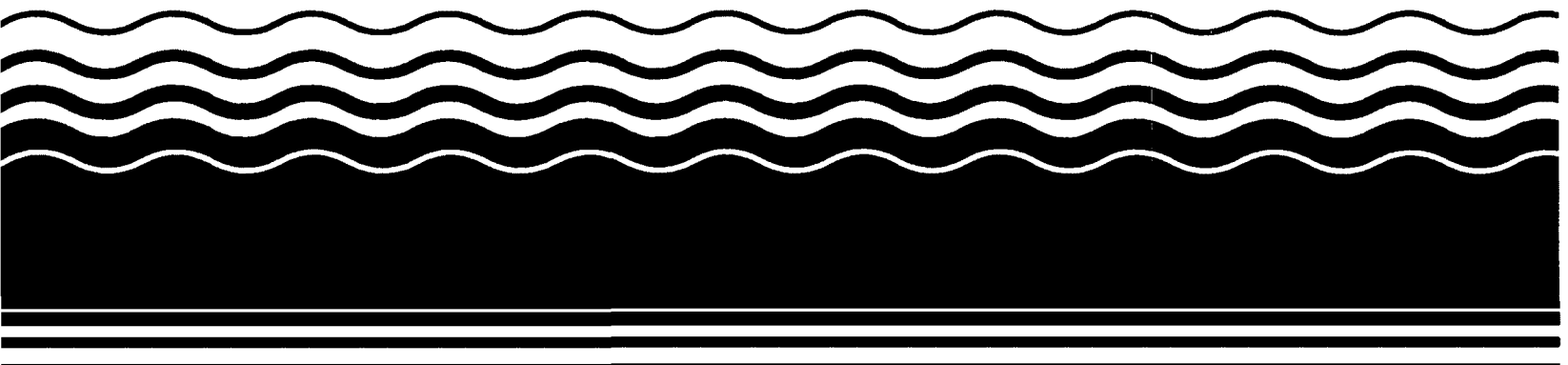


**PB95-963134
EPA/ESD/R10-94/106
March 1995**

**EPA Superfund
Explanation of Significant Difference
for the Record of Decision:**

**McChord Air Force Base,
Washrack Treatment Area,
Tacoma, WA
7/19/1994**



EXPLANATION OF SIGNIFICANT DIFFERENCE FOR THE WASHRACK TREATMENT AREA OF MCCHORD AFB

INTRODUCTION

This document presents an Explanation of Significant Difference (ESD) from the Record of Decision (ROD) for the Washrack Treatment Area (WTA) at McChord Air Force Base. The ROD was signed by the U.S. Air Force, U.S. Environmental Protection Agency and the Washington State Department of Ecology.

Site Name and Location:

McChord Air Force Base, WTA, Site 54
Pierce County, Washington

The McChord Air Force Base (AFB) Washrack Treatment Area was listed on the National Priorities List (NPL) in 1987 under the Comprehensive Environmental Response, Compensation, and Liabilities Act of 1980 (CERCLA or Superfund) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). The lead agency for the WTA is the U.S. Air Force. The U. S. EPA, Region 10 and the Washington State Department of Ecology (WDOE) signed a Federal Facility Agreement (FFA) under Section 120 of CERCLA on August 23, 1989. All three agencies support the need for this ESD and participated jointly in the decision and the preparation of this document.

This ESD, prepared in accordance with Section 117(c) of CERCLA and 40 CFR 300.435(c)(2)(i), is necessary to document the modifications to the selected remedy outlined in the ROD. The differences between the selected remedy in the ROD and the ESD are described below.

The selected remedy for the WTA addressed the potential risks posed by fuel-related contaminants in the groundwater by reducing site contamination to levels that are protective of human health and the environment. The major components of the selected remedy under CERCLA included:

1. Installation of one or more extraction trenches capable of capturing the floating fuel in the unconfined aquifer.

2. Installation of on-site collection systems to contain fuel removed from extraction trench.
3. Monitoring of the groundwater and the floating-fuel extraction/collection system during fuel removal activities to ensure that groundwater remediation levels are achieved throughout the site.
4. Construction of soil piles on a low permeability surface for bioremediation of the contaminated soil excavated during trench construction.
5. Backfilling excavated trench with remediated soil after fuel removal is complete.
6. Implementation of administrative and institutional controls, such as restrictive covenants and McChord Air Force Base command directives, that supplement engineering controls and minimize exposure to releases of hazardous substances during remediation.

Additionally, section IV of the ROD and the Proposed Plan stated that the groundwater will be monitored during and following groundwater remediation activities to evaluate the need for remediation of the residual fuel in the soil above the floating fuel layer. Until the floating fuel is removed, it cannot be determined that the soil is acting as a secondary source of contamination to the groundwater. If monitoring shows that subsurface soil remediation is necessary, further investigation and development of alternatives will be required at that time.

This ESD makes changes to the first two components of the selected remedy. During design only one trench was installed and it was not necessary to install an on-site collection system to contain the fuel. The 90-day pilot test conducted during remedial design, showed that passive fuel recovery is not appropriate because the thickness of the floating fuel layer was significantly less than anticipated. It was also determined during design that the subsurface soils will not act as a major secondary source of contamination to the groundwater.

This and other relevant documents will become part of the administrative Record file pursuant to Section 300.825(a)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Copies of this ESD and the Administrative Record are available to the public at the specific information repositories listed below.

McChord AFB Library
Building no. 765
62 CSG/SS1
McChord AFB, WA 98438-1325

Pierce County Library
Lakewood Branch
6300 Wildaire Road S.W.
Lakewood, WA 98499

I. Summary of Site History, Contamination Problems

McChord AFB occupies an area of about 4,600 acres in Pierce County, Washington. The WTA is within the north industrial portion of the base along the western portion of the instrument runway and in the industrial and operational activity areas associated with aircraft maintenance and flight operation (See Figure 1). The WTA is an area where airplanes were washed and drained of fuel. The study area is defined by the Air Force as encompassing the grassy area between Air Mobility Command (AMC) Ramp C and Ramp D and includes a number of buildings. The C and D ramps are large paved parking areas for aircraft (See Figure 2).

The WTA is designated by the Air Force as Installation Restoration Program (IRP) Sites 54 and 60. The former washrack designated as Site 54 was located on a paved apron used for aircraft washing and maintenance and was reported to have received solvents, alkaline-based detergents, paint removers, and corrosion-removing compounds (Ebasco 1992). However, a remedial investigation (RI) did not discover significant contamination at Site 54. At the request of the WDOE, two wells downgradient of the former leach pits will be monitored, via semi-annual sampling to insure that the low level of contamination at Site 54 is not migrating off site.

Site 60 of the WTA is defined as the area including a former leach pit and former storm drainage infiltration ditches located near the current jet engine test cell facility. In 1983, floating fuel was detected in wells northwest of the washrack and former leach pit locations during a Phase II IRP investigation.

In 1984 the EPA nominated Site 54 for inclusion on the NPL. It was placed on the NPL in 1987. During scoping of the RI, however, Site 60 and its associated fuel were included in the investigation due to the potential for commingled plumes with Site 54. Currently, the floating fuel near Site 60 is the primary focus of the remedial efforts at the WTA.

The Remedial Investigation (RI) (1992) characterized the nature and extent of contamination in the groundwater, soil, surface water and sediments. The RI also evaluated the nature and extent of the floating fuel layer within the site. The Human Health Risk Assessment (1992) and the Ecological Risk Assessment (1991) evaluated potential effects of the contamination on human health and the environment. The Feasibility Study (FS) (1992) evaluated alternatives for remediation of contamination.

Results from the RI and the Baseline Risk Assessment indicate that no CERCLA remedial action is necessary for soil, surface water, or sediments to ensure protection of human health or the environment. However, the remedial investigation did indicate benzene

contamination of the shallow unconfined aquifer as a result of the floating fuel. The benzene concentrations slightly exceeded health-based levels and/or maximum contaminant level (MCLs).

The Human Health Risk Assessment considered the risks to human health from exposure to contaminants in soils, surface water, sediment, and air for current and on- and off-site populations, which included off-site residents and recreational visitors, and onsite long and short-term workers. The risk assessment identified no unacceptable risks to human health from exposure to soils. According to the risk assessment conducted at this site, an excess lifetime cancer risk was in the range of 1×10^{-5} .

The risk assessment also concluded that groundwater does not pose any risk to current onsite residents because the drinking water on base is pumped from deeper groundwater aquifers which are safe for drinking. Off-site residents are not at risk because the contamination has not been shown to migrate off site. The risk to groundwater in a future residential scenario as the result of benzene contamination is 1.29×10^{-5} . This risk range could warrant consideration for no further action. However, the Air Force, EPA and the WDOE proposed to address the groundwater because benzene was detected at levels slightly above the maximum contaminant levels (MCLs) of 5 parts per billion.

The selected alternative for removal of the floating fuel layers was Passive Fuel Removal/Treatment of Fuel combined with Institutional Controls and Monitoring. This remedy would allow for the recovery of fuel without generating groundwater that would require treatment. Implementation of this remedy was projected to reduce the baseline risks from 1.29×10^{-5} to residual risks of 8.5×10^{-6} .

The Feasibility Study (FS) also evaluated five remedial alternatives for the fuel contaminated soils above the floating fuel. The FS evaluated: 1) No Action, 2) Institutional Controls, 3) Containment, 4) In Situ Bioremediation of soil, 5) Excavation/Treatment/Disposal of the Soil. The No Action alternative was recommended as the best alternative for the soil above the floating fuel in the proposed plan. It was concluded, that until the floating fuel is removed, it cannot be determined if the soil above the fuel layer is acting as a secondary source of groundwater contamination. If monitoring showed that subsurface soil remediation is necessary, further investigation and development of alternatives would be required at that time.

II. Description of the Significant Differences and the Basis for those Differences

The rationale for writing the ESD is that the original remedial action specified in the ROD (September 30, 1992) -- passive removal of the floating fuel from the water table to permanently remove the hydrocarbons -- has been implemented to the physical extent that is possible. Upon implementation of the remedial action specified in the ROD, it was found that the volume of floating fuel was overestimated. Recent investigations performed in a 90-day pilot test revealed

the relatively small volume of fuel. In the ROD, the floating fuel was identified as underlying an area approximately 300,000 ft². Originally, the thickness of the layer was estimated to range from 0.065 to 0.58 feet. During design the fuel layer was determined to be less than 0.1 feet; and it is primarily an oily emulsion rather than a true immiscible liquid.

A test trench was installed at the WTA to gauge the ability for fuel recovery and fuel was not observed in the trench. Passive recovery was found to be limited to two wells where recovery is occurring on a regular basis (semi-monthly) and will continue until fuel fails to recharge in recoverable quantities. Currently, only a fraction of a gallon per month per well of non-aqueous phase liquid (NAPL) is being recovered from two wells (CR-01 and CR-02) as shown in Figures 3. Results also show that groundwater contaminant concentrations immediately downgradient of the fuel layer do not exceed the remedial action objectives, which are:

<u>Contaminant</u>	<u>Remediation Level</u>	<u>Basis</u>
Benzene	5ppb	MCL
Toluene	1000ppb	MCL
Ethylbenzene	700ppb	MCL
Xylene	10,000ppb	MCL
TPH	1000ppb	MTCA Method A
Lead	11ppb	Background

Groundwater sampled directly under the fuel contains hydrocarbon constituents which slightly exceed the remedial action objectives of benzene but it must be clarified that this sample was taken directly under (within inches) of the fuel layer and that samples a few more inches away from the fuel layer and samples downgradient in the groundwater do not exceed the remedial action objectives.

It was also determined in the pilot study that natural biodegradation and volatilization is occurring by a healthy population of hydrocarbon degrading bacteria in the soils. Stimulation of the growth of petroleum-degrading bacteria by bioventing appears feasible only in the upper unsaturated portion of the smear zone. However, bioventing would not be immediately successful in the deeper smear zone soils because they are saturated most of the year and contain concentrations of volatile hydrocarbons which are toxic to bacteria.

In order for bioventing to be feasible in the lower smear zone, dewatering and vapor extraction would be necessary. Dewatering is impractical, in that dewatering would increase the depth of the smear zone at the site. An estimation of the capital cost for bioventing with air sparging is \$1.73 million. Operation and maintenance costs are estimated at \$1.109 million for five years. This costly remedial action is not deemed warranted given the limited risks, due to the subsurface soils acting as a secondary source of contamination.

The Air Force, EPA and WDOE agreed that a combination of natural attenuation with long-term groundwater monitoring is appropriate, given the low risk the soils present. Long term monitoring will provide data to demonstrate the progress of natural attenuation to decide whether any additional remedial actions would be necessary in the future.

Sampling procedures to do this and to insure that one is collecting samples in the groundwater and not from the hydrocarbon layer on top of the water table will be followed. The use of specific monitor wells, installation of any additional wells, water quality parameters, sampling frequencies and duration and compliance boundaries will be negotiated separately and incorporated into the sampling plan for the WTA.

III. Affirmation of the Statutory Determinations

The modified remedy continues to satisfy the requirements of CERCLA section 121. Considering the new information gathered in the 90-day pilot study performed by the U. S. Air Force's contractor, all parties believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action at the time the original ROD was signed and is also cost-effective with regard to the risk imposed. In addition, the revised remedy utilizes permanent solutions and treatment technology to the maximum extent practicable for this site.

IV. Public Participation

Notice has been issued that the contents of the Administrative Record File are available for public review and comment as previously stated at both the McChord AFB and Lakewood Public libraries. This Explanation of Significant Difference (ESD) will become part of the Administrative Record File (NCP 300.825(a)(2)). This ESD has been published and a notice placed in the Tacoma Tribune (Tacoma) and the Lakewood Journal (Lakewood) notifying the public that the ESD and content of the Administrative Record are available for public review. In addition, the Record of Decision, the Remedial Investigation and Feasibility Study, as well as, the final pilot study, NAPL Recovery Test/Design Consideration, McChord AFB, Washrack/Treatment Area, are available at the information repositories.

Implementation of this action will begin approximately 30 days after issuance of this ESD. This ESD does not represent a fundamental change in scope or purpose of the original ROD. Hence, a formal comment period will not be conducted. Consistent with the NCP Section 300.435 (c)(2)(i), this ESD has been placed into the following papers:

Tacoma Tribune (Tacoma) and the Lakewood Journal (Lakewood)

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

Odette Hughes
McChord AFB
Environmental Management Flight, Public Relations
555 A Street
McChord AFB, WA 98438-1325
(206) 984-3913

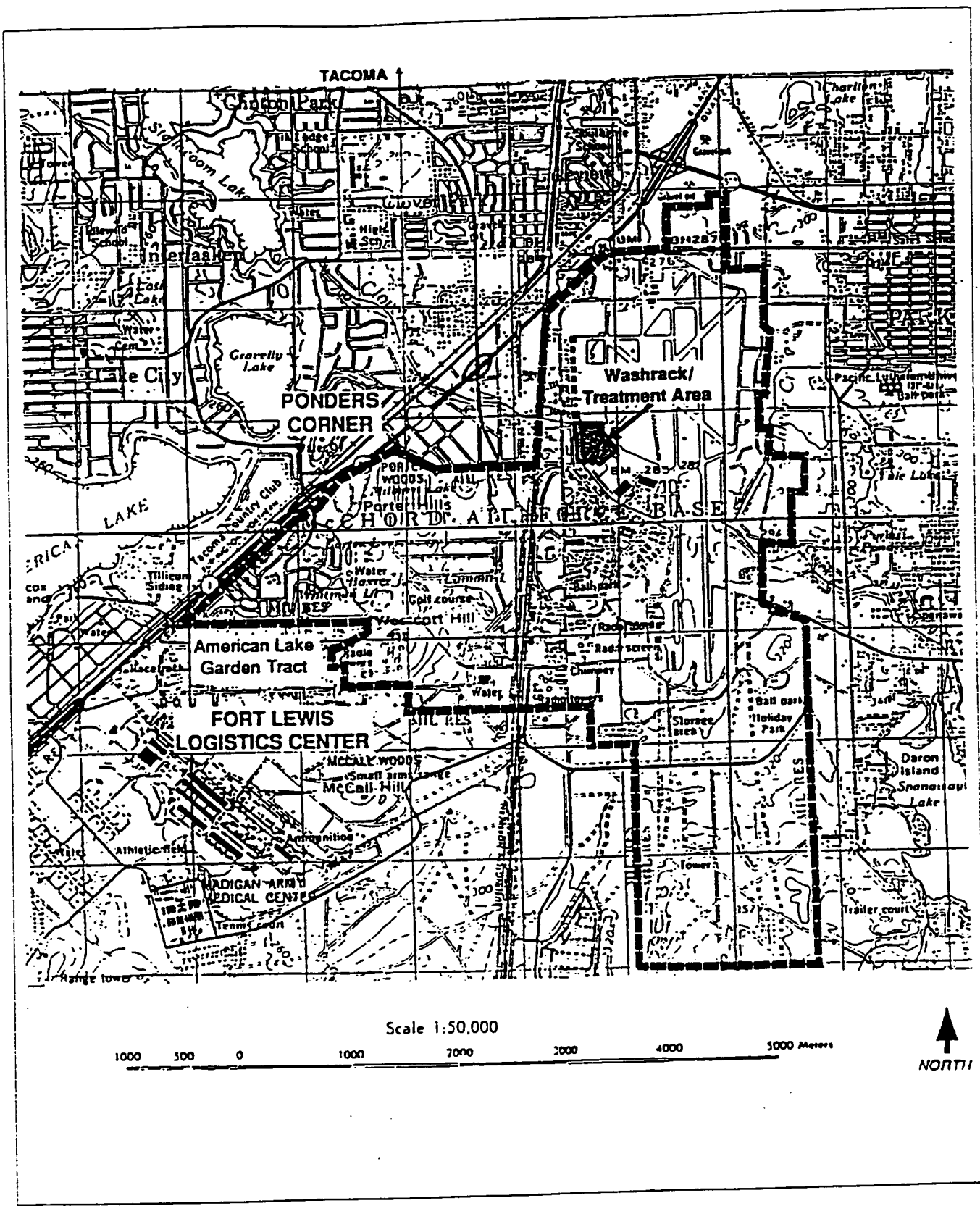
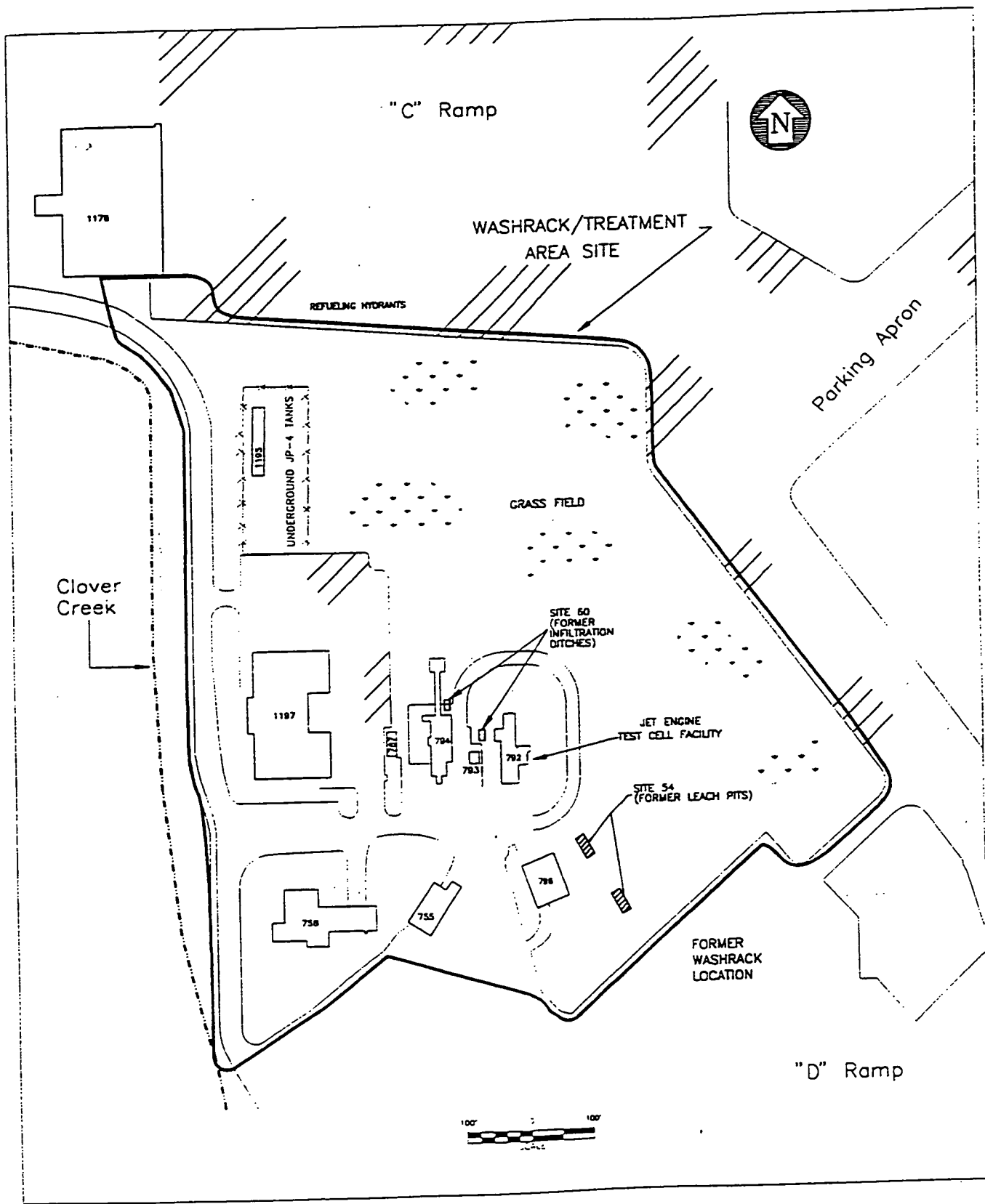
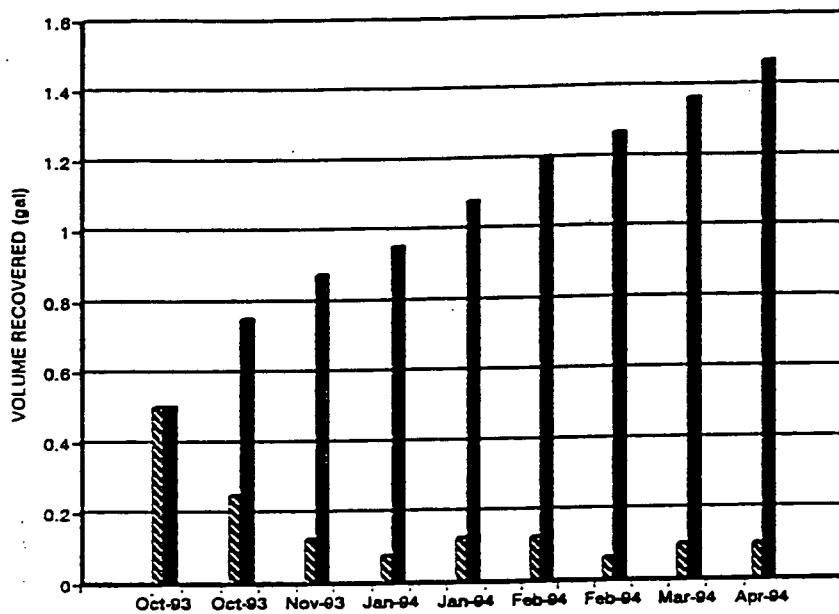


Figure 1: Location Map McChord Air Force Base
Washrack/Treatment Area Pilot Recovery Study



**Figure 2: Site Map McChord Air Force Base
Washrack/Treatment Area**

Well CR-01



Well CR-02

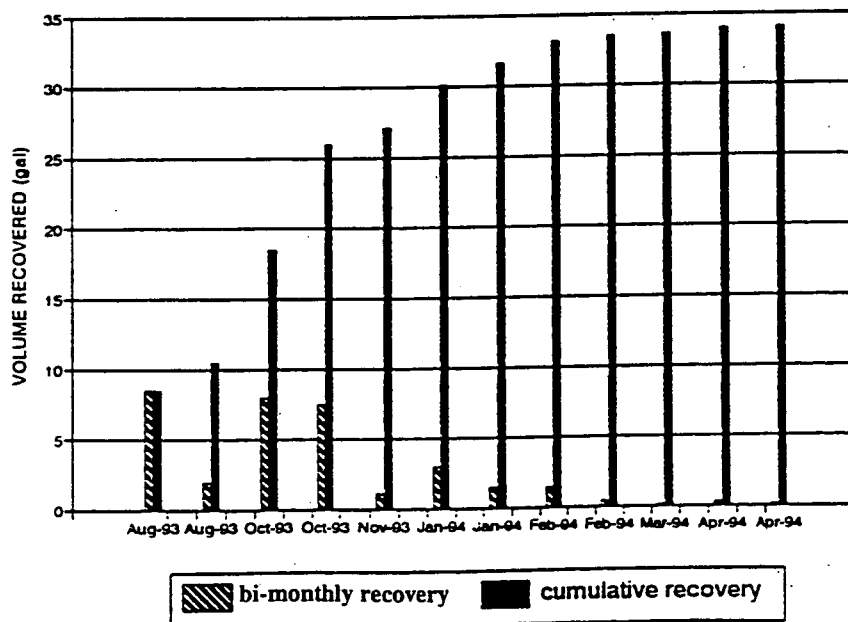


Figure 3: Bi-monthly and cumulative free product recovery McChord Air Force Base Washrack/Treatment Area Pilot Recovery Test

EXPLANATION OF SIGNIFICANT DIFFERENCES
Concurrence

Site Name: McChord AFB Washrack Treatment Plant

INITIAL	<i>smj</i>	<i>C.P.</i>	<i>JOO</i>	<i>HA</i>	<i>RS</i>	<i>Em</i>
NAME	Jennings	Psyk	Oesterle	Hofer	Smith	Emison
DATE	6/20/94	6/21/94	6/22/94	6/22/94	6/22/94	