



Program Update

July–September 2012

Welcome to the July–September 2012 issue of the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Program Update. This publication is designed to provide a status of activities within LM. Please direct all comments and inquiries to lm@hq.doe.gov.

Inside this Update:

LM Co-Hosts International Workshop on Uranium Legacy Sites	1
LM Communication and Stakeholder Satisfaction Independent Survey	1
Environmental Justice Activities	3
LM Conducts Groundwater and Soil Investigation at Riverton, Wyoming, in Response to 2010 Flood	5
LM's First Year with the Title X Uranium/Thorium Reimbursement Program	6
DOE and Colorado Mesa University Education Agreement Expands LM's Site Reuse Portfolio	7
Completion of the Five-Year Reviews for the Monticello, Utah, Radioactively Contaminated Properties Site (Monticello Vicinity Properties) and the Monticello Mill Tailings Site	8
LM Completes Increased Biological Monitoring at Monticello Sites	9
Controlling Retiree Medical Benefit Costs Saves DOE Millions	9
LTS&M and Enhancement of Disposal Cell Covers	12
Yucca Mountain Transition Progress – Review by the Nuclear Waste Technical Review Board	13
LM Supports Calibration of Airborne Radiation Sensors	14
NASA's Missions Have a Link to the Mound Site	15
Innovative Pest Management for Controlling Noxious Weeds at UMTRCA Title I Lowman, Idaho, Disposal Site	16
DOE Feeds Families CANstruction Sculpture Contest	23
Lions Club International Donates 5,000 Trees and Labor to Fernald Preserve	24
LM Welcomes Returning Employee	25
Anticipated LM Sites Through FY 2020	26
LM Goals and Objectives	27

Goal 1

LM Co-Hosts International Workshop on Uranium Legacy Sites

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) co-hosted, with the International Atomic Energy Agency (IAEA), a week of visits to DOE sites in Colorado and Utah, and a 4-day workshop in Grand Junction, Colorado. More than 30 visitors from 20 countries attended the event in August 2012. The IAEA International Workshop on

Continued on page 2



Workshop participants and LM personnel gather in front of the DOE Grand Junction office.

Goal 2

LM Communication and Stakeholder Satisfaction Independent Survey

The U.S. Department of Energy Office of Legacy Management is currently conducting a community and stakeholder satisfaction survey. If you have completed the survey, thank you for taking part. We encourage those who have not taken the survey yet to complete it. **The survey deadline has been extended until October 10, 2012.** Stakeholders will be notified when the survey results are available.

We appreciate every effort that is taken to complete the survey. ☺



Program Update

Continued from page 1

LM Co-Hosts International Workshop on Uranium Legacy Sites

Management and Regulatory Oversight of Uranium Legacy Sites: Perspectives from Regulators and Operators was part of an IAEA program whose objective is to help “member state” countries develop effective programs to remediate and provide postclosure care of contaminated sites around the world associated principally with uranium production during the Cold War. In addition, for participants from countries with operating mines and mills, the program provided insights on avoiding the creation of new legacy sites in the future. The IAEA, headquartered in Vienna, Austria, is a branch of the United Nations, whose mission is the responsible and peaceful use of nuclear science and technologies. Having the workshop in Grand Junction was by design since it lies within the Colorado Plateau, the major region from which uranium has been mined and milled in the U.S. Workshop participants travelled by bus to sites in eastern Utah, including the White Mesa Mill at Blanding, the only uranium mill operating in the U.S., and the remediated former mill sites in Monticello and Green River. A special event was a visit to Moab, where DOE is moving approximately 16 million tons of mill tailings from the former Atlas mill site in Moab by train 30 miles north to a disposal cell being constructed at Crescent Junction. Federal and contractor staff of the Moab Project provided a close-up view of the ongoing cleanup. In Colorado, the workshop participants visited the former mill sites and the disposal cell at Rifle, and the disposal cell in Grand Junction, which is still open to receive mill tailings from “vicinity properties.” The sites at Monticello, Green River, Rifle, and Grand Junction are all now part of LM’s long-term surveillance and maintenance (LTS&M) program and the White Mesa Mill will eventually transfer to LM once operations cease and cleanup is complete.

For visitors from countries of Central Asia, including Tajikstan, Kyrgyzstan, Kazakhstan, and Uzbekistan, visiting remediated legacy uranium sites on the Colorado Plateau had an added benefit. These countries were once part of the Soviet Union and were major sources of uranium for it during the Cold War. Now independent, these countries are left with large uranium legacy sites today in environments similar to those in this part of the western U.S.

Following the site visits, the workshop was held at the LM Grand Junction office. In addition to participation by DOE staff and contractors, representatives from the U.S. Environmental Protection Agency, the U.S. Nuclear Regulatory Commission, and the State of Colorado Department of Public Health and Environment made presentations at the workshop and provided their perspective on setting standards and regulating the cleanup of uranium mill sites in the U.S. under the Uranium Mill Tailings Radiation Control Act (UMTRCA). In addition to lessons learned from the UMTRCA program, workshop participants from Canada, Australia, Russia, France, and Germany, among others, made presentations on the regulatory framework and cleanup of uranium legacy sites in their countries.

One afternoon of the workshop was dedicated to presentations and discussions on LTS&M, site reuse

Continued on page 16



Jason Nguyen of LM talks to workshop participants during the Monticello, Utah, site tour. The former mill site in Monticello has been remediated and converted into a park by the city and wetlands have been restored by DOE.



Goal 1

Environmental Justice Activities

Community Leaders' Institute, West Columbia, South Carolina

The Midlands Community Leaders' Institute (CLI), sponsored by the Medical University of South Carolina, the U.S. Department of Energy, U.S. Department of Defense, South Carolina State University, and Brookland Baptist Church was held in West Columbia, South Carolina, on July 13 and 14, 2012.

The CLI continued to build on the theme Building and Sustaining Healthy Communities. A critical factor in the success of community development programs is a well-informed community. Action occurs when those with authority assume an informed and active leadership role. The purpose of the CLI is to help these leaders know how to access and obtain information necessary for making good decisions and communicating that information to the citizenry.

The focus of this CLI was on the unique relationship between environmental protection, human health, environmental justice, and economic development. Sessions for this CLI included the role of government, focusing on the intergovernmental relationship between Federal, state, and local governments; issues and challenges experienced by youth in the community and the development of resources needed to meet the these challenges; economic development, housing, and health disparities and health issues, especially the combined effects of diabetes, hypertension, and obesity known as Metabolic Syndrome. The Honorable James E. Clyburn, House Democratic Assistant Leader, United States House of Representatives, gave the Keynote Address. The Midlands CLI was one of the largest held with over 350 participants. ♦



The Honorable Congressman James Clyburn (Democrat, South Carolina) speaks during the Midlands Community Leaders' Institute in July.

Save the Date

Sixth Annual Conference on Health Disparities

The Sixth Annual Conference on Health Disparities will be held in Little Rock, Arkansas, November 28 through December 1, 2012, at The Peabody Little Rock. For additional details and to register, please visit <http://buildinghealthycommunities2012.com>.



Program Update

Continued from page 3

Environmental Justice Activities

U.S. Department of Energy's Online Environmental Justice Training Model Provided to the Interagency Working Group on Environmental Justice

U.S. Department of Energy (DOE) Associate Deputy Secretary, Melvin Williams, Jr., made a commitment to provide the content of DOE's newly available Online Environmental Justice Training to the Interagency Working Group on Environmental Justice (EJ IWG) member agencies at no cost. The commitment was made at a Deputies meeting held in April, with help from the National Training and Educational Resource (NTER) and some key DOE personnel.

The NTER system uses an open-source model for its content and can be made available to an individual or group that has been granted access. DOE, as well as other agencies, is beginning to promote NTER's use internally as a way of providing training efficiently and inexpensively. During summer 2012, the U.S. Department of Interior, U.S. Department of Health and Human Services, and U.S. Environmental Protection Agency participated in training sessions to learn how to tailor DOE's Online Environmental Justice Training for their own employees, contractors, and other stakeholders.

DOE's Environmental Justice Program Manager, Melinda Downing, worked with the Office of the Human Capital Officer's (HC) June Robinson, along with Alex Cohen, who was on detail with HC, and Amanda Purnell, a College of Southern Maryland intern who spent the summer working in HC. Ms. Purnell input the Online Environmental Justice Training content in NTER and created a PowerPoint training presentation, a set of Frequently Asked Questions, and led the training session with the agencies. ♦♦♦



Alex Cohen; DOE Associate Deputy Secretary
Melvin Williams, Jr.; June Robinson; Amanda Purnell;
Melinda Downing; and Cheryl Larkin worked together
to make the Online Environmental Justice Training
model available to the Interagency Working Group
on Environmental Justice member agencies.

SAVE THE DATE

2013 National Environmental Justice Conference and Training Program

Howard University School of Law
2900 Van Ness Street NW
Washington, DC 20008

Washington Marriott at Metro Center
775 12th Street NW
Washington, DC 20005

To volunteer or for sponsorship opportunities and additional information, contact
Lloyd Moore, Conference Coordinator, at email@thenejc.org or
Melinda Downing, U.S. Department of Energy Environmental Justice Program Manager, melinda.downing@hq.doe.gov.
www.thenejc.org

APRIL 3-5, 2013



Goal 1

LM Conducts Groundwater and Soil Investigation at Riverton, Wyoming, in Response to 2010 Flood

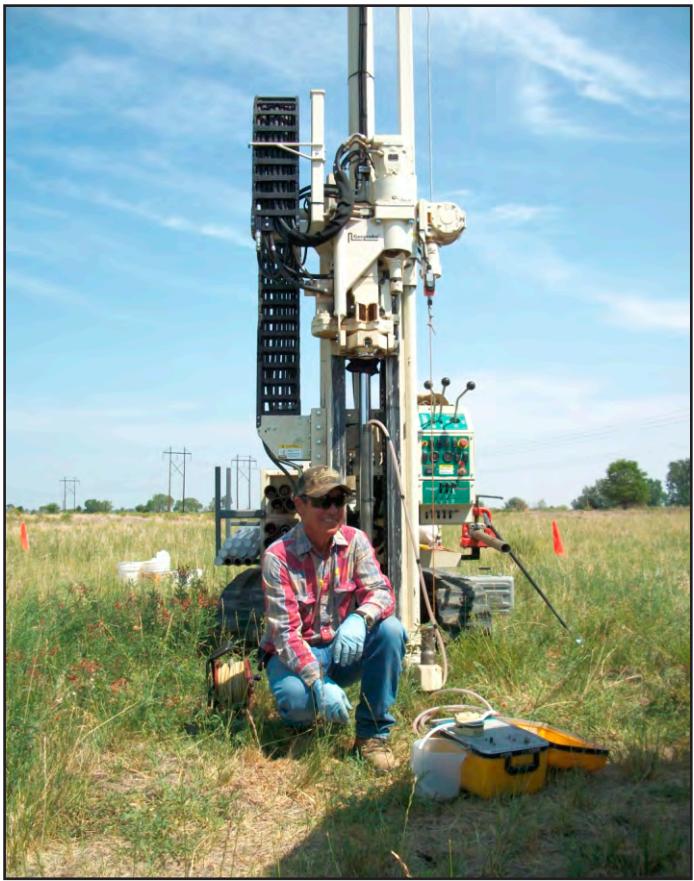
A team representing two Federal agencies—U.S. Department of Energy (DOE) Office of Legacy Management and U.S. Geological Survey—is evaluating redistribution of contaminants at the Riverton, Wyoming, Processing Site. The Riverton site, a Uranium Mill Tailings Radiation Control Act Title I site, located on the Wind River Indian Reservation in central Wyoming, processed uranium ore from 1958 to 1963. DOE relocated 1.8 million cubic yards of tailings waste offsite and completed surface remediation by 1989. Contaminant concentrations in shallow groundwater (located about 6 feet below ground surface) generally declined until June 2010, when a historic flood of the Little Wind River resulted in significant increases in dissolved contaminants.

The field team, managed by DOE, employed Geoprobe Systems® technology to collect groundwater samples from 103 locations for chemical analyses. The Geoprobe Direct Push machine allowed coring of the unsaturated zone to observe the soil profile.

Continued on page 17



The field team moves a Geoprobe by remote control.



A member of the field team operates a pump for sampling groundwater.



The field team drills at the former Riverton processing site.



Goal 4

LM's First Year with the Title X Uranium/Thorium Reimbursement Program

LM's New Role for the DOE Title X Reimbursement Program

Title X of the Energy Policy Act of 1992 authorized U.S. Department of Energy (DOE) to reimburse licensees of 1 thorium and 13 uranium processing sites (Figure 1) for a portion of their remedial action costs attributable to the sale of source material to the Federal government. The amount eligible for reimbursement is determined by applying a Federal Reimbursement Ratio which is based on the amount of source material sold to the Federal government.

Under the Title X Program, DOE receives claims from U.S. Nuclear Regulatory Commission (NRC) or Agreement State licensees annually, conducts technical reviews and financial audits of the claims to determine the amount allowable for reimbursement, reimburses each licensee, and tracks amount paid, disallowed, and owed in a running ledger.

Early in the Program, DOE selected the Defense Contract Audit Agency (DCAA) to perform financial audits of the Title X claims. DCAA and DOE signed a

Memorandum of Understanding establishing the respective responsibilities of each agency. DOE and DCAA typically conduct the technical review and financial audits concurrently, with DOE responsible for the final claim reimbursement determination.

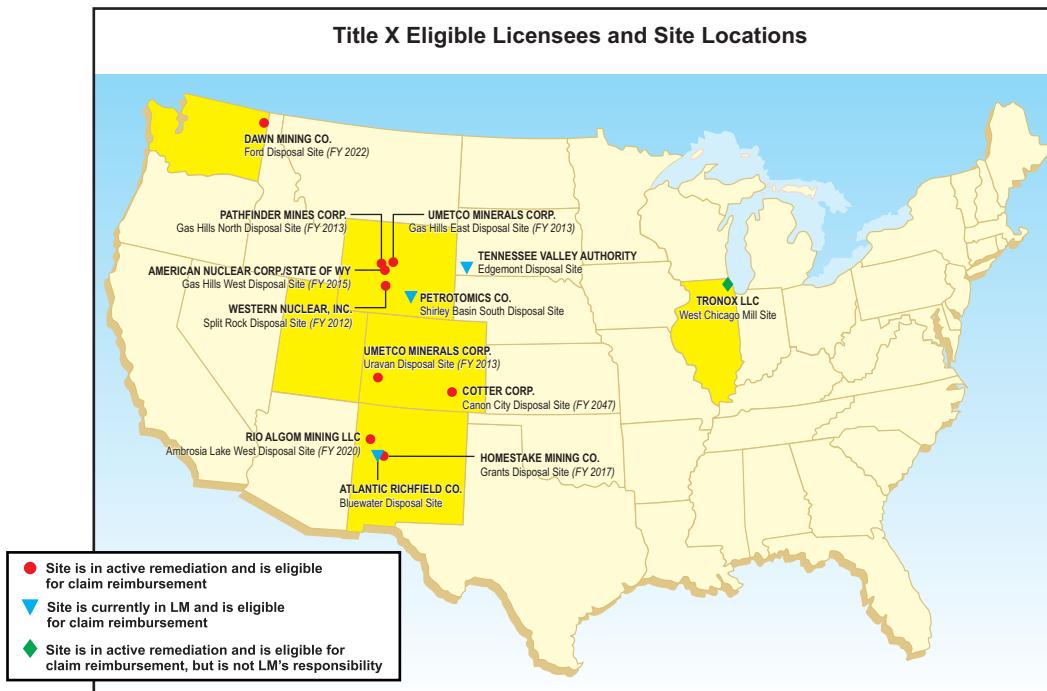
In May 2011, the Title X claim review and audit function was transferred from the DOE Office of Environmental Management (EM) to the Office of Legacy Management (LM.)

2011/2012 Claims and Audits

During the past year, LM received six licensee claim submittals totaling \$40.8 million and conducted preliminary reviews to identify deficiencies requiring correction before formal audit of the claims. One licensee was given an extension of the submittal date due to having a new project manager who was unfamiliar with the Title X Program and claim submittal requirements.

LM Title X staff then coordinated with the licensees and regional offices of the DCAA to schedule and conduct onsite audits of each claim. LM reviewed each claim

Continued on page 10





Goal 4

**DOE and Colorado Mesa University Education Agreement
Expands LM's Site Reuse Portfolio**

A partnership with Colorado Mesa University (CMU) in Grand Junction, Colorado, and the U.S. Department of Energy (DOE) recently provided a chance for CMU students and their instructor to visit the Grand Junction, Colorado, Disposal Site with DOE Site Manager, Rich Bush. Although this was not the first time CMU students had visited the site, it was the first time since DOE and CMU signed an education agreement that both parties hope will give students the opportunity to contribute to ongoing studies being conducted at the site.

In support of Goal 4, the Office of Legacy Management (LM) is currently conducting real property reuse activities at LM sites throughout the country. While reuse options can include renewable energy-related development or agricultural uses, it has been the goal of Deborah Barr, DOE Reuse Program Manager, to expand the range of reuse opportunities to include educational agreements with academic institutions and to explore the possibilities for students to learn about technical and environmental issues facing LM through field activities at appropriate LM sites.

One such site is the Grand Junction disposal site, located approximately 18 miles southeast of Grand Junction. Part of the disposal site was completed in 1994; the rest of the cell remains open until it is filled to capacity with Uranium Mill Tailings Radiation Control Act radioactive waste or until 2023, whichever comes first. A major impetus behind establishment of the new reuse agreement was the recognition by Deborah Barr, Rich Bush, and Dr. Russ Walker, Department Chair, Physical and Environmental Sciences at CMU, that this site could serve as a potential field laboratory for CMU students in the Environmental Science Program to have a significant real-world learning experience.

There were thousands of properties in Grand Junction where tailings were used for construction or fill material before the health threat from escaping radon gas was fully recognized. The State of Colorado and DOE cleaned up over 4,000 properties, removing the materials and moving them to the Grand Junction disposal site. This removal action significantly reduced the potential for radiation exposure to the residents of Grand Junction.

Because there are a number of vicinity properties, including utility corridors, that remain in Grand Junction, the disposal cell will remain open. As the City continues to repair roads and more tailings-contaminated soils are

Continued on page 18



Rich Bush, DOE Site Manager, explains the Grand Junction, Colorado, Disposal Site to Colorado Mesa University students.



Goal 1

Completion of the Five-Year Reviews for the Monticello, Utah, Radioactively Contaminated Properties Site (Monticello Vicinity Properties) and the Monticello Mill Tailings Site

Five-year reviews for the two Monticello, Utah, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites were completed in June 2012 by U.S. Department of Energy (DOE) Office of Legacy Management (LM), U.S. Environmental Protection Agency, and Utah Department of Environmental Quality. The purpose of a CERCLA Five-Year Review is to assess environmental remedies and ensure protectiveness of human health and the environment. Conducting the reviews was a nine-month effort that required several technical disciplines as well as frequent consultations between LM and the environmental regulators.

A public notice was placed in the *San Juan Record* and the *Blue Mountain Panorama* on August 1, 2012, to inform the public that the reviews had been completed. The reviews determined that the uranium mill tailings cleanup and ongoing monitoring were maintaining protection of human health and the environment. The next five-year review will be performed in 2017. The Monticello five-year reviews can be viewed on the LM website at:

[http://www.lm.doe.gov/Monticello/Documents.aspx.](http://www.lm.doe.gov/Monticello/Documents.aspx) ♦



The cleaned up mill site was restored with native plants and transferred to Monticello for recreational use.



DOE will continue monitoring excavations in Monticello's streets and will dispose of tailings that are found that had been used for fill around utility lines. Monitoring of groundwater at the former mill site and treatment of contaminated water east of the mill site will also continue.



Goal 1

LM Completes Increased Biological Monitoring at Monticello Sites

On June 5, 2012, the U.S. Department of Energy (DOE) Office of Legacy Management (LM) completed the biological monitoring at the Monticello, Utah, Disposal and Processing Sites, for the spring and summer of 2012, conducted as part of the remediation at the sites. The sampling phase consisted of four separate events at 2-week intervals. The focus of this year's monitoring was an area referred to as Wetland 3, which is the wetland furthest east. In previous years, monitoring had included other wetlands and a pond, but was discontinued after determination that contaminants were not above trigger levels for selenium, demonstrating that ecological receptors are not adversely affected from selenium increases resulting from site remediation efforts. Previous results from sampling in Wetland 3 indicated trigger levels had not been exceeded, but confirmation was needed.



Scientists collect water quality measurements in Wetland 3.

Continued on page 19

Goal 3

Controlling Retiree Medical Benefit Costs Saves DOE Millions

Washington River Protection Solutions, LLC, sponsor of the medical program for retirees from the Mound, Ohio, and Rocky Flats, Colorado, Sites and Mission Support Alliance, LLC, sponsor of the medical benefit program for retirees from the Fernald Preserve in Ohio, have taken the following actions to mitigate the cost of retiree health care benefits.

- Performed self-funded audits
 - Medical claims and pharmacy audits – ongoing savings generated through corrected claims processes
 - Dependent eligibility audits – removed ineligible dependents
- Negotiated with insurance providers and administrators to achieve best overall cost and value for contractors and employees
- Improved pharmacy contractual and financial terms with pharmacy administrators
- Introduced multi-tiered capabilities, such as 24-hour nurse hotlines, and expanded coverage where it was already available
- Began using multi-tiered pharmacy benefit programs with mail-order prescriptions, generic incentives, specialty pharmacy programs, and participant reviews

These changes have saved the U.S. Department of Energy millions of dollars and will continue to do so in the future. ♦



Program Update

Continued from page 6

LM's First Year with the Title X Uranium/Thorium Reimbursement Program

from a technical perspective. This review included conducting site visits to observe remediated areas and verify that work was performed as stated in the claim. LM also reviewed various records to determine whether work performed was required by the site license or remedial action plan. DCAA focused on the financial part of each claim by reviewing licensee financial records and accounting processes, including invoices, time sheets, the general ledger, subcontracts, and work orders. Reconciliation of technical and financial questions continued among the licensees, LM staff, and DCAA auditors for several months on two of the more complex audits. Then, DCAA issued a written opinion to LM on each claim, including recommendations of any costs ineligible for reimbursement.

Based on the technical review and the DCAA audit, Title X staff made a final determination of any nonreimbursable costs claimed by each licensee. Of the \$20.78 million eligible for reimbursement (after individual reimbursement ratios were applied), the Program decided that approximately \$1.2 million was ineligible for reimbursement.

LM staff then provided written notification to each licensee of the amount eligible for reimbursement and summarized why certain costs were ineligible. Funds were inadequate to cover all reimbursements; reimbursement shortfalls were identified and tracked in EM Title X Program accounting. Shortfalls will be paid as funding allows. Funding allowed for prorated reimbursements of approximately \$15 million, with an additional \$4.5 million owed by DOE. The amount available for reimbursement each year depends on what is appropriated by Congress.

Earlier this year, EM announced in the *Federal Register* the acceptance of claims for remedial action performed in 2011. In late April, LM received seven claims with potentially \$18 million in reimbursements if all costs are approved. The Title X Program has no funding to make any reimbursements for these claims. However, in August 2012, limited funding was received for the Program to conduct claim audits, thus allowing the Title X Program to keep current on the adequacy of submitted claims.

For these new claims, LM formalized the Program's preliminary review function. Six of the seven licensees have subsequently been asked to submit additional claim information so that audits can be performed. LM requested verification for some claims that all work performed was required under NRC or Agreement State direction or approved remediation license amendments. One licensee had inadequate scope for the work performed under the claim, and two did not adequately tie the work performed to specific requirements. All licensees have now responded acceptably.

The Title X Program will be using EM Consolidated Business Center financial staff to conduct four of the audits in late 2012 to early 2013. The staff is familiar with the Title X protocol for financial audits and also supported the Title X Program this past year to resolve financial audit questions on two of the more complex claims.

Title X Program Improvements

During the last year, LM implemented numerous improvements to the Title X Program.

To bring the Program into conformance with LM recordkeeping protocols, a records file index was created. Over 54 boxes of hard copy Program records were organized and electronically cataloged with the support of LM records management staff.

Continued on page 11



West Chicago Thorium Site, Kress Creek remediation.



Program Update

Continued from page 10

LM's First Year with the Title X Uranium/Thorium Reimbursement Program

To assure consistency among the Title X Program financial audits, LM initiated discussions with DCAA to reduce the number of auditing offices from three to one. This approach, which was used early in the Title X Program, would have potentially resulted in lower audit costs and led to additional audit efficiencies. The lack of funding for DCAA to conduct all seven audits this year will lead to a single DCAA office performing the financial audits. Discussions will resume if additional DCAA offices are used in the future.

LM provided lessons learned to the licensees after completion of audits last year. Recommendations included improving future claims by providing better technical descriptions of the work performed and providing any newly revised reclamation plans or regulator direction authorizing remediation. Licensees were also reminded of the importance of having formal subcontracts or work orders, as compared to informal or poorly documented direction to longstanding site consultants.

LM also improved the individual licensee statements of accounts that provide the Program's ledger of claim amounts requested, amounts determined to be reimbursable, reimbursements paid, reimbursement shortfalls, etc. With assistance from LM financial staff, spreadsheet calculations were simplified, the amount

of data requiring manual input was lessened, and spreadsheet linkage was identified and improvements planned. These accounting statements feed into the Title X Program Annual Report and Program Summary accounting spreadsheets maintained by EM.

Finally, in early fiscal year 2013, LM will conduct a management review of the Title X Program to identify additional efficiencies and improve the rigor of the technical review of claims. Other topics to be covered include the review of the financial audit function, completing the Statements of Account spreadsheet linkage, developing a technical review protocol, and whether to update the Program guidance document.

LM's new responsibilities for the Title X Program fit well with its responsibility for performing long-term surveillance and maintenance (LTS&M) at uranium mill sites transferred to LM under the Uranium Mill Tailings Radiation Control Act, Title II. Three of the uranium sites are already part of the LTS&M program, and LM will eventually take responsibility for the other nine as remediation is completed. Additionally, LM may manage the records for the one thorium site in the Title X Program. For the sites still to transfer, LM participation in the Title X Program gives it an early view of what types of responsibilities it expects to have for the sites in the future. ♦



West Chicago Thorium Site, Kress Creek remediation.



Goal 1

LTS&M and Enhancement of Disposal Cell Covers

U.S. Department of Energy Office of Legacy Management (LM) is evaluating methods for enhancing the long-term performance of disposal cell covers for sites regulated under the Uranium Mill Tailings Radiation Control Act (UMTRCA). This effort supports three LM strategic objectives: (1) reduce long-term surveillance and maintenance (LTS&M) costs; (2) increase confidence in the protectiveness of disposal cell covers; and (3) enhance the sustainability of covers.

How do covers work?

UMTRCA covers were designed to (1) meet regulatory standards for radon flux; (2) limit percolation of rainwater through tailings, thereby helping to satisfy groundwater protection standards; and (3) continue performing these functions for 200 to 1,000 years. Early, "conventional" UMTRCA cover designs rely on a low-permeability radon barrier—a highly compacted clay-like soil layer—to limit radon diffusion and rainwater percolation. The low-permeability layer is overlain by a surface layer of rock riprap to control erosion. Later disposal cell cover designs, called water balance covers, rely on the capacity of a soil sponge layer to store rainwater, which is seasonally returned to the atmosphere through soil evaporation and plant transpiration—evapotranspiration.

To spray or not to spray—is that the question?

LM's growing understanding of the ecology of disposal covers may lead to reductions in LTS&M costs. The rock layers on conventional covers create favorable habitats for deep-rooted plants in all climates—even in the desert—by reducing soil evaporation and trapping windblown dust, thereby providing the water and nutrients needed for plant germination and establishment. At many sites, spraying woody plants has been an LTS&M requirement. Costs of controlling vegetation, where required, have escalated as ecological processes continue to create more favorable plant habitat.

Vegetation on UMTRCA disposal cells is closely linked to cover performance. Plant encroachment on conventional covers can be either beneficial or detrimental depending on site-specific cover designs, potential long-term contaminant release pathways, and potential risks to human health and the environment. As benefits, plant transpiration can limit rainwater

percolation and contaminant leaching into groundwater, as with water balance covers, and plant foliage and roots can help mitigate erosion. Conversely, plants, when acting in concert with natural soil-forming processes, may increase radon and percolation flux rates, take up and disseminate contaminants, and create habitat for burrowing animals. For these reasons, a decision by LM to spray or not to spray vegetation hangs in the balance (Figure 1).

An evaluation of the state-of-the-science suggests that the protectiveness of covers in the long term may rely on how LM tailors site-specific vegetation management plans in the near term. Another finding was that the role vegetation will play in the long-term protectiveness of covers is complex and, currently, only partially understood. For these reasons, LM is implementing a plan to fill the data gaps—to provide the knowledge and tools LM will need to make informed decisions concerning LTS&M of covers.

Can we help Mother Nature improve the way covers work?

Designers didn't anticipate plant encroachment on conventional covers. They also didn't anticipate natural soil-forming processes that created fissures and greatly

Continued on page 13

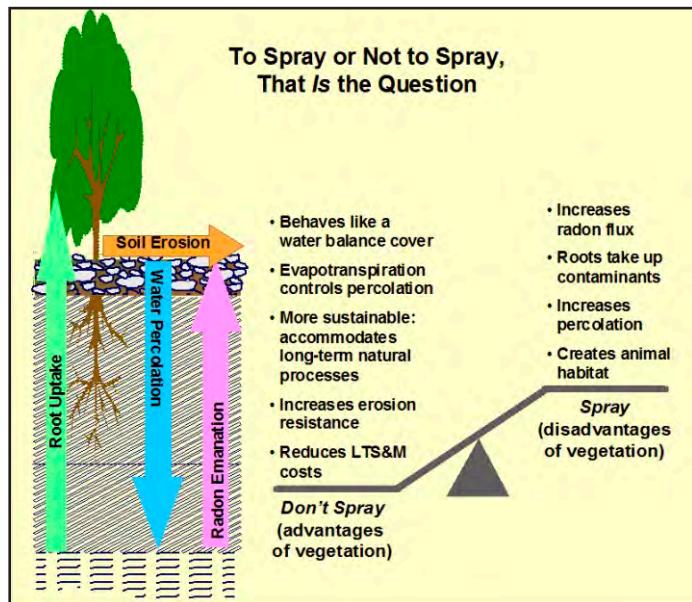


Figure 1. Potential advantages of vegetation may outweigh the potential disadvantages.



Continued from page 12

LTS&M and Enhancement of Disposal Cell Covers

increased the permeability of compacted soil layers—the low-permeability radon barriers. LM is exploring the premise that, counter intuitively, these unanticipated processes, if ushered along, may actually improve, rather than degrade covers. LM is concurrently (1) gaining a better understanding of how these natural processes alter cover performance; and (2) evaluating ways to tweak or enhance these processes. In other words, LM is exploring ways to help Mother Nature make covers more sustainable.

LM calls this enterprise the Enhanced Cover Assessment Program, or ECAP. The concept, in effect, is to accelerate favorable natural processes that will transform conventional covers with low-permeability radon barriers into water balance covers with soil sponges and plants that transpire—pump—water back into the atmosphere. There is still much to learn before LM can put the science into practice. ECAP is focused on understanding contaminant uptake by plants rooted through covers, the depths of soil-forming processes in covers, and the effects of ecological and soil-forming processes on radon attenuation. ECAP is also testing cover enhancement methods and the erodibility of enhanced covers at the Grand Junction, Colorado,

Disposal Site.

How is LM testing cover enhancement?

LM constructed two ECAP test facilities at the Grand Junction disposal site to evaluate cover enhancement methods. One facility consists of two large drainage lysimeters. The other is a large test pad.

The drainage lysimeters are like large plastic swimming pools filled with soil, rock, and instrumentation. Placement of soil and rock layers in the lysimeters matched the engineering design, materials, and construction of the existing Grand Junction disposal cell cover. The instrumentation monitors the water balance of simulated covers—how much water falls on the soil surface as precipitation, sheds as runoff, becomes stored in the soil sponge layer, evaporates, and transpires out of the soil sponge by plants (evapotranspiration), and, most important, how much percolates through the cover. One lysimeter will be ripped and planted; the other is a control and will be maintained similar to the existing disposal cell cover.

Continued on page 20

Goal 2

Yucca Mountain Transition Progress – Review by the Nuclear Waste Technical Review Board

Members of U.S. Nuclear Waste Technical Review Board (NWTRB) recently reviewed the U.S. Department of Energy (DOE) Office of Legacy Management's (LM) ability to preserve, protect, and make accessible legacy records and information from the Yucca Mountain Project (YMP) in Nevada. LM took responsibility for YMP records, information systems, and the Licensing Support Network (LSN) with the closure of the DOE Office of Civilian Radioactive Waste Management in October 2010.

The House Appropriations Subcommittee on Energy and Water Development gave the following directions to the NWTRB in its report on fiscal year 2012 appropriations (H. Rept. 112-118): "The NWTRB should also provide support to the Department of Energy and Nuclear Regulatory Commission's efforts to archive and preserve all Yucca Mountain-related documents and physical materials of scientific value."

To assess LM's progress toward maintaining YMP records and information, three NWTRB staff members conducted an in-depth search and retrieval exercise at the LM Business Center (LMBC) in Morgantown, West Virginia, in August 2012. The NWTRB developed a list of 131 documents and scientific data/analyses items that represent the full range and scope of the types of information generated during the YMP. LM was asked to

Continued on page 25



Goal 4

LM Supports Calibration of Airborne Radiation Sensors

A helicopter specially equipped to detect and measure radioactive material flew into Grand Junction recently to calibrate radiation sensors mounted on the aircraft by using the large-area calibration pads maintained by U.S. Department of Energy (DOE) Office of Legacy Management (LM) at the Grand Junction Regional Airport.

Staff from the DOE Las Vegas National Nuclear Security Administration's Aerial Measuring System (AMS) office at Nellis Air Force Base used radiation sensors mounted in pods on the helicopter, owned by AMS, to collect gamma ray data at the large-area calibration pads at the Grand Junction Regional Airport. The five pads were constructed with known amounts of naturally occurring uranium, thorium, and potassium imbedded in concrete. The data is used to calibrate the airborne radiation detection systems mounted on the aircraft.

As stated on their website, the AMS mission is to provide a rapid survey of radiation and contamination following a radiological emergency. Aircraft specially equipped to detect and measure radioactive material in the air and contamination on the ground are used to conduct the surveys. The AMS uses a sophisticated radiation detection system to gather and store radiological information on computers. The information

is used to produce maps of radiation exposure and contamination and is later used to determine the extent of the hazard and to decide when and where to send Federal, state, or local ground monitoring teams for further assessments.

Two of the AMS helicopter staff that flew to Grand Junction spent 2 months in Japan supporting the Japanese government at the request of the U.S. Ambassador soon after the March 2011 Fukushima earthquake. DOE airborne systems were used to map the spread of contamination caused by the nuclear reactors damaged by the effects of the tsunami generated by the earthquake. During aerial surveys in Japan, the helicopters could not go closer than a mile to the reactors due to the number of unmanned aerial vehicles operating to observe onsite activity. Language and cultural issues not normally a problem in the U.S. had to be overcome to complete the mission.

In addition to the large-area calibration pads at the Grand Junction Regional Airport, LM maintains and operates geophysical calibration facilities for borehole and handheld radiation survey instruments at the Grand Junction Site in Colorado; in Casper, Wyoming; George West, Texas; and Grants, New Mexico. The

Continued on page 21



National Nuclear Security Administration's Aerial Measuring System helicopter calibrates sensors at the Office of Legacy Management Grand Junction Regional Airport large-area calibration pads.



Office of Legacy Management staff receive Transportation Security Administration training and badges to escort calibration facility users within the airport security perimeter.



Goal 1

NASA's Missions Have a Link to the Mound Site

When the National Aeronautics and Space Administration (NASA) landed the Curiosity rover on the surface of Mars, workers from the former U.S. Department of Energy (DOE) Mound Laboratories in Miamisburg, Ohio, including the volunteers at the Mound Science and Energy Museum (MSEM), proudly watched. A technology critical to the success of the mission can be directly linked to the Mound site.

One of the inventions behind Curiosity's multimission radioisotope thermoelectric generator (RTG) power source was developed by scientists at the Mound Laboratories. K.C. Jordan and J.H. Birden are credited with conceiving of and building the first RTG in 1954. RTGs convert the thermal power produced through the natural decay of radioisotope "fuel" into usable electric power. These devices were also called thermal batteries, radioactive batteries, or general-purpose heat sources.

Previous NASA missions powered by RTGs built at the Mound Laboratories continue to explore the far reaches of our universe. Power sources for NASA's Pioneer, Viking, Voyagers 1 and 2, Galileo, Ulysses, and Cassini missions were built at the Mound Laboratories when they were in operation. In August 2012, after being in space for 35 years, Voyagers 1 and 2 were still sending signals back to earth from 11 and 9 billion miles away, respectively. Voyager 1 was launched in 1977 and is now the longest-operating spacecraft in history and the most distant manmade object from Earth.

The Mound site has a rich history of scientific contributions, beyond the RTGs. Built in 1948, the Mound Laboratories continued the World War II Manhattan Project work started in Dayton, Ohio, and they became the first U.S. Atomic Energy Commission site to support the U.S. government's design laboratories during the Cold War and continued until 2002. Environmental remediation at the site started in 1990, while parts of the laboratories were still in production mode, and concluded in 2006.

The MSEM is located in a former DOE building onsite and is dedicated to maintaining and sharing the site's rich history with the public. MSEM volunteers have gathered artifacts from the RTG program and other scientific contributions made by former Mound

employees. Displays, tours, and monthly programs educate the public about the Mound site.

The MSEM is important to the DOE Office of Legacy Management (LM). It helps LM preserve, protect, and share records and information, and it is LM's partner in educating the public about the site's institutional controls and efforts to protect human health and the environment. The MSEM became the new home of the Comprehensive Environmental Response, Compensation, and Liability Act Reading Room after the Mound staff moved to the Fernald Preserve, also in Ohio. Since DOE is no longer located at the Mound site, the public often stops at the MSEM during visiting hours with questions about site operations, environmental cleanup, and LM's oversight mission.

The following links provide more information about the NASA missions and the MSEM:

http://www.nasa.gov/mission_pages

<http://ntrs.nasa.gov>

<http://moundmuseum.com> ♦



During operations, scientists, engineers, and technicians at the Mound Laboratories were at the forefront of several space exploration technologies. LM personnel continue to carry on this proud tradition of excellence in their oversight role of the Mound site.



Goal 1

Innovative Pest Management for Controlling Noxious Weeds at UMTRCA Title I Lowman, Idaho, Disposal Site

The UMTRCA Title I Disposal Site near Lowman, Idaho, is in Clear Creek valley on the western side of the Sawtooth Mountains at an elevation of 4,000 feet, and is located on a Pleistocene river terrace about 80 feet above Clear Creek. The area surrounding the site is steeply mountainous and forested by ponderosa pine. Mountains above the site rise to elevations of 6,000 feet. Clear Creek is a tributary to the South Fork of the Payette River, located approximately half a mile south of the site.

The site is in “one of the more scenic areas of the United States,” says Mark Kautsky, U.S. Department of Energy (DOE) manager for the Lowman site. But because of former processing activities, it became prime habitat for six state-listed noxious weed species: Dalmatian toadflax, spotted knapweed, Canada thistle, rush skeletonweed, oxeye daisy, and hoary alyssum.

Some of these weeds—Dalmatian toadflax, spotted knapweed, and Canada thistle—have been treated annually with herbicide since 2003, and inspectors have noted a gradual decrease in their populations. Additionally, in 2008, DOE introduced Mecinus janthinus, a stem-boring weevil that specifically targets Dalmatian toadflax, at two locations on the ridge east

of the disposal cell. During the 2012 inspection, DOE inspectors noticed only a few Dalmatian toadflax plants present on the site, and they were visibly stressed and not producing flowers. Because of the presence of these insects, Dalmatian toadflax is no longer treated with herbicide.

Treating noxious weeds with natural predators is a sustainable alternative to traditional spraying, and it

Continued on page 22



Dalmatian Toadflax showing signs of stress caused by *Mecinus janthinus*, a stem-boring weevil.

Continued from page 2

LM Co-Hosts International Workshop on Uranium Legacy Sites

and institutional controls, and records management, all responsibilities of LM for uranium and other remediated legacy sites in the U.S. IAEA wanted to highlight the mission of LM to help participants better understand what challenges they will have after remediation to assure that sites continue to protect the public and the environment. A topic of particular interest to many participants is LM’s program of beneficial reuse of sites. During visits to Monticello, Rifle, and Grand Junction, workshop participants were able to see examples of former mill processing sites now being used for recreation and renewable energy generation, among other uses.

For the workshop participants, the two weeks were sprinkled with activities to give them a chance to see some of the natural beauty of the area and experience some western hospitality. While in Moab, the group spent an evening in Arches National Park, and the Tuesday night workshop dinner was a barbecue in Colorado National Monument. Also, a Sunday afternoon was spent at the annual Peach Festival in Palisade, Colorado. Reaction from the participants was unanimously positive. LM continues to support this IAEA effort through ongoing meetings and expects to be able to participate in additional technical exchanges. ♦



Continued from page 5

LM Conducts Groundwater and Soil Investigation at Riverton, Wyoming, in Response to 2010 Flood

Soil samples collected from 34 locations will be analyzed at DOE's Environmental Sciences Laboratory in Grand Junction, Colorado, to determine amounts of uranium in the solid form that may affect groundwater concentrations. The investigation will provide a better understanding of the geochemical reactions that occurred when dilute river water contacted the soil-aquifer and will enable development of new models for predicting the duration of natural flushing in the future.

April Gil, LM Environment Team Lead and Grand Junction Site Manager, provided interviews to several media outlets during the sampling event, which were distributed to the Associated Press. She also met with local stakeholders, including the Wind River Environmental Quality Commission and congressional representatives.

Results of the investigation will be provided in an upcoming data report, followed by interpretative reports and a presentation at the 2013 Waste Management Conference. ♦



Bill Dam, on detail from U.S. Geological Survey, and an LM contractor employee examine a soil core collected inside a plastic tube.



A member of the field team operates a geoprobe machine for sampling.



Continued from page 7

DOE and Colorado Mesa University Education Agreement Expands LM's Site Reuse Portfolio

encountered, the contaminated material will be properly disposed of at the site. The Grand Junction disposal cell was also where contaminated soils cleaned up from the Highway 160 Site on the Navajo Nation in Arizona were disposed of in 2011.

On a recent visit to the site with CMU students, Rich Bush showed pictures of the downtown mill site before and after remediation and discussed with the students why DOE chose to move the mill tailings away from the Colorado River and the population center. The decision to move the tailings was made in consultation with the State of Colorado, which shared in the cost of the relocation and construction. The cleaned up former processing site was located in Grand Junction and is now owned by the City. The site includes a bike path open to the public.

During the visit, the students compared and contrasted the municipal solid waste landfill nearby, contrasting the differences between the methods of disposal, the designs, and the risks being mitigated in each case. As a follow-up, Dr. Walker had the students describe in an essay what differences they saw and what the risks would be for a population if the uranium mill tailings had been left in place next to the Colorado River, if they were used as construction materials, and if they were relocated to the Grand Junction disposal site as they were. Emphasis was given to the issue of risk versus benefit and how to balance the costs to decrease the risk of exposure to people and the environment by isolating the tailings through: 1) disposal in place; or 2) relocation.

The Grand Junction disposal site provides CMU faculty and students an opportunity to learn about surface reclamation, the disposal cell cover performance studies, and vegetation and environmental monitoring. Students can also participate in field activities for groundwater sampling and vegetation monitoring.

Students can shadow DOE scientists and engineers, providing valuable field experience on equipment use, determining groundwater flow directions from triangulated level measurements, and chemical data analysis and trending. Students will also consider specific risks from different exposure scenarios and how to mitigate them.

For example, CMU students may be involved with studies at the disposal site through DOE's Environmental Sciences Laboratory, with a continuing study of treatments for the Enhanced Cover Assessment Project. DOE constructed facilities at the disposal site to evaluate cover enhancement methods and cover performance. One of the facilities is a test pad that was planted in 2011 to evaluate the effects of vegetation on cover performance. One of the tasks for CMU students may be to help plan and participate in an evaluation of the effort, such as evaluating different combinations of plant species and planting methods.

To allow entry for all CMU visitors, Dr. Laura Kilpatrick, LM Senior Realty Officer, developed a license intended to define where the visitors are allowed to go (always under DOE and/or Legacy Management Support staff escort) and to ensure safe activities while at the site. Dr. Kilpatrick worked closely with CMU to ensure they were satisfied with the provisions of the agreement while still providing LM with the necessary documentation.

The agreement with CMU provides opportunities for students to learn through more direct experience in the field. They will learn about technical and environmental issues impacting the region, add to their college education with field experience, and gain insight into potential college studies and career tracks. ♦



DOE Site Manager Rich Bush explains the Enhanced Cover Assessment Project to Colorado Mesa University students while standing next to one of LM's Systems Operation and Analysis at Remote Sites locations, which collects data remotely and transmits it to LM servers daily.



Program Update

Continued from page 9

LM Completes Increased Biological Monitoring at Monticello Sites

"The monitoring this year was structured differently than in years past in that we were targeting a much larger window of potential exposure to the red-winged black birds—the four events spanned the entire nesting season for the birds. For years we struggled with small sample sizes, a consequence of natural wetland evolution and climatic influences. We wanted our monitoring this year to confirm early results and increase certainty in the data for Wetland 3," said Jason Nguyen, LM Project Manager for the biological monitoring at Monticello, Utah. The target of the sampling effort was macroinvertebrates (insects, snails, larvae, etc.) living in the wetland. These samples were analyzed for selenium, a contaminant known to bio-accumulate in some wetlands.

"Selenium levels are important because if birds ingest too much selenium it weakens the shell of their eggs," added Nguyen. The planning and new structure this year worked well, as scientists were able to collect 24 samples, which was significantly larger than events in years past. Results from the laboratory analysis were received by LM in August 2012 and showed a mean concentration of 3.02 mg/kg, compared to the trigger level of 7 mg/kg. "We were thrilled to be able to collect as many samples as we did this year. These results will go a long way in eliminating previous uncertainty due to small sample sizes," noted Nguyen.

A final report containing biological monitoring results was issued in September 2012 and is available on the LM website at:

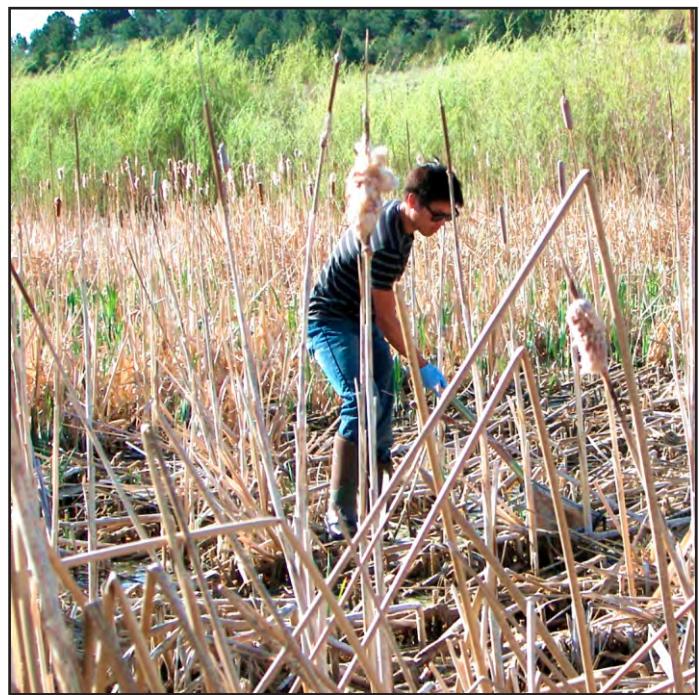
<http://www.lm.doe.gov/monticello/Sites.aspx>. ♦



A sampling net filled with typical collected material.



Scientists sort through the collected material in order to bottle the macroinvertebrates to be analyzed.



DOE Scientist Jason Nguyen collects macroinvertebrate samples in Wetland 3.



Continued from page 13

LTS&M and Enhancement of Disposal Cell Covers

The test pad was constructed to practice and compare soil ripping and revegetation methods. LM is comparing three implements for ripping and blending rock and soil layers: a conventional straight shank ripper; a wing-tipped shank fabricated by LM specifically for the study; and an oscillating, wing-tipped, parabolic shank. This third implement is a patented device originally designed to loosen compacted earth prior to planting vineyards in California. Last fall, LM tried out these implements by ripping the test pad (Figure 2). Last spring collaborators from Geo-Smith Engineering LLC, University of Wisconsin, and Desert Research Institute excavated trenches in the test pad to evaluate which implement created the best soil sponge (Figure 3). Other portions of the test pad were planted to evaluate revegetation practices— different combinations of plant species and planting methods.

LM's strategic plan promises to seek better ways to assure protection of human health and the environment, to improve the long-term sustainability of remedies, and to reduce LTS&M costs. LM is pursuing these goals by providing knowledge and tools to improve LTS&M of disposal cell cover vegetation and enhance disposal cell covers in ways that promise to be sound, sustainable, and cost-effective. ♦



Figure 3. ECAP collaborators collecting bulk samples as part of an evaluation of cover enhancement alternatives.



Figure 2. Ripping the cover enhancement test pad.



Continued from page 14

LM Supports Calibration of Airborne Radiation Sensors

Grand Junction borehole facility is the national standard for determining and calibrating K-factor of borehole radiation sensors. (The K-factor is used to convert gamma ray counts to actual grade concentrations of uranium or radium.)

The various calibration pads and boreholes managed by LM were constructed in the 1960s and 1970s to support uranium exploration. Other uses of the calibration facilities have included calibration of instruments that were used as part of a national assessment of U.S. uranium resources that were managed out of the Grand Junction Office in the 1970s, calibration of instruments used to detect leakage from underground storage tanks at the Hanford Site in Washington and Idaho National Laboratory, and more recently for calibration of instruments used in site characterization, remediation, and monitoring of sites with radiological contamination.

For more information on LM calibration facilities, visit <http://www.lm.doe.gov/land/calibration.htm> or contact Deborah Barr at deborah.barr@lm.doe.gov.

For more information on the NNSA Aerial Measurement system, visit <http://www.nnsa.energy.gov/aboutus/ourprograms/emergencyoperationscounterterrorism/respondingtoemergencies/consequencemanagem-0.> ♦



National Nuclear Security Administration staff member Dr. Piotr Wasiolek explains operations to Deborah Barr, Office of Legacy Management Calibration Facilities Project Manager.



Continued from page 16

Innovative Pest Management for Controlling Noxious Weeds at UMTRCA Title I Lowman, Idaho, Disposal Site

appears to be working well on Dalmatian toadflax at the Lowman site. Unfortunately, not all of the noxious weeds at the Lowman site are suited to innovative pest management methods because the natural predators are either unknown or unavailable in commercial quantities. "In those cases, we use targeted applications of herbicide," says Kautsky.

In 2004, inspectors discovered a small number of rush skeletonweed plants scattered across the Lowman site. Rush skeletonweed is pervasive throughout the Pacific Northwest and is difficult to control. The Boise County weed control supervisor informed DOE that they had released three biocontrol insects in the Lowman area to target and control the spread of this weed. However, the number of these plants had increased approximately tenfold on the DOE site by 2010. A more effective biocontrol insect—*Bradyrrhoa gilveolella*, a root-feeding moth—is being bred but is not yet available for public release. When it becomes available, DOE may release this insect on the disposal site. Until then, this weed has been and will continue to be treated with herbicide. Only a few rush skeletonweed plants were observed in the area in 2012.

The State of Idaho added several noxious weed species to its control list in 2008. Two of these species, oxeye daisy and hoary alyssum, have been found on the Lowman site and they have been treated with herbicide since 2010. Few hoary alyssum plants remain, but oxeye daisy continues to be sparsely scattered throughout the site. The Boise County pesticide applicator, who was onsite during the 2012 inspection, will continue to treat these and other noxious weeds with herbicide until other biological methods become available. ♦



DOE site manager Mark Kautsky (left) with Dean Nygard (center) and Clyde Cody (right), both from Idaho Department of Environmental Quality, at the 2012 inspection of the Lowman, Idaho, Disposal Site.



Goal 1

DOE Feeds Families CANstruction Sculpture Contest

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) was awarded first place in the DOE Feeds Families CANstruction Sculpture Contest. The Feds Feed Families is a food drive campaign that assists food banks in replenishing supplies during the summer months. The sculpture contest was an opportunity for DOE employees to have some fun while doing their part to alleviate hunger across the nation. LM's entry was a sculpture of a truck built from food items off the "most wanted" donation list for the Feds Feeds Families Campaign. The competition was open to site and Headquarters organizations. Among the LM locations, a total of 874 pounds of food was donated for the campaign. ☀



The front view of the truck sculpture by LM employees.



The sculpture won first place in the Feds Feed Families CANstruction Sculpture Contest.

As environmental stewards, LM is continually seeking opportunities to protect tomorrow's future. One simple step we can take toward improving environmental consciousness is to distribute the *Program Update* newsletter via e-mail instead of sending a printed copy.

Please send your e-mail address and your first and last name to lm@hq.doe.gov so that we can update our database.

Thank you for your assistance.





Goal 4

Lions Club International Donates 5,000 Trees and Labor to Fernald Preserve

In early 2012, Lions Club International (LCI) sponsored a tree planting event at the Fernald Preserve in Ohio. The club donated over 5,000 seedlings to help expand a forest restoration project in the southern portion of the site. Nearly 100 volunteers planted more than 3,200 seedlings across 4 areas totaling 3 acres with the help of Fernald Preserve staff. The remaining trees were planted a few days later by the site's ecological restoration personnel.

LCI is the world's largest service club, with a presence in over 200 countries worldwide. With the world losing a large percentage of its original forests during the past century, reforestation is a key component of the organization's Protecting Our Environment campaign. Due to the Fernald Preserve's recognized success in ecological restoration, local chapters of LCI selected the site for their tree planting initiative. The planting event was coordinated by the site's Ecological Restoration and Public Affairs staff. In addition to volunteers from local LCI chapters, the club sought out and partnered with area colleges and universities to increase the number of planting volunteers.

"Developing and fostering a partnership with a recognized community service group such as the Lions Club International is part of the Fernald Preserve mission," said DOE Site Manager Jane Powell. "It's important that the surrounding communities recognize the success of Fernald's cleanup and the ecological restoration of the 1,050-acre site."

Powell recognizes the positive affects that a large number of people working together can make. "Planting 5,000 trees helps to expand the site's establishment of native plant communities, increases wildlife habitats, and makes a strong connection between the Fernald Preserve and nearly 100 volunteers who can claim a little of the site and LM mission as their own." ♦



Volunteers at the Fernald Preserve had a unique experience and worked in areas normally off-limits to the public. The trees these volunteers planted will help LM meet its site mission and benefit the local community.



Goal 5

Office of Legacy Management Welcomes Returning Employee

Raymond Plieness returned to the U.S. Department of Energy (DOE) Office of Legacy Management (LM) on July 30, 2012, to work in our Westminster, Colorado, office. He is serving in a senior advisor role and reports to the Director, Office of Site Operations.

Mr. Plieness graduated from Montana State University with a bachelor's degree in civil engineering in 1980. He started his government career that same year. He initially worked for the U.S. Department of the Interior Bureau of Reclamation in Billings, Montana, as a planning engineer analyzing water resource and hydropower development projects. Over the past 32 years, he has filled various project management and management positions for the U.S. Department of the Army and DOE, working with both the Office of Environmental Management and LM. Mr. Plieness is also a registered professional engineer. He returns to LM after an assignment with the U.S. Department of the Navy.

During his previous time with LM, he was instrumental in the development of policy and guidance for long-term surveillance and maintenance, site transition, and property reuse, as well as execution of the site management mission. Prior to departing for the Navy, Mr. Plieness served for several years as the Director, Office of Site Operations and as the Grand Junction Office Manager.

In his most recent Navy assignment, Mr. Plieness was the Operations Officer for the Guam Program Management Office with the Naval Facilities Engineers Pacific Command. In this position he managed the master planning, environmental programming, construction, and public works execution for development of facilities on Guam to accommodate the movement of Marine Corps troops and their families to Guam from Okinawa, Japan. ♦♦

Continued from page 13

Yucca Mountain Transition Progress – Review by the Nuclear Waste Technical Review Board

demonstrate that the information could be located and accessed, and in many cases both the hard copy and electronic media were requested. The exercise included a demonstration of LM's ability to retrieve electronic information from the 1.8 million electronic records in the Yucca Mountain Records Information System and retrieval of a sampling of physical records from the 14,000 YMP boxes in the LMBC.

LM's Archives and Information Management (AIM) Team coordinated closely with the NWTRB staff members during the past several months to facilitate a productive LMBC visit. LM provided detailed answers to NWTRB requests for information prior to the visit and conducted a familiarization tour of the LMBC once the staff members arrived. AIM Team personnel conducted document retrieval exercises from YMP information systems. LM was able to successfully demonstrate its records management processes and the ability to quickly and accurately locate requested materials.

Additionally, LM provided an update on progress made since a briefing to the full NWTRB in September 2011 in Salt Lake City, Utah. NWTRB personnel were impressed with the progress mentioned, especially the upgraded electronic records information system, which they praised as a "vast improvement" over the original system.

Upon completion of the 2-day exercise, the NWTRB staff described their initial impressions in a memorandum. "By any measure the search-and-retrieval exercise was a success," the memorandum states. "Record retrieval tests of electronic and physical records performed by the LM staff according to the Board retrieval plans were successful... It is clear that these people are professionals who know what they are doing." ♦♦



Legacy Management Goals



Goal 1. Protect human health and the environment

Objectives

1. Comply with environmental laws and regulations.
2. Reduce health risks and long-term surveillance and maintenance (LTS&M) costs.
3. Partner with other Federal programs to make environmental remedies better and last longer.
4. Oversee DOE implementation of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.



Goal 2. Preserve, protect, and share records and information

Objectives

1. Meet public expectations for outreach activities.
2. Protect records and make them accessible.
3. Protect and ensure access to information.



Goal 3. Meet commitments to the contractor work force

Objectives

1. Safeguard contractor pension plans.
2. Fund contractor health and life insurance.



Goal 4. Optimize the use of land and assets

Objectives

1. Optimize public use of Federal lands and properties.
2. Transfer excess government property.
3. Improve domestic uranium mining and milling operations.



Goal 5. Sustain management excellence

Objectives

1. Renew LM's designation as a high performing organization (HPO).
2. Implement LM's *Human Capital Management Plan*.
3. Operate in a sustainable manner and reduce LM's carbon footprint.



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