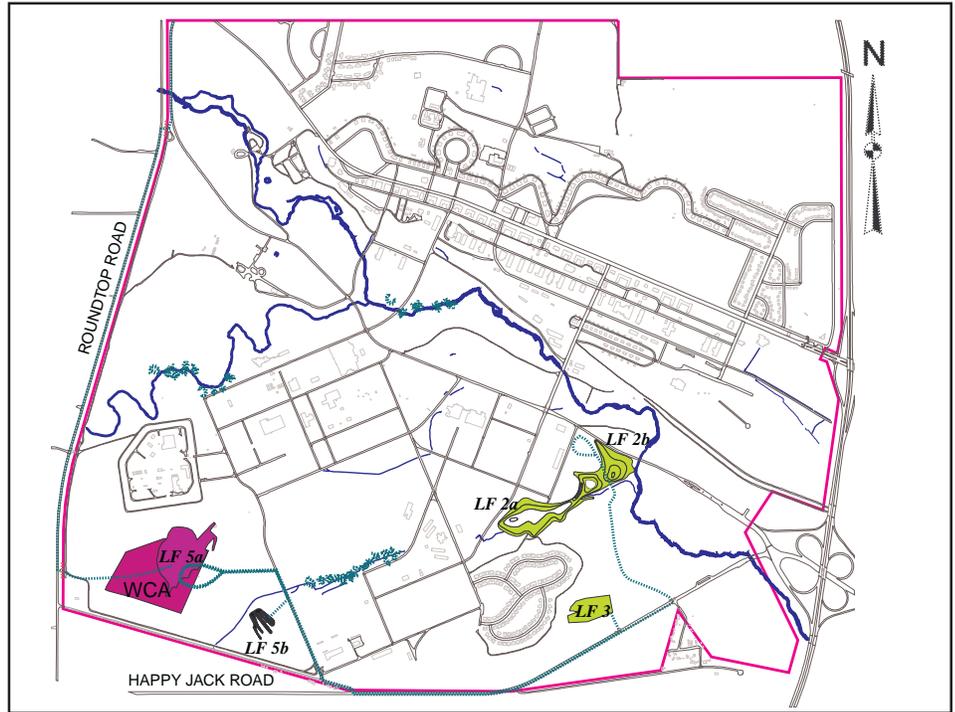


Removal Action Progress

In the last issue of the update, we reported that a removal action was scheduled to begin on Landfill (LF) 2a/2b, LF3, and LF5b in Fiscal Year 2000. That removal action is now underway and has progressed substantially.

The removal action project includes removing all the waste from the above mentioned landfill units and is being performed by the IT Group. The excavated waste will be transferred to an area adjacent to LF5a, known as the Waste Co-location Area, and covered with a cap identical to the one placed at LF5a last year. If, during excavation activities, any waste is found which is classified as "hazardous," it will be disposed off-base at a licensed landfill facility.



Removal Actions are taking place at Landfill 2a/2b, Landfill 3 and Landfill 5b, shown on the above map.

Activities at Landfill 3

Removal activities began at LF3 in May. All visible waste, 106,888 cubic yards, was removed and confirmation samples were collected. If the confirmation samples show that no residual waste remains, the area will be regraded and activities will be complete. See page 2 for photographs of Landfill 3 in its current state.

Activities at Landfill 2a/2b

Removal activities are also underway at LF2a/2b. First steps included creating an evaporation pond near the site and relocating a

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Risk Assessment Primer

The 1990 National Contingency Plan (NCP) requires a site-specific baseline risk assessment to be conducted, as appropriate, as part of the remedial investigation (RI) of a Superfund site. Baseline risk is defined as a risk that might exist if no remediation or institutional controls were applied at a site. The risk assessment is conducted to determine the risk posed by a site to human health and the environment. Specifically, the NCP states that the baseline risk assessment should "characterize the current and potential threats to human health and the environment

that may be posed by contaminants migrating to groundwater or surface water, releasing to air, leaching through soil, remaining in the soil, and bioaccumulating in the food

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Removal Action Progress

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sewer line that runs through the site. Since the water table at LF2a/2b is shallow and waste lies below the water table, water must be pumped from the areas of excavation. This water is routed to the evaporation pond where sediment and any waste materials are allowed to settle out. Then the water will be tested for any contaminants before it is released from the evaporation pond into Crow Creek. Waste excavation is ongoing at LF2a/2b, and 183,456 of a total estimated 234,359 cubic yards of waste have been removed through July 25, 2000. See page 3 for photographs of activities at Landfill 2a/2b.

Excavation activities at LF5b, which is located adjacent to the Waste Co-location area, began in late July. The quantity of waste expected in this area is small, therefore it will be the last area excavated in the project. ☐



All removal activities have been completed at Landfill 3, shown above from a ground standpoint.



The aerial photo above, taken after all removal activities were completed at Landfill 3, illustrates the proximity of Landfill 3 to the base housing area.

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>

Risk Assessment Primer

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chain". The U.S. Air Force performs a baseline risk assessment as part of the remedial investigation (RI) stage for all IRP sites at F.E. Warren.

The goal of the Superfund risk evaluation process is to provide a framework for developing the risk information necessary to assist decision-making at remedial sites. Specific objectives of the process are to:

- Provide an analysis of baseline risks and help determine the need for action at sites;
- Provide a basis for determining levels of chemicals that can remain onsite and still be adequately protective of human health and the environment;
- Provide a basis for comparing potential health impacts of various remedial alternatives; and
- Provide a consistent process for evaluating and documenting public health and environmental threats at sites.

The risk factor for a site is a numerical value that is calculated based on a variety of site conditions. The Environmental Protection Agency (EPA) assigns a value to site conditions such as present and future land use (residential, industrial, etc.), type of contaminants present, site media affected (soil, water, etc.), and the types of people that may encounter the site (children, adults, occasional construction workers). These numbers are used in a standard mathematical



One of the removal activities taking place at Landfill 2a/2b is the transportation of waste from the excavation to the mixing area, as seen in the picture above. The waste will be mixed and dried in the mixing area prior to being transported to the Waste Co-location area.



The aerial photo above shows the entire operation at Landfill 2a/2b, including the evaporation pond. Waste removal activities are in progress in the area between the pond and the road running along the bottom left corner of the picture.

formula to calculate the risk associated with the site in question.

If contaminants are present that are considered to be cancer causing by the EPA a cumulative carcinogenic site risk is calculated. For contami-

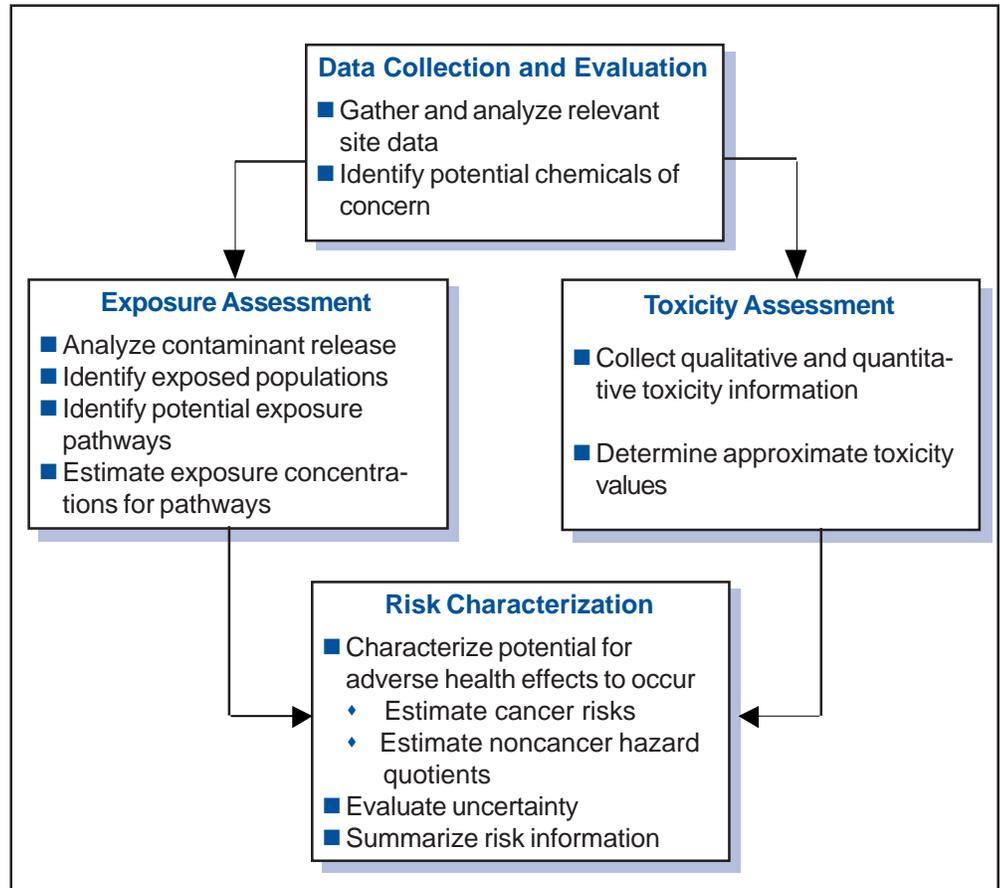
nates present that are not cancer causing a cumulative hazard quotient is calculated. The EPA has set the cumulative carcinogenic risk at 1×10^{-4} (that is, one in 10,000 people may get cancer

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Risk Assessment Primer

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through exposure) and the hazard quotient at 1 (that is, adverse health effects are unlikely to occur if the hazard quotient is less than 1). If the calculated carcinogenic risk factor for a site is greater than 1×10^{-4} or the calculated hazard quotient is greater than 1 then site remediation is required. Unacceptable environmental risk also may prompt remedial action even if the calculated human risk factors are less than 1×10^{-4} and 1. Unacceptable environmental risk include threats or potential threats to sensitive habitats, such as wetlands. Critical habitats of species protected under the Endangered Species Acts are especially important to consider when determining whether to take remedial action.



The four-step Risk Assessment process.

The baseline risk assessment process is broken down into four stages. The chart to the right indicates the four stages of the process and summarizes the tasks to be completed under each stage.

For further detailed information on baseline risk assessments consult

the following EPA guidance documents:

- Risk Assessment Guidance for Superfund Volume I (EPA/540/1-89/002)
- Risk Assessment Guidance for Superfund Volume II (EPA/540/1-89/001)
- Ecological Assessment of Hazardous Waste Sites (EPA/600/3-89/013)
- Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (EPA/624/1-87/001) 

Goodbye to Dan Moore

Dan Moore, our Wyoming Department of Environmental Quality (WDEQ) Restoration Project Manager, is leaving the F.E. Warren program and WDEQ to join the Bureau of Land Management in Tuscon, Arizona. Dan joined the F.E.

Warren program team on February 8, 1999. He brought with him strong technical guidance, a great sense of team work, and coordinated support throughout all branches of WDEQ. We will miss him and wish him all the best in his new venture!

WDEQ is currently searching for a permanent replacement for Dan. In the meantime, Mark Thiesse has again been appointed as our temporary WDEQ Restoration Project Manager. Welcome back Mark! 

F.E. Warren Awarded a Second Time for Clean-up Efforts

Earlier this year the F.E. Warren Restoration Team won the 1999 US Air Force Space Command level General Thomas D. White Restoration Award for Team Excellence. After completing the Space Command level win the F.E. Warren Restoration Team competed against the other US Air Force command level winners for the honor of being named the top restoration team in the US Air Force for 1999. In recognition of their outstanding initiatives and achievements in identifying contaminated sites, implementing cleanup plans, rehabilitating natural resources and fostering good community relations the US Air Force awarded the 1999 Restoration Award for Team Excellence to the F.E. Warren Restoration Team. Following are a few of the Restoration Team's accomplishments that led to the award.

One of the accomplishments of the Restoration Team was in the area of program management and involved an intensive overhaul of the FEW environmental cleanup program. This overhaul transformed a struggling program into a highly organized partnership between the FEW Restoration Team, the Environmental Protection Agency (EPA), the Wyoming Department of Environmental Quality (WDEQ), local governments, and the local citizens. With the overhaul of the program came unprecedented efficiency that enabled the Restoration Team to complete all restoration activities in 1998 and 1999 within or under budget and ahead of the Federal Facilities Agreement (FFA) required



John Wright (F.E. Warren RPM), Gen. Michael Ryan (AF Chief of Staff), Col. Ed Rausch (90th Space Wing Vice Wing Commander), Bill Springer (Chief, Environmental Restoration), Ms. Carol Dibattiste (Deputy Under Secretary of Defense - Environmental Security), Ed Janay (FE Warren RAB Member) accept the Thomas D. White Restoration Award for Team Excellence at the Pentagon.

deadlines. The 1998 and 1999 restoration activities included the completion of caps at landfills LF5a and LF6, removal of LF2c, and the installation of a passive iron-filings treatment wall to treat the groundwater at SS7.

Another of the Restoration Team's accomplishments came in the area of technical merit with the use of innovative technologies and techniques to clean contaminated sites. These innovative technologies included the installation of a passive iron-filings treatment wall to clean the groundwater contaminated by trichloroethylene (TCE) at SS7 and preventing the TCE from seeping into Diamond Creek. Another innovative technology utilized by the Restoration Team was the construction of a

Geosynthetic Clay Liner (GCL) cover system at LF6 to prevent leachate from carrying pollutants to the groundwater and significantly reducing the risk to human health and the environment.

As the FEW Restoration Team has aggressively moved forward to implement plans to cleanup contaminated sites at FEW they have not lost site of the natural resources and local environment. Working closely with U.S. Fish and Wildlife officials and University of Wyoming experts the Restoration Team ensures that any cleanup effort includes protections for endangered or threatened species such as the Colorado Butterfly Plant or the Preble's Meadow Jumping Mouse and the Crow Creek habitat. □

Base Environmental Cleanup Team Spotlight: John Wright

John Wright is the Restoration Program Manager charged with planning, programming, budgeting, and executing the base cleanup effort at F.E. Warren. He graduated from the University of Wyoming with a Bachelor of Science degree in Wildlife Biology.

John's Early Career

Prior to graduating from the University of Wyoming, John worked with the U.S. Air Force. He worked Security Forces for three years at the F.E. Warren AFB, and for one year in Thailand and the Philippines before returning to school.

After graduating from the University of Wyoming, John settled in Sheridan, Wyoming for five years. He utilized his degree in Wildlife Biology working as the Wildlife Technician for the U.S. Fish and Wildlife Service. In 1980, he moved on to become the Environmental Coordinator for Occidental Petroleum's coal mining venture in northern Wyoming.

John built upon his experience at Occidental Petroleum from 1980 to 1987. In 1984, he transferred to



F.E. Warren Restoration Program Manager, John Wright.

Grand Junction, Colorado. There, he worked as Environmental Coordinator and Land Agent charged with ensuring compliance with all regulatory requirements. John was also responsible for acquiring property rights for coal haul routes and load-out spurs for two active coal mines during his time there. The following year, John transferred to Virginia. He worked there as Chief Land Agent, acquiring and maintaining coal mining and surface property rights for four underground coal mines in the southwestern portion of Virginia. John worked as Chief Land

Agent for two years before returning to Wyoming in 1987.

Back in Wyoming, John worked as Environmental Consultant and Resource Manager for several coal companies in Wyoming and Colorado. He worked there from 1987 until 1989.

John Comes to F.E. Warren

John returned to F.E. Warren AFB, this time to work as the Natural Resources Manager, in 1989. He quickly moved up the ranks, receiving a promotion to Environmental Flight Chief in 1993. As Environmental Flight Chief, John was responsible for all base environmental issues.

In 1998, upon realignment of the Environmental Restoration Program under the 90th Space Wing, John accepted the position of Restoration Program Manager. Charged with planning, programming, budgeting, and executing the base cleanup effort, John's education and experience have been a wonderful asset to F.E. Warren.

We are happy to have John on our team! ☐

Contribute to the *ERM Update*

Community involvement is vital to the success of the restoration program at F.E. Warren. This newsletter is just one of the ways the Environmental Restoration Management team shares its activities with the community.

But this newsletter is more than just a way for you to learn about the cleanup --- it's a place for you to share your thoughts about the F.E. Warren restoration program. On the next page, you will see a feature called Community Corner. This is

the place where you can contribute to the *ERM Update*. If you have an article or a letter to submit, send it to the Environmental Restoration Management office. We look forward to hearing from you. ☐

COMMUNITY CORNER

A RAB Member's Perspective

By Steve Balashek, RAB Member

Last month, Bill Springer, the Air Force co-chair of the Restoration Advisory Board (RAB), asked me to write an article about the Environmental Restoration Program/ RAB at F.E. Warren AFB from my unique perspective. I had to think very hard about what my "unique" perspective is. The conclusion I reached is that I don't have one, I have several. In that respect, I suppose, I'm a microcosm of the RAB.

I've been associated with the environmental program at F. E. Warren in one form or another since 1987. First as a military environmental engineer, later as a civilian employee in the Installation Restoration Program, and finally, as a citizen member of the RAB. I've observed the program grow from an Air Force program with rather simplistic guidelines to the complicated program of today that involves DOD, Air Force, EPA, and Wyoming guidelines, rules and regulations as well as laws passed by the Congress.

Throughout the years several things have been apparent. First, everyone involved has been concerned about the environment and the need to address the years of accumulated pollution. Second, virtually no one is in complete agreement about what should be done. Third, everything takes considerably longer

than anyone likes. And finally, there is never enough public involvement.

No one involved with the cleanup program has ever asked "Why do we need to clean up?" or said "This isn't our problem. It was here before we arrived and it will be here after we leave." The attitude of everyone, whether Air Force, EPA, DEQ, or citizen has always been: "There is a problem we need to correct."

Having said that, why then is it so difficult to decide what to do? One reason is the difficulty in determining exactly what needs to be cleaned up, and to what level. These determinations are made through the Remedial Investigation and Feasibility Study and involves a lot of negotiation between the parties before agreement is reached on exactly what must be done to adequately determine the types of pollution present, how much there is, and how it is behaving. Once that is determined, even more negotiations must take place to determine what can be done to actually clean-up or remediate the problem.

These activities take time --- lots of time. Development of the investigation work plan alone can easily take six to nine months because of the complexity in determining and negotiating where each one of perhaps 200 or 300 samples should

be taken. The actual investigation can often take a year or more, especially if several rounds of seasonal samples must be taken. The Feasibility Study can also be lengthy, especially if there are numerous potential solutions, since each one must be developed in enough detail to assess its practicality, effectiveness, and approximate cost. Then the potential solutions must be compared to select the one to be proposed for implementation.

The public needs to be involved in all phases of the process. These actions affect everyone in the community and are funded by our tax dollars. One of the major difficulties over the years has been getting the general public to provide input. There is nothing as discouraging as holding a public meeting to discuss the results of years of effort and have a homeless person looking for a place to get warm as the only citizen attending. The RAB is an excellent, perhaps even the best, way to influence the clean-up process at F. E. Warren. Rather than waiting for the completion of the investigation and remedy selection to comment, the RAB enables citizens to make input as the process develops. If you are reading this newsletter, you have expressed an interest in the restoration activities on the base. Why not spend a couple of hours every other month to actually have an impact? ☐

For Additional Information...

Information about the F. E. Warren environmental cleanup program is available for review in the Administrative Record File — the official collector 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:



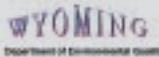
90 SW/EM
Environmental Restoration Management
6203 15th Calvary Avenue, Building 367
F. E. Warren AFB, WY 82005-2767

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

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



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