

F. E. Warren Restoration Efforts in Review

Over the past year, the U.S. Air Force has continued to address potential human health and ecological risks at F. E. Warren Air Force Base (F. E. Warren). Working in partnership with the U.S. Environmental Protection Agency Region VIII (EPA), the Wyoming Department of Environmental Quality (WDEQ), and the community through the Restoration Advisory Board (RAB), the Air Force has been moving forward with the Installation Restoration Program (IRP), created to investigate and clean up hazardous waste located in various areas on the base.

Background

Under the IRP, the Air Force has identified contamination in 12 areas where landfills once existed, seven sites where pollutants were spilled, two fire protection training areas, a firing range, a battery-acid disposal site, base-wide Underground Storage Tanks (USTs), and an open



The Air Force has been moving forward to investigate and clean up contamination at F. E. Warren. Air Force contractors are pictured above installing monitoring wells for collecting groundwater samples beneath Landfill 6.

burning/open detonation area. The most abundant contaminants detected—solvents and a variety of fuels—are located in both the soil and groundwater in these areas.

Because many of the polluted areas are located within close proximity to one another, the Air Force decided to conduct the Remedial Investigation and Feasibility Study (RI/FS) efforts at the base using a “zone” concept. Please see page 4 for more information about an RI/FS. By dividing the base into five different zones, the Air Force could best ensure that influencing environmental factors within each zone are considered during investigations before taking cleanup action. This zonal approach also allows for more

efficient use of resources during investigation efforts.

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F. E. Warren Awarded for Clean-up Efforts

In recognition of their efforts, F. E. Warren’s Restoration Team was recently awarded the 1999 U.S. Air Force Space Command Thomas D. White Restoration Award for Team Excellence. This award recognizes outstanding initiatives and achievements in identifying contaminated sites, implementing cleanup plans, rehabilitating natural resources, and fostering good community relations.



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Current IRP Site Status

The following paragraphs provide the status of the sites designated for environmental investigation and/or cleanup under the IRP. Much of the contamination at the sites is being addressed on a zonal basis, however, the sites are discussed below by type. Please see **Figure 1** and **Figure 2** on page 3 for each of the zone and site locations.

Landfills

Six landfills (with a total of 12 landfill subunits or landfill areas) containing hazardous materials have been identified at F. E. Warren using historical records, aerial photographs, and interviews with former employees. The Air Force has completed initial investigation efforts at each of these landfills. Please see **Table 1** for the current status of each of the landfill sites.

Spill Sites

The seven spill sites currently being addressed under the IRP are generally associated with historical spill materials at nearby buildings. Suspected spill materials include fuel, waste oil, battery acid, and solvents such as Trichlorethylene (TCE). Initial investigation efforts at each of the spill sites were conducted in 1993 and 1994. After a thorough examination of the soil at the sites, it was determined that the levels of contaminants remaining in the soil do not pose any risks to human health or the environment.

The Air Force, however, will be conducting RI/FS efforts in 2001

Landfill	Cleanup Activities Conducted	Planned Cleanup Activities
2 (A,B,C)	Excavation of wastes from Landfill 2c (LF2c) was completed in December 1998.	A removal action is scheduled to begin on Landfills 2a (LF2a) and 2b (LF2b) in FY 2000. A comprehensive Zone RI/FS to address groundwater is scheduled to begin in FY 2002.
3	A water line was constructed in June 1997 to supply residents of Nob Hill with an alternate water source. A comprehensive RI/FS was begun in December 1998.	A removal action is being done in conjunction with the removal action at LF2a/2b. The groundwater remedial action is scheduled for 2003.
4 (A,B,C)	An initial investigation has been conducted.	A comprehensive RI/FS is scheduled to begin in FY 2001 and, depending on results, a removal action may begin in FY 2002.
5 (A,B)	Landfill 5a (LF5a) was capped and a passive gas monitoring system was installed and completed in December 1998. A comprehensive Zone RI/FS began in 1999.	A removal action is scheduled to begin on Landfill 5b (LF5b) in FY 2000.
6	A comprehensive Zone RI/FS began in June 1998. An impermeable geosynthetic clay liner was installed in Summer 1999 along with a passive gas collection and monitoring system. The cover was completed in September 1999.	The groundwater remedial action is scheduled to begin in 2003.
7 (A,B)	An initial investigation has been conducted.	A comprehensive Zone RI/FS is scheduled to begin in FY 2001. A removal action involving a combination of excavation and capping is scheduled to begin in FY 2003.

Table 1: Current status of cleanup for each of the landfills on F. E. Warren.

and 2002 to evaluate the groundwater beneath each of the spill sites. The Air Force's contractor completed construction of an iron-filings treatment wall to clean up groundwater contaminated with TCE at Spill Site 7 (SS7) in early August 1999.

Fire Protection Training Areas

Two of the IRP sites at F. E. Warren address former Fire Protection Training Areas (FPTAs) at the base. These areas were contaminated by fuel, gasoline, waste oil, and solvents poured onto the ground and ignited during training exercises. Water and fire extinguishing materials carried suspected contaminants

across the site and into the soil. Soil contamination at FPTA1 will be addressed through cleanup efforts scheduled at Landfill 7. Initial RI efforts indicate that no cleanup of soil contamination is required at FPTA2. However, the Air Force will be conducting an RI/FS to evaluate the groundwater beneath both FPTAs in 2001.

Acid Dry Wells

Between 1962 and 1986, approximately five gallons of waste battery acid were released per day into the acid dry wells from sinks in Building 826, located between Old Glory and Black Powder Roads. In April

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1986, the acid dry wells and associated structures were removed. In November 1986, more than 500 tons of contaminated soil were removed for disposal at an industrial waste disposal facility in Utah. An RI/FS to evaluate the groundwater beneath the site is scheduled to begin in 2001.

Inactive Firing Range

Weapons historically fired at the inactive firing range include small arms, cannons, and anti-tank weapons. An RI/FS of the area is scheduled to begin in 2001.

Base-wide Underground Storage Tanks

This IRP site addresses 20 inactive Underground Storage Tanks (USTs) at 14 locations across F. E. Warren, historically used for storage of petroleum products. Investigation of this site is being managed under existing UST compliance programs at the base.

Open Burn/Open Detonation Area

The Open Burn/Open Detonation Area (OBODA) was used from the early 1960s to 1990 for burning ordinance, detonating explosives, and depositing residue from the burn pit. A comprehensive RI/FS is scheduled to begin in 2001.

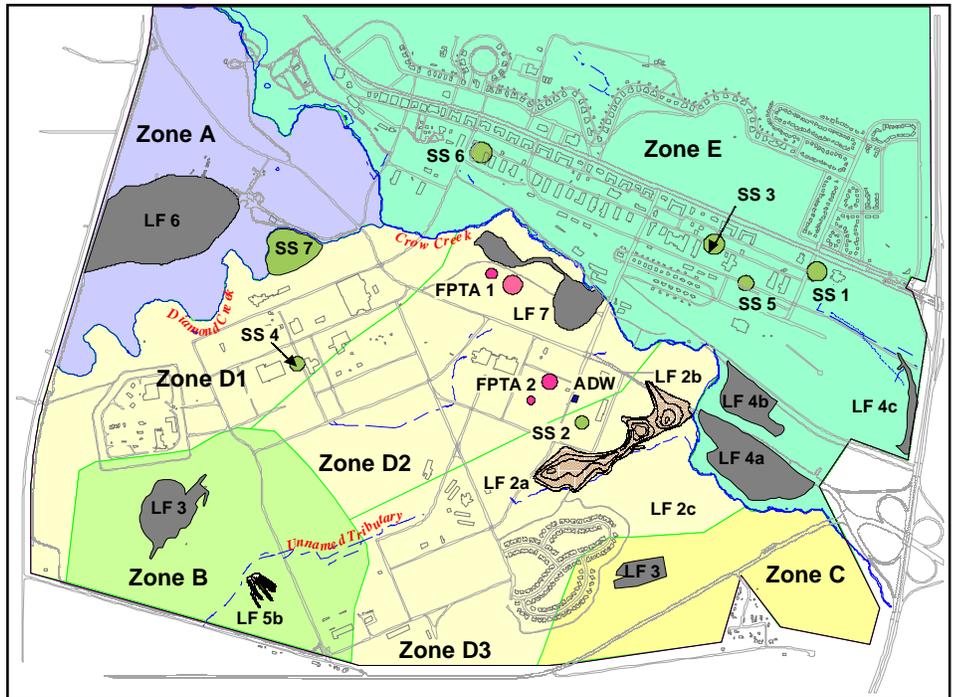
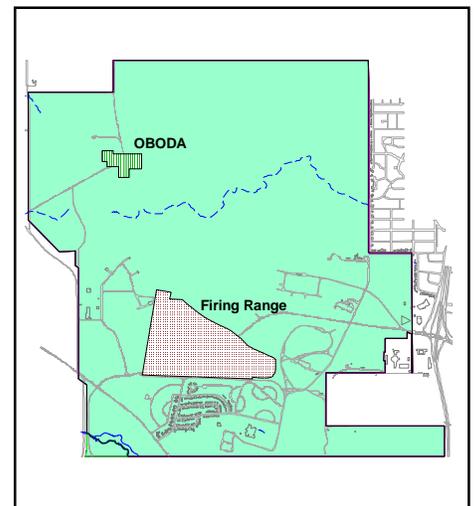


Figure 1 (above): Restoration Management Site Cleanup Map with the locations of the five zones and each of the landfill sites, spill sites, fire protection training areas, and acid dry wells. The Air Force has completed cleanup activities at Landfills 2c, 5a, and 6, and Spill Site 7.

Figure 2 (to the right): The north side of the base with the locations of the inactive firing range and the Open Burn/Open Detonation Area.



Installation Groundwater

Five TCE-contaminated groundwater plumes have been identified beneath the base to date. The contaminated groundwater is being addressed under the comprehensive RI/FS efforts being conducted for all the zones. □

Access Information on the Internet



Information about cleanup activities at F. E. Warren, as well as other environmental information, is available from many sources on the Internet. Visit these sites to learn about what's going on at F. E. Warren and in the community:

U.S. Environmental Protection Agency
<http://www.epa.gov>

Wyoming Department of Environmental Quality
<http://www.deq.state.wy.us>

What is the Remedial Investigation and Feasibility Study?

Many of the contaminated areas on F. E. Warren determined to possibly pose a threat to human health and the environment are currently at the RI/FS stage of the cleanup process. Although commonly referred to as a single step in the cleanup of hazardous sites, an RI/FS actually addresses two separate tasks: gathering information and developing an appropriate strategy for cleanup.

During the Remedial Investigation (RI), the environmental specialists evaluate the site to determine the nature and extent of contamination and to assess any risks associated with the contamination. The RI typically includes collecting samples for laboratory analysis, determining how any contamination might spread in the environment, and comparing contaminant levels at the site with maximum levels established by Federal and state environmental regulatory agencies. During the RI, the environmental specialists seek to answer the following questions:

- What kind of contamination is present,
- Where did the contamination come from,
- What areas of the site have been affected,
- Is the contamination moving through the environment,
- How will the contamination impact human health, plants, and animals in the area,
- What environmental laws and regulations apply to cleaning up the contamination, and
- What are the cleanup objectives for the site?



Groundwater sampling efforts during a Remedial Investigation, pictured above, indicate what kind of contamination is present in the groundwater and provide information necessary to determine how to clean up a site.

During the Feasibility Study (FS), the environmental specialists evaluate various technologies and develop possible cleanup alternatives. Because additional site information may be needed to fully consider all possible cleanup options, the RI and FS are often conducted simultaneously. Once sufficient information is available from the RI, the alternatives are evaluated in detail to determine the best way to address site-specific environmental concerns. Each alternative's strengths and weaknesses are considered. During the FS, the environmental specialists seek to determine the following:

- What remedies are available to clean up the type of contamination associated with the site,
- How effective are the available cleanup options,
- How much will the cleanup cost,
- Are any risks involved in implementing this remedy,
- Will the remedies be acceptable to regulators and the local community, and

- What is the recommended cleanup alternative?

The RI/FS process provides F. E. Warren with a thorough understanding of environmental concerns at each of the IRP sites, and the means by which to address the concerns. All of the findings and recommendations resulting from the RI/FS are summarized in a report. The report is added to the administrative record and information repository files for review and comment by the community. Completion of the RI/FS at an IRP site enables the Air Force and other F. E. Warren stakeholders, including the local community, to move forward on selecting a remedy and cleaning up the site.

If you have any questions about the RI/FS process or the specific progress of the RI/FS at any of the contaminated sites on F. E. Warren, please contact one of the Remedial Project Managers listed on page 6. ☐

Base Environmental Cleanup Team Spotlight: Dan Hytrek

Dan Hytrek is an Environmental Attorney/Adviser with the legal office at F. E. Warren, providing legal support to the IRP activities occurring on the base.

Dan's Background

Dan graduated from Oregon State University in 1984 with a Bachelor of Science degree in Wildlife Science. After working for several years in fisheries and wildlife management, he went back to school at the University of Oregon School of Law. He received his Juris Doctorate and Certificate of Completion in the Natural Resources Law Program in 1989. Immediately following law school, he served as a judicial clerk for two judges of the Oregon Court of Appeals.

Dan entered into active duty in the Air Force in November 1991. His first assignment was at Peterson Air Force Base, Colorado. As Chief of the Claims and Military Justice Sections of the legal office, he was responsible for environmental law matters. In July 1994, he transferred to McClellan Air Force Base, California, where he served as Chief of the Environmental Law and General (Civil) Law Sections. While at McClellan, Dan became intimately involved in the base's environmental cleanup effort.

Dan Comes to F. E. Warren

After completing his active duty service commitment with the Air Force in July 1996, Dan accepted his current position at F. E. Warren.



Dan Hytrek, Environmental Attorney supporting the IRP.

His main responsibilities include providing advice and representation for the IRP. Among other things, Dan has prepared all or major portions of decision documents that have led to response actions at Spill Site 7 and Landfills 2c, 5a, and 6. Dan also provides advice for the other environmental efforts at F. E. Warren, such as compliance, conservation, and pollution prevention. ☐

History of F. E. Warren Air Force Base

The history of the base dates back to the Railroad Act of 1862, when President Lincoln and Congress set plans for the trans-continental railroad, including a military installation on the eastern slope of the Rocky Mountains to protect railroad workers from Indian attacks. The Army post opened in 1867 as Fort D. A. Russell.

In 1930, it was renamed for Francis E. Warren in honor of the Wyoming Senator who played an important role in developing the post. During World War II, the base doubled in size as it became a major training facility.



F. E. Warren was formerly an Army post named Fort D. A. Russell.

Fort F. E. Warren was transferred to the newly formed U.S. Air Force in 1947 and was subsequently named F. E. Warren Air Force Base. After World War II, when the majority of the Army facilities were torn down, the base underwent extensive renovation.

In 1985, the Air Force initiated the IRP at F. E. Warren to determine potential areas on base that have been environmentally impacted. Because of the types and amounts of contamination found at F. E. Warren, EPA added the base to its National Priorities List (NPL) on February 21, 1990. The NPL is EPA's list of the nation's most serious hazardous waste sites.

In 1998, F. E. Warren undertook an intensive overhaul of the cleanup program to improve restoration management and advance the schedule for cleaning up the base. ☐

For Additional Information...

Information about the F. E. Warren environmental cleanup program is available for review in the Administrative Record File — the official collection of documents, data, reports, and other information that supports EPA's and WDEQ's decision on cleanup at a site. You may review the Administrative Record File at the following locations:



90 SW/EM

Environmental Restoration Management
6203 15th Calvary Avenue, Building 367
F. E. Warren AFB, WY 82005-2767

Laramie County Library

2800 Central Avenue
Cheyenne, WY 82001

For additional information about the F. E. Warren environmental restoration management program, please contact one of the following Remedial Project Managers:



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RAB CONTACTS

For information about the Restoration Advisory Board meetings or membership, please contact:

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Inside: Information on F. E. Warren AFB Environmental Restoration



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