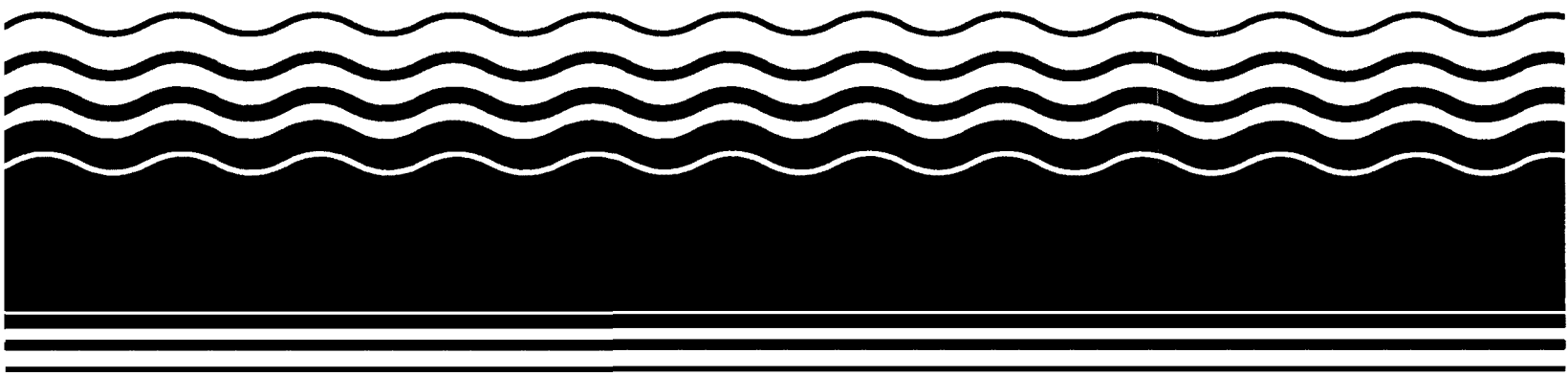
EPA/ESD/R10-95/115
August 1995

EPA Superfund Explanation of Significant Differences for the Record of Decision:

Fairchild Air Force Base
Craig Road Landfill, WA
12/5/94



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

10 February 1995

92 CES/CEVR
100 W. Ent St, Suite 155
Fairchild AFB WA 99011-9404

Environmental Protection Agency
Ms. Cami Grandinetti
Region 10 EPA
1200 Sixth Ave, HW-124
Seattle WA 98101

Dear Ms. Grandinetti

Attached is an Explanation of Significant Differences (ESD) for the Record of Decision for the Craig Road Landfill at Fairchild Air Force Base. This document summarizes the decision to remove the active soil vapor extraction system from the selected cleanup remedy. Also attached is a technical analysis that was used in support of the ESD and its preparation.

Fairchild, the Environmental Protection Agency, and Washington Department of Ecology participated jointly in the preparation of this document. Once we receive your formal acceptance of this document we will provide public notice in a major local newspaper as required by section 300.435 (c) (2) (I) (A) and (B) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

We appreciate your cooperation and assistance in both making the decision and preparing the ESD. We believe this effort demonstrates the tri-party team spirit that has allowed Fairchild to move expeditiously forward in the cleanup program while demonstrating good stewardship of available resources. If you have any questions regarding the ESD contact Ms. Diane Wulf at (509) 247-5170.

Sincerely

Frederick L. Zitterkopf

FREDERICK L. ZITTERKOPF
Assistant Civil Engineer

Attachments
ESD & Tech Analysis

cc:
HQ AMC/CEVR (Mr. Daniel Murphy)
HQ AFCEE/ERD (Mr. Jonathan Haliscak)

EXPLANATION OF SIGNIFICANT DIFFERENCES
FOR THE
RECORD OF DECISION
FOR THE
UNITED STATES DEPARTMENT OF THE AIR FORCE
CRAIG ROAD LANDFILL
FAIRCHILD AIR FORCE BASE, WASHINGTON

I. Introduction

This document presents an Explanation of Significant Differences (ESD) for the Record of Decision (ROD) for the Craig Road Landfill (CRL) operable unit at the Fairchild Air Force Base (FAFB), Spokane, Washington, which was signed by the United States Department of the Air Force, The United States Environmental Protection Agency (EPA), and the state of Washington Department of Ecology (Ecology) on February 13, 1993. The CRL ROD was signed pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The site name and location are as follows:

Craig Road Landfill Operable Unit
Fairchild Air Force Base, Washington

The lead agency for this action is the U.S. Air Force. EPA and Ecology concur with, and approve the need for, this significant change to the selected remedy. The three agencies participated jointly in the preparation of this document.

This ESD, prepared in accordance with section 117(c) of CERCLA and section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), is necessary to address needed modifications to the selected remedy identified in the CRL ROD. The significant difference from the ROD consists of the elimination of the active soil vapor extraction (SVE) system from the final remedy. The following reasons form the basis for this decision:

- Since the ROD was signed, field investigations and treatability studies have shown that subsurface landfill conditions preclude effective and efficient utilization of SVE technology.

- In addition to the trichloroethene (TCE) source that was identified in the fill material during the RI, there is subsequent monitoring well data which suggests that TCE may be present as a dense nonaqueous phase liquid (DNAPL), possibly acting as a predominant source of groundwater contamination.

- The remedy will still be protective of human health and the environment, and will still attain applicable or relevant and appropriate requirements (ARARs).

- The additional cost of implementing the SVE system will not provide a significant decrease in overall risk from contaminants at the site.

This and other relevant documents will become part of the AR file pursuant to Section 300.825(a)(2) of the NCP. Public notice of the ESD will be published in a major newspaper. This ESD will be made available to the public for review at the following locations:

ADMINISTRATIVE RECORD

Spokane Falls Community College Library
W. 3410 Fort George Wright Drive
Spokane, WA 99204

INFORMATION REPOSITORY

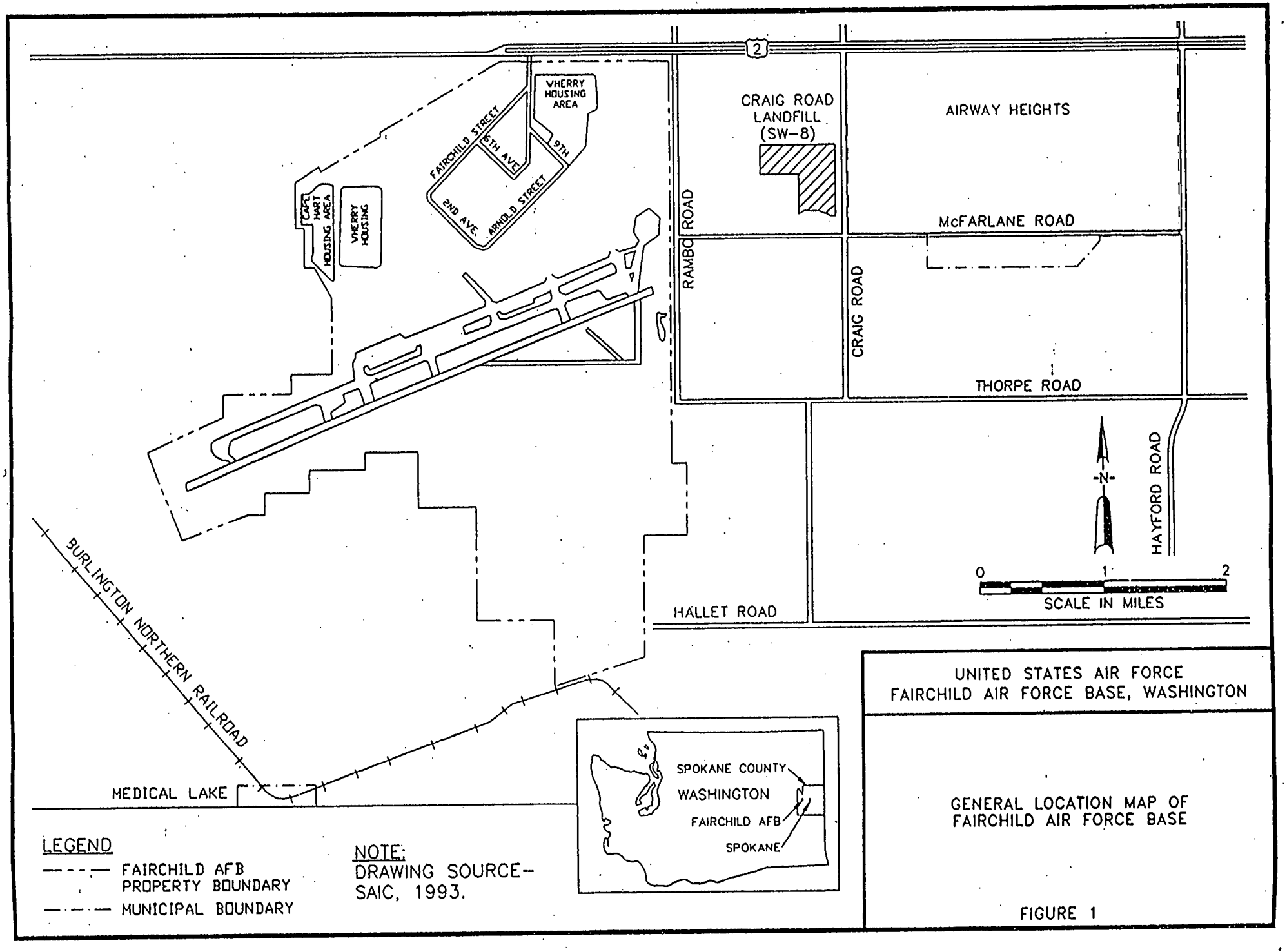
Airway Heights City Hall
S. 1208 Lundstrom
Airway Heights, WA 99101

II. Site History, Contamination Problems, and Selected Remedy

Fairchild AFB is located approximately 12 miles west of Spokane, Washington. The CRL is located on property owned and operated by the U.S. Air Force as a noncontiguous part of the FAFB installation. This property is approximately 100 acres in area and is located on the west side of Craig Road approximately 0.7 miles south of U.S. Route 2 and 0.6 miles east of FAFB proper. (Figure 1).

The CRL was a former disposal location for FAFB and was used for general purpose landfilling. The site is composed of three inactive waste disposal areas. Municipal and industrial wastes were buried in trenches on about 6 acres in the northeast disposal area (NDA), and in a low-lying area of about 13 acres in the southwest disposal area (SDA). In addition, demolition debris form runway reconstruction and other construction was deposited on the ground surface in the southeast disposal area, covering about 20 acres (Figure 2).

The NDA was active from the late 1950s into the early 1960s. Landfilling in this area proceeded by trench-and-fill, soil cover, and grading. The SDA was active from the late 1960s into the late 1970s. The method of disposal consisted of fill and-cover in a topographical low area, possibly with some excavation. The soil cover was graded and then overlain with concrete blocks and asphalt from the runway reconstruction. Based on investigation borings, the depth of the fill materials below the existing ground surfaces exceeds 30 feet in the NDA and 25 feet in the SDA. Environmental problems associated with the CRL were discovered under the U.S. Air Force's Installation Restoration Program (IRP). The RI indicated the following problems at the site:


2
VHERRY HOUSING AREA
FAIRCHILD STREET
5TH AVE
9TH
2ND AVE
ARNOLD STREET
CAPE HART HOUSING AREA
VHERRY HOUSING
CRAIG ROAD LANDFILL (SW-8)
AIRWAY HEIGHTS
McFARLANE ROAD
RAMBO ROAD
CRAIG ROAD
THORPE ROAD
HAYFORD ROAD
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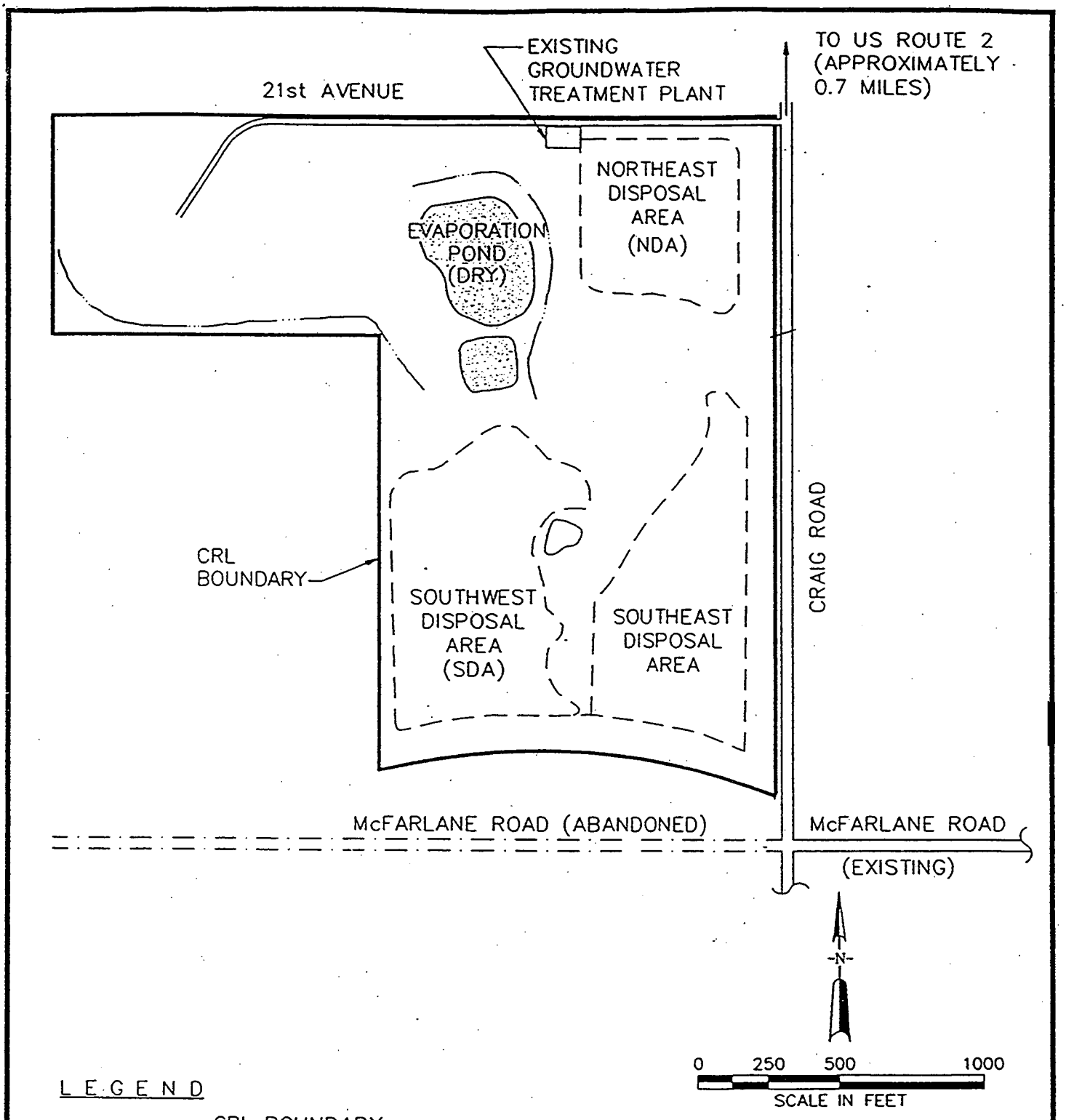
BURLINGTON NORTHERN RAILROAD
MEDICAL LAKE
SPOKANE COUNTY
WASHINGTON
FAIRCHILD AFB
SPOKANE
LEGEND
FAIRCHILD AFB PROPERTY BOUNDARY
MUNICIPAL BOUNDARY
NOTE:
DRAWING SOURCE- SAIC, 1993.
UNITED STATES AIR FORCE
FAIRCHILD AIR FORCE BASE, WASHINGTON
GENERAL LOCATION MAP OF FAIRCHILD AIR FORCE BASE
FIGURE 1



LEGEND

- CRL BOUNDARY
- DRAINAGE TRENCH
- APPROXIMATE LANDFILL BOUNDARY
- SURFACE WATER PONDS (DRY)

NOTE:
DRAWING SOURCE–SAIC, 1993.

UNITED STATES AIR FORCE
FAIRCHILD AIR FORCE BASE, WASHINGTON

CRAIG ROAD LANDFILL SITE

FIGURE 2

- TCE, 1,1-dichloroethene (DCE), and vinyl chloride have been detected in groundwater samples from on-site and/or off-site monitoring wells at concentrations exceeding federal maximum contaminant levels (MCLs) established under the Safe Drinking Water Act. TCE was also detected in nearby residential and municipal water supply wells. In a 1989 removal action by the Air Force, users of those wells with concentrations exceeding federal MCLs were provided with an alternate water supply.

- Two landfilled areas (the NDA and SDA) within the CRL are identified as the apparent sources of groundwater contamination.

- Soil-gas measurements indicate that volatile contaminants are present within the fill material.

A ROD for this site was signed in February 1993. The ROD outlines the remedy that has been selected to address the contamination described in the RI. The selected remedy for restoring contaminated groundwater consists of both source control and groundwater control actions. The source control actions are intended to minimize migration of contaminants from the fill material to the groundwater and to prevent direct exposures to contaminated subsurface soils and debris. The groundwater control actions are intended to prevent further migration of contaminated groundwater across the site boundary and to prevent the consumption by area residents of groundwater which exceeds MCLs. The major elements of the selected remedy include:

- Capping the NDA and SDA.

- Installing an active soil vapor extraction and treatment system in each capped area.

- Extracting contaminated groundwater from the upper aquifer at the landfill, and treating by air stripping and granular activated carbon; treated groundwater will be reintroduced to the aquifer at a location downgradient of the CRL site.

- Monitoring off-site water supply wells within the offsite portion of the plume and providing point-of-use treatment and/or alternate water supply if needed in the future.

- Monitoring groundwater in the upper and lower aquifers.

- Implementing institutional controls.

The remedial design (RD) for implementing the selected remedy began in February 1993. As part of the RD, a treatability study to establish the design parameters of the SVE system was performed. In addition, groundwater pumping tests were conducted to determine design flow rates for the extraction wells, and groundwater samples were collected from extraction and monitoring wells.

III. Description of and Rationale for Significant Differences

The active SVE system will be deleted from the selected remedy described in the ROD. The other elements of the selected remedy will be implemented. Some additional components may need to be incorporated into the passive gas management system of the landfill cap to provide for treatment of the volatile organic compounds (VOCs) which were to be removed by the SVE system, and which now may be intermixed with the gases generated by the landfill. These determinations will be made through coordination with the Spokane County Air Pollution Control Authority.

EPA and Ecology have concurred with the Air Force's decision to delete the SVE system from the selected remedy. The rationale for deleting the active SVE system are described below. A detailed technical analysis supporting this decision is provided in the AR for FAFB Attachment 1.

- Subsurface landfill conditions preclude effective and efficient utilization of SVE technology.

During the RI, soil-gas surveys indicated high concentrations of various VOCs. The selected remedy included the SVE system as an element to address these contaminants. A post-ROD treatability study was conducted to provide engineering information needed to design the SVE system. The treatability study indicated that the fill material displays considerable spatial variations in air permeability and in contaminant concentrations. Because of the variations in air permeability, it is likely that preferential pathways for vapor flow would develop in the fill material during the vacuum extraction process. Such pathways would intersect the zones of higher contaminant concentrations only by coincidence. Consequently, only a limited portion of the fill material and of the contaminants contained in it could be expected to be remediated by the SVE system.

- In addition to the trichloroethene (TCE) source identified in the fill material, there is evidence that TCE may be present as a dense nonaqueous phase liquid (DNAPL), possibly acting as the predominant source of groundwater contamination.

The screening of remedial alternatives and remedy selection in the Feasibility Study (FS) and the ROD were based on the RI's conclusion that the fill material was the primary source of contaminants, which leach from the fill to the groundwater. To address this migration pathway, the selected remedy included the capping of the fill materials to minimize the leaching, and the SVE system to reduce the volume of contaminants available to be leached.

However, post-ROD groundwater samples have indicated VOCs in the aquifer below the SDA at concentrations that suggest that TCE may be present as a DNAPL. Thus there may be two primary sources of groundwater contamination
associated with the CRL, and particularly with the SDA: the fill material and a

DNAPL. Of the two, a DNAPL could be expected to be the predominant source for ongoing contamination, particularly with the leaching of contaminants from the fill material minimized by capping the disposal areas. With a DNAPL source, the emphasis of remedial action would shift to the controls on contaminant migration provided by the groundwater extraction and treatment system. Active remediation of the contaminant vapors in the fill material would not provide a significant enhancement of the groundwater restoration in this situation.

- The remedy will still be protective of human health and the environment, and will still attain ARARs.

The baseline risk assessment found that approximately 83 percent of the carcinogenic risk associated with the site arose from exposures to contaminants in groundwater. The selected remedy will accomplish reduction of these risks through groundwater migration controls and through the provision of point-of-use treatment and/or alternate water supplies as needed. The SVE system would not directly address exposures to contaminated groundwater. While the remaining 17 percent of the site's overall carcinogenic risk is associated with exposure to vapors escaping from the landfill, that risk will still be adequately reduced by the capping element of the selected remedy. Noncarcinogenic health effects were not a factor in developing the selected remedy.

The ROD identifies state and federal ARARs to be used as cleanup standards for the groundwater, but does not identify any cleanup standards for the fill material. This is appropriate since the fill material will be contained with a landfill cap. The deletion of the SVE system by itself from the selected remedy will not affect the remedy's attainment of ARARs.

- The additional cost of implementing the SVE system would not provide a significant decrease in overall risk from contaminants at the site.

The total present worth cost of the selected remedy as described in the ROD is estimated to be $8,722,073 over thirty years. The FS, in which cost estimates for each element of the selected remedy were developed, indicates that the present worth cost of the SVE system is $1,612,523 over thirty years. As explained above, the SVE system would provide no significant decrease in overall risk from contaminants at the site, but would represent about 18.5 percent of the total project cost.

IV. Affirmation of Statutory Determinations

The modifications to the proposed remedial actions will continue to utilize permanent solutions and treatment to the maximum extent practicable for the site. Based on the information gained during RD from the treatability study and groundwater monitoring, it has been determined by the Air Force, EPA, and Ecology that the elimination of the SVE system will not affect the ability of the remedy to achieve cleanup levels. Additionally, the remedy will remain protective of a human health and the environment, comply with federal and state ARARs, and is cost-effective.

V. Public Participation Activities

This ESD and the contents of the AR are available for public review. In addition to the AR on file for the ROD, the AR for this action includes a copy of this ESD, the RD workplan, the RD, treatability study reports for the SVE system and groundwater pump test, the RA workplan, and other supporting information. This action will be implemented with the construction of the final landfill cap layers, which is expected to begin with the next construction field season in the spring of 1995. Although modified from the original ROD, the remedy doesn't present a fundamental change in scope or purpose of this action. Thus a formal comment period will not be conducted.

Consistent with Section 300.435(c)(2)(i) of the NCP, this ESD has been placed in the previously listed FAFB Information Repositories, after the publication of a notice in the following newspaper:

Spokesman-Review (Spokane)

The public is encouraged to review this ESD and other relevant documents in the AR and to provide comments to any of the agencies involved. Additional information may be requested within 14 days of the notice of issuance of this ESD by contacting:

92 ARW/PA
Major Candyce Ballmer
1 E. Bong Street
FAIRCHILD AFB WA 99011-8517
(509) 247-5170

TECHNICAL ANALYSIS
IN SUPPORT OF THE
EXPLANATION OF SIGNIFICANT DIFFERENCES
FOR THE
RECORD OF DECISION
FOR THE
UNITED STATES DEPARTMENT OF THE AIR FORCE
CRAIG ROAD LANDFILL
FAIRCHILD AIR FORCE BASE, WASHINGTON

I. Introduction

This document provides the technical analysis used in determining the need for a modification to the selected remedy identified in the Record of Decision (ROD) for the Craig Road Landfill (CRL) operable unit at the Fairchild Air Force Base (AFB), Spokane, Washington. This analysis will serve as a supplement to an Explanation of Significant Differences (ESD) that was prepared to document the rationale for the modifiation. The significant difference from the ROD consists of the elimination of the active soil vapor extraction (SVE) system from the final remedy.

II. Site History, Contamination Problems, and Selected Remedy

Fairchild AFB is located approximately 12 miles west of Spokane, Washington. The CRL is located on property owned and operated by U.S. Air Force as a noncontiguous part of the Fairchild AFB installation. This property is approximately 100 acres in total area and is located on the west side of Craig Road approximately 0.7 miles south of U.S. Route 2. The CRL was a former disposal location for Fairchild AFB and was used for general purpose landfilling and is now comprised of three inactive waste disposal areas. Municipal and industrial wastes were buried in two of the areas (Northeast Disposal Area (NDA) and the Southwest Disposal Area (SDA)) and demolition debris from runway reconstruction was deposited on the ground surface in the third disposal area.

Environmental problems associated with the CRL were discovered under the U.S. Air Force Installation Restoration Program (IRP). The remedial investigation indicated the following problems at the site.

- TCE, 1,1-DCE, and vinyl chloride have been detected in groundwater samples from on-site and/or off-site monitoring wells at concentrations exceeding federal maximum contaminant levels (MCLs) established under the Safe Drinking Water Act. TCE was also detected in nearby residential and municipal water supply wells. In a 9189 removal action by the Air Force, users of those wells with concentrations exceeding federal MCLs were provided an alternate water supply.

- Two landfilled areas (NDA and SDA), within the CRL were identified as the apparent sources of contamination.

- Soil-gas measurements indicate that volatile contaminants are present within the fill material.

The selected remedy for restoring contaminated groundwater consists of both source control and groundwater control actions. The source control was intended to minimize migration of contaminants from the fill material to the groundwater and to prevent direct exposure to contaminated subsurface soil and debris. The groundwater control actions are intended to prevent further migration of contaminated groundwater across the site boundary and to prevent consumption by area residents of groundwater which exceeds MCLs. The major components of the selected remedy include:

- Capping the northeast and southwest disposal areas at the landfill.
- Installing an active soil vapor extraction and treatment system in each capped area.
- Extracting contaminated groundwater from the upper aquifer at the landfill boundary and treating by air stripping and granular activated carbon; treated groundwater will be disposed of at a location downgradient of the CRL site.
- Monitoring off-site water supply wells within the off-site portion of the plume and providing point-of-use treatment and/or alternative water supply if needed in the future
- Monitoring groundwater in upper and lower aquifers
- Implementing institutional controls

III. Technical Analysis

The selected remedy identified in the ROD will be modified by deletion of the specified active SVE system for the CRL. The Air Force's proposal to delete this system has been agreed to by EPA and Ecology. The reasons for this modification are described in the ESD. The following provides a more detailed technical analysis supporting this decision.

The ROD stated that SVE is necessary "to actively remove volatile contaminants contained within the landfill...and satisfy the statutory preference for treatment". The basis for this determination was, in large measure, predicated on data discussed in the feasibility study (FS) prepared by SAIC (August 1992). The FS indicated that active vapor extraction, a proven long term solution, would remove contaminant sources throughout the life of the cap. Source estimates determined during the Remedial Investigation (RI) conducted by SAIC (April 1992), based on the results of soil gas surveys of the NDA and SDA landfill sites, indicated high concentrations of various volatile organic compounds (VOC). These soil gas measurements, however, were taken at a depth of three feet below the ground surface, which was generally located within the cap rather than the landfill. The soil cap had a mean depth of approximately 5.1 feet (standard deviation = 3.6 ft). Soil cap character ranged from silt/sand to silt and clays (RI,SAIC, April 1992). These findings, regarding cap construction, were partially confirmed during the soil vapor extraction treatability study (Engineering Science, November 1993). Engineering Science, however, measured gas phase concentrations at two

vapor extraction wells, which were screened well within the two landfill domains, and observed considerably lower soil gas values than reported by SAIC. Corrected average landfill air permeabilities, for the NDA and SDA sites, were calculated to be 52 and 67 darcys, respectively (Hoag & Grasso, 1994). The air permeability of the existing confining cap is expected to be much lower (0.1 to 1 darcys, Grasso, 1993) for the soil types described above. Based on the physics of gas phase VOC transport, lower concentrations are expected in the cap as compared to the landfill. However, the juxtaposition of the limited data reported by SAIC (1992) and Engineering Science (1993) indicates the reverse, i.e. higher cap concentrations as compared to the landfill gas. The lower landfill gas concentrations may be attributable to spatial (lateral and vertical) averaging and perhaps diffusion limitations within various strata in the landfill. This data indicates concentration heterogeneities within the landfills which would, most likely, compromise the efficacy of SVE system operation.

Landfills are generally quite heterogeneous and anisotropic, with varying moisture contents and perched water tables. SVE treatability study results indicate a significant depth related variation in subsurface vacuum measurements in a given borehole. For example, at steady state operation, (time = 1980 minutes) at vacuum monitoring point A (VMPA) at the NDA site (see Engineering Science, November 1993), the 15' and 27' depths had soil vacuum levels of 0.048" H_2O and 0.37" H_2O, respectively (i.e., nearly an order of magnitude difference). At VMPB borehole, the 5' 15' and 19.5' depths exhibited vacuum levels of 0.015" H_2O, 0.026" H_2O, and 0.2" H_2O, respectively. This clearly indicates that a layered physical heterogeneity exists. Similar data is reported for the SDA area. Implementation of an SVE system in these landfills would result in an advective air flow through the most pervious strata in the subsurface, remediating only a portion of the landfill. The remaining lower permeability strata would be diffusion limited and require significantly longer clean-up times, which would increase remediation costs.

Finally, although the ROD and the RI/FS consider remediation of the landfill sites as a source control approach, there is evidence that the major active source of groundwater contamination may not be the landfills. SVE treatability results identified the presence of approximately 30 different VOCs in the landfills (Engineering Science, November 1993). Of these compounds, approximately 21 were observed at significant concentrations (less than 100 ppbv). However, although TCE was observed at concentrations comparable to other contaminants in the landfill gas, only TCE was detected in groundwater samples in significant concentrations (ROD 1993). When comparing frequency of detection of contaminants in groundwater, TCE was observed in 48% of samples from all wells and 92% of samples from boundary wells (ROD, 1993). Other VOCs were detected at frequencies that ranged from 0.8 to 5.5% and 0 to 14% for all wells and boundary wells, respectively. Furthermore, although bis(2-ethylhexyl)phthalate was observed twice as frequently (14%) as the next closest compound in boundary wells, its occurrence may have been a result of laboratory or field contamination (ROD, 1993). Using a risk based criteria as determined by the State of Washington's Model Toxics Control Act, only the following groundwater compounds were identified in the remedial action objectives (RAO) for clean-up (ROD, 1993): TCE, 1,1-DCE, and vinyl chloride.

The frequency of observation of 1,1-DCE and vinyl chloride were 0.8% and 0 and 0.8% and 2.6% for all wells and boundary wells, respectively. Maximum observed concentrations for TCE, 1,1-DCE, and vinyl chloride were 2800, 2.0 and 0.8 ug/L, respectively. The detection limit range for these compounds were 0.12-2 ug/L (TCE), 0.13-2 ug/L (1,1-DCE), and 0.18-5 ug/L (vinyl chloride). The ROD states that "cleanup levels will be considered to be attained if these compounds are not detected above practical quantitation limits". Consequently, for two of the three compounds identified in the ROD, maximum observed concentrations were within the detection limit range. Moreover, 1,1-DCE and vinyl chloride are common degradation products of TCE, suggesting that these progeny species may have derived from subsurface transformations rather than migration from the landfill. TCE appears to exist in the landfill gas at concentrations comparable to other RAO VOCs (TCE = 3400 - 4900 ppbv; 1,1-DCE = 340-3300 ppbv; vinyl chloride = 1400 - 13000 ppbv, Engineering Science, 1993). Furthermore, air/water partitioning constants (log K_H ($\frac{atm * L}{mole}$):

TCE = 1.03; 1,1-DCE = 1.32 (calc.); vinyl chloride = 1.35, Schwarzenbach, et al., 1993, Verschueren, 1977) indicate that TCE, 1,1-DCE, and vinyl chloride should have similar aqueous concentrations in the landfill. However, since TCE should be less mobile than the other compounds (log K_{OW}: TCE = 2.24; 1,1-DCE = 1.70 (est); vinyl chloride = 0.60, Schwarzenbach, et al., 1993), the lack of significant presence of other RAO compounds in groundwater implies the existence of a TCE source other than the landfill, such as a dense non-aqueous liquid (DNAPL) pool(s). Removal of VOCs from the landfill would therefore be unlikely to significantly impact the source of groundwater contamination. Moreover, the proposed landfill cap and associated passive vapor recovery system to be installed at both the NDA and SDA sites will further minimize the potential migration of VOCs into the groundwater.

The heterogeneous nature of VOC distribution and landfill stratigraphy, coupled with evidence that the landfill may not be the direct active source of groundwater contamination indicates that elimination of active vapor extraction from the ROD is warranted.

IV. References

1. Engineering Science, Vapor Extraction System Letter Report-Final, November, 1993.
2. Grasso, D., Hazardous Waste Site Remediation: Source Control, Lewis Publishers, 1993.
3. Hoag & Grasso, Groundwater Extraction, Treatment, Infiltration, Cap and Vapor Extraction System - Craig Road Landfill (CRL) Fairchild Air Force Base - Sixty (60) Percent Design Review Comments - Letter Report, 1994.
4. Record of Decision, Craig Road Landfill.
5. SAIC, Remedial Investigation Report, Craig Road Landfill, April 1992.
6. SAIC, Feasibility Study Report, Craig Road Landfill, August 1992.
7. Schwarzenbach, R., Gschwend, P., Imboden, D., Environmental Organic Chemistry, Wiley-Inter Science, 1993.
8. Verschueren. K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand Reinhold, 1977.

EXPLANATION OF SIGNIFICANT DIFFERENCES
Concurrence

Site Name: Fairchild AFB - Craig Road Landfill

INITIAL					RFS	CC
NAME	Grandinetti	Psyk	Oesterle	Gearheard	Smith	Clarke
DATE	11-21-94	11/21/94	11/22/94	12-5-94	11/22/94	12/5/94
	RPM	Sec. Chief	ORC	Br. Chief	Div. Dir.	RA