
FINAL PROPOSED PLAN TO ADDRESS ZONE E, OPERABLE UNIT 6, OPEN BURN/OPEN DETONATION AND SPILL SITES 1, 3, 5, AND 6 F. E. WARREN AIR FORCE BASE, WYOMING

OVERVIEW OF THE PROPOSED PLAN

The United States Air Force (USAF) has developed this Proposed Plan for groundwater at Spill Sites 1, 3, 5, and 6, and soil and groundwater at the Open Burn/Open Detonation Area located on F. E. Warren AFB. The results of remedial investigations and associated risk assessments concluded that the contaminants remaining at these sites pose no unacceptable risks to human health or the environment. Therefore, no action is required or proposed for these sites. This Proposed Plan also describes the rationale for this determination.

This document is issued by the USAF in conjunction with the United States Environmental Protection Agency (EPA) and Wyoming Department of Environmental Quality (WDEQ). The USAF and the EPA, along with the WDEQ, will select a final remedy for the site after reviewing and considering all of the information submitted during the public comment period. The USAF and EPA may modify the preferred alternative or select another response action based on new information or public comments.

Your comments: Written comments on this Proposed Plan are welcome during the comment period and oral comments are welcome at the public meeting, which will be held on August 24, 2004. Your comments will be considered when making the decision on the final response action for these sites.

INTRODUCTION

The USAF has prepared this Proposed Plan in accordance with Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and as part of its public participation responsibilities under Section 300.430(f)(3). The USAF is the lead agency, with the EPA as the lead regulatory agency and WDEQ as the support agency.

The Proposed Plan summarizes information that can be found in greater detail in the *Spill Sites 1, 3, 5, and 6, and Open Burn/Open Detonation Area Remedial Investigation Report*, as well as other documents contained in the Information Repository for these sites.

PUBLIC MEETING

August 24, 2004
7:00 p.m.

Little America Hotel and Resort
Regency Room
2800 West Lincolnway
Cheyenne, Wyoming 82001

PUBLIC COMMENT PERIOD August 9, 2004 to September 8, 2004

For more information, see the Information Repository at the following location:

Laramie County Library
2800 Central Avenue
Cheyenne, WY 82001
(307) 634-3561
Hours: Monday-Thursday
10:00 a.m. - 9:00 p.m.
Hours: Friday-Saturday
10:00 a.m. - 6:00 p.m.

The USAF, EPA, and WDEQ encourage the public to review these documents to gain a more complete understanding of the sites and Superfund activities.

The Information Repository for F. E. Warren is located at the Laramie County Library in Cheyenne, Wyoming.

BACKGROUND

F. E. Warren AFB is located on 5,866 acres adjacent to the western city limits of Cheyenne (Figure 1). F. E. Warren was placed on the EPA's National Priorities List (NPL) in February 1990. As a result, F. E. Warren entered into a Federal Facilities Agreement (FFA), which presently includes 20 sites. The sites are divided into a system of 13 Operable Units and seven investigation zones, one of which is Zone E. Spill Sites 1, 3, 5, and 6, and the Open Burn/Open

Detonation Area are all located in Operable Unit 6 and Zone E (Figure 2).

Based on the findings of the Operable Unit 1 (OU1) RI conducted in 1992, a "No Action" Record of Decision (ROD) for soils at Spill Sites 1 through 7 was issued in 1995. The 1995 ROD also directed that evaluation of the groundwater at these sites would be included in Operable Unit 2. By agreement among the Air Force, EPA and WDEQ, the groundwater at Spill Sites 1, 3, 5 and 6 was further moved to Operable Unit 6 in order to expedite site cleanup decisions.

GROUNDWATER CLASSIFICATIONS: Groundwater beneath FEW has not been formally classified by the Wyoming Department of Environmental Quality for a specific use. However, groundwater immediately off-base is used for drinking water and agriculture.

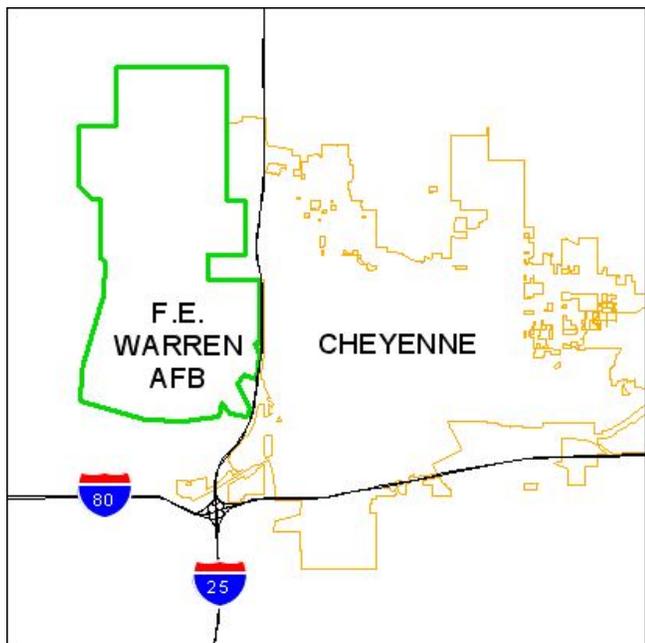


FIGURE 1. F. E. WARREN AFB LOCATION MAP

SPILL SITE 1

The source of contamination at Spill Site 1 was leaking gasoline underground storage tanks (USTs) and leaks from aboveground and underground waste-oil storage tanks at the Base gasoline service station. The leaking USTs were replaced and the waste-oil storage tanks were removed in 1989. Construction of a new Base service station was completed in the summer of 2003. The old structure was demolished following completion of the new facility.

Early investigations indicated that both soil and groundwater at Spill Site 1 contained elevated levels of petroleum hydrocarbons as a result of past releases from the service station's storage tanks. The WDEQ Leaking Aboveground and Underground Storage Tanks (LAUST) registration program will perform clean up activities where registered USTs have leaked. Since the tanks at the Base service station are registered in this program, the WDEQ has agreed to assume responsibility for evaluating and remediating the petroleum hydrocarbon contamination at Spill Site 1. Therefore, hydrocarbon contamination was not fully delineated or evaluated in the remedial investigation (RI). However, to determine if the hydrocarbon contamination was commingled with other Comprehensive Environmental Restoration, Compensation and Liability Act (CERCLA) wastes, chlorinated organic compounds and metals were evaluated.

SITE CHARACTERISTICS

The USAF, with the support of the EPA and the WDEQ, continued the investigation of Spill Site 1 groundwater in 2001 and 2002 as part of the Zone E RI. Characterization of the nature and extent of contamination incorporated information concerning potential contaminant sources, physical site characteristics, and analytical sample results. Eleven new groundwater-monitoring wells were installed and, along with the existing wells, were sampled in 2001 and 2002. The results of the investigation are provided in the RI report and are summarized below.

The area around Spill Site 1 is generally flat with a slight drop in elevation toward the south-southeast. Most of the area is paved with asphalt that is crowned so that storm water is directed toward the perimeter of the pavement.

Soil consisting of interbedded clay, silt, sand, and gravel range in depth from 6 to 9 feet and overlay the Ogallala Formation. The depth to groundwater at Spill Site 1 ranges from approximately 6 to 18.6 feet below ground surface (bgs).

During the RI efforts, no chlorinated volatile organic compounds (VOCs) were detected at concentrations above maximum contaminant levels (MCLs) in the groundwater at Spill Site 1. However, carbon tetrachloride was detected at low concentrations in groundwater to the west and south of Spill Site 1. The investigations concluded that, although the source of carbon tetrachloride contamination is unknown, it is not attributed to Base service station activities.

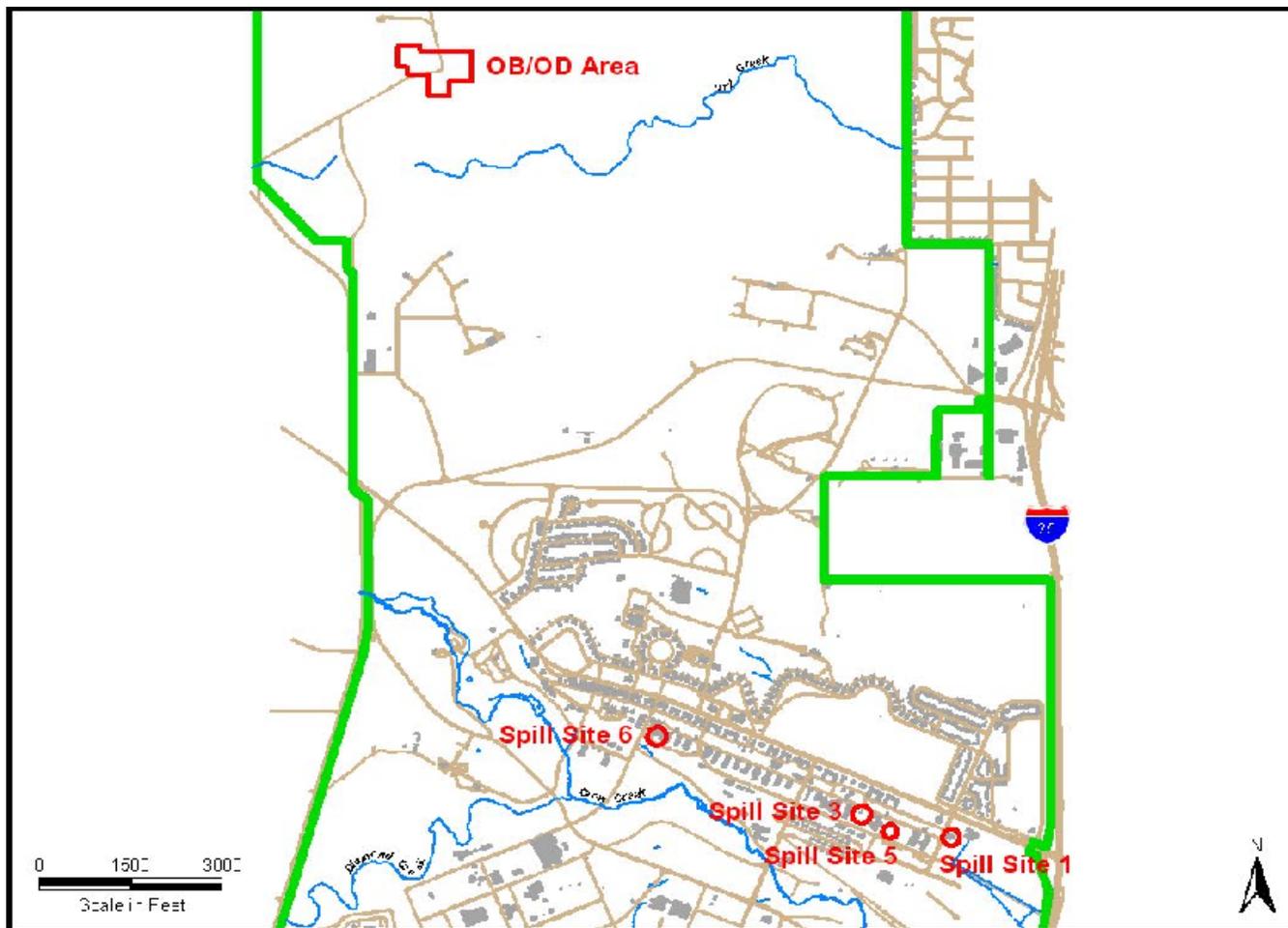


FIGURE 2. SPILL SITES 1, 3, 5, AND 6, AND OPEN BURN/OPEN DETONATION SITE MAP

Therefore, further investigation of carbon tetrachloride contamination will be performed under a separate Supplemental Site Inspection (SSI) to assess its source and extent.

Iron and manganese were detected at concentrations above their respective secondary MCLs and WDEQ groundwater standards. These increased concentrations are attributed to the process of organisms metabolizing petroleum hydrocarbons and using naturally occurring iron and manganese in the soil as electron acceptors. This conclusion is further supported by the fact that the concentrations of iron and manganese reduce to background levels outside the hydrocarbon plume. Because the elevated concentrations of iron and manganese are associated with a hydrocarbon plume these metals will be addressed by WDEQ under its LAUST Program.

Although concentrations of aluminum exceeded the established secondary MCL, the exceedances occurred only in samples with high turbidity and are not attributable to activities at Spill Site 1. Concentrations of other inorganic compounds, such as arsenic, are similar to the range of concentrations observed within the Wyoming region and are therefore not attributed to releases from Spill Site 1.

Soil analytical data collected in 1992 during the OU1 RI as well as data collected in 2001 were used to assess the potential for contaminants to leach to groundwater through comparison to site-specific soil screening levels (SSLs). Tetrachloroethene (PCE) was the only chlorinated VOC detected in soil during the OU1 RI. The average and maximum concentrations of PCE in soil were below Soil Screening Levels (SSLs). Based on this comparison, the potential for soil at Spill Site 1 to act as a continuing source of chlorinated VOCs is unlikely.

SUMMARY OF SITE RISKS

A human health risk assessment (HHRA) was performed for Spill Site 1 to evaluate the potential current and future risks associated with exposure to contaminants of concern in groundwater (excluding petroleum hydrocarbons, which will be further investigated under the WDEQ LAUST program). An ecological risk assessment (ERA) was not completed because no complete exposure pathways exist for ecological receptors to groundwater.

The current land use and reasonably foreseeable future land use for Spill Site 1 is industrial. However, in order to determine if land use controls would be needed, in the unlikely event that the land uses changed in the future, the residential risk exposure scenario for children and adults was run as well as the industrial exposure scenarios for onsite workers and construction workers.

Using these as assumed exposures; the assessment indicates that there are no unacceptable risks of exposure to contaminants of potential concern (COPCs) at Spill Site 1 for industrial workers. The risk assessment determined the risk for the hypothetical resident exposed to COPCs exhibiting cancer effects was within EPA's target risk range, but exceeds the lower end of the range. The calculated risk also exceeds the target hazard index (HI) for COPCs exhibiting non-cancer effects. Arsenic is the primary cancer risk driver, however the total concentrations at Spill Site 1 are below MCLs and are within the range of regional concentrations for Wyoming. Therefore, arsenic is not attributed to releases from Spill Site 1. The primary non-cancer risk driver is manganese, which, as mentioned earlier, is associated with biodegradation of petroleum hydrocarbons. As the WDEQ completes their restoration of the petroleum hydrocarbon groundwater plume, manganese concentrations are also expected to decrease.

PREFERRED ALTERNATIVE

The USAF, EPA and WDEQ have determined that the conditions at Spill Site 1 pose no current or potential threat to human health or the environment. Petroleum hydrocarbons and associated contamination will be further investigated by WDEQ under their LAUST Program.

The source of carbon tetrachloride contamination identified to the west and south of Spill Site 1 will be evaluated under a separate SSI.

Based on the above, no remedial action objectives (RAOs) are necessary for contaminants remaining at

Spill Site 1. Accordingly, no action is necessary at Spill Site 1.

SPILL SITE 3

Spill Site 3 was formerly a disposal site for used battery acid. The two acid dry wells no longer exist on the site and there is no evidence of continued material handling and disposal that were previously undertaken at the site.

SITE CHARACTERISTICS

Spill Site 3 is currently a paved parking lot on the west side of Building 338. Soil at Spill Site 3 is comprised of interbedded clay, silt, sand, and gravel that range in thickness from 15 to 20 feet. The soil overlies the Ogallala Formation. The depth to groundwater ranges from approximately 7 to 10 feet bgs.

SUMMARY OF SITE RISKS

Spill Site 3 was investigated in 1999 to assess the potential presence of contaminated groundwater as well as to determine the potential for any contaminants in the soil to affect groundwater. No contaminants were detected at concentrations above MCLs or WDEQ groundwater standards. Therefore, the groundwater investigation concluded that concentrations of contaminants in groundwater did not pose a threat to human health and the environment. Because no COPCs were identified, no risk assessment for exposure to Spill Site 3 groundwater was conducted. In addition, the contaminants detected in soil are naturally occurring and are not leaching to groundwater at unacceptable concentrations. The 1999 investigation recommended no further action for Spill Site 3; but the decision was deferred in order to combine it with the other sites within Zone E.

During the 2003 RI, the 1999 data was again evaluated and the same conclusions were reached. Therefore, no risk assessment was performed for Spill Site 3 as part of the 2003 RI.

PREFERRED ALTERNATIVE

The USAF, EPA and WDEQ have determined that the conditions at Spill Site 3 pose no current or potential threat to human health or the environment. Results of the RI indicate that contaminants remaining at the site are at very low levels and pose no unacceptable risks. The contaminants detected in soil are naturally occurring and are not leaching to groundwater at unacceptable concentrations. Therefore, no action is required for protection of human health and the environment at Spill Site 3.

SPILL SITE 5

The Spill Site 5 area was used for temporary storage of wastes generated from Base shops. The site included two 200-gallon tanks for used oil and antifreeze; and several 55-gallon drums for used and clean oil.

SITE CHARACTERISTICS

The area around Spill Site 5 is presently enclosed with a 6-foot chain-link fence and paved with asphalt. Wastes are no longer stored at this location and all storage facilities have been removed. A concrete pad with containment berms still exists. The area gently slopes to the south near the spill site with very minimal elevation change. Soil comprised of interbedded clay, silt, sand, and gravel range in thickness from 10 to 13 feet. The soil overlies the Ogallala Formation at Spill Site 5. The depth to groundwater ranges from approximately 8 to 16 feet bgs.

RI activities included installing three additional monitoring wells and collecting one round of groundwater samples in 2001, a second round of groundwater samples in 2002, and soil samples in 2003. Organic compounds including TCE were detected in groundwater in low concentrations during 2001 and 2002. Carbon tetrachloride was the only organic contaminant detected above its MCL or WDEQ groundwater standard during the 2001 sampling event, but was less than the MCL during the 2002 sampling event. The concentrations of organic compounds in groundwater have generally shown a decreasing trend since 1987. In addition, comparison to site-specific soil screening levels (SSLs) indicates that the potential for residual soil contamination to leach into the groundwater at unacceptable concentrations is unlikely. The surface of Spill Site 5 has been paved since 1985, further limiting the infiltration of surface water and, thereby, the potential for contaminants to be leached to groundwater.

SUMMARY OF SITE RISKS

A HHRA was performed for Spill Site 5 to evaluate the potential current and future risks associated with exposure to groundwater at the site. An ERA was not completed because there are no complete exposure pathways for ecological receptors to groundwater.

The current land use and reasonably foreseeable future land use for Spill Site 5 is industrial. However, in order to determine if institutional controls would be needed, in the unlikely event that the land uses changed in the future, the residential risk exposure

scenario for children and adults was run as well as the industrial exposure scenarios for onsite workers and construction workers.

Carbon tetrachloride and TCE were identified as COPCs in groundwater. The HHRA determined the risk for the hypothetical resident exposed to groundwater was within EPA's target risk range, but exceeds the lower end of the range. However, these already low concentrations of the COPCs have been decreasing over the past several years.

The evaluation of the potential for VOCs in groundwater to migrate into indoor air indicates that site carbon tetrachloride groundwater concentrations exceed the Resource Conservation and Recovery Act (RCRA) environmental indicator (EI) target concentration for vapor intrusion. However, the EI uses a conservative default depth to contaminated groundwater of 10-15 feet below ground surface. The maximum groundwater concentration used to determine the EI for Spill Site 5 was collected at approximately 50 feet below ground surface. Lower concentrations of carbon tetrachloride in shallow groundwater did not exceed the RCRA EI target. TCE concentrations did not exceed the RCRA EI target. Therefore, under current and likely future land uses, the potential for indoor air exposure is very limited. No institutional controls are necessary for protection of future residents.

PREFERRED ALTERNATIVE

The USAF, EPA and WDEQ have determined that the conditions at Spill Site 5 pose no current or potential future threat to human health or the environment. No unacceptable risks to human health and the environment were identified during the site risk assessment. Although the RCRA EI for indoor air was exceeded for carbon tetrachloride, concentrations of this contaminant in shallower groundwater are not at levels that would cause an exceedance. Contaminants in the soil are not presently leaching to the groundwater and SSL comparisons indicate that the potential for future leaching is unlikely. Therefore, no action is necessary at Spill Site 5.

SPILL SITE 6

Spill Site 6 was a waste accumulation point consisting of 55-gallon drums for temporary storage of used oil and antifreeze generated from Base shops. A diesel tank (removed in 1990) was also present at the site. The site was also historically used as a radiator cleaning area. Wastes were typically disposed offsite, but numerous oil spills have been reported and battery acid was discarded to the surface soil

through 1982. A clean soil cover was applied to the site in the early-to-mid 1980s to prevent direct contact with stained soil areas.

SITE CHARACTERISTICS

Spill Site 6 is located between and south of buildings 315 and 316. The area between the buildings is enclosed by a 6-foot chain-link fence. The railroad runs east and west just south of the site. South of the railroad, the land surface drops away suddenly to the floodplain of Crow Creek, which is located approximately 1,000 feet south of Spill Site 6.

Soil comprised of interbedded clay, silt, sand, and gravel range in thickness from 8 to 11 feet. The soil overlies the Ogallala Formation at Spill Site 6. The depth to groundwater ranges from approximately 13 to 16 feet bgs.

Zone E RI activities at Spill Site 6 were limited to collection of groundwater samples from the existing network of onsite monitoring wells. Previous investigations suggested a low potential for groundwater contamination at Spill Site 6.

Characterization of the nature and extent of contamination incorporated information concerning potential contaminant sources, physical site characteristics, and analytical sample results. In groundwater, no organic contaminants were observed at concentrations above MCLs or WDEQ groundwater standards. Concentrations of inorganic compounds are comparable to the range of concentrations detected elsewhere on base and are not attributed to potential releases from Spill Site 6.

SUMMARY OF SITE RISKS

A HHRA was performed for Spill Site 6 to evaluate the potential current and future risks associated with exposure to groundwater at the site. An ERA was not completed because there are no exposure pathways for ecological receptors to groundwater.

The current land use and reasonably foreseeable future land use for Spill Site 6 is industrial. However, in order to determine if land use controls would be needed, in the unlikely event that the land uses changed in the future, the residential risk exposure scenario for children and adults was run as well as the industrial exposure scenarios for onsite workers and construction workers.

TCE was the only COPC identified in groundwater. The HHRA determined there are no unacceptable risks to human health posed by TCE. The concentrations of organic contaminants in groundwater are

also below the RCRA EI target groundwater concentrations for vapor intrusion.

PREFERRED ALTERNATIVE

The USAF, EPA and WDEQ have determined that the conditions at Spill Site 6 pose no current or potential threat to human health or the environment. No unacceptable risks were identified during the site risk assessment and no site related inorganic contaminants were identified in the soil during the RI. The concentrations of organic contaminants in groundwater are below the RCRA EI target groundwater concentrations for vapor intrusion. Therefore, no further action is required for Spill Site 6.

OPEN BURN/OPEN DETONATION AREA

The Open Burn/Open Detonation (OB/OD) Area was used to dispose of excess ordnance and conduct training for personnel handling explosives. The OB/OD Area was initially used in the early-to-mid 1970s, and by 1991 regular use of the area had ended and was then limited to occasional emergency OB/OD activities permitted by WDEQ.

Open burn activities historically consisted of placing ordnance at the bottom of a pit specifically constructed for this particular use, along with diesel fuel and wooden pallets. A metal screen was placed over the materials, the fuel was ignited, and the ordnance was allowed to burn itself out. Detonation of ordnance was accomplished using blasting caps. The pit construction was limited to shallow excavation work only. No structural materials, such as concrete or metal, were used to line the pits.

SITE CHARACTERISTICS

Through the use of available aerial photography, six areas of suspected OB/OD activity were identified on the northwestern part of F. E. Warren AFB. These areas encompass a total of approximately 15 acres surrounded by open prairie with flat terrain. A concrete bunker and nearby flagpole are the only structures that are currently present onsite. OB/OD activities within this area included: 1) burning ordnance (primarily small arms ammunition); 2) detonating explosives; or 3) depositing residue screened from the burn pit. The geometry of the three pits that still exist suggests that they were generally small in comparison to the overall boundary of the OB/OD Area and were excavated to relatively shallow depths.

The area's soil is comprised of interbedded clay, silt, sand, and gravel and range in thickness from 0 to 17 feet. The soil overlies the Ogallala Formation at

OB/OD Area. The depth to groundwater ranges from approximately 20 to 35 feet bgs.

Zone E RI activities at the OB/OD Area included completion of test pits and collection of surface and subsurface soil samples in 2001 to substantiate a large set of unvalidated soil analytical data originally collected in 1994-1995 as part of the Operable Unit 6 (OU6) RI. Validated groundwater analytical data collected during the OU6 RI in 1995 were used to assess groundwater contamination at the site because no significant changes in the soil conditions were observed between the 1994-1995 dataset and the additional soil data collected in 2001.

Soil contaminants detected at low concentrations from surface and subsurface soil included VOCs, semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons-diesel range organics (TPH-DRO), total petroleum hydrocarbons-gasoline range organics (TPH-GRO), and dioxins/furans. The highest concentration of each of these contaminants was found in samples from Test Pit 4, which contained visibly stained soil. The extent of the stained soil was further delineated via excavation in 2003, resulting in complete removal of the contaminated soil according to verification sampling. The excavated soil was managed as investigative derived waste (IDW). Therefore, this contaminated soil no longer exists at the OB/OD Area. Explosives residue was only detected at low concentrations at one location in an area suspected of OB/OD activity and were therefore not included as COPCs. Concentrations of other inorganic compounds detected in soil are comparable to background concentrations on Base and are not attributed to activities at the OB/OD Area. The limited extent and relative low concentrations of contaminants observed at the OB/OD Area compared to SSLs support the low potential for contaminants to leach into groundwater at levels that may pose a risk to human health and the environment.

In groundwater sampled during 1995, the only VOC detected was methylene chloride (a common laboratory contaminant) in one sample below the MCL. Two SVOCs (benzo(b)fluoranthene at 1.3 micrograms per liter ($\mu\text{g/L}$) and benzo(k)fluoranthene at 1.2 $\mu\text{g/L}$) were detected in one monitoring well, MW-607R. TPH-DRO and TPH-GRO were detected at concentrations (less than 1,000 $\mu\text{g/L}$, below current WDEQ total petroleum hydrocarbons (TPH) interim cleanup levels for TPH-GRO (7,300 $\mu\text{g/L}$) and TPH-DRO (1,100 $\mu\text{g/L}$). Concentrations of inorganic compounds detected in groundwater are comparable to the range of concen-

trations detected elsewhere on Base and are not considered to be related to potential releases from the OB/OD Area. Selenium was the only inorganic detected above WDEQ groundwater standards, but it is not considered to be related to site activities based on the statistical comparison to background concentrations. Explosives residue, polychlorinated biphenols (PCBs), organochlorine pesticides, and dioxins/furans were not detected in any groundwater sample.

SUMMARY OF SITE RISKS

A HHRA was performed for the OB/OD Area to evaluate the potential current and future risks associated with exposure to soil and groundwater at the site. An ERA was also performed.

The current land use and reasonably foreseeable future land use for the ob/od area is industrial. However, in order to determine if institutional controls would be needed, in the unlikely event that the land uses changed in the future, the residential risk exposure scenario for children and adults was run as well as the industrial exposure scenarios for on-site workers and construction workers.

Human Health Risk: The HHRA determined there are no unacceptable risks to human health for exposure scenarios for surface soil and mixed-zone soil (i.e., soil collected from 0 to 10 feet bgs) for COPCs exhibiting carcinogenic or non-carcinogenic effects.

The HHRA determined the risk for the hypothetical resident exposed to groundwater was within EPA's target risk range, but exceeds the lower end of the range. Primary cancer risk drivers for groundwater are benzo(b)fluoranthene and benzo(k)fluoranthene. These chemicals were detected at trace levels (near the lowest detectable level) in only one well and were not confirmed through detections in other site wells. Therefore, the Air Force, EPA and WDEQ believe that this single detection is not representative of site conditions and does not require the establishment of land use controls for future residential use.

Ecological Risk: Although the Tier 1 ERA concluded that several inorganic constituents exceeded screening benchmarks, evaluation of the detection frequency, background concentrations, and the presence of a healthy plant community strongly indicate the lack of any significant adverse affects. Given the conservative nature of the assessment process, the conservative assumptions used, and the fact that most HQs are low, remedial action at this site is not required.

PREFERRED ALTERNATIVE

The USAF, EPA and WDEQ have determined that the conditions at OB/OD Area pose no current or potential threat to human health or the environment. Inorganic contaminants detected in the groundwater were found to be comparable to background levels. Although Selenium was detected at levels above WDEQ groundwater standards it was also found to be comparable to background levels. TPH concentrations were determined to be below current WDEQ interim cleanup levels. Levels of organic contaminants remaining in the soil and ground water do not pose an unacceptable risk to human health or the environment. Therefore, no action is required for the OB/OD Area. However, access to the OB/OD Area will continue to be restricted as ordnance clearance was not performed and the OB/OD Area will continue to be used on an emergency basis. Risks associated with this site resulting from future OB/OD activity will be evaluated under the appropriate regulatory guidance, i.e. RCRA, at such time land uses of the area change.

COMMUNITY PARTICIPATION

The USAF, EPA, and WDEQ provide information regarding the cleanup of F. E. Warren to the public through public meetings, the Administrative Record for the site, quarterly newsletters, direct mailings to interested parties, and announcements published in the *Wyoming Tribune-Eagle*. The USAF, EPA, and WDEQ encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there. The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files (the Information Repository) are provided on the front page of this Proposed Plan.

For further information on Zone E, Spill Sites 1, 3, 5, 6, and the Open Burn/Open Detonation Area, , please contact:

Mr. John Wright F. E. Warren Remedial Project Manager (RPM) (307) 773-4147 john.wright@warren.af.mil	Mr. Robert Stites U.S. EPA Region 8 RPM (8EPR-F) (800) 227-8917, ext. 6658 stites.rob@epa.gov
Ms. Jane Cramer WDEQ RPM (307) 777-7092 jcrame@state.wy.us	

GLOSSARY OF TERMS

Specialized terms used in this Proposed Plan are defined below:

Administrative Record – *A record of all documents and correspondence for the Installation Restoration Program under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).*

Alluvium – **Water worked deposits within a stream or river system.**

Groundwater – *Underground water that fills pores in soil or openings in rocks to the point of saturation.*

Monitoring – *Ongoing collection of information about the environment that helps gauge the effectiveness of a cleanup action.*

Organic Compounds – *Carbon compounds, such as solvents, oils, and pesticides. Most are not readily dissolved in water. Some organic compounds can cause cancer.*

Record of Decision (ROD) – *A public document that explains which cleanup alternatives will be used to clean up a Superfund site. The ROD for sites listed on the National Priorities List (NPL) is created from information generated during the Remedial Investigation/Feasibility Study (RI/FS).*

Remedial Action Objectives (RAO) – *The stated objectives for actions at the site.*

ACRONYMS USED IN THIS PROPOSED PLAN

µg/L	micrograms per liter
AFB	Air Force Base
AST	aboveground storage tank
bgs	below ground surface
COPC	contaminant of potential concern
EPA	United States Environmental Protection Agency
ERA	ecological risk assessment
F. E. Warren	F. E. Warren Air Force Base
FS	Feasibility Study
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
IRP	Installation Restoration Program
LAUST	Leaking Aboveground/Underground Storage Tanks
MCL	maximum contaminant level
MW	monitoring well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OB/OD	open burn/open detonation
OU1	Operable Unit 1
OU6	Operable Unit 6
PCB	polychlorinated biphenols
PCE	tetrachloroethene
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SSI	Supplemental Site Investigation
SSL	soil screening level
SVOC	semi-volatile organic compound
TCE	trichloroethene
TPH	total petroleum hydrocarbons
TPH-DRO	total petroleum hydrocarbons-diesel range organics
TPH-GRO	total petroleum hydrocarbons-gasoline range organics
USAF	United States Air Force
UST	underground storage tank
VOC	volatile organic compound
WDEQ	Wyoming Department of Environmental Quality

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for Spill Sites 1, 3, 5, and 6, and the Open Burn/Open Detonation Area is important to the USAF. Comments provided by the public are valuable in helping the USAF and EPA select a final cleanup remedy for the site.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by **7 October 2004**. If you have any questions about the comment period, please contact John Wright at (307) 773-4147 or submit your comments to the USAF via email at the following email address: john.wright@warren.af.mil. Verbal comments may also be submitted for consideration at the public meeting.

Name _____
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