U.S. Department of Energy



LM Representatives Attend IAEA Forum in Vienna, Austria Beyond Boundaries: LM's Role as an International Partner

LM Collaborates With Central Asian Partners at IAEA Conference

DIRECTOR'S CORNER



LM is essential to DOE's international cooperation efforts

Former U.S. Attorney General John Ashcroft once remarked that if necessity is the mother of invention, it's the father of cooperation.

That's another way of saying that to help ourselves, we must help others. It is in that spirit that the U.S. Department of Energy (DOE) Office of Legacy Management (LM) participates in global partnerships to learn from others and share our expertise with those who might benefit from it.

LM is increasingly providing input on the international stage with efforts led by LM Technical Director for Long-Term Stewardship David Shafer, who leads LM's International Affairs efforts. Learning from the experiences of other nations and sharing our lessons learned is critical in global efforts to protect human health and remediate — and restore — the environment.

In this issue of Program Update, there are articles that describe our international activities and highlight LM-specific work.

Since 2010, LM has partnered with countries in Asia, Europe, and North America. Recently, in Grand Junction, Colorado, LM welcomed representatives from Kyrgyzstan, Uzbekistan, and Tajikistan as part of the International Atomic Energy Agency (IAEA) Coordination Group for Uranium Legacy Sites (CGULS), which addresses abandoned mines in Central Asian republics. Just as DOE previously learned from others' efforts, LM is now sharing its lessons learned. CGULS visited sites in Grand Junction and Rifle, Colorado, and Monticello, Utah, along with Defense-Related Uranium Mines (DRUM) program sites and the Burro Mines Complex in Colorado.

This is just one example of our international affairs activities, which included a recent visit by Shafer to Vienna, Austria. That visit was part of IAEA's International Working Forum on Regulatory Supervision of Legacy Sites to address contaminated Cold War sites and post-remediation strategies, site transitions, and more.

LM was also represented in November at an IAEA meeting in South Africa to address preventative measures at Africa's active uranium processing facilities, as well as remediation strategies at the continent's legacy sites.

Also in November, LM presented virtually at a Nuclear Energy Agency' initiative — "Expert Group on Awareness Preservation" - that took place in Belgium. LM provided information about the Fernald Preserve, Ohio, Site and discussed how institutional knowledge of waste disposal is preserved from generation to generation.

In 2023, LM will welcome a Canadian delegation to learn about LM's vicinity property program and how it might relate to strategies for the Port Hope, Ontario, site that processed uranium ore in the 1920s and 1930s.

These efforts exemplify the range of expertise the LM team possesses and how LM attempts to learn from and assist global partners with environmental remediation and long-term stewardship.

This collaborative approach creates a global forum that communicates best practices and shares valuable, often technical, information. LM is proud to play a role in this global community that works to protect human health and the environment for people everywhere in the world.

Warm Regards,

Carmelo

Carmelo Melendez

Welcome to the October-December 2022 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-ProgramUpdate@Im.doe.gov

LM Goals



Goal 1 Protect human health and the environment.



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



Goal 3 Safeguard former contractor workers' retirement benefits.



Goal 4 Sustainably manage and optimize the use of land and assets.



Goal 5 Sustain management excellence.



Goal 6 Engage the public, governments, and interested parties.

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LM staff and delegates from the 2022 CGULS technical meeting visit the Atomic Legacy Cabin at the LM Field Support Center in Grand Junction, Colorado, in August 2022.

LM International Efforts Support Remediation and Stewardship Projects Worldwide



LM's international efforts support long-term stewardship and remediation projects worldwide, with events in Austria, South Africa, and Belgium

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is committed to protecting human health and the environment in the United States and across the world. Since 2010, LM has collaborated with international organizations and professionals to support long-term stewardship at remediated uranium mining and milling sites in Europe, Central Asia, and Canada. For example, LM works with the International Atomic Energy Agency (IAEA), an autonomous bureau within the United Nations that focuses on nuclear cooperation and using nuclear technologies for peaceful purposes. LM provides support to IAEA's Coordination Group for Uranium Legacy Sites (CGULS) to address abandoned uranium mines and mills in Central Asian countries. To accomplish these goals, LM and LM Strategic Partner staff travel to other countries and welcome visitors from various organizations and countries to LM sites and facilities. In fact, LM hosted delegates from the Central Asian countries of Kyrgyzstan, Uzbekistan, and Tajikistan for an IAEA technical meeting in Grand Junction, Colorado, from Aug. 28-Sept. 2, 2022, to discuss different post remediation management activities. Now independent, post-Soviet states, these three countries supplied uranium during the Cold War. Today, large, abandoned mines and ore-processing sites that need to be remediated remain in these countries — the CGULS initiative has identified nine priority remediation areas, two of which are complete, with others underway.



The IAEA and the European Bank for Reconstruction and Development (EBRB) support the remediation of seven major sites among the three countries. Once remediation is complete, IAEA's and EBRB's goal is to turn over long-term stewardship responsibility for the sites to the countries. "The workshop was a way to jump start that process in Central Asia," said LM Technical Director for Long-Term Stewardship David Shafer.

Technical meeting participants visited LM's Rifle, Colorado, Disposal/Processing Site, the Grand Junction, Colorado, Disposal/Processing Site, and the Monticello, Utah, Disposal and Processing Sites. They also visited Defense-Related Uranium Mines program sites and the Burro Mines Complex in San Miguel County, Colorado, that LM reclaimed in 2021 and 2022. The technical meeting included presentations and discussions about stakeholder involvement and LM's responsibility for additional resources, including historical and cultural features.

LM also participates in the IAEA International Working Forum on Regulatory Supervision of Legacy Sites (RSLS) to support remediation and post-remediation management of radiologically contaminated sites, many that operated during the Cold War and were abandoned afterward. Shafer recently attended IAEA RSLS technical meeting in Vienna, Austria where he and other LM representatives presented on various topics, including LM's history, post-remediation management, and DOE's site transition policy. Delegates from more than 20 countries participated in breakout sessions to identify topics to cover in a safety guide that IAEA will be developing over the next five years to address long-term post-remediation management of sites and areas that were radioactively contaminated.

"The IAEA looks at LM as being one of the leading organizations in the world for post-remediation management of nuclear sites, particularly given the large variety of sites that we do manage," Shafer said.

On Nov. 21, 2022, LM Supervisor and Field Manager Paul Kerl attended a joint RSLS/CGULS meeting in Centurion, South Africa. Some countries in Africa are still producing uranium, while other countries like Niger and the Ivory Coast have legacy mines dating back to the Cold War. IAEA's long-term

vision for these South African countries is a program like that of the Central Asian countries. RSLS/CGULS meeting participants supported two goals: addressing past legacy uranium-mining sites and preventing a new generation of legacy sites from mining for rare earth elements.

From Nov. 22-24, LM Site Manager Brian Zimmerman participated remotely in the Nuclear Energy Agency's initiative called "Expert Group on Awareness Preservation," in Dessel, Belgium, which extends a prior initiative in which LM participated in 2019 called "Preservation of Records, Knowledge, and Memory Across Generations." Zimmerman presented on the Fernald Preserve, Ohio, Site and discussed how institutional knowledge of waste disposal is shared and preserved across generations.

LM is planning to host a delegation from Port Hope, Ontario, Canada, in February 2023. In the 1920s and 1930s, Port Hope was the principal site of radium-ore processing in Canada, and the ore tailings were used for construction and fill dirt in the region. Subsequently, the Port Hope Area Initiative was created to fulfill Canada's commitment to cleaning up historic wastes in Port Hope and Port Granby and leave an honorable legacy for future generations. Though the ore-processing facility in Port Hope has been remediated, the Port Hope Area Initiative project staff aim to understand how LM's vicinity property program in Grand Junction, Colorado, has been managed. At one time, there were more than 4,000 locations in Grand Junction and the surrounding area where uranium mill tailings were used for construction and fill.

"It is a real privilege for LM to contribute to environmental stewardship around the world, but LM does not have all the answers. International activities give us insights on ways that other countries are addressing similar challenges in ways we have not considered," Shafer said. \Rightarrow



LM Representatives Attend International Atomic Energy Forum in Austria



The International Atomic Energy Agency Working Forum focused on Regulatory Supervision of Legacy Sites

Representatives from the U.S. Department of Energy (DOE) Office of Legacy Management (LM) attended the International Atomic Energy Agency (IAEA) Working Forum on Regulatory Supervision of Legacy Sites (RSLS) in Vienna, Austria, from Oct. 24-28, 2022.

Since its launch in 2010, the forum has aimed to improve shortand long-term safety of radiologically contaminated sites. The working forum facilitates collection, collation, and exchange of information for effective and efficient site management consistent with IAEA standards and international practices. The forum also offers mutual support among site operators and regulators and encourages sharing legacy-site management lessons.

The IAEA forum includes meetings, workshops, demonstration events, and forming working groups that address legacy sites' safety measures to enhance the overall framework, safety, and environmental impacts. The forum also includes professional development for regulators. Themes range from identifying legacy sites to managing site remediation.

LM Office of Business Operations (OBO) Deputy Director Tania Smith Taylor, Uranium Mill Tailings Radiation Control Act (UMTRCA) Program Manager Mark Kautsky, and Technical Director for Long-Term Stewardship David Shafer participated in the forum.



David Shafer, left, takes part in a discussion at the International Atomic Energy Agency's Working Forum on Regulatory Supervision of Legacy Sites in Vienna, Austria, in October 2022. The forum aims to improve short- and long-term safety of radiologically contaminated sites.

"One of IAEA's goals is to publish a safety guide on long-term post-remediation management. This is based on the feedback that was received from other members that participated in RSLS in 2021," Shafer said. "I took part in the work group in February that developed a proposal for the safety guide. This meeting was an opportunity for member states to identify topics and issues that should be covered in the guide."

LM Offers a Wide Range of Technical Expertise

LM's mission covers an array of responsibilities realized through six core goals

The U.S. Department of Energy (DOE) Office of Legacy Management's (LM) mission is to fulfill DOE's post-closure responsibilities and ensure the future protection of human health and the environment. In addition to protecting human health and the environment, these five goals round out LM's operating objectives:

- Preserve, protect, and share records and information.
- Safeguard former contractors' retirement benefits.
- Sustainably manage and optimize the use of land and assets.
- Sustain management excellence,
- Engage the public, governments, and interested parties.

Additionally, LM has activities focused on international affairs and other programs that exemplify LM's mission and range of expertise.

Applied Studies and Technologies Program (AS&T) and the National Laboratory Network (NLN)

LM is responsible for ensuring DOE's post-closure responsibilities are met at sites that no longer have a continuing DOE mission. To meet its mission, LM complies with environmental laws and regulations, reduces postclosure-related health risks in a cost-effective manner, and works to improve the long-term sustainability of environmental remedies. AS&T's responsibility is to assess risk and use a data-minded approach to the decision-making process.

The goal is to develop long-term strategies to minimize site risks, decrease liabilities, and increase stakeholder confidence. AS&T and NLN collaborated with their counterparts to build working groups focused on these common objectives. Shafer oversees many LM international activities. He also served as forum chairman, along with IAEA Technical Officer Edgar Carvalho. Forty people from more than 20 countries participated in working groups to discuss varying topics, and LM representatives gave presentations on a variety of subjects.

Smith Taylor discussed LM's history and DOE's policy for transferring former defense sites to LM for post-remediation management. "As some countries are developing national policies regarding long-term stewardship, I felt it was important to provide some perspective for how the role of LM has evolved over time," Smith Taylor said.



Deputy Director of the LM Office of Business Operations Tania Smith Taylor, takes part in a discussion. Forty people from more than 20 countries participated in working groups at the IAEA forum in October.

Aviation Program

LM's Aviation Program uses technology to gather data and assist in the process to analyze sites and changing conditions.



"The LM Aviation Program is [implemented] by LM and its strategic partner to support the use of small, unmanned aircraft systems (sUAS) for long-term stewardship (LTS) activities," LM Aviation Program Manager Deborah Steckley said. "The program's mission is to plan and [apply] efficient and effective aviation activities consistent with aviation management and safety requirements specified in DOE and LM directives. SUAS surveys of LM disposal sites collect RGB photogrammetry (aerial photographs) and light detection and ranging (lidar) data in accordance with established data quality objectives to support LM's site management."

Lidar produces 3D spatial data, which can be combined with photogrammetry data to produce 3D models. Geospatial, applied studies and technology, and site personnel can then conduct analysis to detect changes in site conditions. Kautsky presented on the transition activities needed for a site to transfer to LM, specifically addressing UMTRCA's Title II sites, which are former uranium mill sites that are most common in other countries.

"One of the key messages I focused on was how early LM will start planning for a site to become the responsibility of LM," Kautsky said. "I also gave some perspective on some of the lessons learned from conducting long-term surveillance and maintenance of UMTRCA sites."

Shafer said although five years may seem like a long time to develop guidance, IAEA safety guides and standards are consensus documents. "A lot of the learning is in the development of a guide, as opposed to just having it referenced afterward," Shafer said. "This is one step closer to having solid international guidelines in place for the long-term management of legacy sites across the world."

The safety guide, which LM will help develop, will eventually include case studies that show how different countries address post remediation management.

Calibration Facilities Program

LM manages five calibration model facilities located in Grants, New Mexico; George West, Texas; and Casper, Wyoming, as well as two facilities in Grand Junction, Colorado. These facilities consist of a variety of calibration models constructed by the U.S. Atomic Energy Commission (AEC) from the 1950s to 1970s.

Variations among calibration models allow facility users to account for a multitude of factors when calibrating radiation detection equipment. There are two types of calibration models: boreholes and pads. Borehole models are used for downhole geophysical well-logging equipment. Pads are used for portable radiation detectors including handheld, vehicle-mounted, and aircraft-mounted systems. LM maintains the different facilities and models and provides access and technical support to facility users to calibrate environmental radiation sensors.

Though these three programs are unique, LM works to ensure they operate in unison as they grow.



PARTNERSHIPS

LM Collaborates With Central Asian Partners at IAEA Conference



The weeklong International Atomic Energy Agency Coordination Group for Uranium Legacy Sites meeting included workshops, presentations, site tours, and more

Since its establishment in 2003, the U.S. Department of Energy Office of Legacy Management (LM) has been dedicated to understanding and applying best practices in a variety of disciplines. This understanding supports LM's continual improvement and growth and promotes a collaborative environment to share best practices with international partners. These practices were put in place Aug. 28 through Sept. 2, 2022, during the LM-hosted International Atomic Energy Agency (IAEA) Coordination Group for Uranium Legacy Sites (CGULS) technical meeting in Grand Junction, Colorado.

The weeklong "Technical Meeting on the Management of Remediated Areas" was designed to engage international partners from Central Asia in a collaborative spirit.

LM welcomed two IAEA officials, a delegate from the European Bank for Reconstruction and Development, and representatives from post-Soviet states Kyrgyzstan, Uzbekistan, and Tajikistan, who engaged on issues related to post-remediation management activities. These countries supplied uranium to the Soviet Union during the Cold War and are now facing the task of remediating abandoned mines and ore-processing sites. With remediation completed at some key sites, CGULS now turns its attention to long-term stewardship, or "post remediation management" of the sites.

LM Technical Director for Long-Term Stewardship Dr. David Shafer leads LM's International Affairs efforts and said the collective effort is to establish long-term care of the sites. "The workshop was a way to jump-start that process in Central Asia," Shafer said.

The week was packed with workshops, presentations, tours, and provided a venue for information sharing and questionand-answer sessions. Attendees were introduced to IAEA and LM through an overview of LM's long-term surveillance and maintenance strategies, institutional controls use, and stakeholder interaction, among other topics. All parties presented information and shared their experiences.



David Von Behren, LM Public Affairs team lead for Education, Communications, History, and Outreach, presented on stakeholder engagement and interaction. Von Behren explained the need to identify stakeholders, which sparked discussion and exemplified the objective of these information exchanges between global communities.

Site tours showcased operations and best practices. For example, participants learned that ore was processed decades ago at the Rifle, Colorado, Disposal/Processing Site. Leaders explained LM's responsibility to manage the disposal cell in compliance with site-specific contingencies and prevent release of contaminants into the environment.

The technical meeting included visits to Defense-Related Uranium Mine (DRUM) program sites, the Monticello, Utah, Disposal and Processing Sites, and the Burro Mines Complex in southwestern Colorado, as many of these sites are in environments like those in the Central Asian republics. The international participants also learned about the beneficial reuse of the former uranium mill site in Grand Junction, Colorado, that is now the site of Las Colonias Park along the Colorado River. Dr. Kenneth H. Williams, senior scientist and program lead for Environmental Remediation and Water Resources in the Lawrence Berkeley National Laboratory Climate and Ecosystem Sciences Division, highlighted his scientific research and work on uranium remediation efforts. His work focuses on groundwater contamination remediation and the most sustainable and effective methods for containing and preventing contamination.

Williams explained the use of microorganisms to create a barrier within aquifers underlying former mill and processing sites to prevent contamination from spreading to local streams and rivers. Williams shared the technology and innovation so international partners can implement the methods in their countries.

Whether they discussed communications, long-term stewardship, new technologies, scientific research, or other approaches, IAEA CGULS workshop participants shared information in a collaborative way throughout the week to contribute to safe remediation and safe long-term management of uranium legacy sites, with the goal to protect human health and the environment across the globe.



Environmental Justice Program Manager Takes Part in Workshop for Community Leaders



TREAT is designed to equip teachers with tools and information needed to educate students about radiation, energy, and technology and encourage them to pursue engineering and nuclear careers

U.S. Department of Energy (DOE) Environmental Justice (EJ) Program Manager Dr. Melinda Downing participated in the Teaching Radiation, Energy, and Technology (TREAT) Workshop at the Savannah River Operations Office in Aiken, South Carolina, on Oct. 12-13, 2022.



From left, Savannah River Site Manager Mike Budney; DOE EJ Program Manager Melinda Downing; and SRS Senior Engineer Edwin Deshong at the TREAT for Community Leaders Workshop in Aiken, South Carolina, Oct. 12-13, 2022.

Dr. Downing and the mayor of Barnwell, South Carolina, delivered opening remarks. Other workshop speakers included the Savannah River Site (SRS) operations manager, a South Carolina State University representative, and local representatives. The TREAT workshop covered the history and missions of SRS, emergency preparedness, Radiation 101, and Environmental Monitoring: Wildlife Surveillance Program. The workshop is sponsored by a DOE EJ grant in partnership with Savannah State University (SSU) and SRS.

Another purpose for the workshop is to educate kindergarten through 12th grade teachers and Central Savannah River Area community leaders about radiation and its sources, radioactive waste management, effects of radiation on environmental health, and the negative impact of environmental radiation exposure to humans. Experts from DOE, SRS, the U.S. Environmental Protection Agency, and the Georgia Department of Natural Resources gathered to educate, answer questions, and discuss engineering and nuclear career opportunities. Dr. Kenneth Sajwan, SSU project facilitator, professor, and institute manager, worked directly with the SRS site, community leaders, and others to coordinate the event. Sajwan and Rev. Jenkins Bosman of the Imani Group facilitated the Community Leaders Institute.



TREAT Community Leaders Workshop participants in Aiken, South Carolina, on Oct. 12-13, 2022.

Edwin Deshong, chief engineer at SRS, provided an overview of the site and J. Kyle Bryant of EPA Region 4 led the group in a survival game. A Citizens Advisory Board representative for SRS also presented. Clarence Brown, founder and executive director of Pre-College University, also attended the workshop. SRS Public Affairs Specialist de'Lisa Carrico, the workshop coordinator, said local teachers and community leaders greatly value the workshop. "This collaboration strengthens meaningful public involvement in adversely impacted communities and is recognized as a model environmental justice program for communities around federal facilities," Carrico said. �

ENVIRONMENTAL JUSTICE

DRUM Team and Tribal Partners Perform Fieldwork at Navajo Nation Abandoned Uranium Mines



Collecting information at defense-related uranium mines in Arizona and New Mexico and assessing risks to the public was a collaborative effort

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) Defense-Related Uranium Mines (DRUM) program conducted verification and validation (V&V) at abandoned uranium mines on the Navajo Nation from mid-October to mid-December 2022. The initial phase of work took place in the Four Corners areas of Cove, Sweetwater, Round Rock, and Red Valley.

The DRUM program is a partnership between LM, federal land management agencies, and state and tribal Abandoned Mine Lands (AML) programs to verify and validate the condition of an estimated 4,225 mine sites across the United States. These DRUM sites provided uranium ore to the U.S. Atomic Energy Commission for defense-related activities that occurred between 1947 and 1970.

LM inventoried DRUM sites on the Navajo Nation, working with the Navajo Nation Abandoned Mine Lands (NNAML) Department and Navajo Nation Environmental Protection Agency (NNEPA). LM's technical support contractor conducted fieldwork to verify and validate these mine sites, accompanied by a Navajo language-speaking liaison to answer any questions that arose. The fieldwork did not involve construction or heavy equipment — the only vehicles were those used by the team to access each DRUM site.

Technical specialists on each field team performed the following tasks:

- Inventory DRUM sites by collecting location and condition data on mine features, such as adits, shafts, and waste-rock piles.
- · Perform gamma radiation walkover surveys.
- Conduct soil and water sampling, if applicable.
- Develop reports that rank physical safety hazards at DRUM sites.
- Perform preliminary screenings of potential risks to human health and the environment.

Information gathered during fieldwork assists LM and NNAML with making decisions to safeguard features identified at some mine sites to protect humans and wildlife. Mine reclamation and remediation work are not part of the DRUM program.

Coordination With Navajo Nation Leadership

Prior to the DRUM field inventory work, DOE coordinated with Navajo Nation President and other leadership, NNAML, NNEPA, Community Outreach Network, Chapter Houses, and other leaders. DOE also coordinated closely with the U.S. Environmental Protection Agency Region 9.

To learn more about DRUM verification and validation work, visit www.energy.gov/Im/defense-related-uranium-mines-program.



Clean Water Act 50th Anniversary Celebrated at Inspirational Location



Editor's note: In October 2022, Council on Environmental Quality Chair Brenda Mallory delivered the following address to mark the 50th anniversary of the Clean Water Act of 1972 at an event in Cleveland, Ohio. A summary of the event and the verbatim text of her speech is reprinted here.

Council on Environmental Quality (CEQ) Chair Brenda Mallory marked the 50th Anniversary of the Clean Water Act of 1972 at an Oct. 18 event along the banks of the Cuyahoga River in Cleveland, Ohio. The Cuyahoga River helped inspire the passage of the Clean Water Act in 1972 because it repeatedly caught fire from pollution. The river has since been restored under the Act's landmark legislation.



U.S. Environmental Protection Agency (EPA) Administrator Michael S. Regan, EPA Office of Water Assistant Administrator Radhika Fox, Assistant Secretary of the Army for Civil Works Michael Connor, Rep. Debbie Dingell (D-Mich.), Cleveland Mayor Justin M. Bibb, water advocates, and community leaders joined Mallory [pictured] to commemorate the anniversary.

On Oct. 17, President Biden issued a Presidential Proclamation to mark the anniversary and reaffirm the nation's commitment to providing access to clean water. The Bipartisan Infrastructure Law and the Inflation Reduction Act build on the Clean Water Act's promise by cleaning up legacy pollution, replacing lead pipes, building more resilient water infrastructure, and tackling climate change.

Chair Mallory's remarks, as prepared for delivery, follow:

"Thank you for the warm welcome, and thank you Mayor Bibb for hosting us here in Cleveland.

It is a pleasure to be here to celebrate the 50th Anniversary of the Clean Water Act!

Yesterday, President Biden issued a Proclamation commemorating this milestone.

He noted how clean water is of paramount importance to our planet, to our nation, and to our communities — and how the Clean Water Act has been an invaluable tool in protecting this precious resource.

The President also celebrated just how far we've come over the last 50 years. It is truly something that we as a nation should be proud of.

In the months and weeks leading up to this anniversary, I have been asked many times, "what does the 50th anniversary mean?"

To answer that question, I think it's important to contextualize what led up to the Clean Water Act.

The genesis of this landmark law was the public outrage over the visible, severe degradation of our planet and our communities — like the Cuyahoga River catching on fire.

Although the riverbed burned over a dozen times, that last fire in 1969 occurred during the awakening of environmental consciousness and prompted a grassroots movement calling for basic rights to clean air, clean water, and livable communities.

Spurred to action by activists and advocates across the country — and overwhelming public support — Congress enacted several hallmark environmental laws. The Clean Water Act was one of them.

ENVIRONMENTAL JUSTICE

It is important to remember that this did not happen overnight; rather, it was the result of years of advocacy for healthier rivers, waters, and communities.

As I reflect on the last 50 years, I am reminded of the power of a collective voice, all pulling in the same direction for a simple, but sacred idea — every person deserves access to clean water.

President Nixon said during his state of the union around that time that "Clean air, clean water, open spaces — these should once again be the birthright of every American."

Indeed, the mission of safeguarding clean air and clean water has long been a shared American value.

And it is this value that underpins our work — 50 years later — in the Biden-Harris Administration and at the Council on Environmental Quality.

While the Cuyahoga River no longer catches fire — in fact, it is now so clean that its waters are once again fishable and swimmable — we now have a planet on fire.

Clean water has always been a shared resource that we ignore at our peril, but that is especially true as we confront climate change.

We cannot separate the need for clean water from other pressing issues we face — like climate change and environmental injustice. Nor can we separate clean water from the opportunities that those challenges present.

President Biden often talks about the United States as a nation of possibilities. Many of those possibilities are rooted in access to clean water and a healthy community.

The next 50 years of environmentalism centers in so many ways around clean water.

And if we can work together to steward this resource, that investment pays off — in a healthy environment, in a healthy people, and in a healthy economy.

But the next 50 years of environmentalism must also include a more holistic picture.

It is about clean water and a changing climate. Clean water and environmental justice. Clean water and equitable green (and blue!) space. Clean water and economic development. President Biden recognizes the opportunity we have at this moment in time. He knows that if we do this right, we can protect lives and livelihoods while making our communities more resilient to the impacts of climate change.

I want to focus briefly on the nexus between clean water and environmental justice.

President Biden made clear from the start of his Administration that we would put equity at the center of everything we do. For too long, our environmental policies have not benefitted all communities.

The President committed on the campaign trail to tackle this issue head on — he committed to bring folks to the table so that, together, we can develop policies that advance a healthy and safe environment for every community.

So much of our water policy in this Administration is geared toward delivering on a basic goal — striving to ensure that everyone, regardless of zip code or race or income, has access to clean water.

That's why the Bipartisan Infrastructure Law and the Inflation Reduction Act make unprecedented investments in our nation's water infrastructure — so that we can protect clean water for generations to come.

We have a lot of work ahead of us, and EPA is a leader and a critical partner in this work. But so are all of you.

Remember, the reason we have the Clean Water Act was because folks of all generations, races, and backgrounds came together to say enough is enough.

We need that spirit and that activism from folks all across the country if we truly want to solve the challenges we are facing today.

I know we can do it, and I look forward to rolling up my sleeves and getting to work with all of you to protect clean water for all people."

ENVIRONMENTAL JUSTICE

LM Looks to Mother Nature to Guide Site Management



LM conducts studies to evaluate pros and cons of managing disposal cell covers with and without vegetation

One of the U.S. Department of Energy Office of Legacy Management (LM) Applied Studies and Technology program's (AS&T) focus areas is the effect of natural processes on remedy protectiveness. AS&T has a portfolio of studies that focus on enhancing LM's understanding of long-term processes that affect disposal cell performance.

According to LM's Real Property team, LM manages 30 sites with disposal cells, including one that has two disposal cells (Bluewater, New Mexico, Disposal Site) for a total of 31 disposal cells. LM has six additional sites that have what are defined as either impoundments or landfills. Therefore, it falls to LM to understand the long-term processes that affect performance of disposal cells and engineered cover systems that ensure long-term remedy protectiveness for human health and the environment.

AS&T's Enhanced Cover Assessment Project (ECAP) examines vegetation impacts on rock-covered disposal cell performance. The project includes several studies that evaluate the pros and cons of managing disposal cell covers that have and don't have vegetation.



Figure 1. The Grand Junction disposal site study area in September 2022. Note the bare rock cover on the conventional area and the vegetation established on the naturalized area.



Figure 2. Cross section of the constructed replica of the Grand Junction disposal cell, which shows the engineered design and location of the monitoring instruments.

SUSTAINABILITY



Figure 3. and Figure 4. Field hydrology and water-balance data from the study instrumentation: Note the percolation levels on the naturalized test are nearly eliminated while the conventional area percolation levels continue to increase on the conventional area.

In one study, the team constructed a scaled-down replica of the Grand Junction, Colorado, disposal site cell cover (Figure 1 and Figure 2). The Grand Junction site's conventional rock-cover provides erosion protection, limits precipitation infiltration into the cell's mill tailings, and attenuates radon emissions.

The study explores how much precipitation percolates through rock covers under vegetated and unvegetated settings. Vegetation management is carried out using two different approaches in this study, 1) the conventional approach (e.g., current practice), which uses herbicide to eliminate plant growth and 2) a naturalized approach to allow and enhance plant growth without using herbicide.

"The project started with investigating the impacts of naturally occurring vegetation observed on disposal cells after construction," said David Holbrook, AS&T Scientist and ECAP project lead. "Now we are asking the question, 'Is there potential to enlist Mother Nature to help with the LM mission?""

Percolation through the test pad cover system ranged from 10-47 millimeters per year (mm/yr) in wetter years, which is considerably higher than anticipated. Increases in saturated hydraulic conductivity of the protection layer and the radon

barrier contributed to the higher percolation rates. Vegetation established relatively quickly after herbicide application ceased in 2014 and had a significant effect on how precipitation was stored and released within the study area.

Within one year of stopping herbicide applications, evapotranspiration increased, water content in the protection layer and radon barrier decreased, and the percolation rate decreased significantly (red oval in Figure 3). Percolation through the naturalized cover averaged 1.4 mm/yr and occurred only once after the spring of 2016. In contrast, the conventional test plot continued to perform as before, with high water content and an average percolation rate of 34.6 mm/yr between 2016 and 2019 (red oval in Figure 4).

So far, results suggest that within 10 years of construction, the covers' radon barrier permeability will increase, and a significant fraction of precipitation may percolate through the covers. However, allowing or enhancing vegetation establishment on the same covers will likely increase evapotranspiration, reduce soil water storage, and thereby limit percolation to very small amounts. Moreover, the water balance benefits of naturalization will likely increase over time as the habitat improves and vegetation thrives. *****





FUSRAP Historical Display Unveiled in Washington, D.C.



DOE and USACE commemorated 25 years of FUSRAP collaboration in a September ceremony to unveil a FUSRAP historical display

The U.S. Department of Energy (DOE) Office of Legacy Management (LM), in partnership with the U.S. Army Corps of Engineers (USACE), unveiled a historical display on the Formerly Utilized Sites Remedial Action Program (FUSRAP) on Sept. 7, 2022.

The display, titled "FUSRAP: A Legacy of Service," is a freestanding, interpretive exhibit that communicates FUSRAP's history and significance. LM and USACE's FUSRAP teams collaboratively developed the historical display. The exhibit will be used during conferences, meetings, events, and by request in FUSRAP communities. The informative piece includes an interactive virtual display in which the public can click through images and text. The in-person event took place at DOE headquarters in the James V. Forrestal Building in Washington, D.C., and included speakers from LM and USACE, including LM Director Carmelo Melendez, LM Deputy Director Peter O'Konski, LM FUSRAP Site Manager Darina Castillo, and USACE Environmental Division Chief Lara E. Beasley.

"In fall 2019, when we began work on this historic display, our vision was to tell the fascinating story of not just LM's and USACE's legacy of service, but also of the legacy of service of 55 different communities throughout our nation," Castillo said during the event. "COVID-19 postponed this moment, but now we come together to showcase the FUSRAP program, our partnership with USACE, and our 25th year of working together."

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A predecessor agency to DOE, the U.S. Atomic Energy Commission (AEC) established FUSRAP in 1974 to identify, investigate, and clean up or control sites across the United States that were contaminated during World War II and the Cold War. USACE joined the program 25 years ago, when Congress transferred FUSRAP cleanup administration and execution from DOE to USACE in October 1997.

In 2003, DOE assigned FUSRAP to its newly established LM office to fulfill the Department's post-closure responsibilities and ensure the future protection of human health and the environment. Today under FUSRAP, USACE remediates sites before transferring them to LM for long-term stewardship.

"The FUSRAP historic display shows the timeline and evolution of the FUSRAP program, beginning with 'The Race for the Bomb,' the U.S. government's compelling call to action with the creation of the Manhattan Engineering District, most commonly referred to as the Manhattan Project," Castillo said. "Our hope is that the FUSRAP [historical] display exhibit communicates FUSRAP history and significance in these communities across the nation." LM's long-term stewardship of FUSRAP sites includes managing site-records and responding to stakeholder inquiries, eventually leading to many sites being released for unrestricted use and ownership transferred to private owners or public entities for beneficial reuse.

"The many complete FUSRAP sites now utilized by their surrounding communities serve as powerful testaments to USACE's and LM's commitment to restoring and benefiting communities who served their country during the Manhattan Engineering District and Atomic Energy Commission eras," Melendez said. "We look forward to continuing our productive relationship with USACE and working together to close out the final chapter of the Manhattan Project and AEC legacy story and provide FUSRAP communities with blank slates on which to write new stories of beneficial reuse." *

PUBLIC OUTREACH

After Nearly Four Decades of Federal Service, Program Manager Calls it a Career

Debbie Barr, a DOE projects veteran, has her sights set on volunteering, continuing her education, and traveling

After serving her country for nearly four decades, Debbie Barr is ready to relax. Nearly three of those decades were spent with the U.S. Department of Energy (DOE), retiring on Aug. 31. Barr was the program manager for the DOE Office of Legacy Management's (LM) Uranium Leasing Program (ULP), Applied Studies and Technology (AS&T) program, and National Lab Network (NLN). She is a U.S. Airforce veteran, serving as a cryptologic linguist from 1983 to 1987, specializing in Korean.

Barr's work with DOE began in the mid-1990s at the Yucca Mountain Site Characterization Office (YMSCO) in Nevada. From December 1995 to September 2010, she worked first with the U.S. Bureau of Reclamation in underground mapping at the Yucca Mountain site, then with DOE's Office of Civilian Radioactive Waste Management. Her primary responsibilities included assisting DOE in planning, developing, implementing, and managing an extensive operating work-scope budget and monitoring contractors' performance against the budget.

In addition, she served as a technical specialist and expert in geological testing and oversight of the geologic testing program, thermal testing program, Performance Confirmation program, and related modeling programs. She directed, oversaw, and executed presentations and briefings about the geology program to agencies and organizations outside the project, including the U.S. Nuclear Regulatory Commission, U.S. Nuclear Waste Technical Review Board, Advisory Committee on Nuclear Waste, state of Nevada, local governments, the general public, and other technical organizations.

Barr came to LM in 2010, initially working with the Beneficial Reuse program, then as a site manager since 2018. Her role as program manager included activities to enhance LM's application of applied science and technology advances with the goal to improve disposal site management, remediation strategies, and to improve cleanup effectiveness. The job requires expertise in geology, geochemistry, and program management.

Barr said her strongest impression of her coworkers is the "tremendous generosity of spirit they've shown" in every project. "Every time I've reached out for help, they've been supportive and unwavering in their help to accomplish whatever needed to be accomplished," she said. "It's been so pervasive throughout my experience with LM, it would be hard to single out any specific stories. I couldn't have worked with a better group of people!"



of the constraints of already stable and entrenched programs," she said. "There's been no such thing as saying, 'We can't do it,' because it isn't acceptable due to precedent."

"The amount of collaborative work [AS&T and NLN] involve with other LM individuals hopefully allowed others in LM to experience the same creativity. I hope everyone I worked with in LM had the same fun I did in working in these areas."

The LM ULP, which she supervised, involves managing DOE lands withdrawn from the public domain that are then leased to private industry for mineral exploration and uranium and vanadium ore mining. This takes place on 25,000 acres of land within the Uravan Mineral Belt in southwestern Colorado.

Jay Glascock, LM's director of the Office of Site Operations, said Barr's energetic management style took ULP to new heights.







"She put the program into high gear after the lifting of an eight-year court injunction, securing new leases, reestablishing partnerships, and formalizing procedures. She sustained access to the mineral resources vital to national and energy security," Glascock said. "If not for her foresight and determination, NLN's support of LM's mission would not exist. She brought science and technology to the forefront of operations."

Barr's colleague, Paul Kerl — Uranium Mill Tailings Radiation Control Act/Nevada Offsites programs supervisor — said LM's highest risk sites will benefit for years to come from the NLN collaboration she spearheaded to find ways to reduce multiple risks at the sites.

"She's the epitome of a professional, always engaging, inspiring, and cross teaming," Kerl said. "She added so much energy and value in so many different programs over her tenure at LM. The compilation of her life's work here at Legacy Management leaves a lasting legacy in itself." Over the course of her long career, Barr has observed some odd sights in the field.

"At Calamity Camp (Colorado) it was so strange to be walking across loose core samples from the uranium exploration days where the wooden core storage had decayed and dumped loose core samples all over the place," she said. "Core is so expensive to obtain since you need to put in boreholes to get it, which is an expensive proposition. It seemed just wrong to be walking on the old core samples."

With more free time to spend, she looks forward to volunteering at places like performing arts centers, taking classes on subjects she finds interesting but not directly related to her job, and traveling more.

"You can't take the geologist out of the individual, even when they retire," Barr said. "I'm looking forward to continuing to impose on many of my friends and relatives at future opportunities with the geologic history of surrounding features and the latest growth in the related physical science fields. Hopefully that won't drive people away ..."



Bill Frazier Honored as Employee of the Year

LM names engineer/site manager as co-winner of the Philip C. Leahy Employee of the Year award

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) honors Engineer Bill Frazier as co-winner of the 2022 Philip C. Leahy Employee of the Year award for his outstanding achievement and exemplary teamwork as a site manager in Grand Junction, Colorado.

Frazier manages long-term care at Title I and Title II Uranium Mill Tailings Radiation Control Act sites that have transitioned to LM for long-term stewardship. He also manages Title II transition sites that have not yet transferred to DOE.

Frazier was surprised and grateful when he learned at the LM all-hands meeting in August that he is one of two employees LM is recognizing for their willingness and ability to perform above and beyond their regular job duties.

"I am honored to be an employee of the year, especially knowing the skill level and aptitude of my LM coworkers and how amazing they are," Frazier said. "It's such a pleasure to work alongside them. We have a wonderful group of people in LM."

Frazier is a member of the Navajo Nation. He is Tódích'ii'nii (Bitterwater Clan), born for Taa'chii'nii (Red Streak Forehead). His maternal grandfather's clan is Honágháanii (The One Who Walks Around Clan), and his paternal grandfather's clan is Tódích'ii'nii (Bitterwater Clan). The Tódích'ii'nii side of his family is from Dilkon, Arizona. The Taa'chii'nii side is from Oak Springs, Arizona, near Carrizo Mountain on the Navajo Nation.

Frazier is a Persian Gulf War U.S. Navy veteran. He graduated from the University of Colorado at Denver with a bachelor's degree in civil engineering and is a registered professional engineer in the state of Colorado. He has worked as a private consultant, municipal city engineer, facilities engineer, and now as a site manager, working at the LM office in Grand Junction.

Frazier also assists with overseeing the Applied Studies and Technology (AS&T) program on a variety of projects. AS&T incorporates improvements in scientific understanding and technology applications into site management and remediation strategies; improves cleanup effectiveness, protectiveness, and sustainability; and helps decrease long-term costs.





Having a civil engineering background has made Frazier a natural fit for his LM work. "I have managed many design and construction projects over the years and managing site responsibilities is not much different. Design and construction are a part of some site activities, so I fit in well with that," Frazier said.

His work in the field also aligns with his chosen vocation, Frazier said. Engineers are constantly learning new things, which makes his job enjoyable and has made him an expert in his profession. "I found that there are no shortcuts to the time and effort you put into things," he said. "If you put the time and effort into anything in life, it will show."

LM Supervisory Engineer Paul Kerl nominated Frazier for the award in recognition of Frazier's can-do attitude and willingness to take on extra responsibility when his team needed help. Kerl said Frazier exhibited all 17 qualities of a team player in his responsibilities as a site manager and execution of LM's mission. Those traits are defined by *The 17 Essential Qualities of a Team Player: Becoming the Kind of Person Every Team Wants*, by John C. Maxwell.

"Since you joined LM in November 2016 as site manager, you were quickly identified as a caring, competent, and dependable asset not only to LM-21, but also to LM holistically," Kerl told Frazier in his nomination letter. "You have routinely been recognized as the 'most trusted advisor' for engineering expertise across the board to your teammates."

Kerl commended Frazier for being adaptable and flexible when his team picked up extra work after the departure of another site manager earlier this year. Beyond the scope of his existing job duties, Frazier supported the alternate water supply system in Riverton, Wyoming, directly engaging with the Northern Arapaho Tribe to address needed repairs.

He also supported water distribution system operation and maintenance at the Legacy Management Field Support Center in Grand Junction, as well as interoffice water quality topics associated with contaminants of concern at fellow managers' sites. Frazier supported his colleagues when communicating about site issues such as erosional piping at Mexican Hat, Utah, and cell depression at Bluewater, New Mexico. Frazier was able to draw on his Native American heritage to facilitate understanding and enhance communication at a high-level forum in Gallup, New Mexico, in April.

At the multi-federal agency field hearing with the U.S. Nuclear Regulatory Commission chairman, commissioners, and staff, the U.S. Environmental Protection Agency, state regulators, and other panel representatives, Frazier presented material on LM's behalf. He briefed Navajo Nation President Jonathan Nez and his cabinet members on strategies and progress under the Navajo Nation 10-Year Plan, as well as critical lessons learned from remediation and long-term stewardship of former uranium mill sites. Frazier developed the briefing materials for the meeting about LM sites on the Navajo Nation, with an emphasis on the Church Rock, New Mexico, Site's future transition to LM oversight.

"You paid particular attention to assure the complicated technical issues were presented in an easily understandable manner," Kerl said. "Your presentation was well received and demonstrated the commitment of the Secretary of Energy to meaningful, open, and effective engagement with the Native American communities. President Nez personally acknowledged and thanked you for your attendance and support."

Frazier said public speaking did not come naturally to him once upon a time. He credits his experience with Toastmasters — where he learned and practiced leadership skills by organizing and conducting public meetings — with giving him the communication skills to represent LM with confidence. "I got comfortable speaking in public," he said, grinning. "I just got used to it."

Frazier's presence at the forum served as a strong model and inspiration for the next generation of Native Americans and STEM students, many of whom were present in the audience that day, Kerl said.

"You are a true team player in every sense of the word, and what you bring to the table every day goes well beyond your primary responsibilities," Kerl said. "You are one of the greatest assets LM has to offer. Thank you for a job well done Mr. Frazier!" أ



Bob Walker Honored as Employee of the Year

LM names IT specialist as co-winner of the Philip C. Leahy Employee of the Year award

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) honors Information Technology (IT) Specialist Bob Walker as co-winner of the 2022 Philip C. Leahy Employee of the Year award for his long-tenured hard work and dedication as an integral member of LM's cybersecurity program.

The Leahy award was created in 2017 to recognize LM employees who demonstrate qualities of an outstanding team player as defined by The 17 Essential Qualities of a Team Player: Becoming the Kind of Person Every Team Wants, by John C. Maxwell. Leahy himself personified qualities of a team player, including being dependable, enthusiastic, prepared, tenacious, and self-improving. Leahy established what is now LM's Grand Junction office, and later served under the U.S. Atomic Energy Commission.

"I had a couple of emotions," Walker said in response to receiving the award. "First, I'm very proud of this distinction. Those of us in IT are usually only recognized on the few days when things are not working as planned. We are often overlooked on most days when things are working. The IT team has many areas in which we can improve, and we continue to strive to make those improvements. However, I don't forget how hard we work, so it is satisfying to be acknowledged for the many good days, as opposed to the few bad."

Walker expressed how humbled he is to achieve such an award. "It's definitely an honor. There are a lot of incredibly talented, hard-working individuals within LM, much like co-award winner, Bill Frazier."

Walker grew up in Morgantown, West Virginia, where he attended West Virginia University (WVU). During undergraduate studies, Walker began writing code part-time for a contractor supporting the DOE National Energy Technology Laboratory. After graduating with a bachelor's degree, his part-time job quickly turned full time.

"I became interested in computer science before it exploded into what it is today. At the time, only a few people had personal computers in their homes, and the internet was a bulletin board, accessible by a very slow telephone modem," Walker said. "I was attracted to technology because I appreciated the efficiency that computers could achieve to perform tasks."









After three years, Walker moved to Naval Air Systems Command in Crystal City, Virginia, to broaden his experience in help desk management and other related issues before moving to work under the National Library of Medicine in Bethesda, Maryland. In 2002, he began working for IBM, where he supported National Defense University in Washington, D.C. During his time there, Walker worked in network administration, enterprise architecture, and information assurance.

In 2005, Walker landed at the LM office in Morgantown. He was the first federal LM hire from outside the original team. With LM, Walker is responsible for all areas of IT, in both primary and backup roles. He has also been deeply involved in developing a procedure for managing IT projects, to include a federal sponsor. Walker has been instrumental in establishing many of the budgeting and capital planning activities performed by the Archives and Information Management (AIM) team.

"I have been the acting AIM team leader for six months and have a better appreciation for how good a leader Doc Parks is. He makes it looks easy, but he leads by example and actively helps everyone around him improve their skills," Walker said. "That's what I've been trying to do with new hires. I spend a lot of time disseminating a lot of my corporate knowledge to the newer AIM team staff members, so they can maximize their technical skills to support LM."

Notably, Walker never backs down from a challenge, and working in IT has its challenges from time to time. One of his biggest challenges is trying to differentiate enterprise-level products from those in the everyday home.

"There are many niche apps and IOT (Internet of Things) products that can accomplish specific tasks, incredibly easily," Walker said. "However, those companies often focus very little on security, nor do they have any sort of capability to be 'managed' centrally. It is often a tremendous amount of effort to reverse engineer those items, or to try and determine what needs to be secured, and if we can do so at scale, efficiently."

Fellow IT Specialist Kyle Brown said Walker handles these challenges and more with ease, which is one of the reasons he nominated Walker for the award.

"Bob is very deserving of the nomination for employee of the year for many reasons. To sum it up, he is someone who has taken on many challenges and held himself accountable for anything that he does," Brown said. "A major challenge that Bob has succeeded in that I admire the most is his ability to take on an even bigger challenge in being a team lead. He has a great vision for the LM mission and has been very influential, encouraging, and supportive to his team members, and those are some attributes I see that make him a great leader," Brown added.

Walker certainly keeps busy on the job, and he is proud to be working with such a great team to achieve LM's goals.

"The reason I like working for LM is the clarity and alignment of the LM mission to the goals. This flows down to the teams and the individuals. I have always felt that LM lays out clear objectives and then provides employees the tools and training to work toward those goals," Walker said.

Despite his many accomplishments and hard work within LM, Walker is most proud of one achievement — his daughter Jessica.

"Being a parent is what I am most proud of. My daughter Jessica is a junior at WVU. I like to think I had something to do with it, but she and her mom probably have more to do with it than I ever did," he said.

As for his goals and future in LM, Walker looks forward to continuing his work within IT.

"I'm still excited every day to find ways to effectively improve the security and productivity of information technology systems used by LM and LM Support contractor staff to accomplish LM's mission," he said. \clubsuit



Director Discusses LM's Mission at Mine Lands Conference



Legacy Management Director Carmelo Melendez gives overview of LM's mission to conference of reclamation specialists

U.S. Department of Energy (DOE) Office of Legacy Management (LM) Director Carmelo Melendez gave an overview of LM's mission at a conference for abandoned mine land professionals that was held in Grand Junction, Colorado, Oct. 16-20, 2022.

In his keynote address at "Confluence 2022: the 43rd Annual Conference of the National Association of Abandoned Mine Land Programs," Melendez described LM's role as federal land managers and stewards of sites that played a vital role in the nation's nuclear-weapons complex. Melendez acknowledged the environmental damage caused by decades of uranium ore mining and processing that provided the nation's nuclear security. "It falls to people like us to actually give a hoot, to actually do something about it, and embrace different points of view and embrace reality," he said. The sites under LM's stewardship represent cultural, historical, and natural resources that have been successfully cleaned up and have remedies in place.

"LM is responsible for institutional and environmental controls associated with a site," Melendez said. For example, at sites where residual hazards remain — like radioactive mill tailings disposal cells — and sites where groundwater contamination is monitored, long-term surveillance and maintenance is required to ensure human health and the environment are protected. Melendez said residual risks are maintained in a sustainable and safe condition to allow affected sites to be beneficially reused.

"We're continuously receiving legacy sites for long-term stewardship and by 2030 the number of sites is expected to grow to 130." After cleaning and restoring a contaminated site, if there is no continuing mission, the site is transferred to LM for post-closure management.

"We work closely with federal, state, local, and tribal governments to set clear expectations and monitor results to ensure public and environmental safety for generations to come," he said.



LM Director Carmelo Melendez spoke to a crowd of several hundred reclamation specialists at the 43rd Annual Conference of the National Association of Abandoned Mine Land Programs in Grand Junction, Colorado, on Oct. 17.

Melendez described the 2017 initiation of LM's Defense-Related Uranium Mines (DRUM) program. The DRUM program carries out LM's mission to protect human health and the environment by:

- Identifying all U.S. Atomic Energy Commission legacy mines.
- Inventorying mine-related features.
- Collecting waste-rock samples.
- Performing gamma radiation walkover surveys.
- Safeguarding the physical hazards of abandoned mines.

"The DRUM program is particularly relevant to this conference," Melendez said. "As many of you know, the physical hazards are the most imminent threat to public safety." Prioritizing safeguarding these hazardous features allows more time for remediation and to provide safer conditions for future generations, he said and added that strategic partnerships built and fostered with other federal and state agencies, tribal governments, and nonprofit entities have boosted the DRUM program's success. "Working groups and events such as this are perfect opportunities to network and brainstorm innovative ways to tackle the



immensity of the problem," Melendez said. He emphasized the importance of working with partners and stakeholders, especially tribal and local community members, in all LM activities. "We always encourage feedback on how we do our work. Please talk to us," Melendez said. "We're always looking for ways to improve, and for opportunities for collaboration and partnerships. Relating to people is what gets us results."

The conference brought together reclamation professionals to discuss innovations, efficiencies, and partnerships to meet the challenges of reclaiming abandoned mines long into the future, organizers said. The gathering featured more than 60 technical sessions on uranium, coal, and hard-rock abandoned mine lands case studies.

LM and LM Strategic Partner contractor staff presented on the following subjects during the conference:

LM Mine Closure Program Manager Chuck Denton

presented on the DRUM program's safeguarding of abandoned uranium mines and mining-related features: DRUM teams build barricades to restrict public access to hazardous mine features and perform site verification and validation (V&V) activities — V&V activities and data help LM understand the scope of potential problems at DRUM mine sites. The team determines the mine locations, reclamation or remediation status, and potential impacts to public safety, human health, and the environment. The purpose of the DRUM program is to inventory abandoned mines that produced uranium for the U.S. Atomic Energy Commission, DOE predecessor agency, and the teams strive to safeguard 600 abandoned uranium mines each year.

LM Public Participation Specialist Shawn Montgomery

presented on building and growing STEM education: LM supports science, technology, engineering, and math education through its program — STEM with LM — and three interpretive centers that are open to the public. STEM with LM brings world-changing advancements and events from the nuclear age to life, and highlights the remedial actions, beneficial reuse, and ecological transformation of LM sites. The program provides materials, resources, training support, and outreach to communities near LM sites. Interpretive center staff deliver STEM education curricula and support STEM outreach by collaborating with tribal partners and agencies. LM experts work with teachers and inspire students in tribal communities through targeted STEM outreach events.

LMSP Senior Technical Manager Miquette Gerber presented on reclamation work at the Burro Mines Complex in southwestern Colorado: The work was done to protect the Dolores River from sediment runoff during heavy rainstorms. The Burro Mines Complex is on a uranium-lease tract near the river. The project involved reclaiming three legacy mines, erosion control, and relocating waste rock to a nearby former gravel pit. The project team finished work on Oct. 21, 2021, removing 72,117 cubic yards of waste rock. LM Aviation Program Manager Deborah Steckley presented on LM's Aviation Program, which uses small unmanned aircraft systems to support long-term stewardship of LM sites: LM is conducting the Uranium Mill Tailings Radiation Control Act Baseline Aerial Survey Project at several post-mission disposal sites. The program team establishes baseline conditions at the sites and provides high-resolution, three-dimensional imagery to enhance long-term stewardship and address potential site issues before they become costly and result in noncompliance. The aerial surveys are effective in detecting changes to disposal cell conditions, ultimately protecting human health and the environment.

LM Physical Scientist Ian Shafer presented on aerial gamma surveys of DRUM sites: A typical DRUM site ranges from 1-6 acres, but some larger sites in Wyoming are measured in square miles, which significantly increases the time and cost of sampling procedures. These increases prompted LM to seek assistance from the National Nuclear Security Administration (NNSA) Aerial Measuring Systems. NNSA provided aerial gamma survey expertise to map the terrestrial gamma signature and other related radiological attributes of the large Wyoming sites. LM will use this data to prioritize its follow-up, ground-based sampling program.

LM Physical Scientist Angelita Denny presented on field calibration facilities for environmental measurement: Since the 1950s, DOE and its predecessor agencies have developed facilities for calibrating gamma-ray measuring instruments used in uranium exploration. The facilities are also suitable for calibrating gamma-ray instruments used for remedial action measurements. The Grand Junction calibration facility has several models with various sized boreholes and steel casings to support additional calibration work, such as determining water factor calibration curves and casing factor calibration curves.





Pictured from left to right: Michelle Brown (Office of Recruitment and Advisory Services), Michelle Pannell (Office of Energy Efficiency and Renewable Energy), JIII Conrad (Office of Environmental Management), Lillie Lane (LM Strategic Partner), Shawn L. Montgomeny (LM Public Participation Specialist), Caleb Woodall (Mickey Leland Energy Fellowship), Cristina Cordero (Mickey Leland Energy Fellowship), Ken Kreie (LM Site Manager), Angelita Denny (LM Site Manager), and Bernadette Tsosie (formerly LM Engineer and Hydrologist, now Assistant Director for Hydrologic Studies for the Washington Water Science Center, U.S. Geological Survey).

LM Attends Annual Fall AISES Conference in California



LM staff participated in STEM Activity Day and college and career fair events at the 2022 American Indian Science and Engineering Society National Conference

U.S. Department of Energy (DOE) Office of Legacy Management (LM) staff attended the 2022 American Indian Science and Engineering Society (AISES) National Conference Oct. 6-8 in Palm Springs, California.

The AISES National Conference is the nation's largest college and career fair for Indigenous science, technology, engineering, and mathematics (STEM) students and professionals, and hosts a variety of exhibitors, including representatives from tribal nations, tribal enterprises, Indigenous-owned businesses, government agencies, nonprofits, and educational institutions. This is the first time since the COVID-19 pandemic began that LM attended the conference in person rather than virtually.

The three-day event attracts visitors from throughout the United States and Canada. More than 2,000 people attended the 2022 conference, which included special activities before and after the main conference, approximately 180 exhibits, and more than 100 sessions.

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Participants enjoy the LM STEM photo booth at the AISES National Conference's STEM Activity Day on Oct. 5.

This year, LM's Ken Kreie, Angelita Denny, and Shawn Montgomery arrived early to participate in the STEM Activity Day on Oct. 5.

The interactive STEM event included hands-on activities, exciting challenges, and a chance to win a variety of prizes. STEM Day, sponsored by the Boeing Company, featured a marketplace for students to learn more about AISES opportunities and gain professional skills, such as résumé building and college application tips — about 250 middle and high school students attended the event.

"We are excited to be able to continue to participate in this conference and interact with STEM students in person this year," said LM Public Participation Specialist Shawn Montgomery. "This is one of our favorite conferences, and we always look forward to showcasing our work within STEM with LM and with our tribal partners."

During this year's STEM Activity Day, LM hosted a "Radiation 101" booth to teach students what radiation is, where it comes from, and how to understand dose and regulatory limits. Booth visitors also uncovered how radiation can be helpful when used in medication, clean energy, and space exploration.

Participants used digital friskers to scan common items, such as smoke detectors, cellphones, and batteries, for radiation. Attendees could put on personal protective gear to take a "Rad" selfie at the photo booth. Throughout the day, about 100 STEM students and educators took part in the fun photo opportunity and interactive learning experience.



Representatives from LM and other DOE offices provided information and answered questions about internship and STEM opportunities within DOE at the college and career fair on Oct. 7.

"While this is a simple activity, it encourages students to think about how radiation is a part of our everyday lives," Montgomery said. "Not only does it emit from places like the sun, rocks, and soils, but it even occurs naturally in materials like bananas and Brazil nuts."

LM Site Managers Angelita Denny and Ken Kreie and support contractors answered questions about DOE internship and STEM opportunities at the college and career fair on Oct. 7.

"My favorite part of attending AISES is volunteering in the résumé room, where I get to meet students and find out about their diverse backgrounds, passions, and college/career plans," Kreie said. "It always renews my faith that our future is in good hands."

"The National AISES conference is a great opportunity for the LM and LMS teams to make valuable educational connections with students and attendees," Denny added.

The conference wrapped up with an awards ceremony banquet that included live entertainment and the traditional AISES Powwow. The next AISES National Conference will take place in Spokane, Washington, in October 2023.

PUBLIC OUTREACH

Partnership Gives LM Interns a Head Start on Their Careers



Students accompany LM scientists to gain valuable insight into field work through the Mentorship for Environmental Scholars Program

Last summer, two interns got a head start in their careers through a partnership between the U.S. Department of Energy's (DOE) Office of Legacy Management (LM) and the Mentorship for Environmental Scholars (MES) Program. The MES program is a paid, eight- to 10-week summer internship that provides underrepresented college students with research experience in environmental science, environmental justice, and environmental policy.

Angelita Denny, LM scientist and site manager, said the MES internship program provides students the opportunity to work with and learn from professionals in their field. "DOE creates a personalized project for each MES intern based on their interest, so they receive hands-on experience that helps them build their résumé," Denny said.

Interns Mikayla Bia and Jacob Henry worked with LM and the LM Strategic Partner on several projects. Bia is pursuing an associate degree in pre-engineering at Diné College in Tsaile, Arizona. Henry earned a bachelor's degree in chemical engineering from the University of Arizona. Bia worked closely with Denny on the Uranium Mill Tailings Radiation Control Act (UMTRCA) team, as well as with Mary Young, a scientist on the Defense-Related Uranium Mines (DRUM) program team. Bia observed DRUM field teams perform verification and validation (V&V), inventories, environmental sampling, and in-field quality assurance activities in Utah.

"At the second mine, Mikayla helped the team collect the total disturbed area and take photos of some features," Young said. "Throughout the visit, there were good conversations among the team members and Mikayla, with the team asking about Navajo Nation culture and traditional ecological knowledge."

Young also took Bia to the high-mine-density area of Moab, Utah, to show her many of the different hazardous features DRUM teams encounter at sites where they work.

While driving between DRUM sites, Young described the program work, team members' responsibilities, and general field work procedures and planning to Bia. The two also discussed Bia's interests, which gave Young some ideas for her summer



research project. One suggestion to Bia was that she create a list of cultural and traditional knowledge that DRUM teams should be aware of during V&V, such as plants used in ceremonies and medicines, topics to avoid speaking about, and general beliefs, to help avoid any unintentional disrespect to the Navajo people.

With Denny, Bia visited the Monticello, Utah, Disposal/Processing Site and attended a Navajo-Hopi-LM quarterly meeting in Gallup, New Mexico. Bia also visited the Slick Rock disposal/processing site in southwestern Colorado. While at the site, she met with LM Director Carmelo Melendez, and DRUM team members Gordon Clark and Chuck Denton.

"Those will be conversations I will never forget," Bia said. "I was lucky to be able to receive both life and educational advice that I will cherish forever." Now that her internship has ended, Bia said the experience gave her the knowhow to be independent in the workplace. "It has taught me the transition from working among others within my age range to learning to work with my mentors and other DOE employees on a professional level," she said.

Henry spent most of his internship last summer working with Dr. Ray Johnson, LM Strategic Partner senior geochemist at the Legacy Management Field Support Center in Grand Junction, Colorado. Supporting the Applied Studies and Technology program, Henry helped Johnson graph and analyze data from the Riverton, Wyoming, Processing Site.

Henry applied a technique developed by the University of Wisconsin-Milwaukee to graph and analyze contaminant release rates after injecting clean water into wells that were in an area where tailings were removed, but with uranium remnants on the solid phase. Thus, the experiment was to see how much of the residual uranium was released. He said the goal for the project was to build on prior work to show uranium and molybdenum release rates to the water after injection. Time-series sampling data were available for the injection well as the water continued to move under natural conditions. Graphs were created to show the chemical composition and chemical changes through time at that specific well. The information obtained will be used to evaluate a new Riverton site compliance strategy. "These concentration profiles [I made] of the wells were converted into charts for presentations," Henry said. "Through this process I polished my skills in Microsoft Excel as well as Visual Basic for Applications to create the graphs showing the various concentration profiles based on different parameters."

Along with Johnson's assistance, Henry used the graphing procedures to help determine possible chemical reactions that could release uranium and molybdenum from the sediment to the groundwater. He presented on the topic at the Geological Society of America Connects 2022 conference in Denver, Colorado, in October.



Jacob Henry takes part in a discussion at the Environmental Sciences Laboratory during his 2022 LM internship in Grand Junction, Colorado.

While visiting various LM disposal sites, Henry learned the history of uranium disposal, cleanup, and monitoring of former mining, milling, and disposal sites.

"What the internship at the Office of Legacy Management did was educate me about the work done so far in dealing with the effects of uranium mining on the environment, as well as on the community," Henry said. "However, working with Ray on his project, I realize there is a lot to be done toward helping and resolving the secondary effects that are experienced in the community and the environment."





Rocky Flats Retirees Tour Former Plant Site

Retired workers return to site of former nuclear production facility and find dramatically changed landscape

They believed the work was important. They felt they had a great job. They knew it could be dangerous, but they trusted the layers of safety and protection. And they considered their coworkers as family. Today, what was a small city where they spent a significant part of their lives is gone.

For 40 years, employees of the Rocky Flats Plant northwest of Denver, Colorado, built nuclear triggers and other components to support the nation's nuclear weapons complex. Following the end of the plant's mission in the mid-1990s, the U.S. Department of Energy (DOE) conducted a 10-year, \$7 billion site closure and cleanup project.

The DOE Office of Legacy Management (LM) conducted the Rocky Flats retiree tour to show appreciation for those who worked at the former Rocky Flats Plant. Nine retirees toured the site, shared their work stories, and learned about LM's ongoing commitment to protect human health and the environment at the Rocky Flats Site. Notably, the tour included recordings of Rocky Flats workers' oral histories. LM staff listened and spoke with former plant workers to learn firsthand about the site's legacy and understand the important role its workers played in United States' history.

Rocky Flats Site Manager Andy Keim and LM and its LM Strategic Partner (LMSP) contractor hosted the Rocky Flats Plant retirees for a visit to their former workplace decades after they left. On Oct. 5, 2022, retirees visited the locations where buildings they worked in used to be and reminisced about their time building weapon components for the U.S. government. For most of them, it was the first time back at Rocky Flats since they retired.

"I came to Rocky Flats in 1974 after I got out of the Army," Tony Abeyta said. "It was hard to get a job as a veteran back then, and I was really grateful for the job." Abeyta said he worked in nearly every building on the site during his construction career and really believed that the people who worked there considered themselves part of a big Rocky Flats family.

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GOAL 6



Jack Weaver, who started at Rocky Flats in 1961 and retired in 1996, reinforced the feeling of kinship the retirees share. "It was a family," Weaver said. "A lot of it had to do with the secrecy, us not being able to talk to anyone outside about what we were doing."

Not only did people feel like they were part of an on-the-job family, but some also took it a step further and became a real family. Mike Butler started at Rocky Flats in 1975 and worked as an engineer until 1995. His wife Sally joined as a site contractor in 1990. They married by 1995 and moved to continue their careers at the Los Alamos National Laboratory in New Mexico. "I came to Colorado in 1966 in the Air Force and fell in love with the state," Butler said. "I went to work for Rockwell, and they asked me to go to Rocky Flats, where I fell in love again."

Keim and his team led the tour that started where the former main street at Rocky Flats, Central Avenue, ran through the plant. The tour then moved to where the major plant buildings were once located. More than one retiree commented that with all the buildings gone, they did not recognize where they were. Even the staff who work on the site regularly have a hard time identifying specific locations.

The Rocky Flats Site team designed the tour to take retirees to the locations where they had worked. The team enlarged photos of the former plant buildings and displayed them at the locations to help the retirees visualize what was once in the space.

"I've been working here since before closure, doing groundwater sampling and characterization," said John Boylan, LMSP Rocky Flats groundwater lead, who led the tour. "Luckily, I know where the wells are in relation to where the buildings used to be, so I can visualize the former surroundings when I'm at a well." He said Rocky Flats Site ecologists rely on the few remaining trees to orient themselves with respect to what was once there.

The retirees shared a common memory regarding the wind at Rocky Flats. "I remember looking out to the east and seeing tornadoes out in the plains," said Jeff Schultz, an engineer who worked in just about every building at Rocky Flats at one time or another. "We had wind all the time and I recall that we had winds up to 150 miles-an-hour." Other retirees relayed stories about broken car windows and sand-blasted bodywork. One retiree mentioned that the strongest wind ever recorded in Colorado was something like 153 mph, and that was at Rocky Flats. Weaver added that there were very few windows in the production buildings. "Hardly anyone had an office with a window. It was dark all the time," Weaver said. "It took nearly 50 years for me to get a window." "I remember when we would have a power failure, and they happened fairly often, you couldn't see anything in the building," added Don Basso, who started working at Rocky Flats in 1956. "You had to feel your way around until the emergency lighting kicked on."

The retirees unanimously believed that although some worked with potentially dangerous materials, they always felt safe on the job. "I always thought Rocky Flats was a safe place to work," Basso said. "To my mind, my health and safety were never in doubt, and I never felt I was in danger."

Tour attendee, Arthur "Murph" Widdowfield, was a contract laborer who helped build the plant in 1957. Later, he started his own company and contracted with the plant to build and maintain high temperature devices, conduct maintenance at the steam plant, and build ductwork across the plant site. Widdowfield said he went to the plant four or five times a year over the next 30 or so years. After retiring and selling his company, he joined the Rocky Flats Cold War Museum board and has served as president for the past several years.

Keim connected with Widdowfield to discuss bringing a group of Rocky Flats Plant retirees to the site for a tour. Widdowfield liked the idea and shared the opportunity with members of the museum board, as well as with another retiree group, Rocky Flats Homesteaders, to determine who was interested in joining the event.

Keim said he hoped to offer another tour to retirees and former workers. "I thought the tour went well and was really excited to hear their stories about the production days," Keim said. "Hopefully, this is something that we can do again with a new group of former Rocky Flats workers."

In addition to the retirees mentioned, Clyde Christman and Ken Freiberg, Rocky Flats Cold War Museum board member also attended the tour. LM Program Analyst Padraic Benson; LM Education, Communication, History, Education Team Lead David Von Behren; LM Program Communication Specialist Christine Jost; and LM Physical Scientist Shawn Eichelberger joined the tour. The following LMSP staff also attended: Senior Public Affairs Specialist Lisa Bade, Museums Collection Specialist Taylour Whelan, Videographer Lead David Kessinger, Videographer Bryan Wells, Videographer Valerie Sears, Site Operations Manager Alan Smith, Senior ES&H Specialist Jerry Mattson, and Public Affairs Specialist Bob Darr. �

PUBLIC OUTREACH



Rocky Flats Site Upgrades Treatment System Solar Technology and Supports Nonprofit



Rocky Flats Site, Colorado, upgrades treatment system solar technology and donates changed-out equipment to community nonprofit

The Rocky Flats Site in Colorado upgraded its Solar Ponds Plume Treatment System (SPPTS) solar technology equipment, helping the community in the process.

Repurposed solar panels, batteries, controllers, and other materials from the previous system were donated to GRID Alternatives, a nonprofit organization that provides energy access programs to households and solar education training to individuals who are interested in the field. The contribution was made to the organization's Colorado office, following the federal process for donating excess government property. "When we make updates at Rocky Flats, it's great to be able to share our surplus equipment with community groups that can put them to good use," said Rocky Flats Site Manager Andy Keim.

SPPTS solar facility upgrade is robust enough to charge an electric vehicle (EV), while maintaining the system's power needs. In fact, it can run without charging for at least three days of cloudy skies.

ORGANIZATIONAL



The Conex container interior houses 10 kilowatt-hour (kWh) lithium iron phosphate batteries to support the SPPTS power needs.

The SPPTS is one of three treatment systems at the Rocky Flats Site and was originally designed to passively capture and treat groundwater contaminated with nitrate and uranium. Over time, the system was reconfigured to improve performance by incorporating active treatment components. These active treatment components require power from the Rocky Flats Site, which is off the grid and relies on solar power.

The previous SPPTS power facility was installed in 2009 and incorporated 24 lead acid batteries and 24 ground-mounted solar panels. The previous facility's electrical equipment was in open-bottom, underground vaults. Determining the need for a new facility depends on the placement and age of the previous components and frequency of maintenance.

"At LM, we're here for the long haul, so we periodically replace equipment to ensure the continuing protection of people and the environment at Rocky Flats," Keim said.

The SPPTS solar upgrade utilizes advanced technology to manage power needs safely and effectively. The new facility is constructed around a 40' x 8' x 9.5' one-trip, Conex container that is insulated and internally lined with fire-rated plywood. The interior of the Conex container is subdivided, with a separate room for the 10 kilowatt-hour (kWh) lithium iron phosphate (LiFePO4) batteries. LiFePO4batteries utilize the safest lithium-ion chemistry and are used for residential purposes.



The new solar facility has a level-2 electric vehicle charger.

The container includes distribution panels, inverters, controllers, lighting, outlets, thermostats, electric baseboard heat in the battery room, and an exhaust fan. A display monitor indicates where the solar system's electricity is being allocated. The new facility is similar to the facility at the East Trenches Plume Treatment System at the Rocky Flats Site, keeping maintenance and monitoring consistent.

There are 28, 400-watt (11.20 kWh potential) American-made solar panels mounted on the outside and top south-side of the Conex container. The power distribution system in the container converts the DC power from the solar panels and batteries to AC power, which is routed to the Treatment System metering vaults. There, AC power is converted back to DC power in waterproof electrical boxes that power the treatment system pumps. A level-2 EV charger is located outside the container.

The new SPPTS solar facility was built to fit expansion needs at the Rocky Flats Site, including powering the future uranium treatment component. The new design also accommodates additional batteries and solar panels, if needed.

ORGANIZATIONAL

Riparian Forest Buffer Tree Maintenance Completed Safely at Pennsylvania Disposal Site



LM recently completed maintenance on several hundred trees in a riparian forest buffer at the Canonsburg, Pennsylvania, Disposal Site

Three years ago, the U.S. Department of Energy Office of Legacy Management (LM) repaired a riprap embankment along Chartiers Creek near the Canonsburg, Pennsylvania, Disposal Site. In addition to repairs made to the riprap, LM planted several hundred trees along the top of the bank to establish a riparian forest buffer. The idea being that the tree roots will help reinforce the floodplain and reduce soil erosion when the creek floods.

Deer, which flourish in Pennsylvania, shed and grow antlers annually. Part of this cycle includes rubbing their antlers against the base of trees, which can destroy the bark and cause the trees to die. To protect the newly planted trees, LM placed plastic sleeves around their small trunks to protect them from deer rub.

The buffer trees grew rapidly over the course of three years, with more than 90 percent surviving. The thriving trees have outgrown their plastic sleeves, and with deer rub still posing a threat, a team from the Fernald Preserve, Ohio, Site Eco East Group replaced the plastic sleeves with wire cages.

"The team out of Eco East safely installed more than 240 wire cages around trees during the week of August 22," Site Lead Ken Broberg said. "It is estimated that the trees should be good for several years of additional growth within the cages."

Fernald Environmental Scientist Brian Wulker said the project will benefit the bank-stabilization effort and the health of the trees. "This project will help keep the restored riparian corridor developing as intended and aid [the trees'] survival rates going forward," Wulker said. Eventually, the trees will grow large and strong enough that they are not likely to die due to deer rub. The final step is to remove the cages altogether. According to Broberg, the project has been beneficial for the Canonsburg site and the health of forests across the state. "This work contributes to the Pennsylvania Department of Conservation and Natural Resources' goal of creating more riparian forest buffers in the state," Broberg said. 💸



Plastic sleeves restrict the growth of riparian forest buffer trees along Chartiers Creek in Canonsburg, Pennsylvania

A dented cage at left shows evidence of deer rub, indicating the cages are working as planned to give the trees ample room for growth while protecting them from deer.



Newly installed cages around the trunks allow for sustained growth of the buffer trees along Chartiers Creek, Canonsburg, Pennsylvania.



Original project: riparian forest buffer tree planting along Chartiers Creek near the disposal site in Canonsburg, Pennsylvania.

ORGANIZATIONAL

DOE and Allen University Sponsor 2022 Community Leaders Institute in Columbia, South Carolina



Community leaders and the public gather to discuss human health, illness prevention, and care

The U.S. Department of Energy (DOE) and Allen University sponsored a Community Leaders Institute (CLI) Nov. 12, 2022, at the university campus in Columbia, South Carolina. Thirtythree participants attended the four-hour event.

The purpose of the CLI is to help community leaders know how to access and obtain the necessary information for making good decisions and communicating that information to the citizenry. 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. This institute focuses on the unique relationship between environmental protection, human health, environmental justice, and economic development.



Community Leaders Institute attendees at Allen University in Columbia, South Carolina, on Nov. 12, 2022.



Community Leaders Institute attendees discuss reducing the incidence of sickle cell anemia, at Allen University, South Carolina, on Nov. 12.

Rev. Willie Thompson Jr., Assistant Professor of Sociology, Religion, and Human Services, Division of Social Science and Business, Allen University delivered the opening remarks. Dr. Oluwole Ariyo, Associate Professor of Biology and Director and Principal Investigator (PI) Allen University Environmental Justice Institute (AUEJI), welcomed attendees.

Panel members presented on the following topics:

- You are What You Eat: Living a Healthy Lifestyle moderated by Oluwole Ariyo, Ph.D., Director and Pl, AUEJI; facilitated by Pastor Jeannette Jordan, senior pastor of the Church House of Ministries Worldwide, Ladson, South Carolina.
- Cancer: Preventive and Curative Approaches moderated by Walter James, MBA, Assistant Professor, Department of Business Administration, Allen University; facilitated by Dr. Marvella Ford, Professor, Department of Public Health Science and Associate Director of Population Sciences and Cancer Disparities, Hollings Cancer Center, Medical University of South Carolina, Charleston.
- Sickle Cell: Reducing the Incidence Together and Care moderated by Mrs. Aisha Greggs Ofosu, Program Coordinator, AUEJI; facilitated by Yvonne E. Donald, Deputy Director and Director of Education and Outreach at the James R. Clark Memorial Sickle Cell Foundation.
- Clean Air in Homes moderated by Dr. Oluwole Ariyo; facilitated by Engineer Keisha Long, Environmental Justice Coordinator, Office of Environmental Affairs, South Carolina Department of Health & Environmental Control, Columbia.

The CLI enables community leaders as they work collaboratively with partnering agencies to positively affect the well-being of their communities. CLI promotes environmental action that improves the health of the community and its members, serving as a catalyst for changing policies, programs, and practices.

For additional information, contact Melinda Downing, DOE Environmental Justice Program Manager, at Melinda.Downing@hq.doe.gov. *

ENVIRONMENTAL JUSTICE

A Transition Window With a Beautiful View

GOAL 4

DOE's EM and LM offices engage local partners together

Just after sunrise on a September morning, a caravan of U.S. Department of Energy (DOE) personnel was driving through the Utah desert when the empty highway gave way to an area known as "God's country."

"Everywhere you look, rock formations and just incredible wide-open space. The sun was hitting the rocks behind us and really lighting them up," said David Von Behren, Education, Communication, History and Outreach (ECHO) Public Affairs team lead for DOE's Office of Legacy Management (LM). The red glow of Arches National Park in Moab was an unmistakable "you-have-arrived" sign.

Following behind Von Behren were fellow DOE employees and contractors heading to meet their counterparts from the DOE Office of Environmental Management (EM). Rarely does an arresting view of unbridled beauty render teams of environmental stewards speechless, but Von Behren said all of them were awestruck.

"It was just so striking when you drive in there and it sort of changes your mindset. You feel more relaxed when you get next to nature that's that beautiful."

"Moab embodies everything Americans think of when we picture 'the West,'" LM Site Manager Ken Kreie said. "Those images the red spires and the sagebrush — it's just a concentration of that archetypal beauty. You know they shoot movies there all the time."



LM Public Affairs ECHO Team Lead David Von Behren and Arches National Park Ranger Kaitlyn Thomas meet with DOE employees, contractors, and other representatives of federal and local agencies at the Atlas site in Moab, Utah, in September 2022.





DOE representatives meet with federal and municipal officials for a tour of a former uranium ore-processing facility near Moab, Utah, in September 2022.

Dozens of iconic movies, including Indiana Jones and the Temple of Doom, were shot in Moab. None of that was lost on those present, as the EM team briefed the National Park Service and Moab area leadership before providing the group an overview of the former Atlas Mill site and discussing its potential future uses.

Atlas is a former uranium ore-processing facility, known as a mill site, in Moab. The current activities are to relocate mill tailings and other contaminated materials from the site to an engineered disposal cell built near Crescent Junction, Utah. The scope also includes active groundwater remediation.

"We were their guests to the Atlas site overlook. But it's important that we start the partnership early, not only with EM, but also with local partners, particularly when there's a site like this that has high traffic," said Von Behren, noting the popularity of the storied park.

"This area of Moab is unique, encompassing world-class parks and stunning natural wonders," said Matt Udovitsch, a physical scientist and acting federal project director of EM's Moab site. "The team at EM understands that our work — and the cleanup of the Moab site — is pivotal." Based in Grand Junction, Colorado, EM currently manages the cleanup of the Atlas site. Once all remediation is complete in three to four years, EM will turn the site over to LM for long-term stewardship. Kreie said, in the past, two years was typically the transition window, but building connections with the community stakeholders takes time.

"We realized that that's just not sufficient time to really establish relationships," Kreie said. "They're making decisions now that if we are involved, they may consult with us as they move forward. So, we end up with a site that's easier or more manageable in the future."

"The thing that stood out to me was that everyone at that meeting had reverence for the beauty and the importance of Arches National Park and being part of its stewardship," Von Behren said.

"We value the collaboration with LM, ensuring that this treasured land is taken care of well beyond the site's cleanup," Udovitsch said. "Sharing the site's beauty on this tour was one of many collaborative efforts to restore and maintain the local landscape's natural beauty for generations to come."



New Employee Bios

Shawn Eichelberger

Shawn Eichelberger joined LM in August 2022 as a physical scientist on the LM-22 team, based in Westminster, Colorado. He is a professional geologist with more than 22 years of environmental consulting experience. For the past 12 years, he supported environmental restoration efforts



for federal clients. Shawn designed, planned, and executed a variety of environmental investigations and remedial actions throughout his career. His project and program management experiences include managing firm-fixedprice performance-based remediation contracts, in addition to projects under cost-plus fixed fee and time and material cost structures. Shawn is well versed in regulator/ stakeholder communications and executing projects in accordance with Comprehensive Environmental Response, Compensation, and Liability Act; Resource Conservation and Recovery Act; and state remediation programs.

Shawn is a proud father of four and has an amazing wife who keeps them all in line. Their family adventures include a lot of camping and skiing. Shawn enjoys just about anything related to the outdoors and is an avid Pittsburgh Steelers fan. "Here We Go, Steelers!"



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EMPLOYEES

Remembering the Leadership of Dick Church

Longest-serving mayor of Miamisburg, Ohio, and former Energy Communities Alliance chairman, who led the Mound site redevelopment effort, dies at age 81

Dick Church Jr., who served as mayor of Miamisburg, Ohio, for 28 years, died Thursday, Dec. 8, 2022, after a brief illness.

Church was administrator for the Mound Development Corporation (MDC), an agency working to redevelop the former Mound Laboratory in Miamisburg. The facility produced nuclear weapons components and supported energy and space missions during the Cold War.

Tiffany Drake, who became the U.S. Department of Energy (DOE) Office of Legacy Management (LM) Mound site manager in 2021, said the first person she learned about was Dick Church.

"Dick was a steadfast advocate for his community and helped provide a much-needed perspective on the impact of site closures and the need for a local government voice within DOE's process," Drake said. "He changed how DOE approaches stakeholder engagement. I will miss his presence at meetings and always appreciated hearing his perspective and stories."

Church was elected mayor of Miamisburg just after the announcement that the Mound Laboratory — the largest employer in the city for decades — would be closing. Church was determined to soften the economic blow to the community. After years of engaging with DOE over future use of the Mound site, Church led the effort to redevelop the property, which is now a business park. The federal government spent more than \$1 billion on Mound site cleanup.

As the Energy Communities Alliance (ECA) chairman, he led the nonprofit organization's involvement in addressing environmental cleanup and economic impacts of DOE activities in local communities.

"Mayor Church was more than a leader at ECA. He was a founding member that led the organization through transition and helped it grow from an idea into an organization that works for and assists municipalities around DOE sites," ECA Director Seth Kirshenberg said as tribute to Church. Church, along with Miamisburg community leaders, created the Miamisburg Mound Community Improvement Corporation (MMCIC), a community reuse organization that negotiated the cleanup and acquisition of the DOE Mound facility. MMCIC later became the MDC as Mound site cleanup was completed and redevelopment began.

"He always said that he never wanted to get involved in DOE matters, but after the closure of the Mound site, he (as the newly elected Mayor of Miamisburg) became a leading voice for municipalities on environmental cleanup, the workers at the sites, and reuse of former federal facilities," Kirshenberg said.

For more than half of his 28-year term, Church visited Washington, D.C., every six weeks to lobby for cleanup of the DOE site in his community, as well as others across the nation, Kirshenberg said.

DOE Environmental Justice Program Manager Melinda Downing said Church will be remembered and missed. "Although [I'm] sad to hear of his passing. I can personally validate Mayor Church's dedication and honesty for all things related to the good of his community," Downing said. "I had the pleasure of being in his presence many times during the closure of the Mound site, and in his role with ECA. Very few community advocates of his kind exist today. He was truly one of the good ones."

Miamisburg City Manager Keith Johnson said Church's influence on the community extended far beyond the city. During his career in public service, Church served as chairman of four Montgomery County, Ohio, committees: the Solid Waste District Policy Committee, Solid Waste Advisory Committee, Emergency Management Executive Committee, and Regional Dispatch Policy Committee.

"He was the region's mayor," Johnson told the *Dayton Daily News*."I don't know how many trips he made to Washington, not just on behalf of the city, but on behalf of the region." \diamond





