks from BTEX and VOCs are within currently acceptable ranges of 10^{-6} to 10^{-4} and hazard indices are less than 1.0.

Previous bioventing field readings collected periodically (Parsons, 1995), indicated that continued bioventing was appropriate to expedite the biodegradation of petroleum hydrocarbons in the subsurface soils. Current field data, collected in November 2002, suggests that biodegradation might be self sustaining without the need for supplemental oxygen injection. The field data collected in 2002 indicates that oxygen levels are sustaining above 20% after one week of non-operation of the bioventing system. To accurately evaluate if continued non-operation of the bioventing system is appropriate, a full respiration test may need to be performed.

4.5 LAND USE CONTROLS

According to the Department of Defense Guidance titled *Policy on Land Use Controls Associated with Environmental Restoration Activities* (Office of the Secretary of Defense, 2001, p.1-2), LUCs include any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health and the environment (Table 4-7). Physical mechanisms encompass a variety of engineered remedies to contain or reduce contamination and/or physical barriers to limit access to property, such as fences or signs. Land use controls consist of physical (engineered) controls, institutional

controls, and administrative controls. The physical controls can be broken down into the main remedy (e.g., a cap or covering) and site controls (e.g., fences, signs, alarm systems). The institutional controls, a subset of land use controls, are primarily legal mechanisms imposed to ensure continued effectiveness of land use restrictions imposed as part of a remedial decision. Legal mechanisms include restrictive covenants and deed notices. Administrative mechanisms include notices, adopted local land use plans and ordinances, construction permitting, and other existing land use management systems that may be used to ensure compliance with use restrictions.

The AFRPA at McClellan has developed a number of controls and procedures that address various issues relevant to LUC/ICs. Since the DGCS ROD is not final, these controls and procedures represent interim measures which are described in the following paragraphs. More recently, AFRPA has initiated the LUC/IC Management Program which will be implemented whenever the use of property is restricted based on its environmental condition (AFBCA, 2002c, p. 1-3).

Site Controls. The site controls at the DGCS are composed of fences, gates, and signs. The entire 316-acre property boundary is fenced with a three-strand barb-wire fence. Along this barb-wire fence signs are hung stating "No Trespassing" and that the property is owned by the U.S. Air Force. The perimeter fencing is in adequate condition to provide a deterrent for vehicular trespassing. The main entrance gate on the south side of the site, used to access the GWTP and the inner compound, is a heavy steel pipe gate. This gate provides an adequate level of security, is in good condition, is always locked, and has a "No Trespassing" sign posted on it. The second gate on the northeast side of the site, used to access the NOAA doppler radar center, is a steel pipe gate supported by heavy wooden posts on each side. This gate provides an adequate level of security, is in good condition, is always locked, and has a NOAA sign posted on it.

The centrally located, 8-acre inner compound containing all the buildings, bioventing system, pump house and ASTs is surrounded by 6-foot high chain link fencing, topped with barb-wire. The fence is in good condition and provides an adequate level of security to deter trespassers. The

only point of entry into the compound area is through a 20-foot long gate composed of 6-foot high chain link fencing, topped with barb-wire fencing on rollers. This gate provides an adequate level of security, is in good condition, and is always locked.

All of the components of the GWTP, with the exception of the extraction, injection and monitoring wells are contained within a fenced compound located centrally within the DGCS. The GWTP is surrounded by 6-foot high chain link fencing that is in good condition and provides an adequate level of security. The only point of entry is on the east side of the GWTP and consists of two locked 10-foot wide hinged swing out gates composed of 6-foot high chain link fencing which provides an adequate level of security. All of the extraction wells are completed above-ground with control panels that are enclosed by 6-foot high chain link fencing. All monitoring wells are completed above-ground with locked caps. The injection wells are completed above-ground with valving and control panels that are not enclosed. The site perimeter fencing provides the security for the wells and the associated valving and control panels.

Site maintenance consists of O&M of the GWTP and the bioventing system, annual construction of firebreaks around the perimeter of the site and around the interior facilities, mowing and weed control around the GWTP and extraction wells, and site inspections to ensure fencing and other physical barriers and signs are in adequate condition.

Beginning in 2004, the O&M of the GWTP is performed by CH2M Hill. The site is visited weekly to collect system readings, equipment maintenance, and to inspect aboveground piping and system components for leaks. Compliance samples are collected monthly at the influent to the carbon filter, between the carbon vessels, and the effluent discharge into the injection wells. Water levels are collected semi-annually at all monitoring wells. And finally, samples are collected at monitoring and extraction wells biannually.

The O&M of the bioventing system is currently performed by the Dolver Company until June 2004. The system is monitored monthly for equipment maintenance, and to inspect the system for adequate operation. Samples are collected and respiration test are performed semi-annually.

In the spring, firebreaks are constructed around the perimeter of the site and around the interior compound. Firebreaks are constructed at a minimum 30-feet width in accordance with the McClellan Firebreak Plan. "No Disk" zones have been established for all of the vernal pools at the site, and all equipment operators are required to attend an on-site briefing on endangered species protection measures prior to construction of the firebreak.

In addition to the site visits performed by the Air Force and subcontractors, an AFRPA representative performs a site visit bi-weekly to inspect the security of the site and the systems. The frequency of site visits provides an adequate monitoring of the site conditions and system operation, while providing deterrence to trespassing.

Real Property/Legal. The legal concerns of residential usage, installation of private wells, or public exposure to contaminated soils or groundwater do not currently constitute an issue of concern because the Air Force still owns and controls the property. In the future, if the property is transferred, the legal issues will need to be assessed to determine if LUCs need to be implemented.

Administrative Controls. Since the Air Force still owns the property and the environmental responsibilities, all of the LUC objectives can be enforced through the encroachment permitting process. The following bulleted items describe the necessary steps by which an encroachment permit might be obtained:

- Contact the AFRPA and request to speak with the appropriate personnel in charge of encroachment permitting.
- Request an encroachment permit questionnaire.
- Fill out the questionnaire and submit it along with a map of the location where the proposed activity is to take place.
- The questionnaire will be evaluated by the appropriate AFRPA technical staff.

The encroachment permit request will either be granted with or without restrictions or denied.

5.0 RECOMMENDATIONS

The remedial actions taken at the DGCS, in accordance with the selected remedies as stated in the IROD and interpreted by the RWQCB, have been operated as intended and are meeting the remedial action goals established in the IROD.

In terms of improving the DGCS remedial systems, cleanup efficiency and reducing operational costs, there are several recommendations that the Air Force should consider before the next Five-Year Review:

- Although the groundwater treatment system is currently operating at extraction rates well below the design capacity, groundwater contamination is being contained as required by the IROD. In addition, several of the extraction wells are no longer yielding significant contaminant mass or concentrations above the MCLs. These and other issues were documented in a recent report by the O&M contractor at DGCS (Tetra Tech, 2002b). A number of recommendations included in that report would improve the efficiency and reliability of the remedial cleanup: namely, 1) updating the groundwater model to confirm the optimal pumping rates and capture zones; 2) redevelopment of key extraction wells that are not currently operating at capacity; 3) removal of the UV/OX system; and 4) improvements to the leak detection systems to prevent spills.
- Continue with three quarters of groundwater samples, as part of the 2003 and first part of 2004 sampling program, for 1,4-dioxane and evaluate the need for addressing 1,4-dioxane in the groundwater monitoring and treatment program.
- Since startup of the biovent system in 1993, the latest test data indicate that bioventing has been effective in aerating the shallow and deep vadose zone. However it is not clear whether the bioventing is required, either on a full or part time basis, to maintain sufficient oxygen levels for biodegradation of residual petroleum contamination. In addition, it is not clear whether the bioventing system achieves sufficient radius of influence in the shallow vadose zone, less than 25 feet bgs, when the seasonal water table rises to within 25 feet bgs. Both of these questions can be answered by a long-term, comprehensive respiration test.
- Confirmation sampling for fuels and VOCs in soil and soil gas at the DGCS is proposed as a future effort at DGCS. Site-specific evaluations will refine and confirm the actual risk assessment from residual concentration at DGCS, including the statement that petroleum hydrocarbons are not impacting groundwater.

In terms of protectiveness of the public, the following is recommended before the next Five-Year Review:

- Based on information received from the Yolo County Housing Authority in Dixon and the Yolo County Health Department, the water supply well located on the migrant farm center has only been tested for nitrate, coliform, and fecal coliform. It is recommended that a single sampling event should be carried out for 1) the onsite irrigation well, 2) the two closest agricultural wells east and southeast of DGCS, and 3) the migrant farm workers housing water supply well using EPA Method 8260 for VOCs. Although there has been no indication of contamination in wells adjacent to DGCS, this recommendation would establish a baseline to confirm that no VOCs are contaminating groundwater that the public may be in contact with.
- The SVE system was shut down and removed with the approval of the RWQCB in September 1999; however, the adopted START/STOP procedures/evaluations were not performed. In order to prepare the site for closure, lease, or transfer, it is recommended to confirm the shut down of the system with a START/STOP evaluation.

It is also recommended that the following LUC/ICs be considered for the site:

- Placing a sign on the perimeter fencing providing current contact information.
- The current LUC/ICs implemented at DGCS are protective of public health and the environment; however, the continued use of bioventing for the petroleum remediation may conflict with the proposed land use following land transfer to Yolo County. As a result, it may be necessary to re-evaluate LUC/ICs depending on the type and duration of the remedial activities that continue after land transfer.

It is currently planned that future programs at DGCS, including site closeout, will be developed by a performance-based contractor and will be carried out with concurrence from regulatory agencies. In addition, these plans may consider the recommendations contained in this Five-Year Review Report.

6.0 PROTECTIVENESS STATEMENT

A Protectiveness Determination is located at the front of the report, preceding the Executive Summary.

7.0 NEXT FIVE-YEAR REVIEW

The next five-year review for the DGCS is required to be submitted by July 2009, five years from the signature date of this review.

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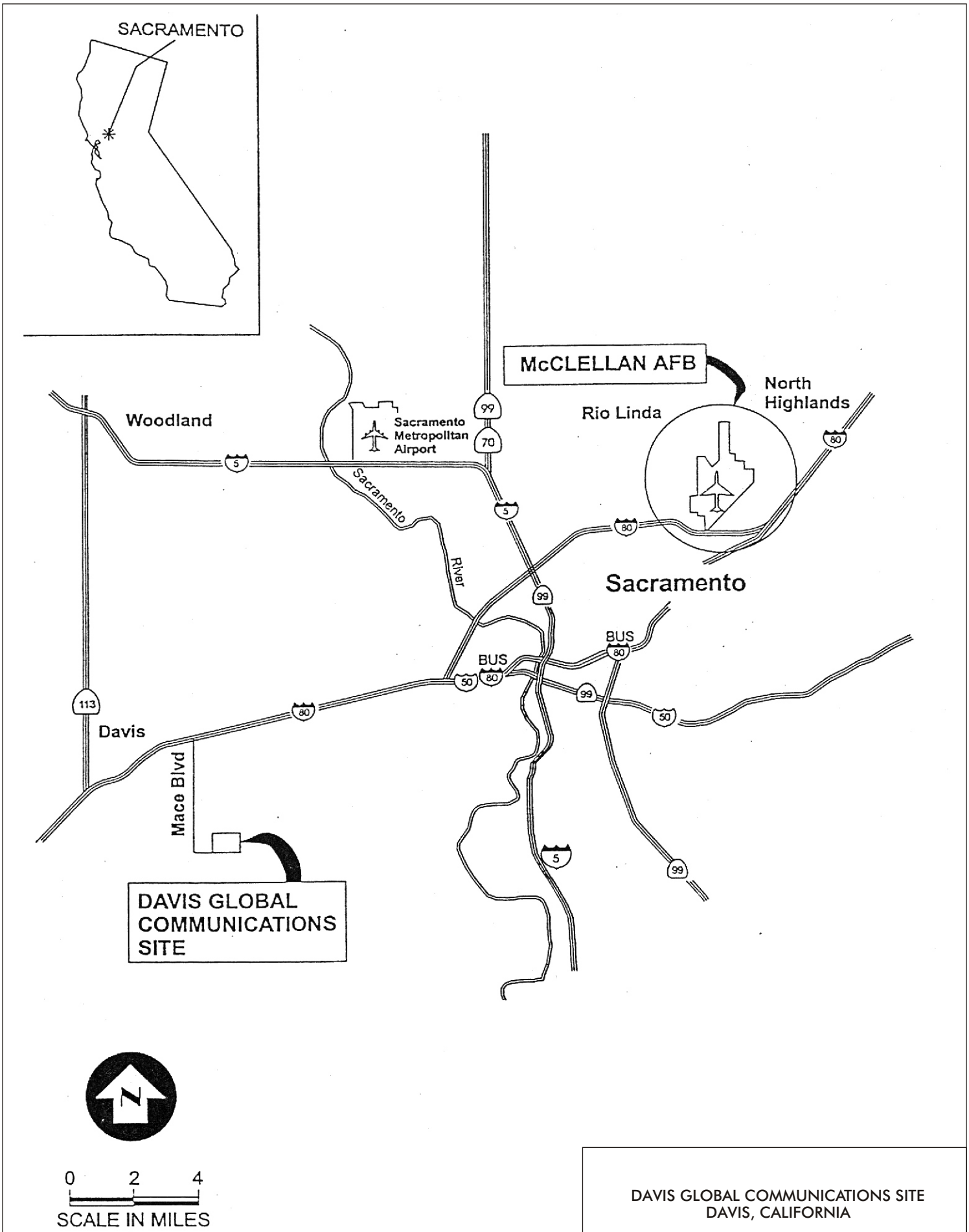

DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

SITE LOCATION MAP

FIGURE 2-1

Source: Parsons Eng. Science, Inc., 1999

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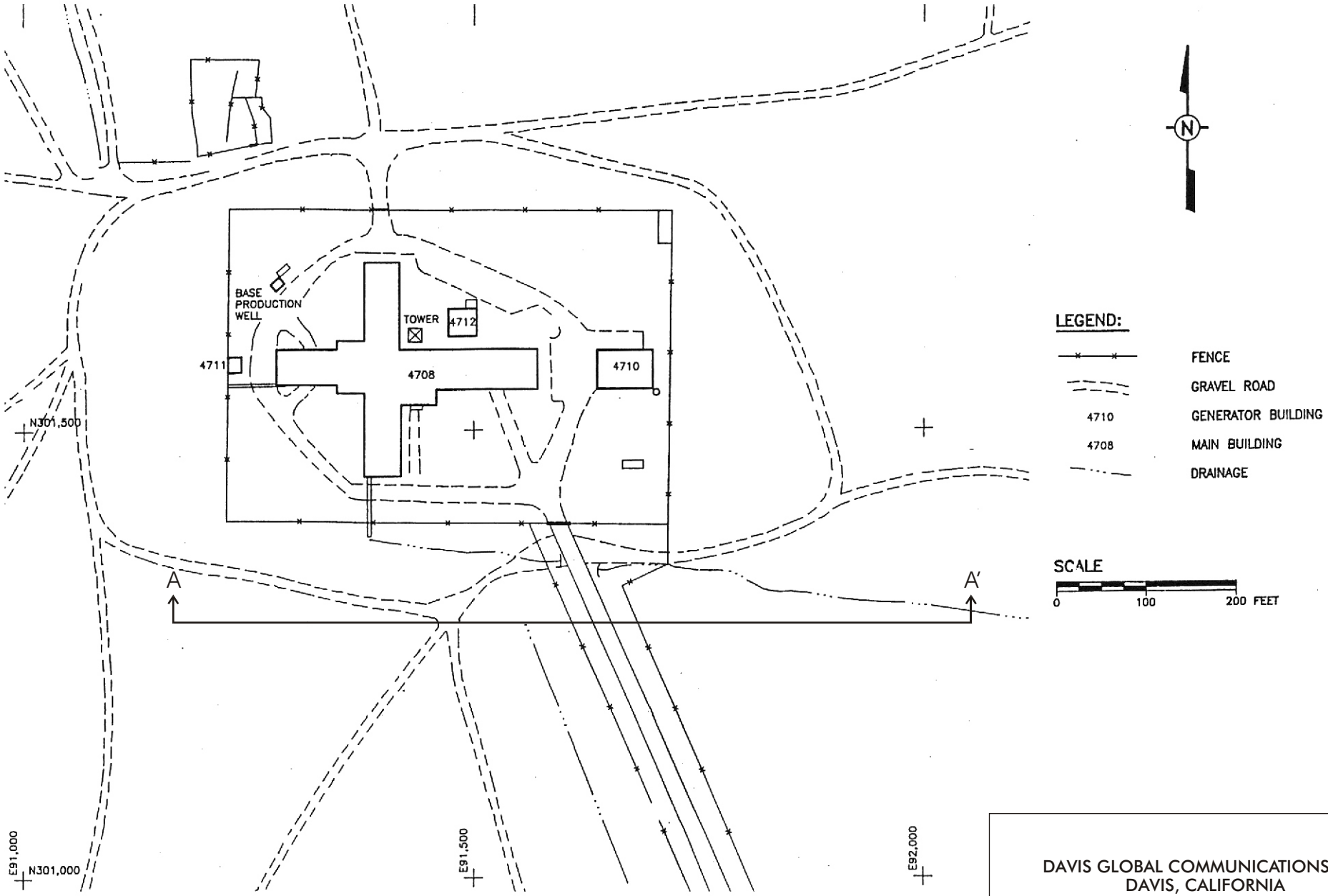

Source: IT Corporation, 1991

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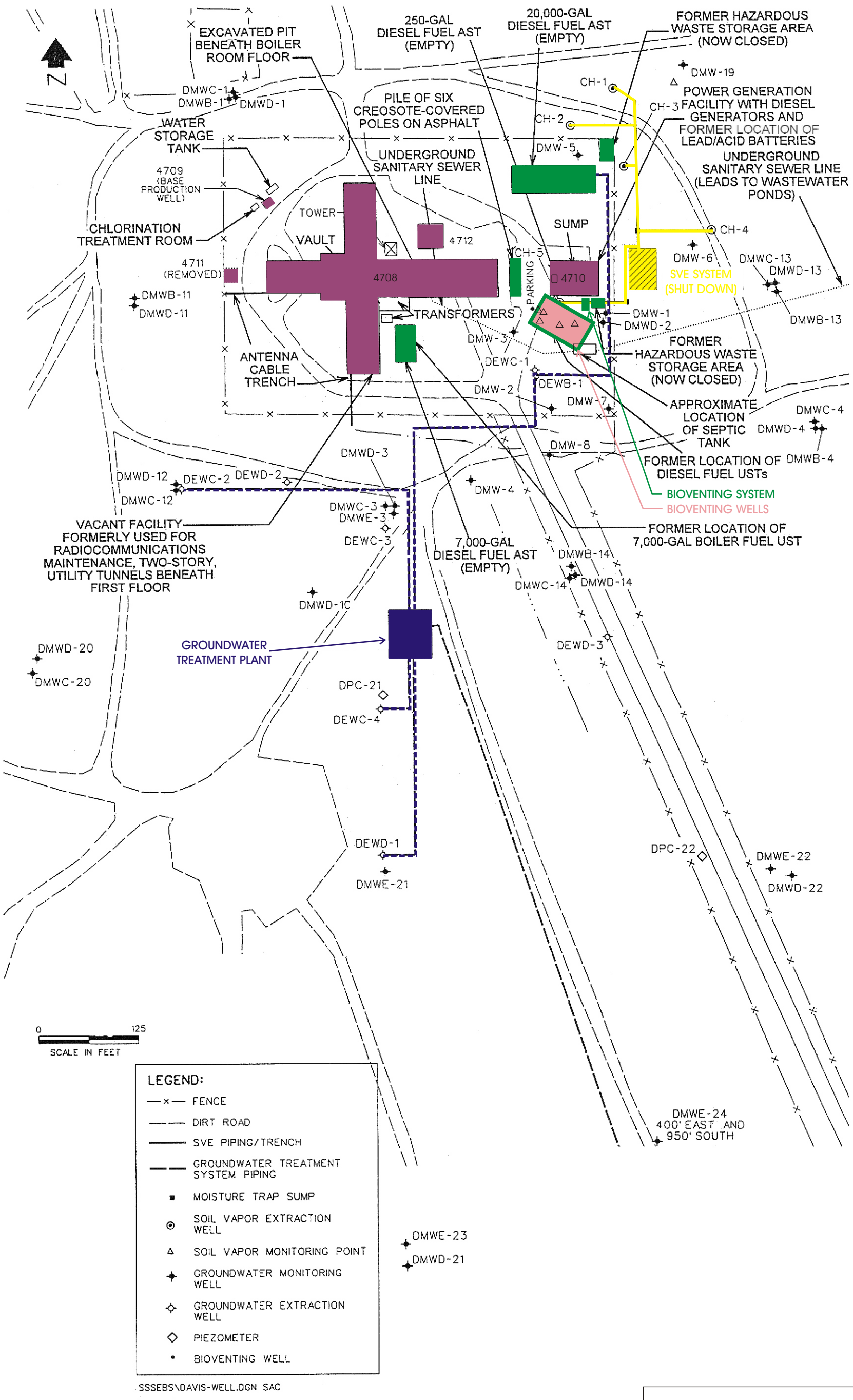
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

MAIN COMPOUND AREA

FIGURE 2-2



DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

KEY FACILITY/PROPERTY FEATURES

FIGURE 2-3

Source: URS Group, 2001

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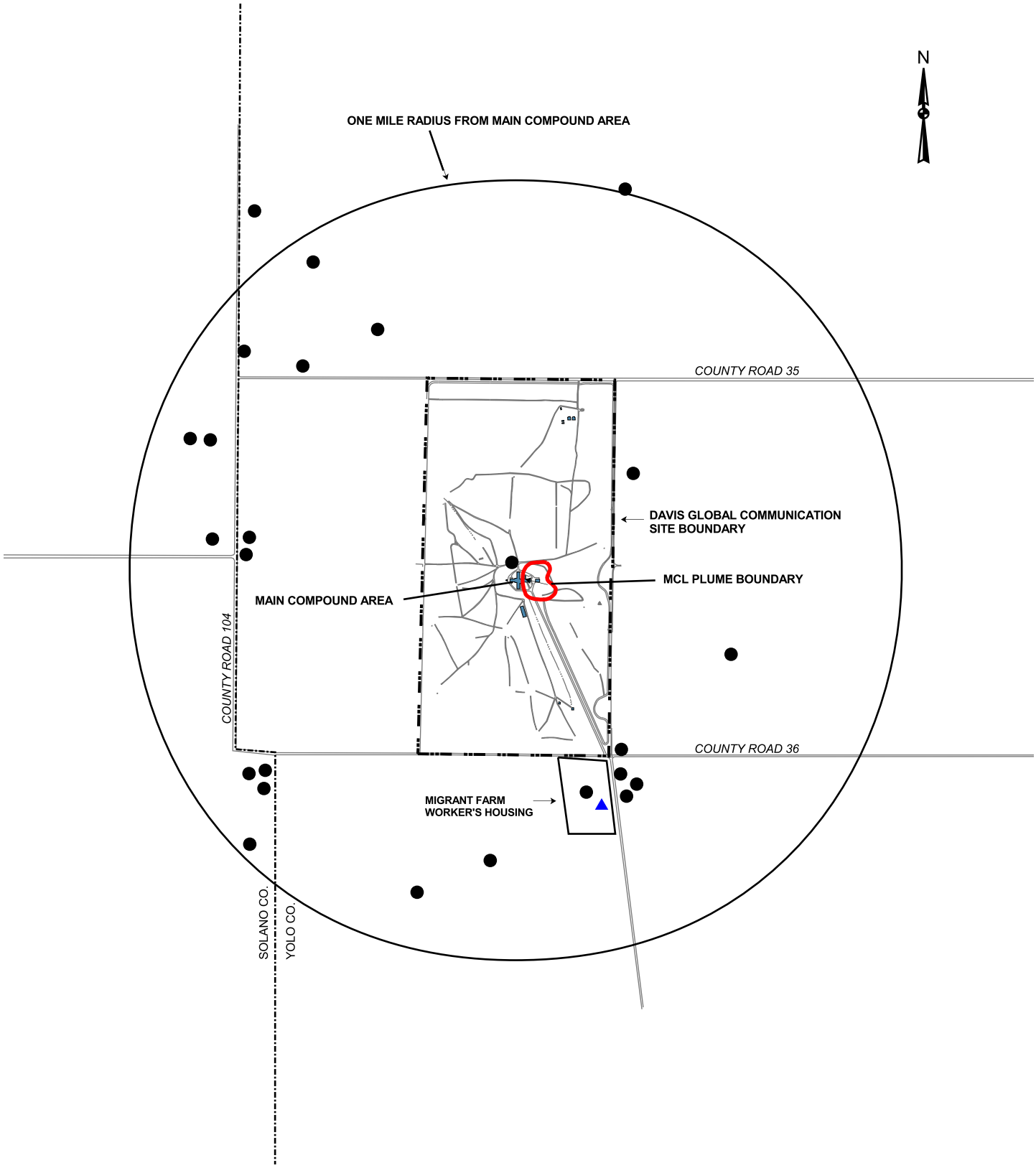


5 JUN 03 9:45

y:\mcclellan\davis\phg_april_03.apr (production wells)

LEGEND:

● IRRIGATION OR WATER SUPPLY WELL

▲ MIGRANT FARM WORKER'S HOUSING WATER SUPPLY WELL

SOURCE: USGS 7.5 MINUTE QUADRANGLE SERIES
SAXON AND DAVIS CALIFORNIA;
IT CORPORATION

2000 0 2000 Feet

DAVIS GLOBAL COMMUNICATION SITE
DAVIS, CALIFORNIA

WATER SUPPLY WELL LOCATIONS

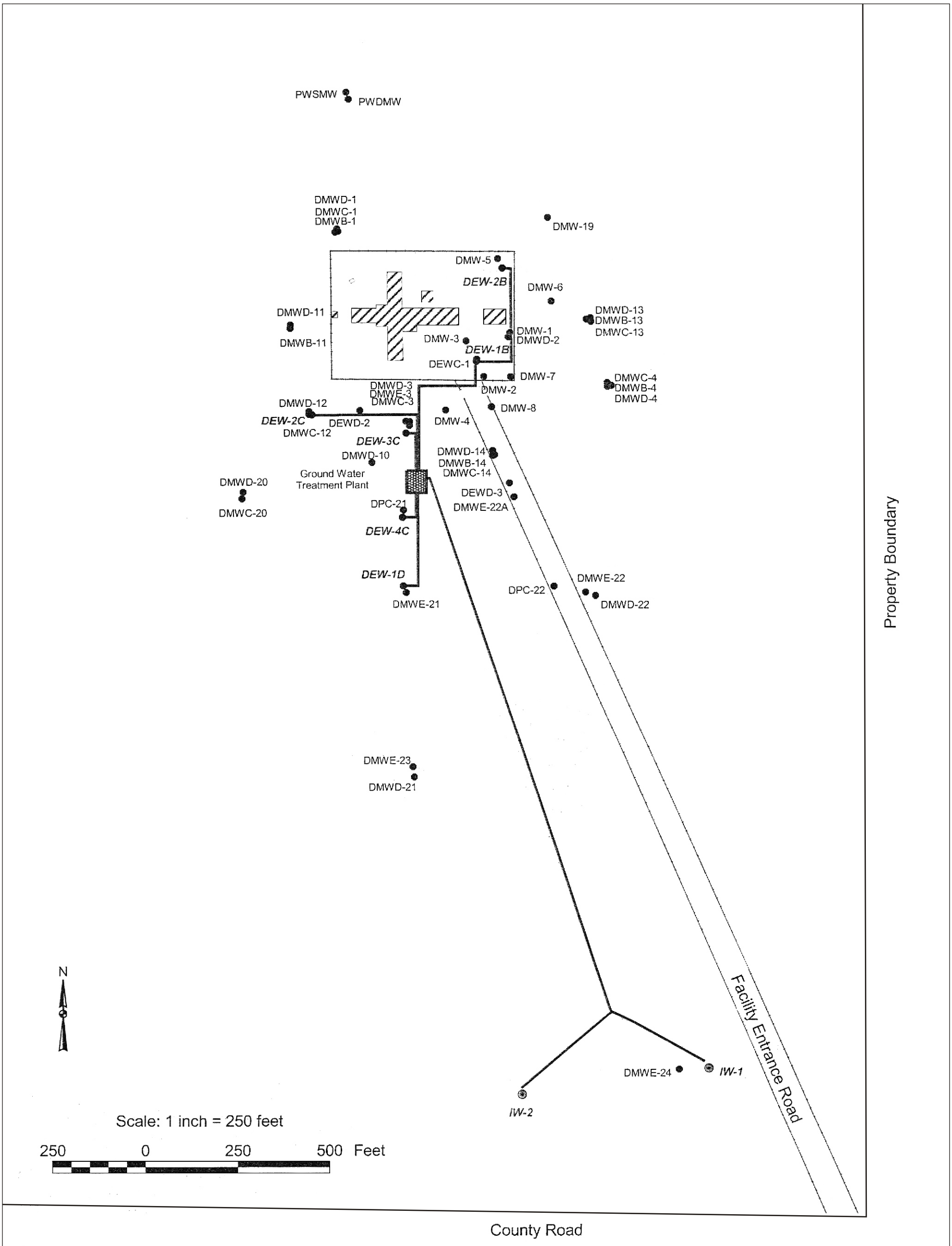
FIGURE 2-4

PHOTO SOURCE: USGS, June 15, 1993

DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA
ADJACENT PROPERTIES MAP
FIGURE 2-5

28 APR 03 10:40

y:\mcclellan\davis\phg_april_03.apr (photo)



Legend

- Monitoring Wells
- Extraction Wells
- Injection Wells
- Road
- Fence
- Groundwater Treatment Plant Conveyance Lines
- Building

Source: Tetra Tech, Inc., 2002

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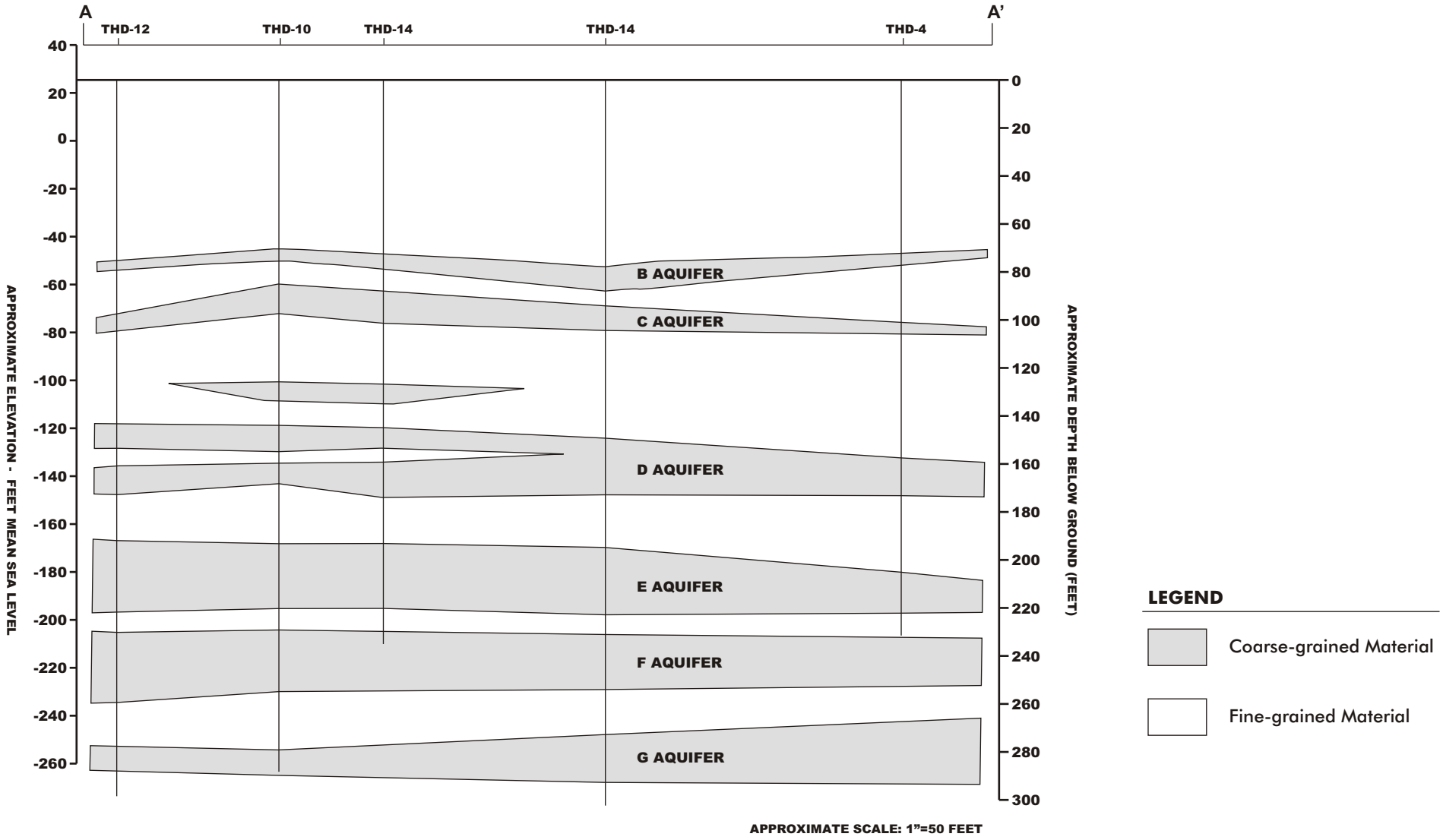
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

GROUNDWATER TREATMENT PLANT AND WELL LOCATIONS

FIGURE 4-1



Source: IT Corporation, 1999

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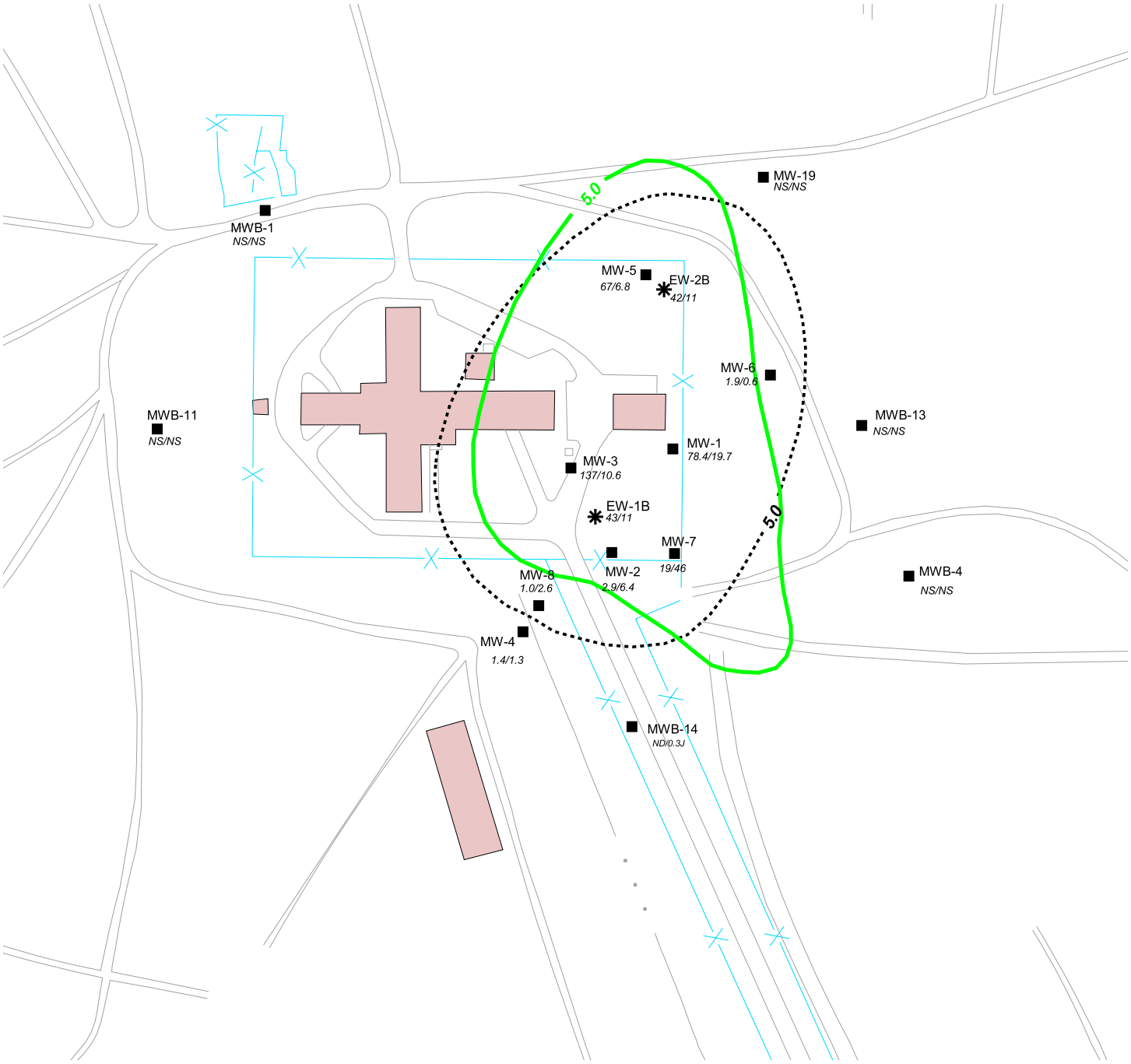
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

CONCEPTUAL HYDROGEOLOGIC CROSS-SECTION A-A'

FIGURE 4-2



LEGEND:

1.4/1.3 PCE/TCE CONCENTRATIONS (ug/L), (TETRA TECH, 2003a)

2003 B ZONE MCL TARGET VOLUME BOUNDARY FOR TCE AND PCE (TETRA TECH, 2003a).

1994 B ZONE MCL TARGET VOLUME BOUNDARY FOR TCE AND PCE. BASELINE ESTABLISHED IN THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (CH2M HILL, 1994)

B ZONE EXTRACTION WELL

B ZONE MONITORING WELL

FENCES

N

100 0 100 200 Feet

NOTES:

1. THE MCL TARGET AREAS ARE BASED ON PCE/TCE CONCENTRATIONS OF 5.0 ug/L FROM ANALYTICAL DATA COLLECTED SECOND QUARTER 2003 (TETRA TECH, 2003a)

2. ND = NON DETECT (<0.5ug/L).

3. NS = NOT SAMPLED.

DAVIS GLOBAL COMMUNICATION SITE
DAVIS, CALIFORNIA

MCL TARGET VOLUME BOUNDARY FOR THE B ZONE

FIGURE 4-3

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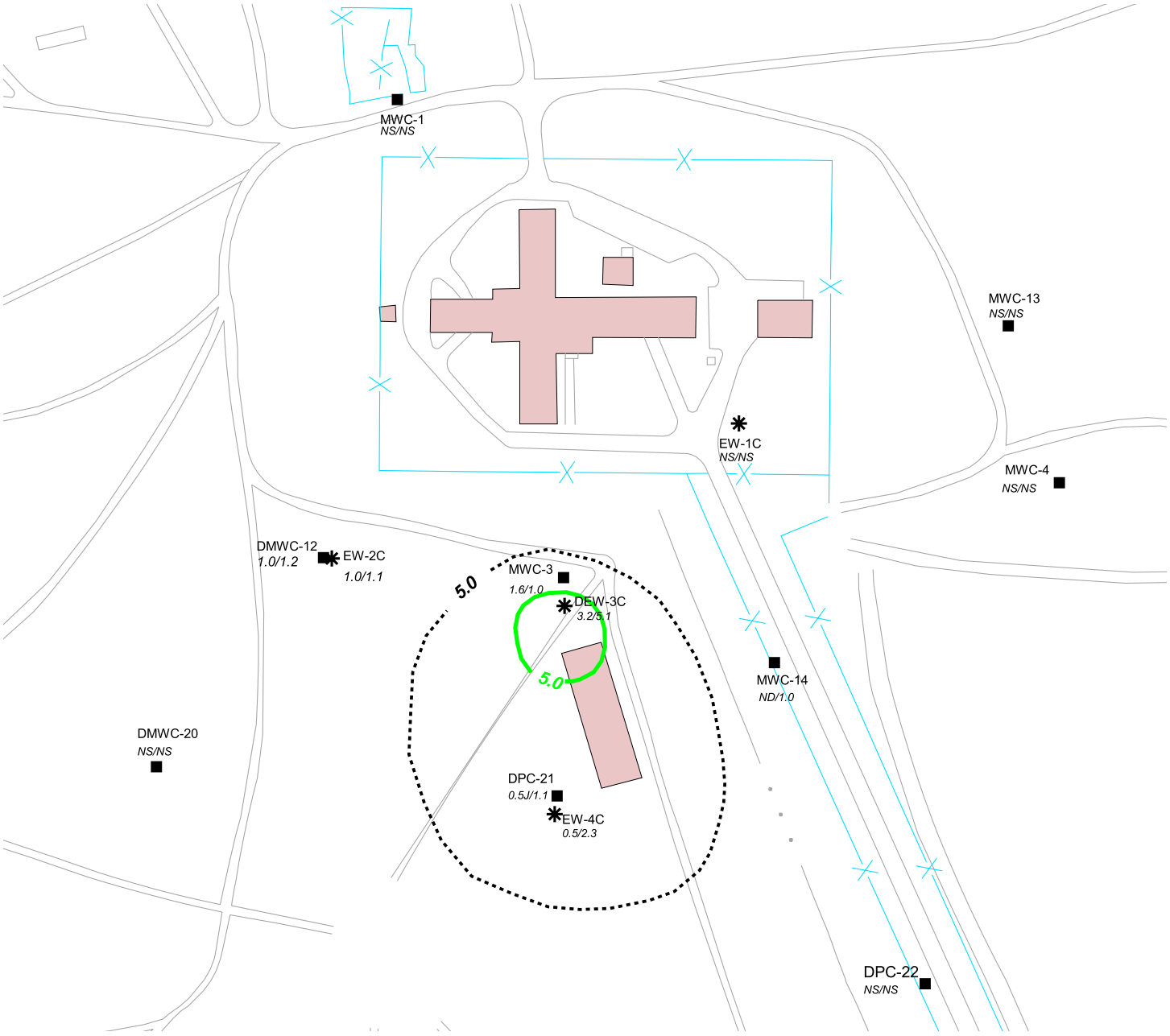
y:\mcclellan\davis\davis_2q03_gw.apr (Figure 4-3)



N

100 0 100 200 Feet

NOTES:

1. THE MCL TARGET AREAS ARE BASED ON PCE/TCE CONCENTRATIONS OF 5.0 ug/L FROM ANALYTICAL DATA COLLECTED SECOND QUARTER 2003 (TETRA TECH, 2003a).

2. ND = NON DETECT (<0.5 ug/L).

3. NS = NOT SAMPLED.

LEGEND:

0.5/2.3 — PCE/TCE CONCENTRATIONS (ug/L) (TETRA TECH, 2003a)

✱ — C ZONE EXTRACTION WELL

■ — C ZONE MONITORING WELL

ESTIMATED 2003 C-ZONE TCE AND PCE MCL TARGET VOLUME BOUNDARY (TETRA TECH, 2003a)

1994 C ZONE MCL TARGET VOLUME BOUNDARY FOR TCE AND PCE. BASELINE ESTABLISHED IN THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (CH2M HILL, 1994)

FENCES

DAVIS GLOBAL COMMUNICATION SITE
DAVIS, CALIFORNIA

MCL TARGET VOLUME BOUNDARY FOR THE C ZONE

FIGURE 4-4

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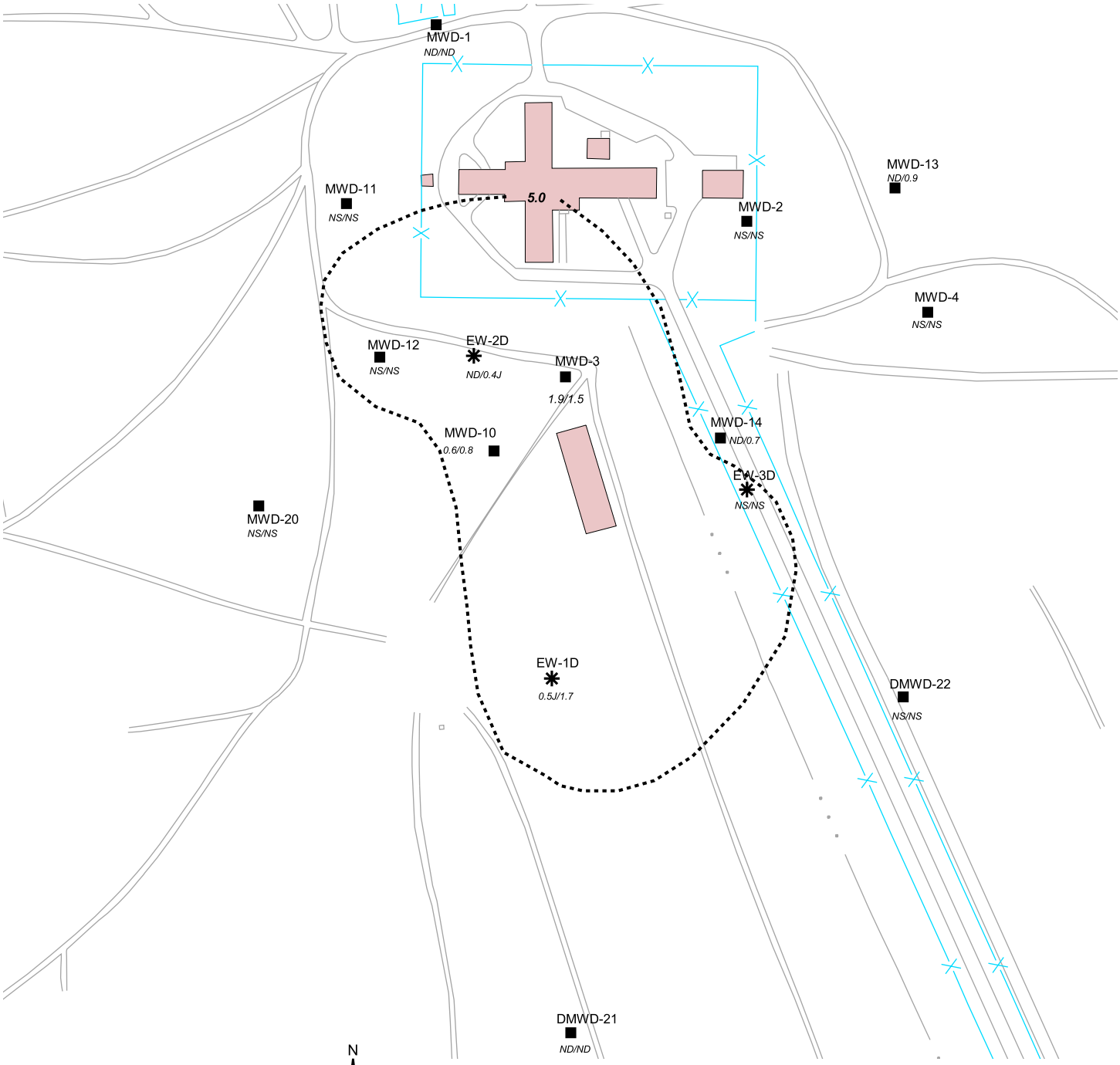

NOTES:

1. THE MCL TARGET AREAS ARE BASED ON PCE/TCE CONCENTRATIONS OF 5.0 ug/L FROM ANALYTICAL DATA COLLECTED SECOND QUARTER 2003 (TETRA TECH, 2003a).

2. ND = NON DETECT (<0.5 ug/L).

3. NS = NOT SAMPLED.

LEGEND:

1.8/1.1 PCE/TCE CONCENTRATIONS (ug/L) (TETRA TECH, 2003a)

✱ D ZONE EXTRACTION WELL

■ D ZONE MONITORING WELL

1994 D ZONE MCL TARGET VOLUME BOUNDARY FOR TCE AND PCE. BASELINE ESTABLISHED IN THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (CH2M HILL, 1994)

FENCES

DAVIS GLOBAL COMMUNICATION SITE
DAVIS, CALIFORNIA

MCL TARGET VOLUME BOUNDARY FOR THE D ZONE

FIGURE 4-5

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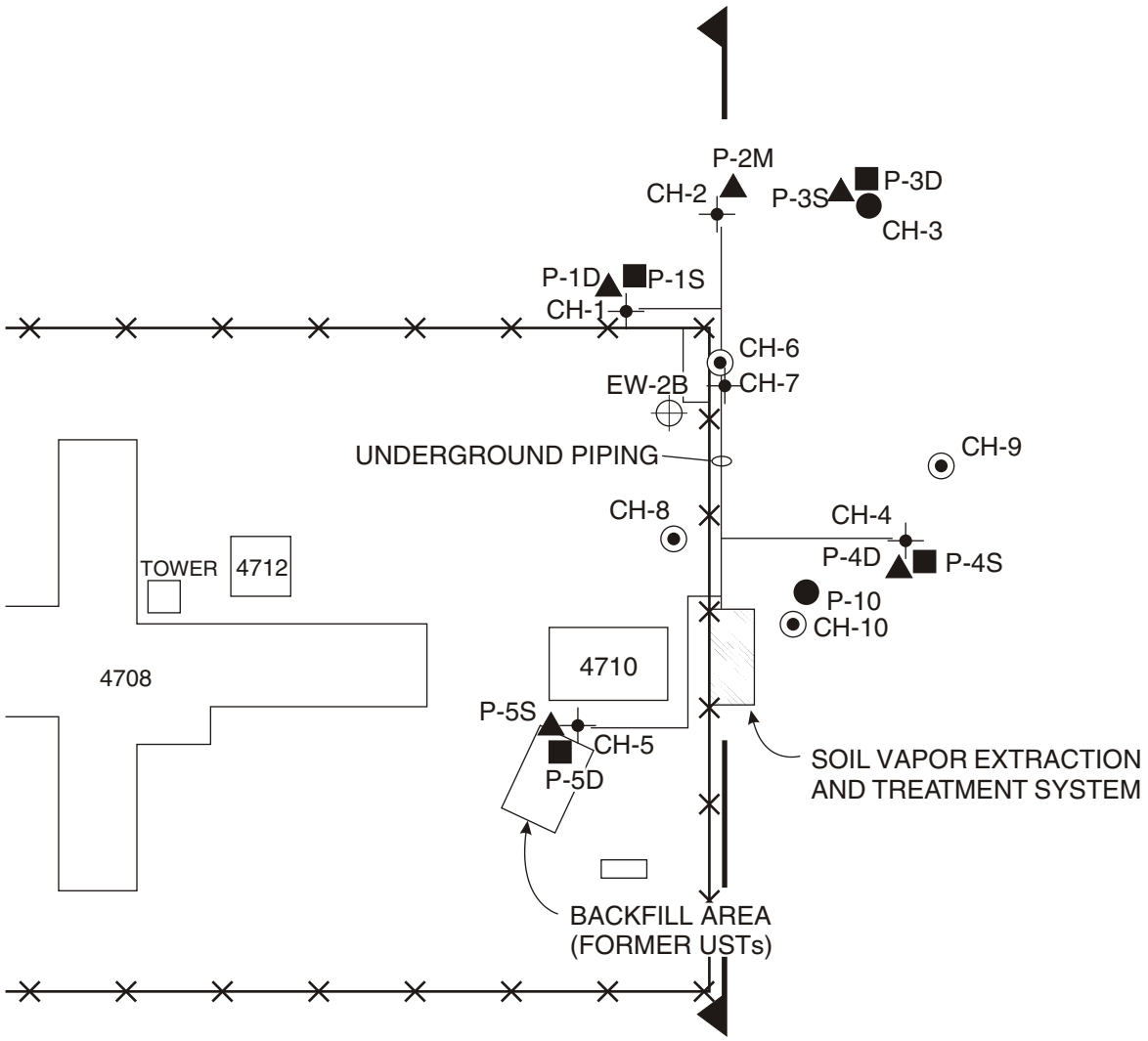
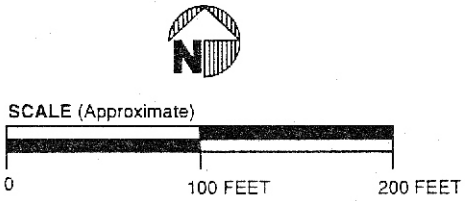


LEGEND

EXISTING WELLS

- DUAL PHASE EXTRACTION WELL
- SOIL VAPOR EXTRACTION WELL, SCREENED IN THE UPPER VADOSE ZONE
- SOIL VAPOR MONITORING WELL, SCREENED IN THE UPPER VADOSE ZONE
- SOIL VAPOR MONITORING WELL, SCREENED IN THE SEASONAL VADOSE ZONE
- PIEZOMETER SCREENED IN THE UPPER VADOSE ZONE
- PIEZOMETER SCREENED IN THE SEASONAL VADOSE ZONE



DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

SVE TREATMENT PLANT AND WELL LOCATIONS

FIGURE 4-6

Source: CH_2MHill, 2000

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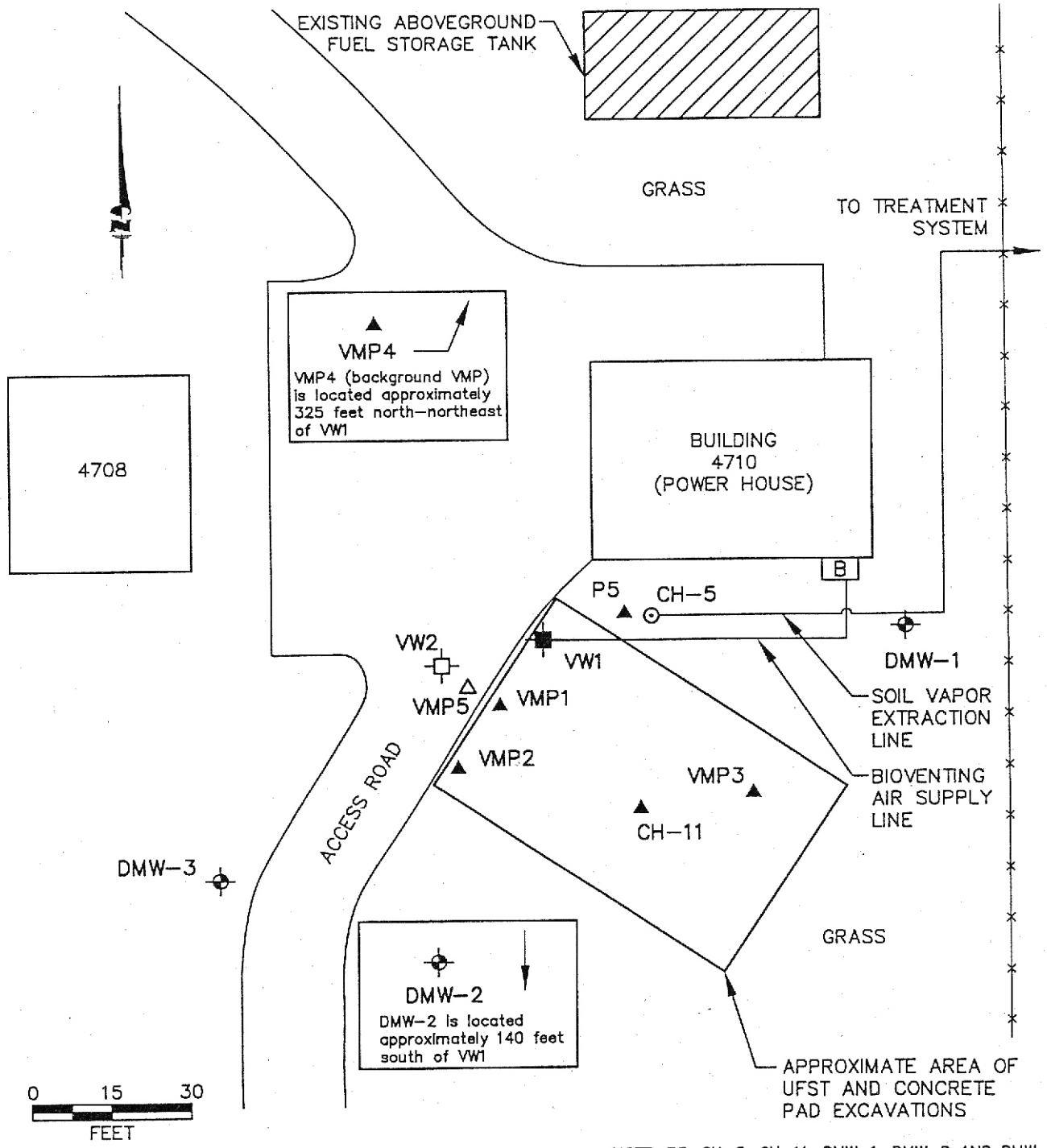

NOTE: P5, CH–5, CH–11, DMW–1, DMW–2 AND DMW–3 INSTALLED BY OTHER McCLELLAN CONTRACTORS.

LEGEND

VW1	AIR INJECTION VENT WELL (INSTALLED 7/93)
VMP1	VAPOR MONITORING POINT (INSTALLED 7/93)
CH–5	SOIL VAPOR EXTRACTION WELL
VW2	TREATABILITY TEST AIR INJECTION VENT WELL (INSTALLED 1/99)
VMP5	TREATABILITY TEST VAPOR MONITORING POINT (INSTALLED 1/99)
DMW–1	GROUNDWATER MONITORING WELL
B	BIOVENTING BLOWER LOCATION
	FENCE

Source: Parsons Eng. Science, Inc., 1999

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DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

BIOVENT TREATMENT PLANT AND WELL LOCATIONS

FIGURE 4-7

TABLE 2-1

GROUNDWATER CONTAMINANTS OF CONCERN AND POTENTIAL CONCERN
AND
ACTION LEVELS AND OTHER STATE GOALS/STANDARDS
FIVE-YEAR REVIEW
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS CALIFORNIA

Contaminant [1]	Groundwater Action Levels		State Drinking Water Goals (and other exposure standards)	
	µg/L	Source	µg/L	Source
Trichloroethene (TCE)	5	MCL [4,5]	0.8	CA PHG [3]
Tetrachloroethene (PCE)	5	MCL [4,5]	0.06	CA PHG [3]
cis-1,2-Dichloroethene (cis-1,2-DCE or DCE12C)	6	MCL [5]	6	CA MCL [2]
1,1-Dichloroethene (1,1-DCE or DCE11)	6	MCL [5]	6	CA MCL [2]
Benzene	1	MCL [5]	0.15	CA PHG [3]
1,1-Dichloroethane (1,1-DCA or DCA11)	5	MCL [5]	5	CA MCL [2]
Vinyl Chloride	0.5	MCL [5]	0.05	CA PHG [3]
trans-1,2-Dichloroethene (trans-1,2-DCE or DCE12T)	100	MCL [4]	10	CA MCL [2]

Notes:

MCL - Maximum Contaminant Level
PHG - Public Health Goal
µg/L - micrograms per liter

Sources:

[1] Source: Davis Global Communications IROD, CH2M HILL, 1994c, Table 2-5
[2] RWQCB, 2003
[3] California Public Health Goal (PHG) as a Drinking Water Level
[4] USEPA MCL
[5] Cal EPA MCL

TABLE 3-1

KEY PERSONNEL
FIVE YEAR REVIEW
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS CALIFORNIA

Organization	Contact Name	Title	Phone/Fax	Email
AFRPA	Paul Brunner	BRAC Environmental Coordinator	Phone: (916) 643-1250, Ext. 200 Fax: (916) 643-5880	paul.brunner@afrpa.pentagon.af.mil
AFRPA	Mike Zabaneh	Program Manager	Phone: (916) 643-1250, Ext. 258 Fax: (916) 643-5880	mike.zabaneh@afrpa.pentagon.af.mil
AFRPA	Brian Sytsma (MWH)	McClellan Community Relations	Phone: (916) 643-1742, Ext. 257 Fax: (916) 643-5880	brian.sytsma@afrpa.pentagon.af.mil
ATSDR	William Nelson	Senior Regional Representative	Phone: (415) 947-4316 Fax: (415) 947-4323	WQN1@CDC.gov
California DFG	Jim Hardwick	Office of Spill Prevention and Response	Phone: (916) 327-0911 Fax: (916) 288-7153	jhardwick@opsr.dfg.ca.gov
	Regina Donahoe	Office of Spill Prevention and Response	Phone: (831) 649-7150 Fax: (831) 649-7189	rdonohoe@ospr.dfg.ca.gov
DTSC	Kevin Depies	Program Manager	Phone: (916) 255-3688 Fax: (916) 255-3734	kdepies@dtsc.ca.gov
DTSC	Kristine Escarda	Public Participation Specialist	Phone: (916) 255-6683 Fax: (916) 255-3654	kescarda@dtsc.ca.gov
RWQCB	James Taylor	Program Manager	Phone: (916) 464-4669 Fax: 916) 464-4797	taylorjd@rb5s.swrcb.ca.gov
Yolo-Solano County AQMD	Larry Greene	Air Pollution Control Officer	Phone: (530) 757-3650 Fax: (530) 757-3670	lgreene@ysaqmd.org

TABLE 3-1

KEY PERSONNEL
FIVE YEAR REVIEW
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS CALIFORNIA

Organization	Contact Name	Title	Phone/Fax	Email
Yolo County - Planning and Public Works Dpt	Linda Fiack	Resource Manager	Phone: (530) 666-8019 Fax: (530) 666-8156	www.lindafiack@yolocounty.org
Yolo County - Environmental Health Services	Bruce Sarazin	Program Manager	Phone: (530) 666-8646 Fax: (530) 666-8156	Bruce.sarazin@yolocounty.org
US F&WS	Beckye Stanton	Fish & Wildlife Biologist	Phone: (916) 414-6733 Fax: (916) 414-6713	Beckye_Stanton@FWS.gov
MWH	John Scott	Program Manager	Phone: (916) 565-4218 Fax: (916) 924-3293	john.scott@mwhglobal.com
MWH	Conny Mitterhofer	Task Order Manager	Phone: (916) 921-3546 Fax: (916) 924-3293	cordula.mitterhofer@mwhglobal.com

Notes:

AFRPA - Air Force Real Property Agency
AQMD - Air Quality Management District
ATSDR - Agency for Toxic Substances And Disease Registry
DFG - Department of Fish and Game
DTSC - Department of Toxic Substances Control
F&WS - Fish and Wildlife Service
MWH - MWH Americas, Inc.
RWQCB - Regional Water Quality Control Board

TABLE 4-1

MONITORING WELLS ANALYTICAL RESULTS SUMMARY
SECOND QUARTER 2003
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

Sample ID	Zone	Selected Contaminants of Concern µg/L					Additional Analytes Detected µg/L				
		PCE	TCE	cis-1,2-DCE	Vinyl Chloride	Benzene	1,1-DCA	1,1-DCE	1,2-DCA	1,4-Dioxane	MIBK
DMW-1	B	**78.4**	**19.7**	**3.4**	**1.2**	<0.5	<0.5	**2.2**	<0.5	<2	**1J**
DMW-2	B	**2.9**	**6.4**	**1**	<0.5	<0.5	<0.5	**0.9**	<0.5	<2	<20
DMW-3	B	**137**	**10.6**	<0.5	<0.5	<0.5	<0.5	**6.6**	<0.5	<2	**1J**
DMW-4	B	**1.4**	**1.3**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**2J**
DMW-5	B	**67**	**6.8**	<0.5	<0.5	<0.5	<0.5	**2.7**	<0.5	<2	**1J**
DMW-6	B	**1.9**	**0.6**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**2J**
DMW-7	B	**19**	**46**	**15.4**	**3.8**	<0.5	**0.6**	**2.9**	**1**	**3**	**1J**
DMW-8	B	**1**	**2.6**	**0.7**	<0.5	<0.5	<0.5	**0.5**	<0.5	<2	**1J**
DMW-19	B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWB-1	B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWB-4	B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWB-11	B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWB-13	B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWB-14	B	<0.5	**0.3J**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**1J**
DMWC-1	C	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NS	NS
DMWC-3	C	**1.6**	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**1J**
DMWC-4	C	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWC-12	C	**1.0**	**1.2**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**0.9J**
DMWC-13	C	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWC-14	C	<0.5	**1**	**0.7**	<0.5	<0.5	**0.4J**	<0.5	<0.5	**0.7J**	**1J**
DMWC-20	C	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DPC-22	C	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DPC-21	C	**0.5J**	**1.1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**0.8J**
DMWD-1	D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWD-2	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWD-3	D	**1.9**	**1.5**	**1.0**	<0.5	<0.5	<0.5	<0.5	<0.5	<2	**2J**
DMWD-4	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWD-10	D	**0.6**	**0.8**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWD-11	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWD-12	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWD-13	D	<0.5	**0.9**	<0.5	<0.5	<0.5	<0.5	<0.5	**0.5**	<2	<20
DMWD-14	D	<0.5	**0.7**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWD-20	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWD-21	D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWD-22	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DEW-2D	D	<0.5	**0.4J**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWE-3	E	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWE-21	E	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<20
DMWE-22	E	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DMWE-23	E	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MCL		5	5	6	0.5	1	5	6	6	NA	NA

Notes:

J - Value is estimated and is less than the quantifiable limit and greater than the method detection limit.
MCL = California Primary Maximum Contaminant Level (RWCQB, August 2003).
µg/L - micrograms per liter
PCE - Tetrachloroethene
TCE - Trichloroethene
DCE - Dichloroethene
DCA - Dichloroethane
MIBK - 2-Methyl-4-pentanone (has been identified as a laboratory contaminant by the laboratory)
NA - MCL does not exist

TABLE 4-2

SUMMARY OF ESTIMATED VOC MASS REMOVED FROM GROUNDWATER DAVIS GLOBAL COMMUNICATIONS SITE DAVIS, CALIFORNIA

Date	Estimated VOC Mass Removed from Groundwater (lbs)	Cumulative Total (lbs)	Estimated Mass Remaining Initial Mass=617 (lbs)	Mass Removed
Fourth Quarter 1995	40.01	40.01	576.99	6%
First Quarter 1996	28.58	68.58	548.42	11%
Second Quarter 1996	31.08	99.66	517.34	16%
Third Quarter 1996	19.23	118.89	498.11	19%
Fourth Quarter 1996	35.92	154.81	462.19	25%
First Quarter 1997	18.90	173.71	443.29	28%
Second Quarter 1997	10.72	184.43	432.57	30%
Third Quarter 1997	5.11	189.55	427.45	31%
Fourth Quarter 1997	5.79	195.34	421.66	32%
First Quarter 1998	6.41	201.75	415.25	33%
Second Quarter 1998	8.11	209.86	407.14	34%
Third Quarter 1998	3.51	213.38	403.62	35%
Fourth Quarter 1998	4.68	218.05	398.95	35%
First Quarter 1999	8.81	226.86	390.14	37%
Second Quarter 1999	5.33	232.19	384.81	38%
Third Quarter 1999	3.10	235.29	381.71	38%
Fourth Quarter 1999	4.50	239.80	377.20	39%
First Quarter 2000	4.88	244.67	372.33	40%
Second Quarter 2000	3.29	247.96	369.04	40%
Third Quarter 2000	2.21	250.17	366.83	41%
Fourth Quarter 2000	3.93	254.10	362.90	41%
First Quarter 2001	3.64	257.74	359.26	42%
Second Quarter 2001	2.10	259.84	357.16	42%
Third Quarter 2001	1.11	260.95	356.05	42%
Fourth Quarter 2001	4.84	265.79	351.21	43%
First Quarter 2002	6.05	271.84	345.16	44%
Second Quarter 2002	2.40	274.24	342.76	44%
Third Quarter 2002	1.32	275.56	341.44	45%
Fourth Quarter 2002	2.71	278.27	338.73	45%
First Quarter 2003	4.59	282.86	336.85	45%
Second Quarter 2003	2.84	285.70	331.3	45%
Third Quarter 2003	0.79	286.49	330.51	45%

Notes:
lbs - pounds
VOC - volatile organic compounds

Source: TetraTech, 2003a,b.
Please note that the values for 2002 and 2003 were corrected from the original source to account for calculation error.

TABLE 4-3

TOXICITY CRITERIA REVIEW
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

	1994 Oral RfD		2003 Oral RfD		change?	1994 Inhalation RfD		2003 Inhalation RfD		change?	1994 Oral CSF		2003 Oral CSF		change?	1994 Inhalation CSF		2003 Inhalation CSF		change?
Acetone	0.1	e	0.1	e	none	0.1	e	NA	r	none	NA		NA		none	NA		NA		none
Benzene	NA		0.004	n	New	NA		0.0086	n	New	0.1	o	0.1	o	none	0.1	o	0.1	o	none
Bromodichloromethane	0.02		0.02	e	none	0.02	e	NA	r	none	0.13		0.13	o	none	NA		0.13	o	New
Bromoform	0.02		0.02	e	none	0.02	e	NA	r	none	0.0079		0.0079	e	none	0.0039	e	0.0039	e	none
Methyl ethyl ketone	0.05		0.6	e	LC	0.1	e	0.29	e	LC	NA		NA		none	NA		NA		none
Butyl benzyl phthalate	0.2	e	0.2	e	none	NA		NA	r	none	NA		NA		none	NA		NA		none
Chlorodibromomethane	0.02		NA	r	none	0.02	e	NA	r	none	0.084		0.094	o	MC	NA		0.094	o	New
Chloroform	0.01		0.01	e	none	0.01	e	0.00086	n	MC	0.0061		0.031	o	MC	0.019	o	0.019	o	none
Dibenzofuran	0.004	e	0.004	n	none	NA		NA		none	NA		NA		none	NA		NA		none
1,2-Dibromoethane (ethylene dibromide)	NA		NA		none	NA		0.000057	h	New	3.6		3.6	o	none	0.25	o	0.25	o	none
1,4-Dichlorobenzene	NA		0.03	n	New	0.2	e	0.03	e	MC	NA		0.0054	o	New	NA		0.04	o	New
1,1-Dichloroethane	0.1		0.1	h	none	0.1	e	0.14	h	LC	NA		0.0057	o	New	NA		0.0057	o	New
1,1-Dichloroethylene	0.0009		0.05	e	LC	0.0009	e	0.057	e	LC	NA		NA		none	NA		NA		none
1,2-Dichloroethylene (cis)	0.01		0.01	h	none	0.01	e	NA	r	none	NA		NA		none	NA		NA		none
Diesel, Marine	0.008	e	TPHCWG		New	NA		TPHCWG		New	NA		NA		none	NA		NA		none
Dibutyl phthalate	0.8	e	0.1	e	MC	NA		NA	r	none	NA		NA		none	NA		NA		none
Ethylbenzene	0.1		0.1	e	none	0.29		0.29	e	none	NA		0.0057	n	New	NA		0.00385	n	New
Bis(2-ethylhexyl)phthalate (DEHP)	0.02	e	0.02	e	none	NA		NA	r	none	0.014	e	0.003	o	LC	NA		0.0084	o	none[a]
Fluorene	0.04	e	0.04	e	none	NA		NA	r	none	NA		NA		none	NA		NA		none
4-Methyl-2-pentanone	0.05		0.08	h	LC	0.02		0.023	h	none	NA		NA		none	NA		NA		none
Naphthalene	0.04	e	0.02	e	MC	NA		0.00086	e	none[a]	NA		NA		none	NA		NA		none
Phenanthrene	NA		NA		none	NA		NA		none	NA		NA		none	NA		NA		none
Pyrene	0.03	e	0.03	e	none	NA		NA	r	none	NA		NA		none	NA		NA		none
Tetrachloroethylene (PCE)	0.01		0.01	e	none	0.01	e	0.17	n	LC	0.051		0.54	o	MC	0.051	o	0.021	o	LC
Toluene	0.2		0.2	e	none	0.1	e	0.1	e	none	NA		NA		none	NA		NA		none
1,1,1-Trichloroethane	0.09	e	0.28	n	LC	0.3	e	0.63	n	LC	NA		NA		none	NA		NA		none
Trichloroethylene (TCE)	NA		0.0003	n	New	NA		0.01	n	New	0.015		0.015	o	none	0.01	o	0.007	o	LC
Trichlorofluoromethane	0.3		0.3	e	none	0.2	e	0.2	h	none	NA		NA		none	NA		NA		none
1,1,2-Trichloro-1,2,2-trifluoroethane	30		30	e	none	7.7	e	8.7	h	LC	NA		NA		none	NA		NA		none
Vinyl chloride	NA		0.003	e	New	NA		0.0286	e	New	0.27		0.27	o	none	0.27	o	0.27	o	none
Xylenes	*2*		0.2	e	none	2	e	0.029	e	MC	NA		NA		none	NA		NA		none

Notes:

[a] the toxicity criterion is new, but this chemical was not a COPC via this route and therefore the change does not affect the results.

CSF - cancer slope factor (mg/kg-day)-1

e - EPA IRIS (Integrated Risk Information System) Database

h - EPA HEAST (Environmental Protection Agency Health Affects Assessment Summary Tables)

LC - less conservative

MC - more conservative

n - NCEA (National Center for Environmental Assessment)

NA - not applicable

o - OEHHA (Office of Environmental Health Hazard Assessment) (Cal/EPA)

RfD - reference dose (mg/kg-day)

TPHCWG - Total Petroleum Hydrocarbon Criteria Working Group

TABLE 4-4

MAXIMUM BTEX CONCENTRATIONS IN VADOSE ZONE AND ASSOCIATED RISK/HAZARD INDEX CALCULATIONS
FIVE-YEAR REVIEW
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

1993-2002 TPH BTEX Data [d]

Well	Depth (ft bgs)	Date	Benzene ppmv	Toluene ppmv	Ethylbenzene ppmv	Xylene ppmv
VW1	10-55	8/16/93	0.005	<0.002	0.013	0.029
		9/26/94	<0.002	0.002	0.003	0.065
		11/21/02	**0.029**	**0.18**	0.072	0.38
VMP1	37.5	8/16/93	<0.011	<0.011	0.55	1.1
		9/26/94	<0.002	0.007	0.007	0.14
		11/21/02	0.026	0.13	0.05	0.26
VMP2	49	9/26/94	<0.011	<0.011	**1.6**	**2.1**
VMP3	45	8/16/93	<0.011	<0.011	0.62	0.88
	35	11/21/02	0.023	0.12	0.033	0.17

Note: Bold concentrations are maximum values used in risk calculations.

[d] Source: Parsons, 2003, June

1993-2002 TPH BTEX Data (assumed at a depth of 10 feet bgs)

			Screening Concentration		Residential Risk/Hazard	
			Soil Gas	Indoor Air		
Constituent	Well/depth	Units	ppmv	ug/m^3	Risk	HI
Benzene	VW1/10	ppmv	0.029	6.2 E-2	7 E-7	0.001
Toluene	VW1/10	ppmv	0.18	4.5 E-1	NA [c]	0.001
Ethylbenzene[b]	VMP2/37.5[a]	ppmv	1.6	4.1 E+0	2 E-6	0.004
Xylene	VMP2/37.5[a]	ppmv	2.1	5.5 E+0	NA [c]	0.053

Notes:

[a]conservatively assumed at 10 feet bgs
[b]cancer risk employs provisional NCEA CSF of 3.85 x 10^{-3} (mg/kg-d)-1
[c] compound is not considered carcinogenic
[d] Source: Parsons, 2003, June

1993-2002 TPH BTEX Data (assumed at a depth of 5 feet bgs)

			Screening Concentration		Residential Risk/Hazard	
			Soil Gas	Indoor Air		
Constituent	Well/depth	Units	ppmv	ug/m3	Risk	HI
Benzene	VW1/10 [a]	ppmv	0.029	1.0 E-1	1 E-6	0.002
Toluene	VW1/10 [a]	ppmv	0.18	7.4 E-1	NA [c]	0.002
Ethylbenzene[b]	VMP2/37.5[a]	ppmv	1.6	6.9 E+0	3 E-6	0.004
Xylene	VMP2/37.5[a]	ppmv	2.1	9.2 E+0	NA [c]	0.088

Notes:

[a]conservatively assumed at 5 feet
[b]cancer risk employs provisional NCEA CSF of 3.85 x 10^{-3} (mg/kg-d)-1
[c] compound is not considered carcinogenic
[d] Source: Parsons, 2003, June

BTEX - benzene, toulene, ethylbenzene and total xylenes
ft bgs - feet below ground surface
NA - not applicable
ND - non detect
ppmv - parts per million by volume
PCE - perchlorethene
TCE - trichloroethene
TPH - total petroleum hydrocarbons
ug/m3 - micrograms per cubic meter

TABLE 4-5

MAXIMUM VOC CONCENTRATIONS IN VADOSE ZONE AND ASSOCIATED RISK/HAZARD INDEX CALCULATIONS DAVIS GLOBAL COMMUNICATIONS SITE DAVIS, CALIFORNIA

1999 VOC Data [b]

				Date				
Constituent	**Well**	**Depth**	**Units**	**6/1/1999**	**6/15/1999**	**8/25/1999**	**10/5/1999**	
PCE	EW-2B	25	ppbv	160	330	140	**2400**	
TCE	EW-2B	25	ppbv	11J	28	8.3	**130**	
1,1-DCE	EW-2B	25	ppbv	ND	7.7J	ND	**120**	
Chloroform	EW-2B	25	ppbv	**420**	15J	ND	54	
Freon 113	EW-2B	25	ppbv	ND	5J	9.9	**36**	
PCE	P-1S	14	ppbv	NA	NA	NA	**720**	14-16 ft screen

Note: Bold concentrations are maximum values used in risk calculations

[b] Source: CH2M Hill, 2000, October

1999 VOC Data

			Screening Concentration		Residential Risk/Hazard	
			Soil Gas	Indoor Air		
Constituent	**Well/Depth**	**Units**	**ppbv**	**ug/m^3**	**Risk**	**HI**
PCE	EW-2B/25	ppbv	2400	4.3 E+0	1 E-5	0.1
TCE	EW-2B/25	ppbv	130	2.0 E-1	2 E-7	0.0003
1,1-DCE	EW-2B/25	ppbv	120	1.5 E-1	NA [a]	0.0021
Chloroform	EW-2B/25	ppbv	420	7.4 E-1	2 E-6	0.002
Freon 113	EW-2B/25	ppbv	36	1.7 E-1	NA [a]	0.000005
PCE	P-1S/14	ppbv	720	2.1 E+0	5 E-6	0.058

Notes:

[a] compound is not considered carcinogenic

[b] Source: CH2M Hill, 2000, October

1999 VOC Data (assumed depth of 5 feet bgs)

			Screening Concentration		Residential Risk/Hazard	
			Soil Gas	Indoor Air		
Constituent	**Well**	**Units**	**ppbv**	**ug/m^3**	**Risk**	**HI**
PCE	EW-2B	ppbv	2400	1.6 E+1	4 E-5	0.4
TCE	EW-2B	ppbv	130	7.2 E-1	6 E-7	0.001
1,1-DCE	EW-2B	ppbv	120	5.3 E-1	NA [a]	0.0072
Chloroform	EW-2B	ppbv	420	2.5 E+0	5 E-6	0.008
Freon 113	EW-2B	ppbv	36	2.8 E-1	NA [a]	0.000009
PCE	P-1S	ppbv	720	4.7 E+0	1 E-5	0.130

Notes:

[a] compound is not considered carcinogenic

[b] Source: CH2M Hill, 2000, October

DCE - dichloroethene
NA - not applicable
PCE - perchlorethene
ppbv - parts per billion by volume
ppmv - parts per million by volume
TCE - trichloroethene
ug/m^3 - micrograms per cubic meter

TABLE 4-6

MAXIMUM BTEX AND VOC CONCENTRATIONS IN VADOSE ZONE AND ASSOCIATED RISK/HAZARD INDEX CALCULATIONS

DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

1993 - 2002 BTEX and VOC Data [d]

			Screening Concentration		Residential Risk/Hazard	
			Soil Gas	Indoor Air		
Constituent	**Well/Depth**	**Units**	**ppbv**	**ug/m^3**	**Risk**	**HI**
PCE	EW-2B/25	ppbv	2400	4.3 E+0	1 E-5	0.1
TCE	EW-2B/25	ppbv	130	2.0 E-1	2 E-7	0.0003
1,1-DCE	EW-2B/25	ppbv	120	1.5 E-1	NA [c]	0.002
Chloroform	EW-2B/25	ppbv	420	7.4 E-1	2 E-6	0.002
Freon 113	EW-2B/25	ppbv	36	1.7 E-1	NA [c]	0.000005
Benzene	VW1/10	ppmv	0.029	6.2 E-2	7 E-7	0.001
Toluene	VW1/10	ppmv	0.18	4.5 E-1	NA [c]	0.001
Ethylbenzene[b]	VMP2/37.5[a]	ppmv	1.6	4.1 E+0	2 E-6	0.004
Xylene	VMP2/37.5[a]	ppmv	2.1	5.5 E+0	NA [c]	0.053
Total					**1 E-5**	**0.2**

Notes:

[a] conservatively assumed at 10 feet bgs
[b] cancer risk employs provisional NCEA CSF of 3.85 x 10^{-3} (mg/kg-d)-1
[c] compound is not considered carcinogenic
[d] Sources: Parsons, 2003, June and CH2M Hill, 2000, October

1993 - 2002 BTEX and VOC Data (assumed depth of 5 feet bgs)

			Screening Concentration		Residential Risk/Hazard	
			Soil Gas	Indoor Air		
Constituent	**Well**	**Units**	**ppbv**	**ug/m^3**	**Risk**	**HI**
PCE	EW-2B	ppbv	2400	1.6 E+1	4 E-5	0.4
TCE	EW-2B	ppbv	130	7.2 E-1	6 E-7	0.001
1,1-DCE	EW-2B	ppbv	120	5.3 E-1	NA [c]	0.0072
Chloroform	EW-2B	ppbv	420	2.5 E+0	5 E-6	0.008
Freon 113	EW-2B	ppbv	36	2.8 E-1	NA [c]	0.000009
Benzene	VW1/10	ppmv	0.029	1.0 E-1	1 E-6	0.002
Toluene	VW1/10	ppmv	0.18	7.4 E-1	NA [c]	0.002
Ethylbenzene[b]	VMP2/37.5[a]	ppmv	1.6	6.9 E+0	3 E-6	0.004
Xylene	VMP2/37.5[a]	ppmv	2.1	9.2 E+0	NA [c]	0.09
Total					**5 E-5**	**0.5**

Notes:

[b] cancer risk employs provisional NCEA CSF of 3.85 x 10^{-3} (mg/kg-d)-1
[c] compound is not considered carcinogenic
[d] Sources: Parsons, 2003, June and CH2M Hill, 2000, October

bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, and total xylenes
DCE - dichloroethene
NA - not applicable
PCE - perchlorethene
ppbv - parts per billion by volume
ppmv - parts per million by volume
TCE - trichloroethene
TPH - total petroleum hydrocarbons
ug/m^3 - micrograms per cubic meter
VOC - volatile organic compounds

TABLE 4-7

LAND USE CONTROL STRATEGY FOR THE DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

MEDIA AFFECTED	LUC OBJECTIVES	USE RESTRICTION(S)	REAL PROPERTY	ADMIN.	SITE CONTROLS	SCHEDULE
Soil and Groundwater	Prohibit installation of private wells	Prohibit installation of private wells	None - Air Force still owns property	Encroachment permits	Maintain existing fence or other physical barrier and inspect and monitor - Annually	Not applicable
	Prohibit residential uses	Restrict development to non-residential use	None - Air Force still owns property	Encroachment permits	Maintain existing fence or other physical barrier and inspect and monitor - Annually	Not applicable
	Reduce the risk to ecological receptors	Digging/excavation restriction Soil management requirements	None - Air Force still owns property	Encroachment permits	Maintain and monitor natural surface cover - Annually	Not applicable
	Restrict excavation, grading, and trenching of residual soil contamination	Digging/excavation restriction	None - Air Force still owns property	Encroachment permits	Not applicable	Notify utilities and join USA - Biannually
	Prevent or reduce exposure to contaminated soil	Digging/excavation restriction	None - Air Force still owns property	Encroachment permits	Maintain and monitor natural surface cover - Annually	Notify utilities and join USA plus health and safety plan for construction activities - Biannually

TABLE 4-7

LAND USE CONTROL STRATEGY FOR THE DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

MEDIA AFFECTED	LUC OBJECTIVES	USE RESTRICTION(S)	REAL PROPERTY	ADMIN.	SITE CONTROLS	SCHEDULE
Soil and Groundwater (cont'd)	Prevent or reduce exposure to contaminated groundwater	Prohibit installation of private wells	None - Air Force still owns property	Encroachment permits	Not applicable	Health and safety plan for construction activities - Biannually
	Prohibit disturbance of extraction, treatment and monitoring systems	Prohibition of development of land use that interfers with remedial operations	None - Air Force still owns property	Encroachment permits	Maintain existing fence or other physical barrier, install sign, and inspect and monitor remedial systems - Annually	Not applicable
	Provide right of access for O&M of treatment and monitoring systems	Provide Air Force right of access for O&M of treatment and monitoring systems	None - Air Force still owns property	Not applicable	Not applicable	Not applicable
	Provide right of access for inspections	Provide AF and regulatory agencies right of access for inspections	None - Air Force still owns property	Not applicable	Not applicable	Not applicable
	Provide information to Stakeholders	Not applicable	None - Air Force still owns property	Not applicable	Not applicable	Provide to advisories - Annually

TABLE 4-7

LAND USE CONTROL STRATEGY FOR THE DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

MEDIA AFFECTED	LUC OBJECTIVES	USE RESTRICTION(S)	REAL PROPERTY	ADMIN.	SITE CONTROLS	SCHEDULE
Soil and Groundwater (cont'd)	Ensure long-term IC monitoring is performed	Monitoring for long-term effectiveness of LUC/IC	None - Air Force still owns property	Not applicable	Inspect and monitor remedial systems (including monitoring and extraction wells) - Annually	Federal Facility Site Remediation Agreement - Annually
Biologically Sensitive Habitats	Protect biologically sensitive habitats such as wetlands, vernal pools, and threatened or endangered species from disturbance.	No disturbance of sensitive habitats without approval from U.S. Fish and Wildlife Service or other regulatory body	None - Air Force still owns property	Encroachment permits	Maintain existing fence or other physical barrier, maintain signs, and inspect and monitor - Annually	Administrative order - U.S. Fish and Wildlife Service Biological Opinion - once per action

Source: Air Force Real Property Agency, 2003. LUC/IC Layering Strategy Worksheet, former McClellan AFB. February 2003.

APPENDIX A

COMMUNITY INTERVIEW SUMMARY

INTERVIEW RECORD

Site Name: DGCS		**EPA ID No.:**	
Subject: Public Awareness		**Time:** 1230	**Date:** 4/18/03
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** 1/2 mile west of the DGCS		☐ Incoming ☐ Outgoing	
Contact Made By:			
Name: Brian Sytsma	**Title:** Community Relations	**Organization:** MWH	
Individual Contacted:			
Name: Anonymous	**Title:** Horseshoe Club Manager	**Organization:**	
Telephone No: **Fax No:** **E-Mail Address:**		**Street Address:** **City, State, Zip:**	

Summary Of Conversation

This community member was aware that there was contaminated soil and groundwater present at the DGCS; however, they were not concerned about it and felt confident that the Air Force would remediate the site.

There was some concern with reuse of the property once the land is turned over to the County.

They had shown interest in recieving additional information about the DGCS and the remedial progress.

USEPA, Comprehensive Five-Year Review Guidance, June 2001.

INTERVIEW RECORD

Site Name: DGCS		**EPA ID No.:**
Subject: Public Awareness		**Time:** 1430 **Date:** 4/18/03
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** City Hall - Davis		☐ Incoming ☐ Outgoing
Contact Made By:		
Name: Brian Sypma	**Title:** Community Relations	**Organization:** MWH
Individual Contacted:		
Name:	**Title:** Mayor of Davis	**Organization:** City of Davis
Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:**	

Summary Of Conversation

The Mayor of Davis was aware of contaminated groundwater at the DGCS, but was not aware of the specific contaminants or the extent of contamination. She would like to recieve more information about the DGCS and it's concerns. Specifically scheduled land transfer to Yolo County.

She did have confidence in the Air Force to clean up the contaminated groundwater.

INTERVIEW RECORD

Site Name: DGCS		**EPA ID No.:**
Subject: Public Awareness		**Time:** 1130 **Date:** 4/18/07
Type: ☐ Telephone ☑ Visit ☐ Other **Location of Visit:** 1/2 mile south of the DGCS		☐ Incoming ☐ Outgoing
Contact Made By:		
Name: Brian Sytsma	**Title:** Community Relations	**Organization:** MWH
Individual Contacted:		
Name: Anonymous	**Title:** Farm Workers	**Organization:**
Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:**	

Summary Of Conversation

Two farm works were interviewed at there place of employment. They were unaware of the site's ownership and the contamination present. Their drinking water source was a groundwater well on the premisses. They were not concerned about the well water or the contamination at the DGCS. They had confidence that the Air Force would do everything necessary to remediate the problem and notify the public of any health concerns. One of the workers showed interest in recieving information on the DGCS

INTERVIEW RECORD

Site Name: DGCS		**EPA ID No.:**
Subject: Public awareness		**Time:** 1150 **Date:** 4/18/03
Type: ☐ Telephone ☑ Visit ☐ Other **Location of Visit:** 1 mile south of the DGCS		☐ Incoming ☐ Outgoing
Contact Made By:		
Name: Brian Sytsma	**Title:** Community Relations	**Organization:** MWH
Individual Contacted:		
Name: Anonymous	**Title:** Land Owner	**Organization:**
Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:**	

Summary Of Conversation

This land owner has a person residence ≈ 1 mile south of the DGCS. She felt adequately informed on the DGCS and it's contamination. She gets her drinking water from a ground water well on the property, but had no concerns of the quality of her drinking water.

She felt confident that the Air Force will adequately clean up all the groundwater contamination.

USEPA, Comprehensive Five-Year Review Guidance, June 2001.

INTERVIEW RECORD

Site Name: DGCS	EPA ID No.:	
Subject: Pubic Awareness	Time: 11:00	Date: 3 Jun 03
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit:	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Brian Sytsma	Title: Community Relations	Organization: MWH

Individual Contacted:

Name: Anonymous	Title: Student	Organization: UC Davis
Telephone No: Fax No: E-Mail Address:	Street Address: City, State, Zip:	

Summary Of Conversation

This student is the news director of the campus radio station, and was unaware of the DGCS. He was skeptical the Air Force would clean the site to standards that public industry would also be held to. He feels the Air Force and media in general do not sufficiently inform the public about contaminated sites. He was interested in receiving updates of the clean up efforts.

Page 1 of 1

INTERVIEW RECORD

Site Name: DGCS		EPA ID No.:	
Subject: Public Awareness		Time: 12:00	Date: 3 Jan 03
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit:		☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Brian Sytsma	Title: Community Relations	Organization: MWH

Individual Contacted:

Name: Anonymous	Title: Professor of Engineering	Organization: UC Davis

Telephone No: Fax No: E-Mail Address:	Street Address: City, State, Zip:

Summary Of Conversation

The professor was previously unaware of the DGCS, and therefore did not know there was a contamination issue at the site. He did express confidence that the Air Force and regulators would work together to clean up the site. He was concerned about potential impact on local natural resources such as parks and wildlife refuge, as well as human health.

Page 1 of 1

INTERVIEW RECORD

Site Name: DGCS	EPA ID No.:	
Subject: Public Awareness	Time: 2:30	Date: 3 Jun 03
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit:	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Brian Sytsma	Title: Community Relations	Organization: MWH

Individual Contacted:

Name: Anonymous	Title: Yolo Co. Parks + Rec	Organization: Yolo County

Telephone No: Fax No: E-Mail Address:	Street Address: City, State, Zip:

Summary Of Conversation

This county employee was vaguely aware of the contamination at the DGCS, but her concerns derived from potential reuse aspects of the site in the future by Yolo County. She is confident the Air Force would take neccessary steps to ensure safety, but somewhat skeptical of the timeliness of property transfer.

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INTERVIEW RECORD

Site Name: DGCS		**EPA ID No.:**
Subject: Public Awareness		**Time:** 12:30 **Date:** 3JUN03
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:**		☐ Incoming ☐ Outgoing
Contact Made By:		
Name: Brian Sytsma	**Title:** Community Relations	**Organization:** MWH
Individual Contacted:		
Name: Anonymous	**Title:** Real-Estate Agent	**Organization:**
Telephone No: **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:**	

Summary Of Conversation

The real-estate agent was previously unaware that there was any contamination issues at DGCS. She was, however, interested in being kept up-to-date with any information relevant to local property purchases/sales. She is concerned about the wells around DGCS, whether they are safe to drink. She is confident that controls (ie Air Force, EPA, DTSC) are in place to clean up the site.

Page 1 of 1

INTERVIEW RECORD

Site Name: DGCS		EPA ID No.:	
Subject: Public Awareness		Time: 1:30	Date:
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit:		☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Brian Sytsma	Title: Community Relations	Organization: MWH

Individual Contacted:

Name: Anonymous	Title: Dept of Health	Organization: Yolo County

Telephone No: Fax No: E-Mail Address:	Street Address: City, State, Zip:

Summary Of Conversation

He was very informed about the DGCS and receives updates and reports about the site from the Air Force. He has been involved with the site for approximately 15 years. He is confident the Air Force is doing everything it should to protect human health and the environment, as well as to clean up the site. He is concerned about funding for the cleanup efforts. He mentioned past public concern about a disposal site near the DGCS, but is confident it does not exist because the County did research and actually dug at the alleged site - but found nothing.

APPENDIX B

SITE INSPECTION AND SITE INTERVIEW DOCUMENTATION

INTERVIEW RECORD

Site Name: DGCS	EPA ID No.:
Subject: SVE system previous operation	Time: 1420 Date: 3/17/03
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit: McClellan	☐ Incoming ☐ Outgoing

Contact Made By:

Name: Dave Kremer	Title: Senior Hydrogeologist	Organization: MWH

Individual Contacted:

Name: Doug Self	Title: SVE System Manager	Organization: AFRPA
Telephone No: 643-1250 Fax No: E-Mail Address:	Street Address: City, State, Zip:	

Summary Of Conversation

Because the SVE system was shutdown and remove in September 1999 we only discussed the previous operation and security issues. The AFRPA representative felt that the level of security at the site was adequate for the former SVE system. The AFRPA representative felt the system operated adequately; however, was not cost effective during the last couple years of operation and that the system shutdown was appropriate.

INTERVIEW RECORD

Site Name: DGCS		**EPA ID No.:**
Subject: GW System operation		**Time:** 1300 **Date:** 3/17/03
Type: ☐ Telephone ☑ Visit ☐ Other **Location of Visit:** McClellan		☐ Incoming ☐ Outgoing
Contact Made By:		
Name: Dave Kremer	**Title:** Senior Hydrogeologist	**Organization:** MWH
Individual Contacted:		
Name: Jim Lu	**Title:** GW System Manager	**Organization:** AFRPA
Telephone No: (916) 643-1250 **Fax No:** **E-Mail Address:**	**Street Address:** **City, State, Zip:**	

Summary Of Conversation

We went over the site inspection check list and the AFRPA provided every document requested. Site issues concerning security, system effectiveness, and future system optimization were discussed. The AFRPA representative felt security at the site was not an issue and was adequately being addressed by the LUC in place. The AFRPA representative felt that the system effectiveness was adequately addressing the IRODs RAO; however, optimization was needed to efficiently address the remaining GW contaminants.

INTERVIEW RECORD

Site Name: DGCS	EPA ID No.:
Subject: Bioventing System Operation	Time: 1350 Date: 3/17/03
Type: ☐ Telephone ☒ Visit ☐ Other Location of Visit: McClellan	☐ Incoming ☐ Outgoing

Contact Made By:

Name: Dave Kremer	Title: Senior Hydrogeologist	Organization: MWH

Individual Contacted:

Name: Doug Fortun	Title: Bioventing System Manager	Organization: AFRPA
Telephone No: (916) 643-1250 Fax No: E-Mail Address:	Street Address: City, State, Zip:	

Summary Of Conversation

We briefly discussed site security and the bioventing system operation and maintenance. The AFRPA representative felt security was not an issue at the site or with the bioventing system and was properly addressed by the current LUCs. The AFRPA representative felt that the operation and maintenance of the bioventing system is adequate; however, the current field data suggest that the system no longer needs to operate to continue the biodegradation process.

USEPA, Comprehensive Five-Year Review Guidance, June 2001.

INTERVIEW RECORD (DRAFT)

Site Name: DGCS		**EPA ID No.:**	
Subject: Vernal pools, biol. habitat at DGCS		**Time:** 1400	**Date:** 6/25/03
Type: ☒ Telephone ☐ Visit ☐ Other **Location of Visit:**		☐ Incoming ☐ Outgoing	
Contact Made By:			
Name: C. Mitterhofer	**Title:** Senior Engineer	**Organization:** MWH	
Individual Contacted:			
Name: Molly Enloe	**Title:**	**Organization:** Parsons	
Telephone No: 916 643-1250, Ext. 231 **Fax No:** **E-Mail Address:** molly.enloe@afrpa.pentagon.af.mil		**Street Address:** Located at McClellan **City, State, Zip:**	

Summary Of Conversation

The discussion with Ms. Enloe included the presence of biologically sensitive habitats; seasonal wetlands, and vernal pools at the Davis site. Vernal pools are located towards the eastern + western boundaries of the site — because they are not in close proximity, they have not been affected by any incidents, such as the spill from the GWTP in 2002. There is currently limited signage/signs of the vernal pools because the site access is controlled and the site is fenced. It would be a good idea to add a few signs indicating the presence of vernal pools. Site controls are working — there have been a few breaches from open holes in the fence and dogs entering the site — (the adjacent park). *

USEPA, Comprehensive Five-Year Review Guidance, June 2001.

* Encroachment permit + monitoring are effective in controlling site access.

Five-Year Review Site Inspection Checklist

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable." USEPA, Comprehensive Five-Year Review Guidance, June 2001)

I. SITE INFORMATION	
Site name: Davis Global Communications Site	**Date of inspection:** 3/24/03
Location and Region: Davis, California	**EPA ID:**
Agency, office, or company leading the five-year review:	**Weather/temperature:** Sunny/mid 60's

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☑ Access controls
- ☐ Institutional controls
- ☑ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☑ Vadose Zone Remedial Actions
- ☐ Other _____
- ☐ Monitored natural attenuation
- ☑ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** Tom Naiman (Name) Field Technician (Title) 4/2/03 (Date)
   Interviewed ☐ at site ☐ at office ☑ by phone Phone no. (916) 643-4826 ext. 105
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency AFRPA
Contact Jim Lu — DGCS GWTP Manager (916) 643-1250 ext 205
Name — Title — Date Phone no.
Problems; suggestions; ☐ Report attached

Agency AFRPA
Contact Doug Fortun — DGCS Bioventt Manager (916) 643-1250
Name — Title — Date Phone no.
Problems; suggestions; ☐ Report attached

Agency AFRPA
Contact Doug Self — DGCS SVE Manager (916) 643-1250
Name — Title — Date Phone no.
Problems; suggestions; ☐ Report attached

Agency
Contact
Name — Title — Date Phone no.
Problems; suggestions; ☐ Report attached

4. **Other interviews** (optional) ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☒ O&M manual — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ As-built drawings — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Maintenance logs — ☒ Readily available — ☒ Up to date — ☐ N/A
   - Remarks: Maintenance Logs in Qtrly Reports

2. **Site-Specific Health and Safety Plan** — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☒ Contingency plan/emergency response plan — ☒ Readily available — ☐ Up to date — ☐ N/A
   - Remarks:

3. **O&M and OSHA Training Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks:

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Effluent ~~discharge~~ reinj. Sampling — ☒ Readily available — ☒ Up to date — ☐ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Other permits ____ — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks: In Qtrly reports

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks:

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks:

7. **Groundwater Monitoring Records** — ☒ Readily available — ☒ Up to date — ☐ N/A
   - Remarks: In Qtrly reports

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks:

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☒ Water (~~effluent~~) reinjection — ☒ Readily available — ☒ Up to date — ☐ N/A
   - Remarks: In Qtrly reports

10. ~~Daily~~ weekly **Access/Security Logs** — ☒ Readily available — ☒ Up to date — ☐ N/A
    - Remarks: In Qtrly reports

MWH

IV. O&M COSTS

1. **O&M Organization**
   ☐ State in-house ☐ Contractor for State
   ☐ PRP in-house ☐ Contractor for PRP
   ☐ Federal Facility in-house G Contractor for Federal Facility
   ☐ Other_____

2. **O&M Cost Records**
   ☐ Readily available ☐ Up to date
   ☐ Funding mechanism/agreement in place
   Original O&M cost estimate_____ ☐ Breakdown attached

   Total annual cost by year for review period if available

   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost

   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**
   Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A
   Remarks Old wooden gate in need of repair on north side of site
   All fences in good shape

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
   Remarks Information sign at site would be a good idea. Signs on perimeter fencing are present but out dated with no contact numbers.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ Name _____ Title _____ Date _____ Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☐ N/A
Other problems or suggestions: G Report attached

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☑ No vandalism evident
Remarks_____

2. **Land use changes on site** ☑ N/A
Remarks_____

3. **Land use changes off site** ☑ N/A
Remarks_____

VI. GENERAL SITE CONDITIONS

A. Roads ☑ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☑ Roads adequate ☐ N/A
Remarks_____

B. Other Site Conditions

Remarks Weed control at the site is adequate. Interior fencing around the main compound composed of 6' high chain link fence with barbed wire on top, is in good condition.

VII. LANDFILL COVERS ☐ Applicable ☑ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
   Areal extent_____ Depth_____
   Remarks_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
   ☐ Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
   Remarks_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
   Areal extent_____ Height_____
   Remarks_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
   ☐ Wet areas ☐ Location shown on site map Areal extent_____
   ☐ Ponding ☐ Location shown on site map Areal extent_____
   ☐ Seeps ☐ Location shown on site map Areal extent_____
   ☐ Soft subgrade ☐ Location shown on site map Areal extent_____
   Remarks_____

9.	**Slope Instability** ☐ Slides ☐Location shown on site map ☐ No evidence of slope instability Areal extent_____ Remarks_____
B. Benches	☐Applicable ☐N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)
1.	**Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay Remarks_____
2.	**Bench Breached** ☐Location shown on site map ☐ N/A or okay Remarks_____
3.	**Bench Overtopped** ☐ Location shown on site map ☐N/A or okay Remarks_____
C. Letdown Channels	☐ Applicable ☐ N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)
1.	**Settlement** ☐Location shown on site map ☐No evidence of settlement Areal extent_____ Depth_____ Remarks_____
2.	**Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation Material type_____ Areal extent_____ Remarks_____
3.	**Erosion** ☐ Location shown on site map ☐ No evidence of erosion Areal extent_____ Depth_____ Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active G Passive
☐ Properly secured/locked ☐Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐Needs Maintenance
☐ N/A
Remarks_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs Maintenance ☐ N/A
   Remarks_____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks_____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
   ☐ Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement_____ Vertical displacement_____
Rotational displacement_____
Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
Areal extent_____ Depth_____
Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
☐ Vegetation does not impede flow
Areal extent_____ Type_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____

2. **Performance Monitoring** Type of monitoring_____
☐ Performance not monitored
Frequency_____ ☐ Evidence of breaching
Head differential_____
Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☒ Good condition ☒ All required wells properly operating ☐ Needs Maintenance ☐ N/A
   Remarks

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   ☐ Air stripping ☒ Carbon adsorbers L GAC 3-10,000 lb vessels
   ☐ Filters
   ☐ Additive (e.g., chelation agent, flocculent) Hydrogen Peroxide used with uv/ox in the past
   ☐ Others
   ☒ Good condition ☐ Needs Maintenance
   ☒ Sampling ports properly marked and functional
   ☒ Sampling/maintenance log displayed and up to date
   ☒ Equipment properly identified
   ☒ Quantity of groundwater treated annually ≈ 120,000,000 gallons
   ☐ Quantity of surface water treated annually
   Remarks

2. **Electrical Enclosures and Panels** (properly rated and functional)
   ☐ N/A ☒ Good condition ☐ Needs Maintenance
   Remarks

3. **Tanks, Vaults, Storage Vessels** All above ground
   ☐ N/A ☒ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   Remarks

4. **Discharge Structure and Appurtenances** Injection wells are above ground completions
   ☐ N/A ☒ Good condition ☐ Needs Maintenance
   Remarks

5. **Treatment Building(s)**
   ☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
   ☒ Chemicals and equipment properly stored Hydrogen Peroxide tank is empty
   Remarks

6. **Monitoring Wells** (pump and treatment remedy) Semi-annual sampling and quarterly water levels
   ☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☐ N/A
   Remarks

D. Monitoring Data

1. Monitoring Data
   ☐ Is routinely submitted on time ☒ Is of acceptable quality Mitter Tech does QA/QC

2. Monitoring data suggests:
   ☒ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   - ☐ Properly secured/locked
   - ☐ All required wells located
   - ☐ Functioning
   - ☐ Needs Maintenance
   - ☐ Routinely sampled
   - ☐ Good condition
   - ☑ N/A

   Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The Groundwater treatment plant (GWTP) is functioning as designed. It is meeting the RAOs stated in the IROD.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

It appears that the O&M procedures are being completed weekly, monthly, quarterly, semi-annually and annually.

The degree of effort has resulted in a high percentage of uptime which ultimately will continue the clean up of the GW.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

The reduction in quarterly mass removal rates has reduced to only 3 pounds per quarter. At this rate an additional 28 years of operation would be required.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Remodel the entire GW system and the extraction well pumping rates and target zones.

APPENDIX C

PHOTOGRAPHS OF DGCS

1. MAIN GATE TO THE GWTP AND INNER COMPOUND

2. CONTROL PANEL, VALVING, PIPING AND INJECTION WELL IW-1

3. BUILDING 4709 IN THE INNER COMPOUND FUNCTIONS AS THE PUMPHOUSE

4. 7,000-GALLON AST PREVIOUSLY USED TO STORE DIESEL FUEL FOR THE BOILER

5. 6-FOOT HIGH CHAIN LINK SECURITY FENCING AROUND INNER COMPOUND

6. 20,000-GALLON AST PREVIOUSLY USED TO STORE DIESEL FUEL

7. 6-FOOT-HIGH CHAIN LINK SECURITY FENCING AROUND EXTRACTION WELLS

8. NORTHEAST SIDE OF BUILDING 4708 IN THE INNER COMPOUND

9. BUILDING 4710 FACING NORTH WITH BIOVENT SYSTEM LOCATED ON THE RIGHT SIDE

10. BIOVENT SYSTEM HOUSING WITH APPROPRIATE EMERGENCY NUMBERS POSTED ABOVE IT

11. GWTP - INFLUENT HOLDING TANK

12. GWTP - THREE 10,000-LB. LIQUID CARBON VESSELS IN SERIES

13. GWTP - TWO SAND FILTERS IN SERIES

14. GWTP - UV/OX TREATMENT SYSTEM, NOT IN USE SINCE 1999

15. 5.74 ACRES OF LAND IN THE SOUTHEAST CORNER OF THE DGCS WAS FEDERALLY TRANSFERRED TO NOAA IN JANUARY, 2001, FOR A DOPPLER RADAR FACILITY.

APPENDIX D

RESPONSES TO COMMENTS ON THE DRAFT FIVE-YEAR REVIEW

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
RWQCB GENERAL COMMENTS (DATED 13 MAY 2004)						
1.				RWQCB (James Taylor)	Overall, the Report is well written and prepared. However, several sections of the Report should be revised to more clearly describe indoor air inhalation pathway risks from subsurface volatile organic compound (VOC) contamination, and the assumptions and limitations of the evaluations conducted to date. The Protectiveness Determination also does not clearly address the indoor air pathway. The Report describes the indoor air risk assessment methodology in Section 4.4.3. However, this evaluation is based on data (not provided in the Report) from a dual phase extraction well (EW-2B) screened beginning at 25 feet below ground surface (bgs). This data does not directly represent current VOC shallow soil gas concentrations from ground surface to 20 feet bgs. The shallow soil gas data that has been collected (described in Section 4.4) is over 10 years old and was not used to update the risk assessment, and instead used the more recent dual phase extraction well data. The Report does state in Section 4.4 that, "…additional investigations and modeling would need to be performed to determine if the VOC contaminant levels present pose a threat to human health or the environment." These significant limitations in the risk assessment methodology are not clearly stated in the Report. The Report should be revised to clearly describe the rationale for using the dual phase extraction well data, and the limitations of using this data in evaluating the current status of protectiveness at the site from shallow soil gas VOC contamination. The Protectiveness Determination should also be revised to address the indoor air pathway.	Section 4.3.3, Technical Assessment, has been expanded with text and tables to 1) clarify the approach that was used to develop and evaluate the risk and hazard indices; 2) outline the use of conservative assumptions to offset uncertainties in the data; 3) tabulate the BTEX and VOC data that was selected for maximum concentrations; and 4) present the risk calculations for the individual and combined compounds of concern. The results presented in the new Table 4-6 show that, even with the most conservative scenarios, calculations of risk are within the currently acceptable ranges of 10^{-6} to 10^{-4} and hazard indices are less than 1.0. The following sentences have been added to the Protectiveness Determination (end of second sentence of second paragraph): "Based on conservative screening evaluations of residual concentrations of BTEX and VOC compounds in the soil gas and using the available data, the risks to indoor air are within acceptable ranges. However, more detailed site-specific evaluations would be appropriate prior to property transfer to ensure no changes have occurred."

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
RWQCB SPECIFIC COMMENTS (DATED 13 MAY 2004)						
1.	1.2	1-2	First Paragraph	RWQCB (James Taylor)	Next to last sentence: This sentence states that, "This schedule forecast did not envision the dispute over water quality goals between the State and the Air Force, which resulted in delays to the final ROD schedule for DGCS." The McClellan VOC Proposed Plan dispute was not linked to the Davis Site ROD or schedule. The Davis Site has a separate Federal Facility Site Remediation Agreement (FFSRA) and the dispute resolution was site-specific for McClellan. The current schedule for the Davis Site calls for preparation of a data gap FSP and a Remedial Investigation/Feasibility Study Addendum (RI/FS). Therefore, issuance of a ROD based on the original schedule would have been premature until further data gaps and investigations are completed. Please delete the reference to the dispute as the cause of the ROD delay, and revise the Report accordingly.	Although the McClellan dispute was not specifically identified with the DGCS, the uncertain outcome of the dispute, namely lower groundwater cleanup levels, was considered by the Air Force to potentially (and significantly) affect the remedial alternatives and schedules at both locations. As a result, the Air Force considers that the dispute at McClellan did have unintended impacts on the schedule at DGCS. The referenced statement was intended to clarify the reason for synchronization between the schedule of this first Five-Year Review for Davis with the second Five-Year Review for McClellan.
2.	2.3	2-6	Third Paragraph		Fifth sentence: This sentence states that, "The evaluation of lower cleanup levels, especially those not widely accepted, is beyond the scope of this Five-Year Review." The statement, 'especially those not widely accepted' is subjective and not based on either Federal or State regulatory requirements. Therefore, please delete this statement from the sentence.	The phrase "especially those not widely accepted" has been removed from the text. The sentence now reads: "The evaluation of lower cleanup levels is beyond the scope of this Five-Year Review."
3.	4.1.3	4-4	Second Paragraph		Second sentence: This sentence states that, "Analytical results from the DGCS groundwater monitoring program are reported semi-annually, in the Second and Fourth Quarter Monitoring Reports." Analytical results from the groundwater monitoring program are submitted quarterly. Please correct this discrepancy.	A report is issued each quarter that presents operations data (including analytical results) for the DGCS groundwater treatment plant. This operations-oriented, analytical report includes all compliance testing for the treatment system as well as analytical results from the extraction wells. In contrast, the sampling program for the groundwater monitoring wells at DGCS is carried out according to a semi annual program (typically shown on Table 3-1 of all quarterly reports), and the results are presented in the second and fourth quarter reports along with the

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
						normal operations data and associated analytical results. As a result, the statement noted in the RWQCB comment refers to the groundwater monitoring program; and as written, is accurate. We do not propose any change.
4.	4.3.3	4-13			Sentence at top of page: This sentence states that, "Resolution of this issue may affect the perceived protectiveness of the remedy and may result in a change in ARARs for the final ROD." Board staff concurs that selection of water quality limits (WQLs) such as public health goals (PHGs) may result in a change in ARARs for the final ROD. However, the statement that selection of lower WQLs, 'may affect the perceived protectiveness of the remedy' is unclear. The current and future remedial actions of groundwater plume containment and treatment should prevent exposures to contaminated groundwater. The protectiveness of the site will remain the same, regardless of the cleanup level, as long as there is not a complete exposure pathway. Therefore, Board staff believes that this statement should be revised for clarity, or that the 'perceived protectiveness" statement should be deleted from this sentence.	The sentence has been removed.
5.	4.4	4-15			This section describes the bioventing operations and the possibility that the petroleum contamination is commingled with non-petroleum VOCs (i.e., CERCLA contamination). The Report should be revised to conclude whether or not the petroleum constituents are commingled with CERCLA contamination at this Site. The Report recommends that a START/STOP evaluation be performed at the Site to confirm the shut down of SVE operations using the START/STOP protocol. The Report does not describe a site closure plan or strategy for addressing the petroleum and petroleum derived constituents. Section 4.4 should outline	Currently, the Air Force is planning to issue a Performance Based Contract (PBC) at DGCS and implement the contract by 2005. Through the PBC process, the Air Force will select a contractor to execute environmental investigations, remedial construction, and operations necessary to reach Operating Properly and Successfully (OPS) certifications and achieve site closure approvals from the regulators, while continuing to meet the requirements of the Interim Record of Decision. The contractor will be responsible for interface with regulatory agencies for approval and acceptance of any remedial approach selected,

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
					the anticipated process for either achieving site closure under state requirements, or how this site will be addressed or closed under the CERCLA process (utilizing the START/STOP process), based on the determination of whether not the petroleum is commingled with CERCLA contaminants at this Site. Sites with petroleum or petroleum derived constituents that are commingled with CERCLA contaminants must be addressed under CERCLA. Sites with only petroleum or petroleum derived constituents would be addressed or closed under state requirements.	cleanup standards, and preparation of any CERCLA decision documents or other agreements, if applicable. As currently envisioned, the issues of commingled sites, CERCLA vs non-CERCLA closure, and implementation of the START/STOP process will be addressed by the PBC contractor and presented in future plans for concurrence with the regulators.
6.	4.4	4-16	Next to Last Paragraph		See General Comment 1. This paragraph describes risk from VOC soil vapors, including concentrations of petroleum derived VOCs (e.g., benzene). This paragraph should be moved to Section 4.3.3, and included in an expanded discussion of the risk assessment methodology.	Please see the response to General Comment 1. The data presented in this paragraph has been qualified, and Section 4.3.3 has been expanded to include a more thorough discussion and analysis of indoor air risks.
7.	5.0	5-1 and 5-2			Recommendations: See Specific Comment 5. This section should be expanded to include a recommendation for a closure plan, or a plan of action to address any residual petroleum contamination at the Site.	The general recommendation for a closure plan to address residual petroleum contamination has been added to Section 5.0. However, as described in the Response to Specific Comment 5, the content of the plan will be developed by others at a later date.
8.	5.0	5-1	Fourth Bullet		This recommendation should be expanded to include an evaluation of indoor air risks, including additional investigations and modeling that would need to be performed to determine if the VOC contaminant levels present pose a threat to human health or the environment. Confirmation sampling for fuels and VOCs in soil and soil gas should also include collection of any site-specific soil parameters (e.g., moisture content, etc.) needed to refine the risk assessment modeling. Site-specific soil parameters are preferable to default modeling values.	The recommendation has been expanded to include appropriate site specific evaluations that would refine and confirm the actual risk assessment from residual contamination at DGCS.
9.	Table 2-				For trans-1,2-dichloroethene, the table has 1.3	The table has been corrected.

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
	1				ug/L as the California MCL. The California MCL is 10 ug/L (the Federal MCL is 100 ug/L). Please correct this discrepancy.	
DEPARTMENT OF FISH AND GAME (RECEIVED 21 MAY 2004)						
1.				CA DF&G (Regina Donohue)	The California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) received the Draft Five-year Review Report for the Davis Global Communications Site on March 11, 2004. The Davis Global Communications Site (DGCS) is located in southeastern Yolo County, about four miles south of the City of Davis. The former transmitter facility is located on 316 acres of open grassland and vernal pools. An initial baseline ecological risk assessment was conducted in 1994. URS prepared a Site-Specific Supplemental Environmental Baseline Survey (SSSEBS) in 2001. DFG-OSPR has not reviewed these documents. These reports identified sensitive habitats and organisms, including the burrowing owl, Swainson's hawk, and two species of special status plants. The subject document describes the history of contamination, remedial actions, and recommends future actions. The contamination at the site consists of petroleum and chlorinated solvents in soil and groundwater. The comments that follow are provided as part of our role as a natural resource trustee for the State of California's fish and wildlife and their habitats.	The comment has been noted and no response is necessary.

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
2.					Information in the subject document indicates that the ongoing remedial actions are containing and slowly removing contaminants from the soil and groundwater. The DFG-OSPR assumes that these actions either have or will eventually provide adequate protection of ecological receptors and the environment. However, Section 4.0 provides little information regarding risks to ecological receptors. It is stated that there are no transport mechanisms for contaminants in subsurface soil or groundwater to contact surface wetlands. However, DFG-OSPR is unable to determine whether burrowing organisms, such as the burrowing owl and ground squirrels, are potentially at risk from inhalation of fuels and volatile organic compounds (VOCs) that remain in the vadose zone (i.e., 0 - 6 feet below ground surface; DTSC, 1998). The DFG-OSPR will be better able to evaluate the remaining risk to ecological receptors and the environment after the recommended confirmation sampling for fuels and VOCs in soil and soil gas at the DGCS is completed. However, it would be useful to provide a more comprehensive summary of potential ecological risks in Section 4.3.3, including an assessment of the need to update any of the ecological risk assessment methodologies employed in 1994 or 2001.	The Ecological Risk Assessment conducted in 1994 (CH2M Hill, 1994, Appendix I) identified burrowing animals as a potential receptor of concern due to possible inhalation of volatile contaminants in the shallow soil. The assessment was conducted using benchmarks available at that time and did not identify any specific risk to burrowing animals based on that exposure scenario. More recently, the Supplemental Site-Specific Environmental Baseline Survey (SSSEBS), prepared in 2001, expanded the list of biological site-related resources at DGCS; however, this study did not specifically consider the risk from contaminated soil gas to burrowing animals. As a result, in 2004 there is no current and definitive assessment of potential risk to burrowing animals from contaminated soil gas. However, the need for more detailed evaluations of risk to burrowing animals may have been reduced by: a) the removal of contaminated soil piles that were considered habitat for burrowing owls; b) the general lack of shallow soil gas data from the burrowing zone of potential receptors (i.e. 1 to 6 feet); c) the lack of promulgated methodologies and air standards for burrowing animals, and d) the soil gas remediation that has taken place at the site. To provide a general indication of potential risk to burrowing animals from shallow soil gas, a screening assessment based on very conservative assumptions for soil gas concentrations and toxicity reference values (TRVs) for burrowing animals was carried out. Table D-1, attached with this response, shows the estimated burrow air risks based on maximum concentrations of 9 soil gas COCs and the resulting hazard quotients for mammals assuming TRVs for No Observable Adverse Effect Level (NOAEL) and Lowest Observable

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
Cont'd						Adverse Effect Level (LOAEL). The soil vapor concentrations represent the maximum detected for each COC, regardless of depth, and are assumed to occur in the burrowing zone. This is an approach similar to that used to screen the risk in indoor air from soil gas described in Section 4.3.3 of this report. The source of the TRVs is from a similar biological evaluation conducted at a nearby Davis Superfund site (MWH, 2003 Appendix L). The results of this screening assessment indicate that the maximum soil gas concentrations at DGCS range from 10^{-1} to 10^{-6} below the NOAEL levels and from 10^{-2} to 10^{-7} below the LOAEL levels. Summations of hazard quotients for all 9 COCs are well below 1.0. Although this screening does not replace a site-specific risk assessment, the conservative assumptions of the scenario coupled with the very low hazard quotients a) confirm the conclusions of the 1994 CH2M Hill study; and b) suggest that it is unlikely that there is a widespread risk to burrowing animals from residual soil gas at DGCS.
3.					One of the recommendations of the Report is to add signs that clearly mark environmentally sensitive areas within the Davis site. We strongly support this effort to protect the vernal pools. We are also pleased to learn that the Air Force has established "No Disk" zones encompassing all vernal pools at the site, and all equipment operators are required to attend an on-site briefing on endangered species prior to construction of the perimeter firebreak, and mowing for weed control.	The comment has been noted and no response is necessary.
4.					The remedial actions in progress are effective, and the recommendations will improve the protection of ecological receptors and the environment. We would like to see the question of potential risk to burrowing mammals and	Please see Response to Comment No. 2.

RESPONSES TO COMMENTS ON THE DRAFT DAVIS FIVE-YEAR REVIEW						
Comment Number	**Section**	**Page**	**Paragraph**	**Reviewer**	**Comment**	**Response**
					burrow-dwelling birds addressed in the Final Five-Year Review Report. DFG-OSPR looks forward to working with the Air Force to ensure that there are no ecological risks at the site. Thank you for the opportunity to review the subject document.	

TABLE D-1

ESTIMATED BURROW AIR RISKS
FIVE-YEAR REVIEW
DAVIS GLOBAL COMMUNICATIONS SITE
DAVIS, CALIFORNIA

Compound	Maximum Concentration in Soil Vapor[a,b] (C_{sv}; ug/m^3)	Toxicity Reference Value based on NOAEL (TRV; ug/m^3)[c]	NOAEL-based HQ[d]	Toxicity Reference Value based on LOAEL (TRV; ug/m^3)[c]	LOAEL-based HQ[d]
1,1-Dichloroethene	120	108000	0.0011	1080000	0.00011
Benzene	0.029	171000	0.00000017	1710000	0.000000017
Chloroform	420	4260	0.099	42600	0.0099
Ethylbenzene	1.6	60000	0.000027	600000	0.0000027
Freon 113	36	--	--	--	--
Tetrachloroethene	2400	198000	0.012	1980000	0.0012
Toluene	0.18	219000	0.00000082	2190000	0.000000082
Trichloroethene	130	1736000	0.000075	17360000	0.0000075
Xylene	2.1	15000	0.00014	150000	0.000014
		Hazard Index[e]=	<1		<1

Notes:

bgs- below ground surface

C_{sv} - soil vapor concentration

ft - feet

HQ - Hazard Quotient

TRV - Toxicity Reference Value

NOAEL - No Observable Adverse Effect Level

LOAEL - Lowest Observable Adverse Effect Level

[a] Data were collected between 1993 and 2002 from depths ranging from 10 ft bgs to 55 ft bgs.

[b] Typically, burrows are in the top 3 ft bgs. However, gopher burrows may be as deep as 10 ft bgs.

[c] TRV Source: MWH 2003, *Draft Site Wide Risk Assessment Volume 2 Ecological Risk Assessment: Appendix L Toxicity Reference Values,* LEHR/SCDS Environmental Restoration University of California, Davis, August

[d] HQ = C_{sv}/TRV

[e] Hazard Index = Sum of all HQs

State of California

Memorandum

To: Mr. James Taylor
Central Valley Regional Water Quality Control Board
11020 Sun Center Dr, #200
Rancho Cordova, CA 95670-6114

Date: July 28, 2004

From: James E. Hardwick
Staff Environmental Scientist
Office of Spill Prevention and Response
Department of Fish and Game

Subject: **Review of the *Response to Comment Matrix and Revised Sections of the Draft Five-year Review Report for the Davis Global Communications Site,* (March 2004) SITE: 100266**

Background

The California Department of Fish and Game, Office of Spill Prevention and Response (DFG-OSPR) received the *Response to Comment Matrix and Revised Sections of the Draft Five-year Review Report for the Davis Global Communications Site* via email on July 14, 2004. The Davis Global Communications Site (DGCS) is located in southeastern Yolo County, about four miles south of the City of Davis. The former transmitter facility is located on 316 acres of open grassland and vernal pools. An initial baseline ecological risk assessment was conducted in 1994. URS prepared a Site-Specific Supplemental Environmental Baseline Survey (SSSEBS) in 2001. DFG-OSPR has not reviewed these documents. These reports identified sensitive habitats and organisms, including the burrowing owl, Swainson's hawk, and two species of special status plants. The subject document describes the history of contamination, remedial actions, and recommends future actions. The contamination at the site consists of petroleum and chlorinated solvents in soil and groundwater. The comments that follow are provided as part of our role as a natural resource trustee for the State of California's fish and wildlife and their habitats.

Comments

Based on the selected inhalation toxicity reference values, the DFG-OSPR does not believe the burrow risk estimates are overly conservative. However, given the time constraints for document completion and the fact that the hazard quotients in Table D-1 are quite low, we will accept the preliminary conclusion that widespread risk to burrowing animals from residual soil gas at DGCS are unlikely.

Conclusion

The DFG-OSPR's comments are adequately addressed in the document and we look forward to working with the Air Force to ensure that there are no unacceptable ecological risks at the site. Thank you for the opportunity to review the subject

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JUL 30 2004

document. If you have any questions regarding this review or require further details, please contact Jim Hardwick by telephone at (916) 327-0911, or e-mail (jhardwic@ospr.dfg.ca.gov).

Reviewer: Regina Donohoe, Ph.D.
Staff Toxicologist

cc: Julie Yamamoto, Ph.D.
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July 20, 2004

AFRPA/DD-McClellan
Mr. Paul Brunner
3411 Olson Street
McClellan, California 95652-1071

DAVIS SITE 5-YEAR REVIEW, FORMER MCCLELLAN AIR FORCE BASE, SACRAMENTO CALIFORNIA (DSR 876-2)

Dear Mr. Brunner:

The Department of Toxic Substances Control (DTSC) will not be providing comments on the Davis Site 5-year review. The Davis Site is limited to groundwater issues only and the Central Valley Regional Water Quality Control Board (CVRWQCB) has been State lead regulator on the Site for some time. DTSC defers the State's review to the CVRWQCB.

If you have any questions regarding these comments, please contact me at (916) 255-3747.

Sincerely,

Tami Trearse
Project Manager
Office of Military Facilities

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